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## Research and Innovations in Education for Global Challenges: The Way Forward

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By

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Education etymologically speaking is of Latin root, *educare*, which means to draw out of a person something potential and latent. It means to develop a person morally and mentally so that he is sensitive to individual and social choices and able to act on them. It means to kit him/her for a calling by systematic instruction and it means to train, discipline or form abilities. In a broad sense, education is all those experiences of the individual, through which knowledge is acquired, the intellect enlightened or the will strengthened (Okafor, 1981).

The history of man, right from creation, is therefore full of accounts of man's attempts to probe into the unknown aspects of his environment. Perhaps, it was because of these circumstances of man's existence that he was endowed with the precious and natural tendency to be inquisitive.

Man has always searched, and will perhaps continue to search for facts yet unknown to him, for the answers to questions yet unanswered. This search has followed different forms and approaches through the ages.

Until the 20th century, education had not embraced the scientific method. Knowledge about educational phenomena or events were derived solely from either educational experience or authority. In other words, an assertion or statement was taken to be true if it was made by a well known person. Such statements or claims from outstanding personalities were accepted without anybody questioning their accuracy.

The danger inherent in this sort of practice can easily be seen. Even when what was being put forth was false or inaccurate, no one would question it so long as the person who said it was a well-known person. As would be expected, some of the notions about educational phenomena, which were false, were held unto as correct for several centuries. This was so because what was significant at that time was the person and not the knowledge being put forth. There was much respect for persons and opinions in the field of education.

However, by the beginning of the 20th century education had witnessed a major and significant shift in methodology. Rather than rely on opinions of well-known educationists and philosophers, there was the craving and demand for sustaining any claim with empirically verifiable data. In other words, by that point in time, the scientific method of investigation had found its way into the field of education and this is where research is anchored.

### **What is Research?**

The term research according to Nwana (1985) "is a process of finding out the solution to a problem? Applied to education, it may be viewed as a well organized inquiry or investigation in a given area of education in order to find answers or solutions to educational problems. Such investigation may lead to the discovery of facts or principles. Educational research essentially focuses on exploring ways of improving methods of instruction, administration, learning and teaching processes in our educational system, be it primary, secondary and tertiary levels of schooling.

The findings of educational research may serve as a guide in decision making. For purpose of a meaningful research, problems have to be identified and stated in clear terms.

There are usually a number of steps that are adopted when carrying out an educational research. These are:

- (i) Identification of research problem(s).
- (ii) Literature review
- (iii) Formulation of hypotheses or research questions
- (iv) Research design
- (v) Data collection
- (vi) Data organization
- (vii) Data analysis
- (viii) Data interpretation
- (ix) Conclusions and recommendation
- (x) Writing of research report
- (xi) Publication.

Thorough understanding of these steps no doubt, will equip a beginner in educational problems or related issues. When the findings of these research or investigation are applied to educational system, innovation is deemed to have taken place and this brings us to a consideration of what innovation stand for and to this we hereby turn" to.

### **Innovation: the Fruits of Research**

Innovation refers to new or developments that bring about improvements. In other words, innovation, connotes a device, programme, method, process or production which can be utilized to bring about improved condition. In education, some

innovations have been evolved to improve the quality of instruction, learning and the total educative process.

Ogu (2001) sees innovation as a deliberate introduction of something new as a way of solving individual or group problems, or a way of accomplishing goals. To him, innovation is deliberate and does not happen accidentally. Innovation in relation to education means introduction of novelty into the curriculum. As a result, the curriculum contents, objectives, learning experiences, methodology and instructional materials are subject to change when they are obsolete or have outlived their importance. When the curriculum contents are no longer addressing any of the societal issues, they have to be changed with the ones that have direct effect in treating the social needs and problems.

Innovation in any aspect or component of curriculum should be introduced not as an end but as a means of solving some identified problems. Thus an innovation ought to be purposeful if it must be worthwhile. According to Mkpa, (1987), the desire to innovate may be associated with a number of purposes such as the need to cope with pressure from social change, the need to make use of research findings geared towards improved teaching and learning, the need to explore opportunities with potentials for improved education, and the need for education that is more relevant to the contemporary situation in the nation. Some specific areas where innovation has taken place in education are hereby highlighted.

### **Computer Assisted Instruction**

In the 1950s, Frederick Skinner, a renowned Professor of Psychology in one of his research visits to schools, found out that teachers used the same method for all students not minding their needs, motivation, ability and other traits of individual differences. In essence, he found out that the pace of the class, which was dictated by the exceptionally good students in the class, was to the disadvantage of the low ability students. He then wondered how the low ability students would cope (Suleiman & Abubakar, 2002).

After some years of research, Skinner came up with his teaching machine to the American audience. He was greatly surprised at the response of the teachers who felt that such innovation would lead to mass retrenchment, that they could lose their jobs and positions in the educational sector. Even though teachers did not find the teaching machine interesting; yet they had no choice when the computer system appeared on the educational scene some few years later.

### **Audio Visual Aids**

Video and television could be valuable tools for the teaching and learning of school subjects. Callahan and Clerk (1977) who recommended the use of television and moving pictures in classroom teaching emphasized that students tend to enjoy viewing and they understand messages from video and television much faster. Gbodi (1998) reiterated that knowledge enters the human brain mainly through two major senses of

sight and hearing. She further stressed that sight covers between 75 - 90% and hearing 10-15%. It has also been confirmed that the effectiveness through sight and hearing is that we can remember 30% of what we hear and see simultaneously. Nneji (2000) in her finding detected that video and television have the potentials of enhancing quality learning in school subjects. According to her, they can be used to arouse interest, modify attitude, clarify concepts, stimulate thinking, summarize contents, demonstrate and concretize knowledge that could otherwise only be talked about in abstract terms.

### **The Use of CD ROMS and other Digital Media**

A growing number of teachers now use computer graphics, video disc, CD-ROMs and other digital media to convey information in a more dynamic form to students. Again, teachers use computers and multimedia technology to create in-class presentations using power points. To get pupils more involved in the learning process, many teachers use hypermedia and interactive multimedia software that put students in control of the class as against teacher controlled media presentation which are considered passive. It is emphasized that the use of computers, the internet and related technologies, given adequate teacher training and support, can indeed facilitate the transformation of the learning environment into a learner centred one.

### **Application of ICT in Teaching and Learning**

ICT can be of immense help to a dynamic teacher because it can enhance the dual capacity of both learning and teaching, quite easily and cheaply. Today almost all branches of knowledge are stored in the so-called 'idiot box' and anybody with an internet access and some basic operational skills can have access to that knowledge with a single clique and free of cost.

Other uses of ICT in teaching includes the following:

1. Distance education and e-learning is made possible.
2. Knowledge of ICT can help in material creation in form of text books, journals, conferences and seminar papers, hand outs, etc.
3. Teaching can be more entertaining and interesting.
4. Activities can be quickly prepared.
5. It has advantage in delivering repetition and memorization drills.
6. Sound system of a language can be easily taught using pictures, charts, etc.

Both teachers and students can use ICT to download materials and make them available to others. Teachers can also use this information to set drills and tests; and to set class research projects. World wide web (www) can be described as a laboratory of resources available to computer users to view a wide variety of information, including magazine and archives. According to Ndukwe (2006) the internet is the largest library, bookstore, auction house, and art gallery in the world. No human can possibly digest it all. The internet is of immense value as world library which provides access to information on all subjects which conventional libraries generally do not have. The

internet provides not simply published resources but also cyber spaces and others for discussion, new learning networks that help connect students, teachers and the others for a widening variety of purposes.

### **Internet Bridging the Gap and Space**

The internet enables students and teachers to connect to the World Wide Web. Facilitate group discussion among students from different schools. Even in distance learning both teachers and students take courses not locally available.

According to Idih (2001) with access to e-mail in their classroom, teachers have the opportunity to communicate with colleagues at schools, educators in other schools, parents, administrators, etc. The ease and immediacy of e-mail can have an enormous impact on the sharing of ideas, the making of requests and the completion of other daily communication both educational and managerial, Meeting can be organized through e-mail, mailing out the plans to several people at once. Consensus or discussion between groups of teachers can be without their sitting down together. The use of ICT will make teaching more interesting and enthusiastic unlike the lecture method which is characterized by verbalism where the teacher dominates the scene as the authority in the field and learners reduced to passive recipient. There is much room for challenging learners' ingenuity and development of cognitive skill through experiments which ICT promotes.

### **Computer as a Storage Device**

It can assist the classroom teachers in keying in the results of their pupils for easy processing and retrieval. All the information required of them about their classes can be stored in the system.

### **Online Course Registration**

In most of our higher institutions, students register their courses online at their own comfort zone. This online course registration has control over maximum credit load. Its aim mainly is for seamlessly results computation. The result of over 10,000 students can be done in a matter of minutes.

### **Payment of School Fees by Online**

Research has also introduced a new method of paying school fees which makes it faster and save the students long queue in the banks especially rush occasioned by evading penalty attached to late payment. Again payment of school fees by online is fraud free because the bank and the university database have the direct interface thereby eliminating human error.

### **Computer Base Test (CBT)**

The use of CBT for General Studies Examination was necessitated by the difficulties often encountered by the course lecturers in marking students' scripts which are outrageously too large. Often times the lecturers are unable to meet up with the mandatory time frame given for submission of results. For the CBT exams, students are expected to register their courses online to enable the internet service providers capture their details in their database. The lecturers are expected to submit at least 100 multiple choice questions per course for the internet service providers. The questions and their answers are submitted in separate CDs. Where paucity of computer systems and space constraint exist, the exams can be taken in batches. The results are released the same day. Expectedly, the students should be reasonably computer literate to be able to benefit from this innovative approach.

### **Use of Optical mark Reader (OMR)**

This machine which is another aspect of innovation in education can mark, grade and generate over 20,000,000 results within forty eight hours. Joint Admission and Matriculation Board (JAMB) use this machine and one can see the ease and immediacy their results are turned out within few days of administration.

### **Checking of result by online**

Students can know their results without the stress of going to their schools by simply downloading the information on the website, through the use of scratch cards.

### **Closed Circuit Television Camera (CCTC)**

This has an inbuilt security device and other mechanisms which the user can define its control. Administratively it can be used in a variety of ways. The school authority can use it to monitor lateness to school both on the staff and students. It can also check loitering and other activities associated with students which are disruptive to their studies.

### **Challenges Confronting Research in Nigeria**

Research is a thorough scientific investigation into the unknown. It is common that any journey to an unknown area is associated with much hazards and risk taking. Take for instance, the first explorers to Africa suffered untold hardship in the hands of the people who thought them to be ghosts. Apart from this, the climatic condition or even other natural disasters added to their burden.

In our country Nigeria, researches are often undertaken to find out certain facts in different fields of the nation's endeavours. In fact for any nation to take seriously of her development, she must be constantly involved in economic, education, political and

even in international diplomacy research to assess where she stands among the community of nations for global rating.

Based on the information above, we can now articulate some of the challenges of research undertakings in Nigeria.

1) Greed and Corruption

The nation may make very good policies concerning research and production. But the same policy makers who most often are the implementers of this policy may turn round to withhold the fund budgeted for research grant until certain percentage of the grant is given to them as kick back or goodwill before the money is eventually released, which may not be in full, however.

2) Misappropriation of research grants

When the researchers get the fund, sometimes it is diverted to buying expensive cars, building personal and residential homes and taking chieftaincy titles instead of what the fund (through very little) was meant for.

3) With lack of proper funding of research projects and research institutes, it becomes very difficult to procure necessary research equipments, facilities and materials for use in these institutes. The result of course can be imagined. In a school or college where we cannot find any single microscope, hardware and software equipment as well as recent journals and publications in the library, research definitely will be stifled.

4) Poor Storage Facilities

The storage of research results in files, and sometimes in worn out scattered files constitutes serious problems for researchers. In fact it becomes very disturbing, embarrassing and disheartening when ex-students or alumni from nation universities, polytechnics and colleges of education come back to look for their transcripts and only to be told that some of his/her scores were missing. The situation is even worse in the library where the librarian cannot account for the number of volume in the library.

5) Attachment of utilitarian gains over and above national interest

Most of our research workers attach more utilitarian gain which they can get from the research work and not what the results will contribute to the national development. This group of research workers who perceive that their remuneration from the government is inadequate may exhibit lukewarm attitude in their research endeavours. Though financial motivation is very necessary but research workers should be more interested in the name and legacy their research findings can fetch them beyond mundane consideration.

6) Publish or Perish Syndrome

The quest for promotions in our higher institutions which are attached to publication, is also posing a serious and grave challenge to research. Since one's job movement in the vertical ladder is a function of publication, some lecturers have thrown the spanner on the air on their way to write and publish junk as research papers to get their professorial chair in the universities. By so doing, they have only scratched the surfaces of tiny

areas in their discipline and came out with volumes, which earn them their promotions. I believe similar things are going on in the polytechnics and colleges of education.

7) Arm chair researchers - These are stay at home researchers who produce volumes of presumed research work about a given place without venturing to visit the place, while sitting in the comfort of their homes and offices. The early missionaries and some western scholars belonged to this group because most of what they wrote concerning African and their mode of worship were never factual research.

8) Over stress on foreign journal/international journals – Too much emphasis on online journals with impact factor to enhance advancement of one's growth in academics has given rise to the proliferation of syndicates. Nigerians are very good at circumventing any policy. To publish at all cost to get promoted to professorial rank, many syndicates accept to publish anything for their clients once they meet their terms and conditions. This results to turning out anything in the name of international journals devoid of real academic content, that cannot stand any global rating. In the main the spirit of inquiry and genuine investigation is killed.

9) Uncompromising .attitude of some respondents

Some respondents especially on certain cultural matters like different kinds of traditional initiation and their modus operandi may be very suspicious of the researcher and then would be very reluctant to divulge any useful information. Persistence to get data in criminal as well as in cultural matters may jeopardize the life of the researcher. For fear of losing his life, the researcher may not do any in-depth investigation but will come out with a research finding that is fake, and therefore cannot serve any meaningful purpose. It is also noted that some traditional professionals in certain skills like herbalism, magic and necromancy and rainmaking find it extremely difficult to divulge the secrets of their professions to researchers. And this accounts for lack of continuity in these esoteric professions especially among the traditional people. Thus prying into the secrets of these professionals is risky.

Having discussed some of the challenges associated with research, we conclude this paper with the following recommendation as a way forward.

- 1) Government should make fund available for research project.
- 2) Misappropriation of research grant should be viewed as a criminal case and the person(s) so concerned should be apprehended by the anti graft agencies.
- 3) The copy right commission should keep the activities of piracy and plagiarism under a check.
- 4) The authorities of our institutions of higher learning should put in place anti plagiarism device with a view to tracking down copy and paste researchers, and ensure that such journal(s) are/is not scored for assessment.
- 5) Our research institutes should be placed on adequate monthly subvention to enable her carry out research projects; they should also look inward on how to improve on their internally generated revenue to ease their functions.
- 6) There should be enlightenment complacency directed to ensure that some



respondents understand the purpose of the research and so co-operate with the researchers on field work.

7) Research findings must be carefully documented and meticulously guarded where they are stored.

8) In this modern age of electronic media, it is usually necessary to store research findings in computers as well as diskettes, flash drives, which can easily accommodate volume and volumes of documents. Researches for public consumption can be stored in the internet.

9) Museums and archives are also very indispensable for storage of research findings.

10) National Research and Registration Commission should be put in place to register, and co-ordinate all research projects with specific reference, to the name of the researcher, the purpose of the research, the amount approved and released for the research, the duration of the research and the supervision in line with compliance to all the specifications.

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