

TEACHER EDUCATION AND TECHNOLOGY IN THE 21ST CENTURY.

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ABSTRACT

A sound teacher education programme is a prerequisite for a reliant education, which is the prime engine of human development, the vital transformational tool, the fulcrum around which the economic growth of the nation revolves. A nation can only develop meaningfully and professionally through a good teacher education programme rooted in the integration of technology into all areas of instruction. Teacher education is important if the nation must realize its potentials and placed among committee of nations with clear-cut educational policies in the 21st century. Technology education must be incorporated into teacher education programme to facilitate effective teaching and learning, using multi media devices, such as CDS, CD-ROMS, Slides etc. Technological advancement has eliminated distance and time as constraints to learning. The use of on-line teleconferencing and observation of professional teachers else where in the world has further made learning more interesting and flexible. This paper therefore, underscores the imperatives of technology in teacher education.

INTRODUCTION

Teacher education is a part of the education process or training that involves the art of acquiring skills in teaching profession. It enhances the skills of teaching and learning. According to Akinyemi (1969):

"If the African teacher is to cope adequately with the monu mental task that lies a head of him, he has to be well trained for His job. He must be willing to enter into the spirit of new African age, willing to share new information and skills his Fellow teacher, seek more knowledge on his own initiative and above all, be flexible and willing to experiment and not be afraid of failure. The new teacher envisaged must have flexibility Built into his total professional and academic made-up, and should be helped through regular in-service training to keep Abreast of techniques, skills and research in his field".

Teacher education is sui-generic to effective realization of our national goals. It should therefore, be basically related to every phase of development in our society. For,

wherever one turns, be it economic, political or social spheres of activities, one is faced with the ever recurring problem of trained manpower needs; but no adequate training can take place without competent teachers to handle the program. In the area of formal education, competent teachers are needed for nursery schools, primary and secondary schools, technical and vocational education, teachers' colleges, university education and adult education with its many facets – literacy campaign, extension services, continuing education, extra-mural work, in-service and pre-service training, training on – the – job, training within industry as well as general education for personal satisfaction.

At a less formal level or informal level, the competent teacher is a good citizen, a community leader, an innovator and an enlightened parent. His influence extends beyond the confines of the confines of the classroom. In rural area he is looked upon as one of the mainstays of the community or village. If he is a graduate, and the only village graduate at that, his influence is even greater everyone expects him to be a reservoir of all knowledge and skills (Freeman, 1989).

In rationalizing the objectives of teacher education in the 21st century Nigeria, the worth and value of a prospective teacher must be recognized; he must be given a good opportunity to learn to enhance his progress as a professional teacher; he must be seen to develop skills in effective teaching and learning. This can be done by employing the use of instructional media or technology to complement other methods. According to Adegbija (2004):

“Technology education must as a matter of great national concern be encouraged. This requires unrestricted access to technological facilities for teachers and students in many institutions of higher learning. The internet, for example, must form the greater resource that should be readily available to teachers and students. Several technological strategies and devices to facilitate teaching and learning must be adopted and used. Prominent among these are, computer - assisted prosody training, audio - conferencing, network collaborative interaction. We need audiotape players with individual headphones. Desktop computers and projection and sound system playback, laser disc players, TV VCRs, audio and video software and multimedia instructional materials. We need devices for digitalization, editing, compressing videos and audio, taking digital snapshots, making digital video recordings, scanning images and texts, creating audio CDs- CD- ROMS and DVDS, etc”.

BASIC FACTS

Teacher education in Nigeria is still shrouded with problem of incorporating technology into teaching. Most schools hardly prepare students to meet the challenges of higher education or the workplace. Part of this problem is attributed to our low level of technology. But that is not a convincing defence because some least developed countries in Africa have grappled with the challenge of adapting technology to teacher education program.

According to Stephens (2001):
“Teachers must incorporate technology into

their teaching. A redesign of the current teacher training model is necessary for education to lead the change into the 21st century.”

Most teachers in Nigeria today still receive similar training that teachers did many years ago. Generally, teaching methodology courses focus primarily on serving the needs of the traditional students. They (teachers) learn to utilize resources that are often obsolete and rarely effective. Ill- equipped teachers enter the educational arena with few tools and little armour, decreasing their chances of survival. Yet, education should be seen to infuse teacher training with the enabling factors of technology. To prepare teachers for the 21st century, there is therefore, the immediate need to embrace a technology model that would revolutionise the profession, and reposition it for greater challenges.

It is sad to note that most of our public schools today still experience archaic practices. Instead of being the repository of knowledge, teachers simply provide a guide to students' learning. That apart, they are yet to appreciate the relevance of technology to education. In some schools where the computers were procured, they generally remain in the laboratories removed from the classrooms, and therefore, are not an integral part of instruction.

According to Loveless (1996):
“Computers are capable of improving schools, but their underuse is a serious problem.” A study carried out by Oladele (2002) revealed that; 70 per cent of the secondary school teachers in Nigeria have never used a computer in the school.” And the reason why students use the computers so rarely is because most teachers do not possess the training and skills to integrate computers into the everyday happenings of the classroom. This trend can be extremely dangerous, particularly now that technology has permeated every stratum of our society. It is the main force driving society. It is really empowering the individual teacher (Fatoki, 1999). Radio, televisions, telephones, video cassette recorders, computers, the internet, e-mail, fax modems, and so forth, are becoming accessible to individuals.

TEACHER TRAINING IN THE 21ST CENTURY

There is the need to give special attention to teachers of teacher. Ironically, we have no effective programme for training those who are to train teachers. Despite the establishment of colleges of education both at the Federal and State government levels, institutes of Education and Faculties of Education in various universities are to cater for effective and professional teacher education program, the program has been run in a haphazard manner. That apart, most of our universities today employ lectures without teaching qualifications. This development, according to Ukadike (2000), "is the root cause of low standard of university education in Nigeria." If our university lecturers are obliged to have a teaching qualification before they are adjudged qualified to teach, there would be a great transformation in the quality of university education in the country. This practice is not new. The Americans, the Canadians and some European countries have been doing this for decades. The university of London institute of education offers such a course to the lecturers in the London medical schools.

Despite the need for this type of training, the driving force for teacher training in the 21st century is the effect that technology will have in redesigning the roles, purpose, effectiveness, and scope of teacher training. Advancements in technology, as I have earlier noted in this paper, are already infiltrating all areas of society, and will continue to do so at a more rapid space during the next millennia. According to Cardenas (2000), "the global community is demanding that its citizenry and especially its workforce possess advanced skills these skills soar above the basics of reading, writing, and computer."

Given this demands therefore, the teacher training model for the 21st century must "utilize technology to carve a new direction. Technology weaves the strands that impact instruction – student diversity, ability discrepancies, special needs, accountability pressures, cultural background, and political forces" (Cardenas, 2000).

An effective integration of technology into all areas of instruction would enable schools to develop the ideal of learning environment of individualized instruction for all learners. Technology should be seen as a

mechanism that bridges the learner with the content; it allows learners to progress at their own pace while corresponding to their individual learning style.

According to Scott (2001), "Technology must become a tool used to build skills needed to function productively in the future. It allows for the transformation of our current school model. This transformation calls for restructuring the roles and responsibilities of teachers, administrators, and the school itself. Teachers can no longer remain the circus trainers of drill and practice. Instead of viewing themselves as having the sole responsibilities of imparting knowledge and enforcing discipline, teachers must learn to mentor students in their instructional and social development. They must learn strategies needed to guide and support students through learning experiences and opportunities that allow individuals to deepen their understanding of new and different concepts. Ultimately, the goal of education is to instill the characteristics needed for long-life learning."

PROSPECTS OF EFFECTIVE TEACHER TRAINING IN THE 21ST CENTURY NIGERIA

The current teacher training model in Nigeria must be revamped if we have to meet the challenge of the global technological age as it affects teacher education program. Our school must "reinvent teacher preparation and professional development, and create a learning system that is organized for students and teachers' success, and prepare them to be productive members of a highly fluid society" (O' Neil, 1998).

Technology training must be adequately incorporated in all areas of teacher training." Just as books and journals were previously considered the fountain of knowledge, now computers, the Internet, telecommunications, satellite learning, cellular communications and so on, are the convenient, mobile, and disposable textbooks and encyclopedias of the new millennium. These machines are the keys to current, accurate, and updated information. Since information is easily accessible, learning is more individualized, holistic, and pertinent. Only when the use

of technology provides a meaningful and applicable opportunity for users will it become integrated into the pattern of learning and working (O, Neil, 1998).

Our ivory towers (universities) have a greater role to play in adapting technology to teacher education program. They could train teachers on how to acquire information accessing skills that would make them more effective. According to Smith (1995), "resources in cyberspace catapult the ability of teachers to the global realm.

Still quoting Smith (1995)," In the 21st century, technology will reach beyond the current confines of the universe. "The charge of universities is to expose, prompt, stretch, and provide emerging teachers with the most advanced resources to be better more efficient teachers. Technological advancements also help eliminate many restrictions such as time and distance. The use of real-time on line teleconferencing, observation and discussion of real classroom situations is possible without actually visiting the site. Education students will benefit from observing experienced teachers and by interacting in authentic educational situations throughout the globe.

By being able to enhance student teacher observations through teleconference observations, the educational methods instructor can create a more accurate, in-depth, and realistic assessment than one restricted by the traditional and infrequent on-site visits. Student teacher could request a professor to observe a small segment of a lesson to provide feedback. This would allow them to observe their colleagues' classrooms and talk with them so that they can unlearn old practices and build new ones" (Smith, 1995).

It is the expectations of every progressively-imbued Nigerian that given the benefits of technology to the overall transformation of the society, teachers would strive hard to eradicate the limitations imposed by traditional methodologies which are currently being adopted. When this is done, the possibility of learning increases exponentially.

It is also imperative to induce our educators to respond appreciably to constant societal change and therefore, become agents of progressive change.

There is no doubt, that the challenge of the 21st century could be met if our current

teacher training program or model is redesigned to allow technology to stretch, enhance, reaffirm, and catapult our emerging teachers.

CONSEQUENCES OF NON-ADAPTABILITY OF TECHNOLOGY TO OUR TEACHER TRAINING PROGRAMME

The consequences or negative implications non-adaptability of technology to our teacher training program are disastrous. According to Fakunle (2002), "a non-adaptability of technology to teacher training program will make it difficult to meet the needs of our students and the micro and macro communicates that we belong to. Students will enter the job handicapped by useless knowledge and skills, and incompetent to perform expected skills. Generations of children and young adults would be unable to manoeuvre successfully in a rapidly changing and demanding society.

The negative implications highlighted by Fakunle (2002) are also worthy of note:

1. Teachers will remain isolated from other teaching disciplines.
2. Effective individualized instruction will not occur.
3. Traditional practices of teaching will continue.
4. Subject areas will remain non-integrated.
5. Student will not have the problem-solving, technological, communications and group dynamic skills to be successful.
6. Teacher attrition will continue to rise while student performance continues to decline.
7. Long range effects to the economy will be disastrous due to a shortage of skill workers.
8. The technology leap to the 21st century will leave teachers in the dust.
9. Without the effective integration of technology

into teacher training, education will remain in the current obsolete paradigm.

10. Schools will become useless institutions of society.
11. All sectors of the economy will demand the competencies needed to use technology.

APPROPRIATE MODEL OF TEACHER TRAINING PROGRAM IN NIGERIA

An appropriate model of teacher training for Nigeria must ensure that:

- (1) Teacher training is a continuous exercise throughout the period the teacher remains in service.
- (2) The technology that the teacher is exposed to is user-friendly, flexible and interconnected.
- (3) Student teachers are allowed to observe and interact with experienced teachers through teleconferencing.
- (4) Technology helps to remain creative, adaptable and flexible
- (5) Learning is no longer teacher-centered and teacher-directed, but ensures that teachers become an important part of the learning process.
- (6) Adequate learning materials or tools are produced to facilitate and enhance learning and instruction.
- (7) Colleges and universities are abreast of the current educational research, device their curricula.
- (8) Empower students to broaden their knowledge base and redefine the roles of teachers.

CONCLUSIONS

The pivotal role of teacher education programme cannot be down played if we desire professionally competent teachers that will be creative and proactive in realizing our developmental goals.

Technology education should be incorporated in all levels of teacher training, and all categories of teachers, including university lectures. Technology has made it possible to reach various groups of learners in different climes adopting instructional media that are flexible, easier to access,

accommodating and revolutionary in approach.

The internet provides or serves as a reservoir of resource materials and window of communication with experienced professionals using e-mails. E-learning must be encouraged especially at tertiary level.

RECOMMENDATIONS

Technology is the only 'tool' that can positively bring about appreciable growth in education if well adapted to our climate. The challenges faced by education in this century are indeed numerous. Teachers must be well positioned to adopt the current methodologies germane for effective teaching and learning. They must be skilled in critical areas of instructional technological applications in order to prepare students to "utilize creative awareness needed to access information and resources".

The teacher is spark that fixed the whole developmental process, the keyman in the drive to progress. His services are indispensable to the nation; he must therefore, be effectively trained if we have to solve the recurring problem of manpower needs.

On a general note, we must ensure that teacher education is adequately planned as an integral part of our national development. The planning must be based on manpower assessment, allow for changes and keep pace with economic and technological advancement.

REFERENCES

- Akinyemi, J.A. (1969) *A philosophy for Nigerian education*. Ibadan: Heinemann education Books.
- Adegbija, A. J. (2004) *Technology and Democratic Culture*. A keynote address delivered at the ELITT 2nd Annual conference at the Federal University of Technology, Minna on 27th May.

- Cardenas, V. (2000). *Current Schools Reforms Agenda*. Adapting Technologies to School System (August 2000) (On-line). Available: URL.
- Fakunle, T.A. (2002). *Instructural Media Applications*. Ibadan: Heinemann Educational Books.
- Freeman, B. (1989). *Teacher Education and Modernization: Essays on World Education*. London: Oxford University Press.
- Fatoki, O.A. (1999). *Technology for Sustainable Development*. Ado-Ekiti Omolayo Standard Press (Nig.) Ltd.
- Loveless, J. (1996). *Integrating Technology into Classrooms*. Michigan, Zon Dervan Publishing House.
- Oladele, J.O. (2002). *Fundamentals of Psychological Foundations of Education*. Lagos: Johnson Ltd Enterprises.
- O, Neil, F. (1998) *Education for the 21st century: Basic Issues of Change* T.H.E. Journal. Pp Vol, No 70-77.
- Scott, S (2001) *New Directors: Teachers and Technology for the 21st Century*. Educational Leadership Program, University of North Carolina at Chapel Hill.
- Smith, B. (1995). *The Teacher Glasgow Oxford University Press*.
- Stephens, R.O. (2001) *Preparing for 21st Century Schools*. Dubuque, IOWA; Kendall/Hunt.
- Ukadike, S. P (2000) *The Dysfunctionality Open University System in Nigerian*. Newsline newspaper, June 28. P.12.