Information and communication technology and education: Analysing the Nigerian national policy for information technology

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This paper presents an analysis of the Nigerian National Policy for Information Technology. The analysis reveals that the policy is inadequate to impact positively on the Nigerian education system, and that the philosophical frame of reference is market driven. The policy places little emphasis on the integration and infusion of ICT in the country's education system. Policy implications and suggestions are offered to ensure maximum use of ICT potentials in the Nigerian school system.

Information technology, education, Nigerian, national policy, technology integration

INTRODUCTION

Information and communication technology (ICT) is an indispensable part of the contemporary world. In fact, culture and society have to be adjusted to meet the challenges of the knowledge age. The pervasiveness of ICT has brought about rapid technological, social, political, and economic transformation, which has eventuated in a network society organised around ICT (Castells, 1996).

The field of education has not been unaffected by the penetrating influence of information and communication technology. Undoubtedly, ICT has impacted on the quality and quantity of teaching, learning, and research in traditional and distance education institutions. In concrete terms, ICT can enhance teaching and learning through its dynamic, interactive, and engaging content; and it can provide real opportunities for individualised instruction. Information and communication technology has the potential to accelerate, enrich, and deepen skills; motivate and engage students in learning; helps to relate school experiences to work practices; helps to create economic viability for tomorrow's workers; contributes to radical changes in school; strengthens teaching, and provides opportunities for connection between the school and the world (Davis and Tearle, 1999; Lemke and Coughlin, 1998). Information and communication technology can make the school more efficient and productive, thereby engendering a variety of tools to enhance and facilitate teachers' professional activities (Kirschner and Woperies, 2003).

In research, ICT provides opportunities for schools to communicate with one another through e-mail, mailing lists, chat rooms, and so on. It also provides quicker and easier access to more extensive and current information, and it can be used to do complex mathematical and statistical calculations. Furthermore, it provides researchers with a steady avenue for the dissemination of research reports and findings (Yusuf and Onasanya, 2004).

Based on a review of 28 major reports on technology integration in American Schools, Culp, Honey and Mandinach (2003) advanced three major reasons for ICT in education. They suggested that technology is usually (a) a tool for addressing challenges in teaching and learning, (b) a change agent, and (c) a central force in economic competitiveness. As a tool for addressing

challenges in teaching and learning, technology has capabilities for delivery, management, and support of effective teaching and learning. It is equally good for geographically dispersed audiences, and it also helps students to collect and make sense of complex data. It also supports diverse and process–oriented forms of writing and communication, and it broadens the scope and timeliness of information resources available in the classroom. As a change agent, it catalyses various other changes in the content, methods, and overall quality of teaching and learning, thereby ensuring constructivist inquiry-oriented classrooms. As a central force in economic competitiveness, it deals with economic and social shifts that have technology skills critical to future employment of today's students.

Looking at the role of education in the development of any society, the school will be indispensable in developing an ICT culture of any country. The school must provide effective leadership in ICT integration, through research, modelling of effective integration of ICT, and provision of opportunities for professional development of citizens of a country.

A NATIONAL POLICY FOR INFORMATION TECHNOLOGY

In order to husband the potentials of ICT, most nations of the world have evolved national information and communication technology policies, to serve as a framework for ICT integration in all facets of the society. African countries, and particularly Nigeria, are not exceptions to this practice.

The digital divide between advanced and developing countries, particularly in Africa, is well established. Like most African countries, Nigeria as a nation, came late and slowly in the use of ICT in all sectors of the nation's life. Although Africa has 12 per cent of the total world population, the continent has two per cent presence in ICT use (Jensen, 2002). In Africa, there is low access to basic ICT equipment, low internet connectivity, low participation in the development of ICT equipment, and even low involvement in software development. In fact, New York City has higher Internet connectivity than the whole of Africa (Ajayi, 2002; Hall, 1998).

The seeming backwardness of the African continent in ICT necessitated a continent-wide initiative, the African Information Society Initiative (AISI), which had its origin in the African Regional Symposium on Telematic for Development, held in Addis Ababa, in April, 1995. The symposium organised by the Economic Commission for Africa (ECA), the International Telecommunication Union (ITU), UNESCO, the International Development Research Centre (IDRO), and Bellanet International, urged the ECA Conference of Ministers to consider the importance for Africa of the global information revolution (Ajayi, 2002; ADF, 1999). Based on this recommendation, the ECA Conference of Ministers in May 1995 passed resolution 795 (XXXl) titled 'Building Africa's Information Highway', which called for work on national information and communication networks for planning and decision–making as part of an African information highway, and for the establishment of a high level working group made up of African experts in ICT, to prepare Africa's entry into the information society. Subsequently, in May 1996, the ECA Conference of Ministers through its resolution 812 (XXXI) approved the plan of action prepared by the high-level working group entitled the African Information Society Initiative "An action framework to build Africa's Information and Communication infrastructure" (Ajayi, 2002; ADF, 1999).

The AISI action plan framework called for the formation of National Information and Communication Infrastructure (NICI) plans and strategies. This was to be an on-going process through planning, implementation, and regular evaluation of programs and pilot projects, developed according to the needs and priorities of each country (ADF, 1999). It should be stressed that Nigeria did not achieve much on the NICI plan and strategies at the beginning of 1999.

A significant leap was made when the Nigerian government in October of 1999 issued a document on telecommunications development strategy and investment opportunities in Nigeria. Similarly, in October 1999, the National Policy on Telecommunication was approved (Ajayi, 2002). The document contained policy statements on objectives, structure, competition policy, satellite communication, management structure, finance and funding, manpower development and training, internet, research and development, safety and security, international perspectives, and policy implementation and review (Federal Republic of Nigeria, 2000).

The national policy on telecommunication was a key step in the development of infrastructural base for ICT. In 2001, the Federal Government approved the Nigerian National Policy for Information Technology (IT), and followed this up with the establishment of the National Information Technology Development Agency (NITDA), which was charged with the implementation of the policy (Ajayi, 2002).

A NATIONAL POLICY FOR INFORMATION TECHNOLOGY AND EDUCATION

Information and communication technology (ICT) policy, as noted by Rowland (1996) and cited in Hafkin (2002), can be categorised into vertical, infrastructural, and horizontal policies. Vertical ICT policy addresses sectoral needs, such as education, health and tourism. The infrastructural aspect deals with the development of national infrastructure and this is closely linked with telecommunication. The horizontal aspect deals with the impact on broader aspects of society such as freedom of information, tariff and pricing, privacy and security. These three aspects are adequately addressed in the Nigerian IT policy. It is now important to examine the document as it affects education. In making this analysis, the writer has been guided by four key questions.

- What does the Nigerian national policy for information technology tell us about education?
- How adequate is the policy for the integration of ICT in the Nigerian education system?
- What implications are there for the Nigerian education system?
- What agenda is needed to redefine the national policy to cater for the country's education system?

Answers to these questions are intended to provide a basis for redefining and re-development of the Nigerian national policy on information technology (Federal Republic of Nigeria, 2001). First, the document mission statement recognised the need 'To Use IT for Education' (p. iii). In addition, the general objectives in three (xv, xvi and xxiv) of the 31 stated objectives stressed that information technology must be used to:

xv)   empower the youth with IT skills and prepare them for global competitiveness.
xvi)   integrate IT into the mainstream of education and training.
xxiv) establish new multifaceted IT institutions as centres of excellence to ensure
          Nigeria's competitiveness in international markets (pp. iv – v).

In order to achieve these objectives, 20 strategies were outlined. The fifth strategy was stated in this way: "Restructuring the education system at all levels to respond effectively to the challenges and imagined impact of the information age and in particular, the allocation of a special IT development fund to education at all levels" (p. vi).

It should be underscored that although as the mission, general objectives, and strategies recognised the importance of ICT in education, the document has no sectoral (vertical) application to education. Issues relating to education are subsumed under sectoral application for human resources development. Under this sectoral application objectives 1 to 4 relate to education as follows:

- to develop a pool of IT engineers, scientists, technicians, and software developers;

- to increase the availability of trained personnel;
- to provide attractive career opportunities; and
- to develop requisite skills in various aspects of IT.

In order to achieve the objectives for human resources development, nine major strategies are outlined. These strategies are targeted at the building of knowledge and skills in information technology. These include (a) making the use of ICT mandatory at all levels of educational institutions; (b) development of ICT curricular for primary, secondary, and tertiary institutions; (c) use of ICT in distance education; (d) ICT companies investment in education; (e) study grant and scholarship on ICT; (f) training the trainer scheme for National Youth Service Corp members (g) ICT capacity development at zonal, state, and local levels; (h) growth of private and public sector dedicated ICT primary, secondary, and tertiary educational institutions; and (i) working with international and domestic initiatives for transfer of ICT knowledge. In spite of these objectives and strategies that are focused on education, the document is inadequate to cater for the needs of the country's education system. Some of the deficiencies noted in the document are enumerated as follows.

First, the policy has no specific special application to education. While there are sectoral applications for health, agriculture, art, culture, tourism; and governance, education is subsumed under human resource development. An ADF (1999) recommendation explicitly notes the need for sectoral allocation dedicated just to education.

Second, the objectives and strategies related to education as reflected in the sectoral application for human resource development are market driven. Students are only being prepared to acquire knowledge and skills for future jobs. The focus is only on learning about ICT, which is regarded as 'Topicality', whereas for primary and secondary schools the focus is regarded as the early stage of ICT use in education (Cloke and Sharif, 2001). This philosophy limits the potential of ICT in education to a central force in economic competitiveness. Its potentials as a tool for addressing challenges in teaching and learning and as change agent are thus neglected (Culp, Honey and Mandinach, 2003). Students need not learn about computers only; ICT should be integrated for the development and management of teaching and learning in Nigerian schools.

Third, teachers are indispensable for successful learning about ICT, and learning and teaching through ICT. Computer education introduced into the Nigerian secondary school since 1988 has largely been unsuccessful as a result of teachers' incompetence (Yusuf, 1998). Empirical studies have established that teachers' ability and willingness to use ICT and integrate it into their teaching is largely dependent on the professional development they receive (Davis, 2003; Pearson, 2003; Selinger and Austin, 2003; Watson, 2001). The Nigerian national IT policy is silent on teacher education and teachers' ICT professional development as envisaged by the review of Culp, et al. (2003).

Learning through ICT entails the development of nationally relevant context software for school use. The national policy does not recognise the need to create quality software. A review of 28 key policy documents over 20 years in the United States (Culp, et al., 2003) puts forward seven key recommendations. The second emphasises the creation of more high quality content and software. The available software in Nigerian schools is imported with no local content. The policy document does not address this issue.

A further recommendation by Culp, et al. (2003) also includes an increase in research, evaluation, and assessment. None of the issues relevant to ICT application in the Nigerian education system address the issue of research, evaluation, and assessment, all of which are critical to ensure success. Research, evaluation, and assessment should address access, professional development, use and competence, attitude, and so on.

In addition, the document has no specific direction on ICT or technology plan at institutional levels. Advanced countries have specific plans for ICT. For instance, in Britain the National Grid for learning initiatives, and the strategy for Education Technology, specifically addressed ICT issues in United Kingdom and Northern Ireland respectively (Selinger and Austin, 2003). The Nigerian national policy does not give any guidelines on school technology plans.

The implications of these inadequacies are that the national policy cannot adequately take care of the need of the Nigerian education system. Its educational focus is limited to the market driven goal. The need for integration in teaching and learning, the need for quality professional development programs for pre-service and serving teachers, research, evaluation and development, and the development of local context software are not addressed. These are major components of quality ICT application in education.

In view of these inadequacies, there is a need to revise the Nigerian national policy for information technology. Such revisions should be undertaken to involve stakeholders in the area of education so that they can ensure that the policy covers issues related to learning about ICT and learning through ICT. Furthermore, the objectives in sectoral application areas should address education specifically in order to broaden the market driven objectives. The integration of ICT into every aspect of teaching and learning should also be the key focus.

Although the issue of infrastructure is implicit in the present policy, it should be reviewed in such a way that access policy is addressed in concrete terms, since this is important in ICT integration. Infrastructural needs must be addressed across zones and school levels.

Since teachers are vitally important to ICT integration in education, the national policy on IT should address the issue of teachers' professional development. This should incorporate issues relating to teacher training institutions and ICT, pre-service teacher education, in–service teacher education, and standards for teacher competence and certification in ICT.

Since research, evaluation, and assessment are critical for ICT usage in education, the national policy should identify a frame of reference in order to gauge success of ICT application in education. Such a frame of reference will encourage refinement of school practices relating to ICT integration.

CONCLUSIONS

Despite the fact that Nigeria came late into the ICT world, the adoption of the Nigerian national policy for information technology in 2001 is the right step in ICT application in every sector of the nation's life. The document is designed to ensure that Nigeria as a nation recognises the strategic importance of ICT for national development. Successful application in every sector can only be assured through adequate coverage of needed areas. Identified gaps should be filled through the involvement of important stakeholders in education.

Information and communication technology is a powerful tool for the development of quality teaching and learning; it is a catalyst for radical change in existing school practices and a veritable vehicle for preparing the students for the future. Success in the implementation of an ICT policy will be dependent on the recognition of the importance of sectoral application to education and sustainable implementation. Maximising ICT potentials will involve quality ICT policy, greater involvement of private and public in the funding of the implementation, and proper implementation and monitoring.

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