

## **UNESCO Kalinga Prize Winner – 1992**

### **Peter Okebukola**



**Executive Secretary of the  
National Universities Commission (NUC), Nigeria,  
Great Educationist & Science Popularizer  
And  
First African to Win the Prestigious UNESCO Kalinga Prize  
for the Communication of Science**

**I have the fire of Popularization of Science aglow in me indeed. On a daily basis I make an effort to serve Science to People.**

*...Peter Okebukola*

**Higher Education is the key to Africa's development.**

*...Peter Okebukola*

## Professor Peter Okebukola



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### **Professor Peter Okebukola – National Universities Commission Executive Secretary**

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## OKEBUKOLA , Peter Akinsola

*Executive Secretary, National Universities Commission (Nigeria)*

### A Brief Profile



Professor Peter Okebukola was born in Ilesa on February 17, 1951. He had his secondary education at St. Malachy's College, Sapele and Remo Secondary School, Shagamu. He had his higher education at the University of Ibadan where he obtained his Bachelor's degree in 1973 followed by Master's and Ph.D degrees in Science Education in the same university. He had specialized training at the Massachusetts Institute of Technology (M.I.T.), and Harvard University, both in Cambridge, USA. He specializes in higher education, science, computer and environmental education. He serves on a number of international organizations as Consultant including UNESCO, UNICEF, The World Bank and the UNDP. **Professor Okebukola is noted as the First African to win the prestigious UNESCO Kalinga Prize for the Communication of Science.** He is a Fellow of the Board of Directors

of the International Academy of Education, Member of the Executive Board of the International Association for Research in Science Teaching. He is also the African Representative and Member of the Board of Directors of the International Council of Associations for Science Education. He is a Fellow and Past President of the Science Teachers Associations of Nigeria as well as of the National Association for Environmental Education. He has won several international gold medals in science and computer education and he is the Editor of or in the Editorial Board of 25 national and 18 international journals.

His research efforts have gravitated around five central themes – higher education, computers in education and e-learning, co-operative learning, metacognitive strategies in science education, and

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## Glossary on Kalinga Prize Laureates

eco-cultural influences on the learning of science concepts. These efforts have resulted in over 130 internationally published works and over 120 national and international conference presentations. Many of his publications can be found in the world's top 10 science education, computer education and environmental education journals.

He was Dean of Education, Deputy Vice-Chancellor and Acting Vice-Chancellor of Lagos State University, Director of the University's Centre for Environment and Science Education, Visiting Professor at the Curtin University of Technology, Perth, Australia and currently the Executive Secretary of the National Universities Commission (NUC).

As Executive Secretary of NUC since 2001, he has superintended over quality assurance of the 75 universities in Nigeria. The spectrum of quality assurance activities that he has taken responsibility for includes setting new benchmarks and minimum standards for Nigerian universities, conduct of system-wide accreditation of programmes leading to application of sanctions on failed programmes, shutting down of illegal satellite campuses of universities, contextualisation of the UNESCO/OECD Guidelines on Cross-Border Higher Education, establishment of ten twenty new private universities and their annual quality audit as well as the development of strategies for institutional accreditation.





Peter Okebukola  
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08/04/2008 01:18 PM

To: crmishra@nalcoindia.co.in  
cc:  
Subject: BRIEF PROFILE AND PHOTOGRAPH

Congratulations on the book "Biographies of UNESCO Kalinga Prize Laureates."

Please find attached my brief profile and a photograph. I will be pleased to supply additional information and send more photographs.

Regards,

Peter Okebukola

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Okebukola-1.jpg Okebukola-Kalinga.doc

## Professor Peter Akinsola OKEBUKOLA A Biographical Profile



Professor Peter Okebukola was born in Ilesa on February 17, 1951. He had his higher education at the University of Ibadan where he obtained his Bachelor's degree in 1973 followed by Master's and Ph.D degrees in Science Education in the same university. He had specialized training at the Massachusetts Institute of Technology (M.I.T.) , and Harvard University, both in Cambridge, USA. He now specializes in science, computer and environmental education. He serves on a number of international organizations as Consultant including UNESCO, UNICEF, The World Bank and the UNDP. He is currently the Executive President of UNESCO's African Network for Innovations in Higher Education. In addition, Professor Okebukola is noted as the First African to win the prestigious Kalinga Prize for the Communication of Science, the First African Fellow and Member of the Board of Directors of the International Academy of Education whose

membership is restricted to distinguished professors of education in the world, and the first African Member of the Executive Board of the International Association for Research in Science Teaching. He is also the African Representative and Member of the Board of Directors of the International Council of Associations for Science Education. He is a Fellow and Past President of the Science Teachers Association of Nigeria as well as of the National Association for Environmental Education. He has won several international gold medals in science and computer education and he is the Editor of or in the Editorial Board of 25 national and 18 international journals.

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## Glossary on Kalinga Prize Laureates

education, and eco-cultural influences on the learning of science concepts. There efforts have resulted in over 190 internationally published works and over 200 national and international conference presentations. Many of his publications can be found in the world's top 10 science education, computer education and environmental education journals.

Some of the major finding of his research in computers in education have appeared in Educational Research (U.K.), Journal of Educational Technology System (U.K.), the Nigerian Educational Forum and the Journal of the Science Teachers Association of Nigeria. Some of the articles on co-operative learning, metacognition, and eco-culture and science have appeared in the American Biology Teacher (U.S.A.), School Science and Mathematics (U.S.A.), Science Education (U.S.A.), Journal of Research in Science Teaching (U.S.A), European Journal of Science Education (U.K.), Journal of Social Psychology (U.S.A.), International Journal of Science Education (U.K.), International Journal of Educology (Australia), Research in Science Education (Australia), Human Relations (U.K.), Educational Research (U.S.A.), Journal of Social Psychology (U.S.A.), Journal of Biological Education (U.K.), Journal of Chemical Education (U.S.A.), Educational Perspectives (Nigeria), Journal of the Science Teachers Association of Nigeria, Instructional Science (Netherlands) and Research in Science and Technological Education (U.K.) among several others.

He has attended and made well-received presentations at local, national and international professional meetings. Of note are all the annual conferences of the Science Teachers Association of Nigeria since 1973, and the annual meetings of

the USA-based National Association of Research in Science Teaching (NARST). He has also attended several NSTA National Conventions and Annual Meetings of the American Educational Research Association in the U.S. Other international conferences that he attended and made presentations took place in the U.K., Israel, Ghana, The Gambia, Kenya, Ethiopia, Mozambique, Senegal, Sierra Leone, Japan, France, Australia, Russian Federation, South Africa, Norway, Switzerland, USA, Ivory Coast, Belgium, Germany, Italy, and Burkina Faso.

His teaching career which began in 1970, included service in secondary schools as a teacher of biology , chemistry and physics, teacher of general science to students in a teachers' college; and a teacher of biology to college of education students and pre-degree biology students in a university. He also taught science education courses, research methodology, computers in education, data analysis/statistics and psychology of education to undergraduate and graduate students in the Lagos State University . As a Visiting Professor at the Curtin University of Technology, Australia, he taught statistics, research methods and science curriculum development to Ph.D students.

He is the immediate past Executive Secretary of the National Universities Commission. He is the Pro-Chancellor and Chairman of Council of Crawford University, Osun State University and The University of Education, Ikere-Ekiti. He has been awarded a number of honorary D.Sc degrees. He was the leader of the Academic Community to the National Political Reform Conference and recipient of the National Honour of the Officer of the Order of the Federal Republic- OFR.

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## **Books written by Prof. Peter Okebukola**

- 1. Repositioning Higher Education in Nigeria**  
by Babolola Borissshade, Peter Okebukola  
Softcover, Heinemann Educational Books  
(Nigeria), Limited , ISBN 9781294221 (978-129-422-1)
- 2. Strategies for Environmental Education: Focus on  
Component of the Environment**  
by Peter Okebukola, Ben Akpan  
Hardcover, Science Teachers Association of  
Nigeria, ISBN 9783763946 (978-37639-4-6)  
January 2005
- 3. Strategies for Environmental Education: Focus on  
Energy Consumption**  
by Peter Okebukola, Ben Akpan  
Hardcover, Science Teachers Association of  
Nigeria, ISBN 9783301802 (978-33018-0-2)  
January 2003
- 4. Strategies for Environmental Education : Focus on  
Soil Fertility, Livestock, Fishery, and Fresh Water**  
by Peter Okebukola, Ben Akpan  
Hardcover, Science Teachers Association of  
Nigeria, ISBN 9783763962 (978-37639-6-2)  
January 2006
- 5. Strategies for Teaching Overpopulation**  
by Peter Okebukola, Ben Akpan, Science Teachers  
Association of Nigeria  
Hardcover, Science Teachers Association of  
Nigeria, ISBN 9783301896 (978-33018-9-6)  
January 2002



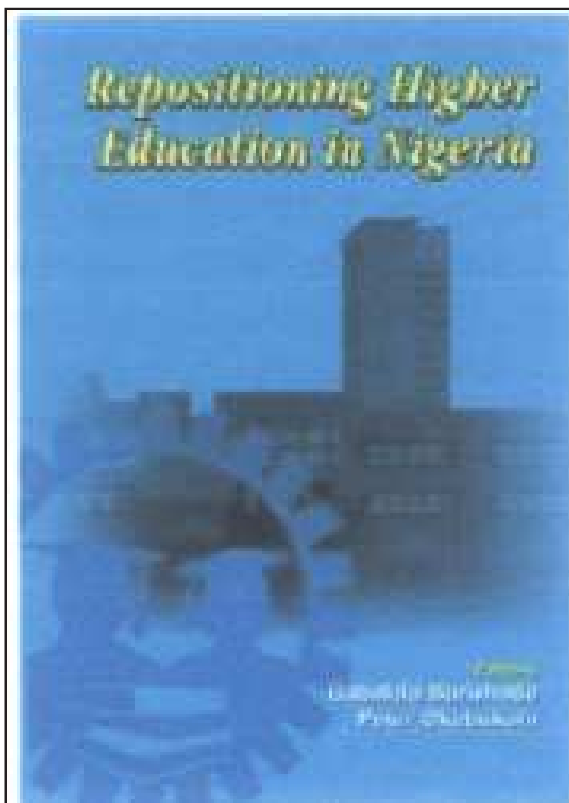
## BOOK REVIEW

### Repositioning Higher Education in Nigeria

Editors

**Babalola Borishade**

**Peter Okebukola**



#### **PRODUCT DETAILS**

<b>Paperback</b>	: 720 apges
<b>Publisher</b>	: Heinemann Educational Books (Nigeria) (May 2006)
<b>Language</b>	: English
<b>ISBN-10</b>	: 9781294221
<b>ISBN</b>	: 13:978-9781294228
<b>Product Dimensions</b>	: 25.4x17.8x3.7 cm
<b>Price</b>	: \$49.95 & this item Delivered FREE in the UK with Super Saver Delivery.
<b>Availability</b>	: Usually dispatched within 8 to 11 days. Dispatched from and sold by Amazon. co. uk.

*Contd...*

# Repositioning Higher Education in Nigeria

## PRODUCT DESCRIPTION

### SYNOPSIS

Published for the National Universities Commission in Nigeria, this book is the outcome of a National Summit on Higher Education, which took place in Nigeria in 2002. The summit was convened by the Ministry of Education with the support of Unesco. Its purpose was to thrash out the issues pertaining to the improvement and repositioning of the higher education system in Nigeria, so that it may better respond to the country's needs. The resultant work is a multicontributory publication covering the breadth and depth of the problems implicated in the higher education system. The papers address for example: the purpose of higher education in a developing country context; the state of universities in Nigeria; management and funding of higher education; the relevance and delivery of curricula; disciplinary, social and religious concerns; and the role of ICTs and new initiatives such as distance learning and virtual library projects. The contributors propose recommendations for improvement, including: the necessity of high-level government interest in education reforms; the importance of university autonomy and academic freedom; the need for both the public and private sectors to support higher education; the need for substantial hikes in government funding for higher education; the participation of stakeholders in policymaking for higher education; and the precondition of good government and democracy for the success of the sector.



## Interview with Prof. Peter Okebukola

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*In a world dominated by Science and technology science communication and popularization is of utmost importance especially for developing countries where a large population needs to be told about the impact of science and technology in their daily lives, and there are individuals who have made science popularisation the mission of their life. Prof Peter Okebukola of Nigeria won the prestigious 1993 Kalinga award for science popularization. He is the president of the National Association of Environmental Education of Nigeria, and also a consultant to UNESCO and UNICEF. He was in India recently and visited the Indira Gandhi National Open University. He was interviewed by Shri Biman Basu, Editor Science Reporter. Here are some excerpts:*

**Biman Basu :**

**Prof Peter Okebukola would you tell us why did you take science and communication as you profession?**

**Prof Peter Okebukola:**

Thank you very much and I am glad to be here back in the place where I received in 1993 the UNESCO Kalinga Prize for the popularization of sciences. My interest in the popularisation of science started from very early days. I got fire. I got this interest in science fired by my science teachers at secondary school and when I got to the University I had the fire burning more vigorously to communicate with others who had not seen the fun in science. Who do not have the benefit of seeing the impact of science in our lives. Who do not have the benefit of tapping from the huge resources, who do not have the benefit of

acquiring the knowledge of science, acquiring the process of science. So I thought I would reach out to such people and I did the first degree in science education. I had a second degree also in science education. After my doctorate degree I thought I could step up my activities in terms of science popularization and I was also involved in a number of governmental and non-governmental agencies that could help to propagate my interest in science popularization, to improve as a measure the public understanding of science. So my interest is a long standing one and its one that I had to acquire formal degrees in and its one that is still burning in me. So I have the fire of popularization of science aglow in me indeed. On a daily basis I make an effort to serve science to people.

**Biman Basu :**

**What are the areas in which you specialize? What do you write about basically? For example we have astronomy, space, physics, chemistry and all. Do you specialize in any of those areas?**

**Prof Peter Okebukola :**

Yes overtime I have had gravitated towards the areas of environmental education. So, that would appear to be my immediate area of specialization but over the years there has been some kind of evolution. I am specifically into the area of biology, in the area of botany but as a mission my recent interest is in environmental education, where we try to let our people know about the state of the world environment, about the state of the national environment, and about the state of the local environment and how humans have contributed to degradation of environment and how the humans can help to reverse the trend and so my area of interest has been environmental education.

**Biman Basu :**

**What kind of environmental problems do you have in Nigeria?**

**Prof Peter Okebukola :**

Well, we have the same environmental problems that you have all over the world. Bio-diversity laws, warming of the environment, you know is global; but we are also feeling it in Nigeria, erosion, pollution and so on. But when you compare the indices of the problems you have in Nigeria with what you have elsewhere I would say, you know, by my reading the data that it is not as acute as you have in several other developed and developing countries. But we have a lot of problems in our urban areas regarding wastes. Waste management is an area that we have found to be problematic with us and the government is addressing, you know, these issues. On our part, as environmental educators, we are trying to let citizenry know about dangers in littering gutting waste, putting garbage in places is should be.

**Biman Basu :**

**Do you have strict environmental laws to protect your forests, rivers and other natural resources?**

**Prof Peter Okebukola :**

Yes, Nigeria lays claim to having some very good laws in these areas. We have the laws at the federal level. We have laws at state levels and we have laws at the local government level. So at the 3 tiers of the government there are laws for protecting the environment and we have enforcement agencies. We have a ministry at the federal level and at the local level also we have environmental protection units. So together this three level of operation works in concert to make public aware about these laws and to enforce the laws.

**Biman Basu :**

**What kind of scientific research goes on in your country, because as a science writer you must be writing about them also and let you people know about what is happening in your country. So what kind of research is being done there?**

**Prof Peter Okebukola :**

Quite a lot of impressive research is going on in Nigeria in different fields. In the area of engineering, in the area of agriculture, in the area of medicine etc. In all aspects of science you have Nigerians working actively. In the frontier of knowledge, I must say that all our 37 universities and all over scientific research institutes are actively pursuing research and these research effort are commented upon in journals, they are recommended in occasional publications and monographs. What we try to do for the science popularization is to extract elements of the research that will have impact immediately on the lives of the people. I was the President of the Science Teachers Association of Nigeria and at this moment the Present of National Association for Environmental Education. We are producing brochures, pamphlets which record the findings of this research. From top rated scientists for distribution, to popularize in different languages we have TV and Radio programmes. They seem to do two things – one to encourage to study science and two to educate the population about science and also about the environment. We are using two pathways Textual pathways and broadcast media pathway to convey the findings of research to the

people. I must also say that Nigeria is achieving some strides in aerospace research. We have a number of agencies that are connected with this kind of research.

**Biman Basu :**

**Do many scientists in your country engage themselves in science popularisation?**

**Prof Peter Okebukola :**

Not many scientists are engaged in science popularization in Nigeria but I tell you the numbers are growing. The science association of Nigeria SAN, has a science popularization wing. Some scientists get together to link up with other organizations like Science Teacher Association of Nigeria STAN in order to propagate their results, to sell their results for public use, for public understanding of their findings. Would say that the number of scientists engaged is still low related to population of scientists that you have in Nigeria but the number is good.

**Biman Basu :**

**And what is the language in which science popularisation done in your country?**

**Prof Peter Okebukola :**

Mainly in English because English is the official language. We have over 250 other linguistic groups just like that you have in India. But what happens is that at the state levels some efforts are made to translate this to the languages that are common to the state or the locality. We have a number of television stations that screen programmes in local languages. Science popularization is one of the programmes that are seen. But at the National level it is English and at my own level of intervention it is largely in English.

**Biman Basu :**

**Are there any popularization magazines published in Nigeria?**

**Prof Peter Okebukola :**

Yes, quite a handful of popularization magazines are published mainly by non-governmental

organizations one of which is the Science Teachers Association of Nigeria STAN. I am a fellow and past President. We have newsletters, bulletins that are distributed free to our members and others. At the government level the efforts is still very minimum . But that's understandable because the NGO's have taken leadership in this and they are doing well so the Government can of course allow here, NGO's to look into this direction and contribute.

**Biman Basu :**

**What kind of television programmes do you have on Science? Do you telecast programmes like National Geographic or Discovery Channel or you have your own programmes produced in your own country?**

**Prof Peter Okebukola :**

We have some excellent stations in Nigeria Television Authority (NTA). They produce the programmes for us. The Federal Radio Corporations is also a National producer of radio programmes. But of course, National Geographic and Discovery channels are available on Cable television to the affluent homes, which is a fraction of the Nigerian population to the order of 10 or 20%. So the television and radio combined which are national outfits are helping to develop these programmes. So we don't depend on foreign channels but people engaged in science popularization will have to watch Discovery and National Geographic and get the elements because there you get almost the latest and then you can blend this with the local flavour and context for broadcast.

**Biman Basu :**

**Thank you very much.**

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**(Courtesy, Electronic Media Production Centre, Indira Gandhi National Open University, Delhi India)**

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**Source :** [www.vigyanprasar.com/comcom/inter18.htm](http://www.vigyanprasar.com/comcom/inter18.htm)

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## INTERVIEW OF PROF. PETER OKEBUKOLA

by

### Global University Network for Innovation (GUNI)



**The executive secretary of the National Universities Commission (NUC) Nigeria, Peter Okebukola, talked to GUNI about the future of the higher education system in Africa and the challenges involved**

Peter Okebukola suggested the creation of an African higher education area based on the European model and talked about the conditions needed to prevent brain drain. He also presented the paper “Quality Assurance and Accreditation in Higher Education in Sub-Saharan Africa” at the Third International Barcelona Conference on Higher Education “Accreditation for Quality Assurance: What is at Stake?” held in November 2006.

**1. What are the principal challenges facing higher education in Africa over the next five years?**

**Ans :** There are four challenges facing higher education in Africa over the coming years. The first concerns **access**, because there are many qualified people who wish to enter the higher education system.

The second challenge is derived from the first and relates to the **quality** of the product of the higher education system. Because of the increasing number of university students, without a concomitant increase in facilities and other resources, including human resources such as teachers, the quality of the system has deteriorated.

The third challenge concerns **funding**. The dependence of African institutions on governmental funding over the years has meant that they have been unable to take on the responsibility of generating their own funds. Consequently, funding will remain an important issue for the next five years. That is, there will not be enough money to meet the needs of the system, mainly due to the lack of further government funding and the inability of the main institutions concerned to find innovative fundraising solutions.

Finally, the fourth challenge is related to **relevance**, in terms of the socio economic needs of the countries involved. The good news is that many countries are now taking steps to renew their curricula in order to make them more suited to their own needs and more relevant to national characteristics, so that they can produce entrepreneurial and globally competitive outcomes.

**2. In the future, will we be able to speak of an African higher education area? What governmental issues would need to be addressed to make this possible, and when do you believe it might happen?**

**Ans :** Yes, we are indeed working on that. In February 2006 the UNESCO World Conference on Higher Education was held to look at quality assurance in higher education in Africa, to see how the quality issue can be included, how the quality of processes can be improved and, consequently, how can we achieve products of a high quality. We agreed on an action plan to use the European Bologna Process, a common educational area for the whole of Europe. We are trying to model this for Africa. In five years we will have moved towards tailoring the Bologna process to the African region. In fact, we already have pan-African institutions and governmental institutions such as the African Union and the association of African Universities, which can facilitate the development of an African higher education area.

To achieve this, we require the **collaboration** of the **institutions** I mentioned and other similar organizations. The African Union, for example, is already developing a ten-year plan for the revitalization of education in Africa.

**3. How do you think higher education affects development in African countries?**

**Higher education** is the **key** to **Africa's development**. The higher education sub-sector produces doctors, engineers, teachers, top-level civil servants and other highly qualified professionals. Therefore, higher education and its products will promote the development of the economy. Secondly, it will develop the key elements for basic education, i.e. teachers who have been trained within the higher education sub-sector.

There is an implicit link between the **quality** of higher education and the **economy** and **society**. If a country can establish a good higher education system, development is ultimately assured. One example is Japan, which has very few natural resources but a large and well-developed knowledge economy and knowledge-based society.

**4. If this is true, what strategies and measures are essential to prevent brain drain in Africa and to enable highly qualified professionals to contribute to its development?**

The real question is: why did they leave Africa in the first place? We have to find **the push factor** in order to prevent good professionals from leaving our region, and we know that the push factor includes the **economy**. Firstly, the people you mentioned need attractive **working conditions** in order to stay. Secondly, they need a **good working environment**. Therefore, if we are able to equip the classrooms, laboratories, workshops and libraries to the level of those that our professionals encounter in other countries, they will be happy to stay, to carry out their research and also to teach students. We must not forget that there are other reasons for

brain drain, which are related to the country's **security levels** and basic infrastructure.

Those professionals who have already left Africa have become **global citizens**. Therefore, African governments do not need them to **come back permanently**. What is being done is to ensure that they can come back from time to time, after spending a number of years outside the country. The goal is to establish collaboration between the foreign institutions that they are currently working for and African institutions so that they can pass on their experience and their newly acquired knowledge and skills.

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This article is based on a conversation held with the GUNI Secretariat at the 3<sup>rd</sup> International Barcelona Conference on Higher Education, November 27-29 2006.

Monday February 19, 2007

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**Ref :**

<http://www.guni-rmies.net/interviews/detail.php?id=1020>





**NOMADIC AND STREET CHILDREN'S PREFERENCE FOR  
SCIENCE CONCEPTS:  
IMPLICATIONS FOR CROSS-CULTURAL SCIENCE TEACHING**

by

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**Introduction**

The pace of research within the framework of culture and science learning has quickened in the last ten years. The stimulus for this line of research has probably come from the growing interest in multiculturalism (Okebukola, 1998). The overarching goal of multiculturalism is to factor into the teaching-learning enterprise, a broad spectrum of cultural learnings, dispositions and perspectives. In the pursuit of this goal, two major lines of approach have emerged. One is to isolate and describe strands of culture and cultural entities that could impact on learning. Exemplifying this thrust which addresses the what questions are the works of Olarewaju (1990) on language especially the mother tongue and Dennick (1992) on the culture of minority groups in the United Kingdom. The second line of approach is to determine how these strands of culture and cultural entities influence learning. Bishop (1991), Bajah (1997) Okebukola and Jegede (1991) have addressed the how question. The precincts of the what and the how are gaining increasing attention of researchers especially in science education. This attention derives from the realization that science teaching takes place in a cultural context (Aikenhead, 1997; Cobern, 1996) since it uses the metaphors and images available to the learner. There

is also the realization that the society is pluralistic and the response of science teachers should be towards this pluralism.

Research, of the what and the how variety on cultural characteristics and the influence of such characteristics on science concept development of nomads and street children is almost entirely absent from the science education literature. This silence is all the more striking given the global endorsement of science for all. Science for all calls science educators to duty to find ways of making every citizen in the community scientifically literate. This call aims at dissolving the boundary of offering of science to a select group in the community especially those in the formal school setting. Embraced within the context of the "ALL" is every member of the schooling and non-schooling communities – children, youth and adults of all races and colour, creed, political and geographic affiliation, socio-economic profile, ability level, gender, and other disaggregating, disabling and enabling factors. As Jegede (1998) aptly notes, the spirit and the letter of science and technological literacy for all cannot be fully realized if science education at the

dawn of a new millennium continues to discriminate against peoples especially from disadvantaged and marginalized backgrounds as well as against the science and technology native to cultures other than of Western origin. Science for all means understanding all the aspects of what affects full participation in science by all and what factors determine the successful integration of all aspects of knowledge from any and every place in unraveling nature.

Beginning from 1993, and following the launch of UNESCO'S Project 2000+ on scientific and technological literacy for all, there has been a perceptible flurry of activities around the world on implementing programmes on science education for all. The web of such programmes are beings stretched to catch as many people as possible. This initiative has given rise to the concept of the "hard-to-reach" and people in "especially difficult circumstances". The hard-to-reach are those who ordinarily , are unable to access the formal education system on account of physical, socio-economic and psychological barriers. These include nomads and street children. People in especially difficult circumstances are defined as those displaced by war, famine, earthquake and other disasters. Data contained in the 1997 United Nations' Development Program (UNDP) World Report, show that in developing countries especially those in Sub-Saharan Africa, about a tenth of the population on the average, are below poverty line. This factor is pushing children within the school-age population to the "hard-to-reach" group. Many are on the streets to augment self and family income. Nomads who are migratory groups consider formal schooling (and also school science) non-relevant to daily living of pastoralism. Together, these two groups – nomads and street children form a sizeable population that needs to benefit from the experience of learning science. In Nigeria, there is an estimated two million people in the two groups. The web of science

education for all is being stretched to accommodate this population that is growing by the day.

To address the issue of education of the nomads, the Government of Nigeria established the National Commission for Nomadic Education (NCNE) in 1989. Since inception, NCNE has focused on the provision of formal education to the children of pastoral nomads. However, the National Council on Education at its 37<sup>th</sup> meeting held in Kano in March, 1990, directed the Commission to incorporate the children of migrant fishermen into the Nomadic Education Programme. Since then, pilot schools were established by states, local governments and communities in seven states in the riverine and coastal areas of Nigeria. Primary science is one of the subjects offered in such schools. The objectives of primary science education for children of migrant fishing families are not different from the objectives stated in the national primary science curriculum. It however reflects the local conditions of the fishing communities.

The street children education program was initiated in Nigeria in response to the pursuit of the goals of EFA (Okebukola 1998). There is a growing number of street children especially in the major cities that has developed into a corpus which is drawing the attention and intervention of governmental and non-governmental organizations. Several NGOs and UNICEF have been in the frontline of this intervention. Special schools where primary science is offered have been set up for these children.

The NCNE primary science curriculum for nomads and the curriculum for science for the street children have as objectives:

To enable children:

1. observe and explore the environment;
2. develop basic science process skills including observing, classifying, experimenting and manipulating;

3. develop a functional knowledge of science concepts and principles;
4. develop scientific attitudes including curiosity, honesty, perseverance, willingness to change opinion and critical reflection;
5. develop self-confidence and self-reliance through problem-solving activities in science;
6. develop functional awareness of sensitivity to the orderliness and beauty in nature; and
7. develop attitudes and values consistent with the management and conservation of life.

This paper reports a subset of a larger study which examined science concept development by nomads and street children. The focus here is on the science concept/topic preferences of nomads and street children and the implications of these preferences for cross-cultural science teaching.

#### **Setting for the Study**

In 1990, the Federal Government of Nigeria, established the National Commission for Nomadic Education (NCNE). At about the same time, the Lagos office of the United Nations Children's Fund (UNICEF) began the study of the street children phenomenon in Nigeria. Together, these initiatives were aimed at the actualization of Education for All (EFA). The NCNE thrust led to the establishment of formal and non-formal programs for all members of nomadic communities in Nigeria. UNICEF on the other hand, stimulated private sector actions for rehabilitating street children into formal education. By 1994, formal and non-formal education of nomads and street children had begun in earnest. Science education is a core component of the scheme.

This study was on two groups of children with age ranging between 7 and 13 years. The first group was the children of nomadic fishing families in the Badagry Local Government Area of Lagos State of Nigeria. The population for this group in Nigeria has

been estimated to be 320,000. In the study area, that is Badagry Local Government, there are about 1,600 children of nomadic fishing families. The choice of Badagry Local Government Area was for logistical convenience since NCNE data show demographic, socio-economic and cultural similarities among the nomadic groups in the coastal belts of Nigeria. The second group of children were enrolled in a flexible schedule school for street children owned by a non-governmental organization in Lagos. Classes are run three days a week during "low periods" for street trading. Thus, the children are engaged in income-generating street trading outside class periods. There are 223 children enrolled in the school which is one of six in Lagos State.

#### **Indigenous Cultures of Fishing Nomads and Street Children**

Fishing nomads in Nigeria are mainly animists (Obanya, 1985). The pervasive view held within the community is that all events in nature from the growth of a seedling to a harvest of fish are strictly controlled by gods; a god being specific for an event. There is worship of gods symbolized by animate (e.g trees, mammals, and birds) and inanimate (e.g. rocks, water bodies and metals) objects. If there is illness in the family, some disease – causing germ is hardly taken as cause. To the nomad, more likely than not, it is an angry god that must be appeased before the illness could abate. For a poor performance of a child in school, lack of rain on a planting day, heavy rain during the market day, attack of smallpox, diarrhea attack, and rise and fall of sea level, some god is in a mood. Any other explanation is scornful. The belief is held that improved productivity does not depend solely on the use of fertilizers or other artificial agents but on the activities of the agents of a supreme God. These agents are consulted for productivity to improve. Appeasement by way of sacrifices is carried out when yield is low and the agent of God is assumed to be "angry". Further, there is doubt, expressed oftentimes as sneer, that

science and technology offer acceptable explanation for events in nature and can be tools for the survival of humanity. While this belief is prevalent among many rural communities in Nigeria, it is experience of a variety of such settings as a consequence of their mobile habits make nomadic groups more prone to hold this belief.

Other common characteristics of the indigenous culture of fishing nomads is fluidity of language and intra-family and inter-group cohesion, while the “Ogu” language is the mother tongue (L1), the nomads are able to communicate passably in the languages of adjoining territories through which they traverse for fish trade. On the western flank is the Republic of Benin, a French – speaking country. On the east are Yoruba-speaking neighbors in Nigeria where English is the official language. Interaction with neighbors of different tongues has induced some measure of fluidity in language use by the nomads. They speak and understand the native ‘Ogu’ language, Yoruba and pidgin French. A small number can also speak and understand Pidgin English.

Since the fishing nomads move together in small groups, close-knitness is apparent in family and friendship/group relationships. There is sharing of family/group resources and a good measure of collaborative work. Competitive tendencies are suppressed by the reward system which glorifies joint ventureship rather than individual success. The belief is held that metaphysical powers play a major role in determining the direction and thrust of events especially in the life of humans. How else can one explain the transformation in a market square of the village medicine man to a snake, then to a vulture and back to the medicine man in the glare of scores of watching eyes? These present the fertile ground for the superstitious belief system that is prevalent among the migrant fishing families.

The UNICEF (1996) study on street children showed them to be largely urbanized and shallow in the “multigod” belief. Most are monotheists, believing

in one God, and are superstitious, and multilingual. They are highly competitive and aggressive.

### **The Study**

The study was implemented in two phases. It began with the measurement of science concept/topic preferences of pupils and teachers in three schools for nomadic fishing communities in Badagry Local Government Area of Lagos State, Nigeria. Two schools for street children and two in the mainstream in the Lagos metropolis were also studied. The aim of this phase of the study was to obtain data on primary science concepts that the children enjoyed or disliked learning and using in everyday life, and reasons for such preferences. In turn, data on teachers’ perception of children’s preferences of the topics was also sought for the purpose of comparison with those of the pupils. The overall idea was to describe inter-group profiles of preferences of the nomads, street children and the mainstreamers, and subsequently, make inter-group comparison. Thirty children and two teachers were randomly selected for study from primary 4 and 5 in each school.

The second phase was participant observation of science classrooms in the three groups of schools. Within this phase, target children in each group were selected for indepth study using qualitative techniques. The goal of phase two was to identify underlying currents of cultural variables at work in influencing science concept preferences. The overarching assumption was that the data sets generated from the two phases of the study would provide a firm basis for drawing tentative conclusions on how some of the cultural attributes of nomadic and street children influence their preference for and use of science concepts. It is from this position that the implications for science teaching could be meaningfully drawn.

### **Study of Science Concept Preferences**

Children like or dislike science concepts for a host of reasons. These range from the manner of

**Findings and Discussions**

presentation of the concepts by teachers; nature of the concept whether abstract or concrete; to the alignment or mis-alignment with the cultural disposition of the children, especially with religion/belief systems, and language. It was in realization of the wide array of factors that could influence science concept preferences among children that a focus on cultural factors was selected as filter for the measurement of the preferences. An interview schedule was prepared and validated for data gathering. This was made up of a list of science concepts that are contained in the Core-Curriculum for primary science used in the three groups of schools – nomadic, street children, and the mainstream. Concepts that have been taught up to primary 4 (fourth Grade) in the three groups were included in the list. There was a total of 12 topics on the list. In a face-to-face interview session, a child was given a sheet of paper containing the 12 topics. The interviewer had a similar list. In addition to this, the guide requests from the child, an indication of the degree of likeness for the topic- “Very much like”; “Like”; “Don’t like”. The interviewer translates this instruction to the child in the language of instruction of the class, normally the local language. The child was asked to give reasons for every answer. It should be stated that this was an exceedingly difficult aspect of the study. It took several practice sessions between the four interviewers and selected children from the three groups of schools to ensure that a high degree of success of the procedure. After this training, and a pilot trial, the interviewers proceeded to collect science concept preference data from the pupils. The teacher version had the instructions and the topics on the paper handed out for completion. Validity checks for both versions were carried out using primary science experts. Internal consistency reliability of 0.82 was found for the teacher version, stability coefficient of 0.73 was established for the pupil version with a five-day gap between administration on a pilot sample.

From the study of concept/ topic preferences, we found a mixed pattern of results. While the preferences of the nomads and the street children tallied on some concepts/topics, there were disagreements in others. For instance, more than three-quarters (76.8%) of each of the two groups “preferred” and “very much preferred” the concepts/topics: the Human Body; Weather; Air and Our Earth and Sky. Over 90% reported dislike (“not prefer”) for Measurement, and Electricity. The topic which the fishing nomads showed preference for that the street children disliked was “Water”. On the other hand, while most (82.4%) of the street children preferred (“preferred” and “very much preferred”) Heat and Temperature; Colors; Machines; and Light, the nomadic children did not express preference for these topics. All the children in the regular schools expressed preference for all the topics. For possible reasons for these variegated results we turned to the interview data.

Interview data converged to confirm that the topics where there were commonality in preferences, that is, The Human Body; Weather; Air; and Our Earth and Sky, both the nomads and the street children felt unencumbered by cultural factors. Summary of reasons given for their preference profiles in the follow- up interviews shows the nomads and street children expressing the following sample views:

**The Human Body**

Nomad: “The topic makes me understand how my body moves and shows the wonderful work of God”.

Street Child: “I prefer the topic since it enables me know how my body works especially how the food we eat is broken down, what makes us grow, how we react when there is something harmful to the body. The body is just like a machine”.

**Weather**

Nomad: “The weather is important for our life especially when it rains,...for fishing. What we

learned about the weather is interesting. We now know why there is the rainy season and the harmattan. There is nothing that we learned from home that does not agree with what we were taught in school about the weather. Ah! Some people in our village can cause rain to fall”.

Street Child: “I like to know about the weather because it is important when we are doing business on the street. It is not a difficult topic since we know that there are just two weathers in Nigeria – rain and harmattan”.

Except a mention of possible “making of rain” by the village medicine man, the nomads and street children focused largely on the utilitarian aspect of the topics as determinant of preference, rather than on inhibition or enhancement by indigenous cultures. Our observational and interview data showed that religion, language and other socio-cultural factors did not exert noteworthy influence on their preference.

Both the nomads and the street children showed no preference for Measurement and Electricity. For Agosu, a 10-year-old nomad, “measurement is a little confusing for me. At home, we use feet and inches. In our science and mathematics class, it is metres and centimeters.” Interview with Agosu showed other areas of conflict. Liquids that are commonly used at home such as kerosene and palm oil are measured in “bottles” rather than in litres. Besides, the 4-litre metric gallon is different from the 4-5 litre imperial gallon that they are used to. The traditional acre is also different from the relatively new concept of hectare. Harrison (a street youth) also confirmed dislike for measurement, albeit for a different reason. “There are too many calculations in measurement”, Harrison explained, with a frown. Asked whether or not the units of measure for length and volume were of any difficulty. Harrison was not sure. He however, confirmed that he grew up with the metric system and has had little interaction with old people who are used to the imperial system.

The dislike for Electricity is difficult to explain. While Bose (nomad, 9-year old female) and Amisu (street youth, 11-year old, male) expressed excitement about batteries, bulb and electric circuits, many others from the nomadic and street children groups, were not excited about the topic of Electricity on account of the incessant cut of public power supply by the National Electric Power Authority (NEPA). At best, many homes in the study area are supplied electricity for two hours in the day. Some areas have been in darkness for a continuous period of six months. Of the two groups, the nomads are worse off as they are in remote and rural locations. The street children are largely urban based where electricity is supplied by NEPA, though erratically. Thus, while interview data showed for the global and more generic concept. The emerging picture is that there are environmentally-induced cultural influences on the two groups that seem to account for the similarity in the lack of preference for Measurement and Electricity. The general distaste for NEPA's activities might also have contributed to the negative preference for Electricity.

Now to contrasting preferences. While the nomads “very much prefer” the topic “Water”, “Heat” and “Temperature”, most of the street children expressed lack of preference for these topics. Interviews with six subjects from each of the groups (3 boys and 3 girls) showed that preference of the nomads for water derived largely from the desire to have in-depth knowledge of the substance which forms a core of the basis for living. As reported by the nomads in interview sessions, water is at the heart of their existence. Two of them claimed that “they are from water” a belief held by many riverine dwellers that some children are “donations” from the river goddess. For the nomads, they live on and around water, and obtain their livelihood through fishing. Such subtopics like water pressure; changes of state; water cycle; sinking and floating were reported to be exciting for the fishing nomads. Heat and temperature were also preferred as “they are

important for fishing activities especially when to fish and storage of our catch". These were the views of 10-year old Akojenu a Primary 5 pupil in one of the nomadic schools.

Lack of preference by many of the street children for "Water" as a topic in the science class can be explained at least in part, by views expressed by some of the street children interviewed.

Ngozi, a 12-year old girl said:

"Not that I don't like the topic in class, I just don't like water as rain. Many of us make low sales during the rainy season. Rain water also does not allow us to go out to relax and play."

Tunde who is 11 years old, justified his dislike for water as a topic in the science class by his experience on the street. "Water makes you wet". He went further to add that "...Water was the cause of the typhoid fever I had last year that nearly killed me. Even ordinary malaria is caused by water on which mosquitoes breed." The common thread in the interview data to explain lack of preference for water by the street children is the discomfort brought to bear on their street activities by rain. The message was some sort of misplaced aggression. Water as rain, spoils their day, so water is not a good friend of the street child. It is interesting to note that observational data confirmed that all the practical activities in the science class on water Pressure and Sinking and Floating, did not seem to discount significantly from the bad impression the children have of water.

Field notes taken by research assistants who observed the two groups over a four-month period showed records of active participation of the pupils when topics they expressed preferences for were being taught. It was impressive to log the excitement in the science class for the nomadic group during the two weeks they were taught the four sub-topics under A water-sources, properties, water cycle and purification. A the three 35 – minute lessons on

properties of water had the class aglow@ (field note M.23). A Most pupils turned in the homework given on this topic, unlike the tardiness which characterized the submission of home assignments by this class@ (field note T. 18).

The excitement in class and the enthusiasm to turn in assignments can be attributed to the utility value of the topic to the everyday life of the fishing nomads. Thus, a match was found between the preference expressed for the topic by the pupils and the teacher and the participatory level of the pupils in class. It was reassuring to note that over 80% of the pupils scored 10/10 in the class test given at the end of the three weeks. This reassurance is of the well-established relation between attitudes and preferences and achievement in science (Gardner, 1993).

The street children were equally observed to display a high level of participation in the science class. Although most expressed no preference for water, there were field notes of Ajoyful learning@ when water cycle was the topic of lesson. Properties of electric current and our Earth and sky were noted as Adull classes@. An explanation for the excitement in the water cycle class may be that it was a topic where the process of rain is described. It would be recalled that the street children interviewed had a distaste for rain. It is unclear why the classes on Electric current and Our Earth and sky lacked luster. A record in the field notes that no practical activities took place in these classes could be a plausible explanation. Largely theoretical classes have been known to engender apathy in science classes especially with children (Okebukola, 1997).

Classroom observations further showed that the nomads worked well in cooperative learning groups; the street children not so well. The street children were more inclined to competitive work and soon disorganised small-group work as soon as it was composed by the teacher. These observations are

in alignment with the goal structure subculture of the two groups. Although no achievement tests were administered to the two groups by the research team for the purpose of making comparisons, the research assistants who carried out observations noted better attitude to work and Aa potential for better performance @ by the nomads. This agrees with the literature confirming the enhancing effect of cooperative learning on learning outcomes (Johnson, 1998, Okebukola, 1991).

Informal interactions with the pupils by the research team as part of the procedure for collecting qualitative data revealed deep-rooted beliefs which were not shaken by class work. For instance, the nomads were not shaken in their traditional beliefs about water. This provides an endorsement for the border-crossing postulate of Aikenhead (1996). For the science class, a pupil boxes up traditional beliefs and keeps Aon the front burner@ the scientific ideas and belief system. Outside class, there is a shift in the reverse direction. This shift and border crossing take place in response to different situations. In an examination setting, in the science class, and when there is a need for sciencing, the shift is in the direction of what is commonly, albeit, erroneously regarded as A Western@ science. At home, in the community and when explanations are to be given to events that cannot be easily reasoned out, the border is crossed to the traditional belief system zone. Okebukola (1999) has conjectured a homoestatic control mechanism for the border crossing phenomenon. With six hours of school work and 18 hours at home, many of the children are likely to be more in the AT@ (traditional) zone rather than in the AS@ (Science) zone.

The reality of the teaching and learning of science is that students need to cross borders for the everyday subcultures of peers, family and ethnic orientation into the subculture of school, classroom and subject matter (Jegede, 1998). Just through imagination, crossing from one subculture to another will be exceedingly difficult and sometimes

impossible for students who hold one world view while expected to learn in another. However, according to Aikenhead (1996), border crossings need not always be problematic, if the learner can intuitively and subconsciously alter certain belief, expectations, and conventions as he or she negotiates the cultural borders between indigenous knowledge and school knowledge.

We may now briefly put the threads together for the purpose of drawing implications for science teaching. Standing out in sharp relief is the influence of the environment (ecology) on cultural dispositions of the subjects of the study. For example, we found in this study that the environment where the nomads and street children live influenced their worldviews and in turn, preferences for some science topics. Ecoculture has been reported to be a strong determinant of achievement and attitude to science (Okebukola and Jegede, 1991). It is important, therefore, for science teachers to determine environmental factors that could affect the cultural dispositions of the learners and adjust instruction appropriately.

The study also showed that when the belief system and the utility value of a science concept converge, interest and possibly achievement, are bolstered. The nomads have strong beliefs about water and they saw its utilitarian value for their daily living. The street children saw the utilitarian value of Heat and Temperature to their activities on the streets. They showed preference for these topics. For the science teacher, it is useful to suggest a regimen of concept/topic preference testing as a component of formative evaluation in science. The results should be located within the cultural milieu of the learners and instruction appropriately tailored to accommodate these preferences. Where preference level is low, more intense engagement in hands – on activities could be helpful (Tamir, 1998). In all of these is the constructivist's approach. Meaning have to be negotiated with learners as the science lesson progresses.



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## Glossary on Kalinga Prize Laureates

There is also the need for teachers to align science curriculum implementation to suit local conditions. At the level of the class, the teacher should break down the science curriculum in a way that will take care of the cultural colour of the class. This is a steep task for the teacher if he or she has to work with different classes and across grade levels. The effort will be worthwhile if the desire is to promote meaningful learning of science concepts.

Worthy of suggestion to science teachers is the need to fully connect home with school. Since children spend most of the time at home, the world of the science class should be stretched to the home by way of science projects to be carried out at home, and assignments to be discussed with parents and older siblings. Co-curricular activities

which target superstitious and non-scientific beliefs and attitudes should be given accent.

Teachers should reflect critically with pupils on their actions and views and conduct science classes as a process. Teachers in the view of Burdett (1985) need to interpret syllabuses more liberally and to welcome opportunities for cultural enrichment. Science programs especially for children should encourage learning from the environment and the use of local materials and technologies.

### Conclusion

As we seek to come to terms with the challenges facing humanity today, and in the future, gaze is turning more increasingly to science and technology. The assumption is pervasive that the pathway to our understanding.

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### Source :

[www.ouhk.edu.hk/cridal/misc/okebukola.htm](http://www.ouhk.edu.hk/cridal/misc/okebukola.htm)

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# American Investment Possibilities in University Education in Nigeria

by

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## Introduction

Collaboration in higher education between Nigeria and the United States of America has had a long history. Before the first university was established in Nigeria in 1948, many Nigerians took advantage of attending colleges and universities in the U.S. for their undergraduate and graduate degree programmes. Today, the number of Africans studying in the U.S. is predominantly Nigerian and the number of academic and cultural linkage agreements between Nigerian and American universities can be rated the highest in Africa. In this paper, we summarise potential areas for further collaboration especially with US Historically Black Colleges and Universities.

## E-learning

Worldwide, there is a rising tide of interest in e-learning as a delivery system in university education. One of the measures of the degree of embrace of this delivery system is the level of investment by the university community. In 2003, over \$250 billion was committed worldwide to e-learning infrastructure and content. Determined not to be left behind, the Nigerian university system, through the National Universities Commission is to pilot e-learning in three universities-University of Lagos, University of Jos and University of Calabar. SUN Microsystems

is collaborating with NUC in the implementation of the project in the three trial sites. There is a high degree of content and structure similarity between many of the programmes offered in Nigerian universities and those of universities in the U.S. especially in science and engineering-based disciplines. Hence, partnering with American companies in implementing e-learning in Nigeria is a worthwhile venture.

## Nature of Investment

- Development and deployment of e-learning infrastructure
- Development and deployment of content
- Capacity building (training) of managers, students and teachers in e-learning protocols.

## Approximate Cost of Investment \$50 million

### *Investment Benefits to America*

- Huge financial returns from subscriptions of Nigerian universities to e-learning protocols developed by American companies.
- Huge market in Nigeria for hardware and software on e-learning manufactured/produced by American companies.

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## Glossary on Kalinga Prize Laureates

- Training of skilled personnel through e-learning, to service the oil and gas industry to which America has shown a lot of interest.
- Sharing of knowledge and skills among Nigerian and American university students and staff via e-learning platforms.

### Methodology of Investment

- Setting up of an American-Nigerian e-learning Consortium with NUC as Administrative Secretariat
- Conduct of e-learning feasibility study by the e-learning Consortium.
- Organisation of a Forum/Workshop to develop mutually-agreeable terms on the implementation of the e-learning project.
- Implementation of Agreed Terms.

### Investment Incentives

- Contribution of N200 million in kind by Nigeria through NUC.
- Enjoyment by American investors of approved government tax incentives / relief/rebate/holiday.
- Enjoyment of a potentially stable and positive economic climate for investors.

## HIV/AIDS Education

Two days ago (Saturday, July 12), President George Bush met with a group of people living with HIV/AIDS at the National Hospital, Abuja. At the opening of the Sullivan Summit on the same day, the U.S. President reiterated the commitment of his country “to wipe out HIV/AIDS in Africa and the rest of the world” – a commitment to be backed with \$15 billion budget proposal to the American Congress. We laud the commitment of the government and people of the United States and will actively participate in efforts to actualize this dream.

### Nature of Investment

- In-country and overseas specialized training of 500 HIV/AIDS educators

- In-country follow-up training for selected university staff and students.

- Development and printing of 5 million copies each of HIV/AIDS education resource materials and public awareness posters for distribution within university campuses.

- Media advertisements and jingles on national TV networks, newspapers and magazines.

### Approximate Cost of Investment: \$5 million

### Investment Benefits to America

- Arrest of the global rise in HIV/AIDS that is estimated to cost the world over \$600 billion in expenditure for cure and loss of humanpower.
- Deepening of understanding of American educators on HIV/AIDS education that can be deployed in HIV/AIDS education activities in the U.S., other parts of Africa and the rest of the world.

### Methodology of Investment

- Set up a coalition of American investors with NUC and NACA.
- Set aside \$5 million for the implementation of the project

### Investment Incentives

- Contribution of N50 million in kind by Nigeria through NUC.
- Enjoyment by American investors of approved government tax incentives / relief/ rebate/ holiday.
- Enjoyment of a potentially stable and positive economic climate for investors.

## NUC National Higher Education Pedagogical Centre

This Centre aims to provide academic staff of universities, polytechnics and colleges of education in Nigeria and the West African sub-region with

training in modern methods of higher education teaching including use of ICT for instruction, curriculum development, student counselling and evaluation. It will also serve as the training site for e-learning operators for the university system.

The Centre will attract high-calibre international and local staff as trainers and managers and is envisioned to emerge as the UNESCO West Africa Sub-regional Higher Education Pedagogic Centre by 2005.

#### **Nature of Investment**

- ICT Infrastructural Development and Deployment by American companies
- Support for the development of training modules and manuals as textual, video and CD-ROM materials
- Support for a total of 50 American Professors especially from US Historically Black Colleges and Universities, to serve as trainers in batches for periods ranging from four to eight weeks over a five year period.
- Donation of books on modern higher education pedagogy to the Centre by U.S. Universities.

**Approximate Cost of Investment :** \$9.5 million

#### **Investment Benefits to America**

- Publicity leading to high-level patronage in the West African Sub-region for American companies involved in the activities of the Centre. The dividend may be worth over \$100 million profit for such companies.
- Exposure of American academics to modern methods of teaching African higher education students that can be ploughed back to teaching African-American students and other students with African origin in US Historically Black Colleges and Universities.
- Profit from the sale of training modules and manuals as textual, video and CD-ROM materials.

#### **Methodology of Investment**

- Establishment of a joint venture partnership between NUC and interested US groups.
- Joint Venture Partnership to implement agreed investment proposals.

#### **Investment Incentives**

- Contribution of N300 million in kind by Nigeria through NUC.
- Enjoyment by American investors of approved government tax incentives/relief/rebate/holiday.
- Enjoyment of a potentially stable and positive economic climate for investors.

#### **National Virtual (Digital) Library Project**

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This project is designed to make available the latest digital library resources in the form of books, journals, maps, films, video and CDs available to all students and staff in the Nigerian school system. The first phase is commencing with the higher education sub-sector which in turn is being trialled in 22 pilot universities.

#### **Nature of Investment**

- Linking of Digital Libraries in American Universities especially Historically Black Colleges and Universities with the Nigerian National Virtual Library Project.
- Subscription to digital databases of renowned overseas (especially American) publishers for the Nigerian National Virtual Library.
- Strengthen of the ICT infrastructure for the deployment the Nigerian National Virtual Library.
- Capacity building (training) for managers, users and operators of the Nigerian National Virtual Library by American experts.

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## Glossary on Kalinga Prize Laureates

**Approximate Cost of Investment** :\$10 million

### Investment Benefits to America

- Availability of very rich library and archival digital resources from Nigeria in major academic disciplines to American university libraries.
- Promotion of cultural linkage of inestimable value between Nigeria and America.

### Methodology of Investment

- Partnership with the Federal Ministry of Education

### Investment Incentives

- Contribution of N500 million in kind by Nigeria through NUC- one of the parastatals of the Federal Ministry of Education.
- Enjoyment by American investors of approved government tax incentives/ relief/ rebate/ holiday.
- Enjoyment of a potentially stable and positive economic climate for investors.

### Other Areas of Partnership and Possibilities

- Expansion of Student and Staff Academic and Cultural exchange Scheme between Nigerian

and US Historically Black Colleges and Universities.

- Promotion of Research Collaboration between staff of Nigerian Universities and US Historically Black Colleges and Universities
- Participation of Professors from US Historically Black College and Universities in the Expatriate National Service Scheme (ENSS) of the Nigerian University System

### Conclusion

This paper summarises potential areas for further collaboration between Nigeria's 53 universities and US Historically Black Colleges and Universities. It is hoped that participants at the Sixth Sullivan Summit will adopt some of the dimensions presented for implementation.

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## Okebukola Draws Road Map for ICT in Higher Education

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by

**Bill Okonedo**

Sixty per cent of Nigerian universities now have Internet access for staff and students, and if this growth trend continues, it would help bridge the knowledge and wealth divide between the nation and other more advanced countries of the world. This view was put forward by Peter Okebukola, a professor and executive secretary of the National Universities Commission (NUC)

Okebukola, who made a presentation at the third anniversary lecture of Zinox Technologies Limited, observed that Nigeria has a higher education system of 181 institutions made up of universities, polytechnic and colleges of education and that student enrolment stands at over 1.4 million. The projected tripling of enrolment beginning from 2011 as a result of the feed-in of products from the Universal Basic Education (UBE) programme, he noted, was stimulating a quest for more efficient, ICT – enabled mode of higher education delivery.

His words : “Until about ten years ago, we had universities that had no access to the Internet. At the same time, while the system was experiencing “massification” in terms of enrolment, the academic staff population was undergoing “rarification” or brain drain and is now recovering owing to a number of governmental interventions in telecommunications and a massive injection of funds into the system.

In the last five years, over 60% of the universities have web presence and facilities for staff and students for Internet transactions. It is worth stating that 50% of the federal budget on education in 2004

is allocated to federal universities. This funding level has helped to address some of the ICT developmental issues in the universities. “

The process of producing a National ICT Strategic Plan document for Nigeria, he stressed, has been initiated by Government, through the Federal Ministry for Science and Technology’s NITDA (National Information Technology Development Agency) and several universities have developed their Strategic ICT Plans, which will hopefully be incorporated in the National Plan.

“The lack of a national fibre network backbone infrastructure is a major issue in a discussion on ICTs in higher education in Nigeria. Bandwidth and connectivity for higher education institutions and their providers are deployed using more expensive technology. For the country at large, this lack has ensured the underutilization of Nigeria’s portion of the SAT-3/WASC submarine cable that has been lit for more than two years. Particularly for our universities, some with multiple campuses strewn across long distances, the lack of a national backbone presents special challenges. It means multiple deployments of VSATs to interconnected campuses, and at the mercy of highly predatory local vendors”. There are emerging pieces of a national backbone, being planned and deployed by Nigeria’s two national carriers, he pointed out, adding that without a deliberate policy intervention in the form of regularity requirement in their licenses, chances are low that these carriers will attend to

the ICT needs of higher education institutions. He warned that the vast majority of our universities and higher education institutions that are sited out of urban and economic centres may be passed by. "Reference has already been made regarding the deployment of separate high-speed academic and research network backbone infrastructure for higher educational institutions even in countries with enviable national infrastructure. This is in recognition of the intensive nature of bandwidth requirement. Without similar prioritization and attention, our higher education institutions will be totally incapacitated and unable to compete in the global education market. "A significant and almost peculiarly Nigerian or African complication to the lack of a national backbone is the unstable nature of electric power supply to our institutions of higher learning. Providing alternative electric power supply has to be part of planning and deployment of a network infrastructure. This adds another layer of costs and logistics". In his view, an even greater infrastructural challenge for ICTs in higher education is the inadequacy of campus (Local Area Networks) LANs, (Wide Area Networks) WANs and access PCs to distribute services internally in the form intranets. Also, he advised, local campus network infrastructure and intranets to cultivate network communities, which should be the point of embarkation for the proper use of ICTs in higher education. Without recurrent costs, the idea of a national high-speed backbone for higher education is almost meaningless, he said.

"For Government, the challenge is to prioritize use of ICTs in higher education, through special grants and deliberate policy statements and actions consistent with the role of universities in all aspect of national development. For higher educational institution, the challenges – as has been demonstrated by a few of our universities – are to diversify the sources of finding; make efficient use of available resources; build partnerships; consistently prioritise ICT capacity building in their

institutional strategic plans; as well as reduce costs while encouraging innovation, by exploring options provided by Free and Open Source Software".

He enumerated the Federal Ministry of Education and its agencies actions in this direction, as encompassing several ICT-driven programmes, including School Net, the National Open University of Nigeria and the National Virtual Library Project; TeachNet by NCCE; PloyNet by NBTE. The National Universities Commission he observed, is implementing a number of ICT projects including Library Automation Project; Nigerian Universities Management Information System, NUMIS; Nigerian Universities Network, NUNet; Virtual Institute for Higher Education Pedagogy, VIHEP; National Virtual Library Project, NVL; Virtual Institute for Higher Education in Africa, VIHEAF. NUC is also embarking on an e-Learning Pilot Programme for Nigerian universities.

"Through the Virtual Institute for Higher Education Pedagogy (VIHEP) and VIHEAF, NUC has demonstrated what could be accomplished. The Universality of Jos and Obafemi Awolowo University, Ile-Ife have embraced ICTs to a level where teachers and their methods are being positively influenced. These range from online access via the Internet (as done by NUC for VIHEP) or Intranet/Learning Centres (as in Jos); through CDs; Print, TV & electronic media.

"NUC has encouraged universities to use at least 20% of their Teaching and Research Equipment grants for ICT development. NUC has prioritized ICT, and will expend N960 million for ICT projects this year. Both the Carnegie Corporation of New York and MacArthur Foundation have made grants to some universities, and several have prioritized ICTs under their grants. There is a general lack of project-management skills, and tendency to invest in equipment rather than human capacity. A general tendency towards big-bang projects and "saving-on-planning" and expert advise does not help. We are currently addressing this challenge.

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## Glossary on Kalinga Prize Laureates

The development of a blueprint is beyond the scope of this lecture. A blueprint is better devised through a bottom-up stakeholder approach. It is within this realization that I wish to submit what can be called my initial and lowly thoughts on the process of developing such a blueprint and the major elements of the document”.

Okebukola suggested that government should flag off an e-education initiative for Nigeria which should embed the existing ICT initiatives in education that are currently located as loosely connected small islands.

This initiative, he said, should involve leaders from the telecom and IT industries, educational institutions, NITDA and relevant government ministries and should provide a practical model of public-private partnership in the area of ICT that can ignite the engines of socio-economic growth and will support Nigeria’s vision of building a knowledge economy.

He stressed that there were three key elements of the education blueprint which were derivable from the Osuji Education Quality Equation  $Q=CET$ , these being the Curriculum, the Environment and the Teachers.

“We should ensure that the curriculum of our schools at all levels is well dosed with ICT content. This way, our children and our youth will have a steady deepening of interest, knowledge and positive attitude to ICT. It is gladdening that efforts are being made in this direction. Computer Studies is now a subject in the curriculum at the secondary level while computer literacy is emerging as a compulsory offering for undergraduate education. At the co-curricular front, computer clubs now have a good footing in our secondary schools.

The second element in the Osuji equation, he noted, is the environment. This component includes infrastructure and teaching-learning resources. A solid and sustainable ICT infrastructure will also need to be in place.

Also, he stressed, whereas the basic ingredients for installing a solid ICT infrastructure in Nigeria are being put in place, we are still thin on the ground in the education sector. While there are no current national data available, on ICT resource, he estimated that the ratio of computers to users Nigerian schools would be in the neighbourhood of 1 to 2,000 at the primary school level; 1 to 900 at the secondary and 1 to 200 at the university level.

Regarding teachers, he expressed the view that, this is the most critical as the quality, quantity and motivation are strong determinants of success for any educational plan or enterprise. “Our proposal is to provide in-service training to teachers to develop computer skills and continually update their knowledge and skills in ICT through continuing professional development.

He warned that any development plans in this direction, would be hinged on the assumption of political and economic stability in the country, and the retention of key officials in the system, to ensure policy continuity.

He envisaged that by the end of the year 2015, Nigeria would have a forward-looking national policy on e-education, in place and that this would be funded by the federal and local governments and development partners, such as the UNDP, UNESCO and the African Development Bank, among others.

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### Source :

Business Day , Nigeria’s Premier Business Daily  
[www.businessdayonline.com](http://www.businessdayonline.com)

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Peter Okebukola  
<pokebukola@yahoo.com>

To: crmishra@nalcoindia.co.in  
cc:  
Subject: MORE PICTURES

09/12/2008 05:09 PM

I am sorry about the long delay. I have been doing a lot of travelling overseas. I had to search my archives for these pictures. I I should email the certificate to you before the end of next week when I return to Nigeria.

Regards.

Peter Okebukola

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Okebukola-Kalinga-3.jpg



Okebukola-Kalinga-4.jpg



Okebukola-Kalinga-5-Reception at the Nigerian High Comm.jpg

## Some of the Photo Features on Prof. Peter Okebukola



**Prof. Peter Okebukola with the officials of Nigerian Embassy in New Delhi**



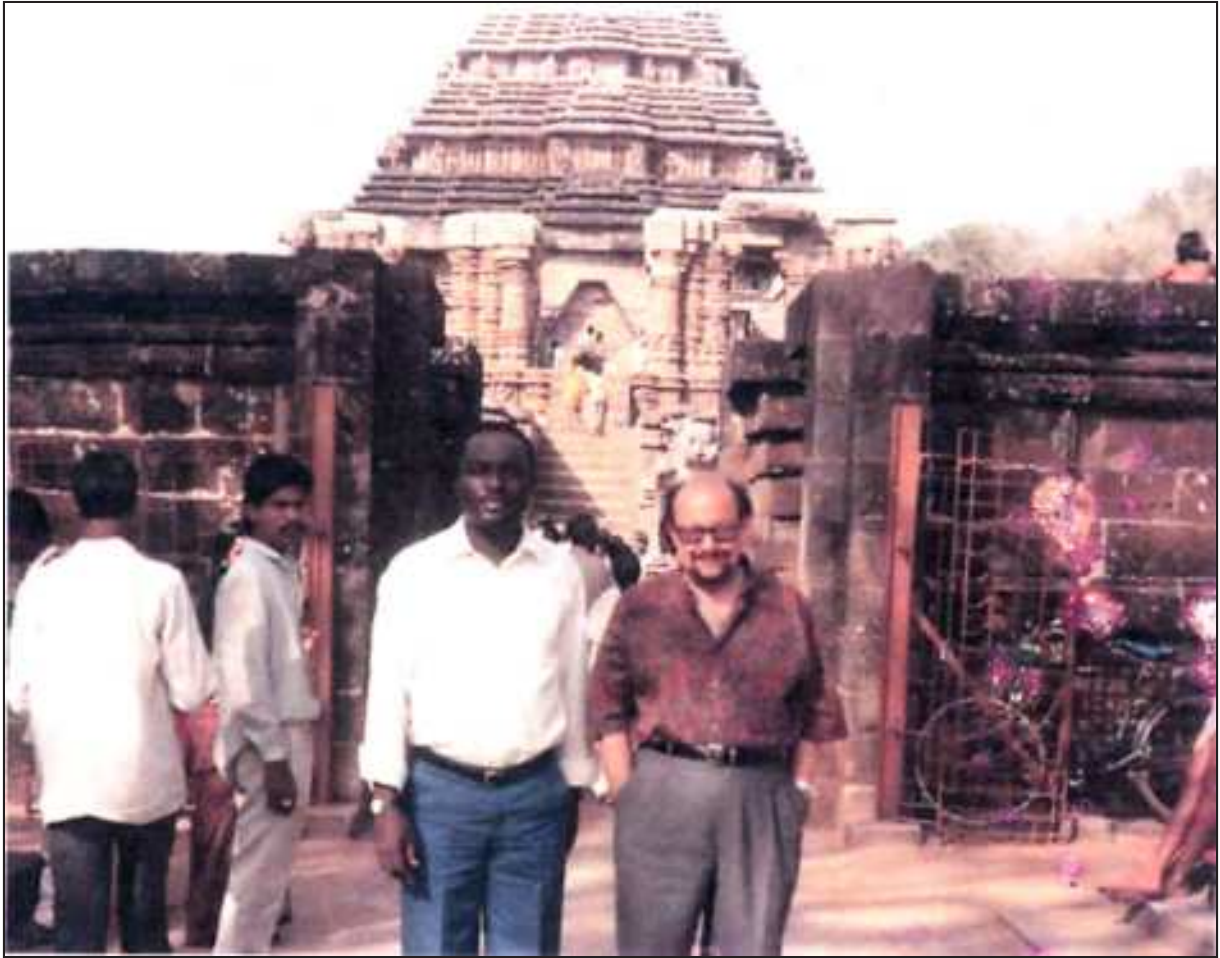
**Prof. Peter Okebukola visits World Famous Monument Taj Mahal in Agra, India**



**Prof. Peter Okebukola with the Legendary Sri Biju Patnaik,  
Founder of Kalinga Foundation Trust in Bhubaneswar, Orissa**



**Prof. Peter Okebukola is being welcomed at the  
State Guest House, Bhubaneswar, Orissa**



**Prof. Peter Okebukola visits World Heritage Site “Sun Temple” at Konark,  
One of the Famous Golden Trangles of Tourism & Culture, Orissa**