

# TEACHER EDUCATION CHALLENGES IN THE AGE OF INFORMATION TECHNOLOGY

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## ABSTRACT

Teachers are persons professionally produced by a dynamic system. The system depends on social processes defined by the character of a given age. This paper examines the nature of teacher education in an age of information technology. It attempts to explain why teacher education presents so many problems. The character of the current age where the outputs of teacher education will validly function was discussed under the challenges of the information technology age. The paper concludes with several implications drawn from the analysis.

**KEYWORDS:** Teacher, Education, Information Technology.

## INTRODUCTION

It is now a trite to say: no educational system may rise above the quality of its teachers (Federal Republic of Nigeria, FRN, 2004, sect. 8. (70)). It is a trite because every educator recites this daily. Scholars quote the same to emphasize the importance of teachers, and teacher education. However, many basic truths are considered so common that no action is taken to realize them, or their implications. It is a basic truth that the quality of teachers determines the quality and tone of a given age. If every age can be characterized in this way, then it is fundamentally true that every age has its own specific type of teacher. In a given age, the problems of that age, the challenges it faces, the skills, attitudes and knowledge it needs to survive are epitomized in the kind, quality and depth of teacher education which produces the teacher.

The operative word here is the concept of "challenges" which defines the character of an age. Teacher education has always been challenged in all ages that man has passed in the process of acquisition of education. In the Greek Age, Socrates faced the challenge of academic freedom. He died defending it. In the Roman Age, it was the problem of sustaining the imperial culture. The early American Colonies faced problem of creating a definitive American culture which supported American Revolution. The Age of the British Empire saw Britain articulating colonial teacher education to produce loyal citizens for the Empire. The challenges posed by our break with colonial Britain include political integration, nation-building, economic and technological development. Our national policy on teacher education reflected these problems. It is undeniable that teacher education is still challenged by these problems in an age when Nigeria is drawn into the vortex of globalization, and information technology. With the entry of these two variables into our national life, further challenges complicate the status of our teacher education, and hence, the quality of our

educational products. Now, what do these successive ages teach us in terms of teacher education in an age of information explosion?

In attempting to answer this question, it is argued that the problem of teacher education challenges in an age of information technology is essentially a problem of professional validity and relevance, which has necessary implications for content of teacher education, educational leadership within the colleges of education, and the building of teacher image for effective participation in changing societies and production of positive educational output. It is insisted that the issue raised by the information technology age calls for a re-examination of our professional orientations and our survival skills as models for any given age.

## The Nature of Teacher Education

Since the break with the colonial age, Nigerian educators have written extensively on the problems of teacher education. A review of existing literature suggests that the following problems facing teacher education are identified:

- 1) Lack of proper conception of the nature of teacher education as a discipline;
- 2) Absence of empirical research as a basis for making sound decisions about teacher professional preparation;
- 3) Low funding of teacher education institutions for production of qualitative teachers;
- 4) Low utilization of the capacities of colleges of education for making positive inputs into education;
- 5) Disorientation of teacher self-image in the eyes of the general public resulting from governmental neglect of one of the noblest professions in the history of mankind.
- 6) The erroneous view that everything should be subjected to optimization of private market engine, including teacher education, even when outputs of education are immeasurable in worth (Lantz, 1964;

Hunt and Joyce, 1967; Amadi, 1983; Klees, 1986; Levin and Rumberger, 1987; Easton and Klees, 1990; Emeh and Amadi, 1992; Emeh and Erukoha, 1995; Emeh, 1997; Emeh, 1998).

These problems are part of the multitude of problems facing the entire educational system of this country. In the face of these problems, what can be said about the nature of teacher education? In their attempt to explain why Teacher Education presents so many problems, Peck and Tucker (1973) stated:

The reason for this is the inherently complex nature of the phenomenon to be studied. "Teacher Education" is a long, complicated series of operations. Each operation is, itself, an extremely complex set of steps, most of which have never been carefully identified, let alone measured. In these respects teacher education resembles psychotherapy as a process which cries out for precise, microscopic analysis (P.942).

Teacher education is a complex, sub-system of a large multi-variable educational system. As a sub-system, its strength, content, philosophy, resources and processes are not given to it independently. Take the problem of resource as a variable in teacher education. Its quantity and quality is influenced by the volume of resources available in the social system. Part of this resource must find its way into the educational system and part of what flows into the educational system will find its way into teacher education. Whether what teacher education finally gets as a resource is large or small, significant or not must depend on a complex of factors: the orientation of society to its teachers; the character of the political leadership and its attitude to education, the transparency of educational leaders, the needs of society, and the state of the economy to mention but few. The miracle is that teacher education still functions in this country in the face of these complex variables.

While teacher education is complex in sub-system functioning, it is even more complex in its internal process function. Peck and Tucker (1973) in their careful evaluation of research in teacher education also noted this internal process complexity in the nature of teacher education:

Teacher education involves many factors which interact simultaneously: the Pupils' aptitudes, interests, readiness and attitudes toward learning, their parents' and their sub-cultures' attitudes toward schooling; the administrative policies and the interpersonal organization of the schools; similar characteristics of the teacher-training institutions; the individual, personal characteristics of teachers; these and even more factors, are constantly at work in the real settings we too briefly sum up with the simple sounding phrase, "teacher education" (P.942).

Teachers are persons who are professionally produced by this dynamic complex system. The system itself depends on social processes defined by the character of a given age. Its nature now gives us a clue why it must be challenged by the given age in which it exists. The reason for this challenge is the attempt to justify the validity and reliability of the professional teachers the system believes itself to be producing. In any given age, operators of teacher education system must face the questions:

- i. Are our products valid for this age – that is, these outputs we have produced, are they real teachers given the age we are living?
- ii. Are our products reliable for this age-that is, are our outputs consistently able to deal effectively with the varying problems of the age? and
- iii. given our National Policy on teacher education, and our objectives for the nation, and the global system which we are a part, can we honestly say that our system is producing professional teachers that are significantly relevant for the survival of Nigerians in this age?

These questions are why teacher education must always be challenged in each age. Those who are involved in teacher preparation must always raise these questions. Then, they must have courage to answer them. To even attempt answering these three fundamental questions, we must know the character of the current age where the outputs of our teacher education will validly function.

#### The Challenge of the Information Technology age:

The age of information has begun. We are living in that age. Science is producing soft and hard wares for manipulating information. Soft and hard-wares are the technology necessary for manipulating information. All aspects of our life will be affected by this information technology. Commenting on this age of information technology, Sanders (1988) writes excitedly:

We're just crossing the threshold of this new information era in which you'll live and work. No one knows how it will evolve or future historians will view it. The ancient Egyptians and Greeks are remembered for their pyramids and magnificent architecture. Roads and aqueducts remain as monumental to the glory of Rome, and towering European cathedrals remind us of the genius of medieval builders. But the greatest achievements of our time may not be construction projects... Rather, future historians may view our era as the time when people developed tools that permitted them to amplify human intelligence and acquire the information needed to explore new system of health care, education, manufacturing, and government (P.3).

In advanced countries where information has reached a developed stage, impressive activities are happening:

- 1) By 1989, more than 90 percent of white-collar workers will have access to personal computers (Infocorp Projection, 1985 :1)
- 2) The new information age requires an educated workforce, and computers are contributing to the educational process today. Personal computers have flooded into the nation's elementary and high school systems in recent years (Sanders, 1988).
- 3) Millions of home computers are being used by family members, Video games with entertainment and educational value are common (Sanders, 1988)
- 4) Over 50 million information workers amass, process, and manage the knowledge needed to run businesses and other organizations in the United States (Sanders, 1988)
- 5) Computers such as UNI SYS MT. 1540 medical terminal help the quality of a physician's diagnoses and can help improve the control of important medical processes (Sanders, 1988). Millions of scientists and engineers use computers daily to develop plans and hypotheses, conduct research, make decisions, and control activities (Sanders, 1988).
- 6) Many of public concerns of modern nations have become so intertwined with computer technology that the two areas are virtually inseparable. Government agencies such as the Internal Revenue services have such volume of data to process that they must use computers (Sanders, 1988).

These and hundreds of other activities are going on in many advanced countries. As we think of these activities, we cannot escape the necessary conclusion that those who perform these activities using the technology developed for them were taught by qualified, competent teachers. We cannot also escape the conclusion that these teachers passed through one form of teacher education system to be able to acquire the competencies and validity to produce people who are able to perform these activities. For Nigeria to fall in line with these advanced countries, we need a revolution in our teacher education system. We must aim at producing **teachers who are relevant** to this age of information technology.

As Nwankwo (1985) observes, in an era of information explosion, in an age when time has become a valuable and even a rare commodity, and in the modern technological society in which accuracy with speed and precision are assets, the uninformed, time-unconscious or imprecise manager/executive is as good as dead. Today's organizations require managers who can get at, interpret and appropriately use information. (P.3).

That is the kind of Teacher demanded by Information Technology Age. Information technology places in our hands

large quality of information about the educational system all over the world, researches in teacher competences, feedback experiments in the classroom, advances in microteaching, technology to enhance teaching and learning, voluminous literature on educational evaluation, and recent discoveries about teaching and teaching methodologies. The problem is how to harness this vast information to make *teacher education valid and reliable*. This, will, of course, depend on our educational goals and objectives and the extent we allocate resources to produce a valid teacher education system. Here, we must remind ourselves of our teacher education goals as stated in the Nigerian National Policy on Education. The purpose of teacher Education should be to:

- a) produce highly motivated, conscientious and efficient classroom teachers for all levels of our educational system;
- b) encourage further the spirit of inquiry and creativity in teachers;
- c) help teachers fit into the social life of the community and society at large and to enhance their commitment to national objectives;
- d) provide teachers with the intellectual and professional background adequate for their assignment and to make them adaptable to any changing situation not only in the life of their country, but in the wider world;
- e) enhance teachers' commitment to the teaching profession (FRN 2004 section 8, (71)).

Our national goal is to produce highly motivated teachers, possessing high spirit of inquiry and creativity and who, above all, are committed to the teaching profession. At the moment, and with this national goal before us, and as we reflect on the prospects of teachers in this information age, there is indeed no cause for joy. Those who produced the Implementation Guidelines for the Universal Basic Education (UBE) Programme (FRN, 2002) are aware of what the information age means to teacher Education. It is stated there that:

UBE is also an excellent opportunity for Nigeria to confront head on the challenges and to take full advantage of the possibilities offered by new information and communication technologies for improving the quality of knowledge. No educational system can afford to stay outside the knowledge age while operating in a world that is now run by knowledge. The way out of the dilemma is the integration of computer awareness, computer appreciation, computer literacy, and computer applications into UBE.

It is insisted that this is the dilemma of Teacher Education today. While it is agreed that integrating information and Computer Science into teacher education will increase the validity and reliability of our current products to meet our national needs, it must also be argued that there is another

variable that must be taken seriously into consideration. The variable is *our teaching culture*. This variable is important because as Mkpa (2000) rightly observed a disoriented teaching culture introduced into our educational system years ago contributed significantly to the collapse of UPE. Protracted observation of events in teaching sector indicates that the teaching profession has suffered terrible neglect. Elsewhere, we have listed the following as the current character of the teaching profession (Emeh, 2002: 15):

1. destroyed and disoriented self image
2. low quality of life;
3. absent-mindedness in the classroom due to force of social rejection and low professional acceptance;
4. tendency to stop learning since the little learned is not profitable or supportive of life;
5. reduction to perpetual debtors due to irregular salary payments;
6. low commitment to the culture of the school system resulting from the significant differential between the educational sector and the business world;
7. low creativity and low directed self-effort;
8. the gradual replacement of value oriented research to teaching profession by abstract, technical, quantitative measures that do not raise serious issues.

All of these characteristics indicate a profession that has been brutalized, undervalued, and in the brink of destruction. In fact, the destruction of teaching profession in Nigeria is almost complete. As we prepare to produce teachers who are valid and relevant for information age, we must also endeavour to re-build teacher self-image, and to stress the cultural framework within which the information age operates. What are the implications to Teacher Education?

#### Implication to Teacher Education:

Several implications are drawn from the foregoing analysis.

- a. **Knowledge and Concepts:** We have already agreed that the content of Teacher Education should be modified through integrative approach to reflect major concepts derived from information technology. New courses will include: System analysis, computer education, education technology, computer application to classroom dynamics, information processing, and the psychology and philosophy of information age. All of these courses will be designed to equip the teacher with new conceptual tools to face and solve teaching problems in concrete classroom teaching. The emphasis must be on learning through planned activities that can be performed by the students themselves under the guidance of the teacher.
- b. **Skills and competencies:** The test of a skilled and competent teacher is that of validity and consistence. If the skill and the competence possessed are not **relevant to the current age of information technology**, then such a teacher cannot perform effectively or he/she will perform awkwardly and

ineffectively. Teachers must be skilled in the use of computers, for enhancing their teaching capacities. Teachers must be skilled in programme designs, and must be familiar with finite Mathematics to enable them solve system problems in the classroom. Such competent teachers will help children learn how to build models and how to solve models through acquisition of data and data analysis. Much of teacher performance activity will be on demonstration of skills and competences which children can acquire and test for themselves rather than mere talk.

- c. **Attitudes, values and commitments:** Confidence is a product of one's consciousness of one's capacities and abilities. If a teacher is properly equipped, he will be confident in his classroom performance. In the information age, stress is placed on how information is acquired rather than information itself. Teacher

Education must prepare students on the processes of acquisition of knowledge rather than knowledge as a product. This means that teachers must be prepared to value and teach strategies for knowledge acquisition and validation rather than the old assimilationist approach to knowledge consumption. Developing new culture of teaching is a slow and cumulative process. It is accelerated by student teachers appreciating their profession, and feeling that they are making significant contributions to national development. It is destroyed when the self-image of the teacher is subjected to inhuman treatment such as denial of welfare, adequate compensation for work, absence of recognition, or professional down grading. No amount of technology will make significant change in a teacher whose self-image has been bashed and brutalized.

- d. **Educational Leadership in Teacher Education:** We have always believed that one of the most important variables enhancing any organization is the character of the leadership. If the leadership is positively committed to education, then the educational system will experience positive inputs and manifest new surge of energy. On the other hand, if the character of leadership is negatively oriented to education, Teacher Education will be ignored. Perhaps this is the time to say that the practice of imposing a leader on colleges of Education must be reconsidered. Colleges of Education have their professional apex, and are therefore capable of producing leaders from among themselves. Such leaders will usually be committed, and will know the needs of their organization in terms of cultural perspectives and problem orientations. Generating an educational leadership within the Teacher Education System has the advantage of continuity of focus and familiarity with the culture of production of effective and reliable teachers.

- e. **In-service Courses:** While the college of Education will solve the problem posed by information technology through curriculum innovation and integration, they will develop short in-service courses

for these NCE holders already produced within the traditional model who had no advantage to be exposed to information technology processes. Teachers who do not have this advantage stand the chance of being invalidated. The short courses should focus on:

1. An extensive overview of latest classroomware and multimedia technologies and how they effectively enhance teacher productivity;
2. in-depth comparative presentation of international cases of college of Education leverage information technologies to improve the value chain of teaching and learning processes;
3. illustrations and discussions of organizational change needed to introduce new technologies and their impact on teacher education process redesign; and
4. extending and enhancing the way Teacher Education institution cooperate with the school and reach students nationally and internationally, leveraging the global networks which are converging into information superhighway;

We must abandon the traditional closed system approach of producing teachers who lack both national and international outlook in a world where information technology has broken the barriers that constant knowledge interface.

**f. Research Orientations:** As noted earlier, a review of literature on Teacher Education has shown that our research results do not enable administrators and policy makers to make sound decisions about teacher Education. The reason is our preoccupation with trivial questions which halt at mere correlational and association analysis seeking superficial differences or relationship among postulated variables of teacher Education. Such researches are based on survey data derived from highly questionable subjective responses. We must abandon this positivistic approach (Emeh, 1991: 72-81) in favour of research orientations that is committed to teacher Education model building within the framework of social values. Information technology and system analysis has placed in the hands of Teacher Education researchers approaches and tools which will enable them;

- i. to build models,
- ii. derive necessary implications of the model,
- iii. generate data through simulation and other experimental designs;
- iv. solve the model, and identify casual relationships; and
- v. draw strategical and tactical conclusions for policy on Teacher Education.

Information technology now challenges educational researchers in the domain of teacher education to design researches that will enable policy makers to make sound

decisions about input, output, process and organizational variables that impact significantly on effectiveness of teacher Education.

### Summary and Conclusion

We have argued in this paper that the situation of teacher Education in a dynamic age of information technology poses challenges to teacher education, and calls for the determination of the **validity, reliability and relevance of the products of teacher education**. We have tried to show that teacher education will always confront each age with particular challenges. We have attempted to show what this new age requires as deduced from its characteristics, and we have described the current plight of the noble profession of teaching which is in the brink of collapse. To prevent this collapse, we have tried to deduce some practical implications of information technology challenges to the content, value, competences and skills, educational leadership and orientations to research in the domain of teacher education.

The philosophy of teaching is essentially concerned with the truth about teaching, the beauty of teaching, and the good about teaching. All of these categories have to do with validity and reliability of teaching. Information technology will enhance the truth of teaching. It will show what true teaching is, and how it can be realized. It will also show all the beauties which teacher education has as a process of producing human beings who will internalize the relevant culture of the age, and it will help to upgrade teachers who were produced in traditional model. Teaching as an activity will be more enjoyable. Above all, information technology will enhance the goodness of teaching by making the realization of teacher education goals possible. It will help to confer on the teacher the nobility he/she deserves, and place the profession of teaching among the excellent professions of the age.

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