

Building the ICT capacity of language teachers: empirical insights and lessons for sub-Saharan Africa

Victor Benjie. Owhotu

University of Lagos, Lagos Nigeria

Keywords: Building ICT capacity; language teachers; sub-Saharan Africa.

This paper first highlights insights and lessons from several empirical studies of ICTs in education in Asia, Europe and sub-Saharan Africa. Based on these valuable lessons, an action plan strategy is proposed for ICT capacity building of language teachers in sub-Saharan countries.

1. The global insights into ICTs in education: UNESCO actions

Information and Communication Technologies (ICTs) have become a global preoccupation, a true 'second revolution' that is determining the fate of developing nations with respect to the challenges of globalisation. A holistic view of the potential of ICTs to address a range of developmental issues has been strongly reflected in UNESCO'S vision, philosophy and programmes especially over the last decade. Significant actions taken by the Organisation in this respect include the creation of the UNESCO Institute for Information Technologies in Education (IITE) with headquarters in Moscow, and the Addis Ababa-based Africa-centred UNESCO International Institute for Capacity Building in Africa (IICBA) which provides opportunities for teacher education through distance learning, women empowerment and institutional partnership. Furthermore, since 1998, specific regional evaluation and capacity building activities have been co-ordinated by UNESCO Regional Offices, of which two empirical studies are noteworthy. The first provided invaluable insight into the universal acceptance of ICT, the role it should play in national educational development planning and practices and the need to devise very close monitoring mechanisms at all levels for cost efficiency [1]. The second more substantial study titled "Using ICTs to Upgrade the Quality and Reach of Education" in Asia and the Pacific>> which aimed to "*break-down barriers and build bridges*" highlighted the strategy and series of lessons for education systems around the world. Four major areas of emphasis were identified by the partners: (a) the need for unambiguous and sustainable ICT in educational policies which "promotes successful policy models and strategies of ICT integration...", and places special emphasis on removing barriers to participation and the learning of girls and women, out – of – school youth, the disadvantaged and those with special needs and the poor; (b) capacity – building of teachers through training and professional development and other facilitators for effective use of ICTs in improving teaching and learning. Some of the focus actions of this project included "developing a regional guideline on curriculum framework and standard of ICT infusion by teachers; designing templates of ICT-integrated e-lesson plans and evaluation tools for teachers to assess their student learning using ICTs and "creating an on-line network of teacher centres to share innovative practices"; (c) integration of ICTs in the classroom and strengthening ICT use in school and ASEAN School net. Three of its features are: (i) exploring and demonstrating how ICTs can be used in schools to improve the quality of education for all and better prepare youth for the demands of the knowledge society; (ii) developing interactive education software and ICT-based teaching/learning lessons and materials for integration into the teaching of science, mathematics and language; and (iii) exchanging experiences and best practices generated from the use of ICTs and School net in ASEAN countries; (d) empower Non-formal learning/education programmes for meeting non-mainstream adult and community needs especially ; "improve the quality of life and alleviate poverty among disadvantaged rural populations through greater access to context-specific education programmes using ICTs..." [2]. The lessons are invaluable for other regions of the developing world.

2. Further empirical insight and lessons from the field

Between 1996 and 2003, we carried out a longitudinal study of ICTs in preservice language teacher education and in state-owned and private secondary schools-in England [3]. The study was of significant interest in one major respect. As early as 1986, Nigeria, the largest sub Saharan country and only E9 member country in the sub-region had expressed keen interest in becoming part of the emerging global trend and was searching for appropriate ways and means to actualise her computer education policy. Above all, the United Kingdom was implementing her new national curriculum including the introduction of two core subjects: IT and modern foreign languages. This was bound to generate valuable insight and lessons for Nigeria and sub-Saharan countries –whose educational systems are derived largely from those of the European countries such as Great Britain and France.

2.1 Two Working Questions initially guided the study in 1996: How was the British national curriculum being implemented with respect to information technology skills development in initial teacher training and the secondary school modern language curriculum? What lessons could we learn for the Nigerian environment against the backdrop of her moribund 1987 computer education/literacy policy? By 2003, the second question had become very relevant to education systems in sub-Saharan Africa. For the purpose of this paper, we present only some elements of the study: key results and especially salient lessons which provide a platform for addressing ICT capacity building of teachers in countries of sub-Saharan Africa.

2.2 The study was a survey. The following initial and modified procedures were adopted in 1996 and 2003 respectively: organized institutional visits, interviews, classroom observation, questionnaire administration on PGCE language student-teachers, school heads and IT administrators. Data collection was generally the same as in 1996 with some modification to the locations and samples used. Whereas in 1996 our investigation was limited to institutions in Cambridgeshire, the 2003 phase involved Cambridge, Oxford and London based institutions. In 2003, however, we used a total of seven different questionnaires, as against four in 1996. The 2003 version of the IT skills questionnaire was expanded to include the Internet and on-line data sourcing/current search skills; web design and learning. The extension was meant to account for development in ICT since 1996. The PGCE students completed three sets of questionnaire, one of which requested them to provide base line information on (a) their pre-enrolment IT skills and current level of confidence and skills within the first term of training.

2.3 The following results are noteworthy and relate to modern foreign language teaching and learning. Information technology has been well entrenched in the language teacher training and the secondary school curriculum

Data provided by the Cambridge, Oxford and London PGDE student teachers respectively showed that there was a total of 1,672 personal computers in the 21 partner schools available for teaching and learning languages, including 65 laptop computers, an average of about 80 computer units. The data for Oxford showed a range between 200 and 231 for the seven schools while data for London showed that ten schools had among them at least 300 personal computers. One Technology College boasts more than 50 personal computers. Furthermore, the great majority of schools had CD ROMS, multi-wave radio cassette recorder, video cassette recorder playback facility; a few had satellite TV receivers, all had e-mail facility and almost all had Internet and internet links while three London schools had teleconferencing facility. By 2003, the shift was more towards Internet based materials and resources for classroom activities. With specific regard to IT skill development of trainee teachers, a total of 84 PGCE students responded to our questionnaire by the end of the (1st) Michaelmas Term. This was to assess their perceived achievement and level of confidence in the four CLUSTERS as follows: (Percentage scores are shown for the three universities respectively): A+B: Operational and word processing skills: with 87%; 78%; 85%. C: Databases and Desk Top publishing 61%; 31%; 67%. D: Spread sheet: with 59%; 42%; 53%; respectively. E: Internet skills: with 43%; 46% and 45% respectively. This meant that within the first of three terms of instruction and independent work, most students teachers had become fully confident (and

competent) in at least clusters A, B and C. This is all the more significant as only 16 out of 84 respondents (14.04%) from Oxford, Cambridge and London Universities were familiar with IT before enrolling on the PGCE course.

What, from our findings, explains the resounding success story of ICTs in British education? Three major factors: a very strong awareness and political will, the building of strong partnership of all stakeholders, and purposeful and unaccountable implementation. It had also become obvious that teachers especially would remain relevant key players and change agents; would need an improved knowledge of industry (the new technology) and a keener sense of relevance or direction in developing employment related curricular and be even more relevant by meeting new official and societal expectations [4], through, as Cajkler (1993) put it <<a clear understanding of what IT can offer them, the capability to make effective use of IT, suitable curriculum support materials and advice, and sufficient access to appropriate equipment and technical support>> [5]. Accordingly, the expectations of student – teachers and secondary school end-users were to be measured by the degree to which all learners would have opportunities to: <<experience a range of software packages in the target languages; use a range of IT devices to help them process and learn the language; (Word processing, desktop publishing, electronic mail...); see IT as a support to their learning, for consolidation, repetition or extension; develop their own ability to learn independently with the support of IT; and learn how to use the target language in IT related environment >> [6]. Furthermore, between 1996 and 2003 the British Government would take far reaching reform measures to facilitate the implementation of the National curriculum. It set up the national training support agencies (the Teacher Training Agency (TTA), Ofsted, the (New Opportunities Fund, (NOF), and the Department for Education and Employment (DFEE). Not only is monitoring and assessment taken seriously, it is tied to funding. In fact, the setting up of the Teacher Training Agency in 1999 was an added impetus to integrate IT within 10 subjects/specialities.

With regard to crucial issues of Funding, the Ofsted Report of stated as follows:

The Department for Education and Employment (DFEE) funding for the ICT infrastructure and generic training amounted to 675 million pounds over four years and began in April 1998..... distribution to Local Education Authorities (LEAs) via the Government Standard Fund (SF). In addition the Government announced that, from April 1999, 230 million pounds of lottery fund would be available from their New Opportunities Fund (NOF) a non departmental public body to help increase the competence of all teachers in their use of ICT in teaching and learning. The scheme would use training organisations, approved by NOF and quality-assured by the Teacher Training Agency (TTA) [7]. Expectedly the following results were attained , among others: **(1)**“ There [was] emerging evidence of a link between high standard across the curriculum and good ICT provision. (...) The powerful new resources obtained with AGFL funds have increased pupils motivation to learn”. **(2)** “Training programmes that lack the intended subject-specific focus have been less effective in raising teacher’s confidence to use ICT” (page 4). **(3)**“Many teachers have bought their own computers through Government schemes. Computers ownership has helped to boost teachers’ confidence and basic ICT skills significantly”. (Page 4) [8].

Finally, the positive results we had recorded in terms of the positive IT confidence and skills profile of the PGCE group were driven by the enabling environment of organised instruction and independent work and learning, the availability of and ready access to and efficient management of ICT. (both conventional and new) in the teacher training departments of the three institutions, as well as invaluable partnership through school board mentoring and professional practice for student teachers in placement schools.

2.4 Empirical Insight and Lessons from a 2006 study.

In September/October 2006, we carried out a small scale questionnaire survey of 10 countries, several of which belong to the 17 first wave TTISSA *countries: Angola, Burkina Faso, Chad, Democratic Repub-

lic of the Congo (DRC), Niger, Sieria Leone, Nigeria and Tanzania Gambia and Senegal not part of the 17, but we considered it useful to include them in the survey. We submitted the questionnaire to the Education/Cultural Attachs, or Counsellor of the respective diplomatic missions in Abuja Nigeria. Some of our findings corroborate those reported by Member States at the High-level experts meeting on TTISSA held in Paris in October 2005 under “general problems” para 5.2.2. What the 2005 UNESCO report confirmed was that teacher training institutions and teachers need a holistic and urgent attention in almost every respect: Teacher education policy, chronic teacher shortages, poor status and conditions of service, quality assurance training and retraining; outdated curricula, poor physical facilities and infrastructure, scare teaching and learning materials, in addition to << the wide range of difficulties in the daily lives of teachers >>. [9].

In several of the country profiles we surveyed, there was no national agency for ICTs, while in a few, ICT access as a function of the population ranged from 30% - 60%; status of teachers ranged from partly satisfactory to unsatisfactory” at all levels (primary secondary/tertiary). (Chad), ICTs in most cases have not been integrated into basic education and National teacher education., but just emerging in the tertiary education curriculum. All the countries were agreed on the vital role of ICTs in education, national development and international competitiveness of the ICT literate graduate. Teacher education was an integral part of the national education policy, although there was no separate policy on teacher education, except in the case of Nigeria which has established by decree the Teachers Registration Council thus providing dedicated framework to address teacher education and professional practice. All countries faced challenges of integrating ICTs in mainstream and teacher education: due to: erratic power supply; inadequate and very high cost of ICT infrastructure; low access; low ICT and internet access among the population (5% DRC; 5% Chad; 30% Gambia); need for ICT access to be made free in the education system (Gambia); low budgetary appropriation to schools and teacher training institutions all countries dearth of technical manpower (Gambia, Nigeria: D.R.C., Chad); unsatisfactory political will and that of the general public (Burkina faso); ICTs not part of Basic and secondary education curriculum, low teacher status and low morale/motivation of teachers (all countries). Gambia emphasized the need for a shift to alternative source of energy such as SOLAR for cost efficiency and accessibility. Furthermore, there was total agreement that: ICTs were equally relevant and should get equal emphasis both in the humanities and in science and technology; training/capacity building of teachers was paramount but should not be addressed in isolation of teachers’ status enhancement and motivation; and that teachers of English, foreign languages and African languages equally need to be empowered to use ICTs in their classrooms.

Despite the general trend, most countries in the past three years have shown some political will and commitment to the ICT revolution in education. Nigeria, expectedly, has been the leader in the sub region. She has launched, the National Information Technology Development Agency (NITDA); Virtual Institute for Higher Education Pedagogy on-line course for teachers in tertiary institutions; the Petroleum Trust Fund (PTF); signed; a MOU in 2004 with Microsoft targeting the school and especially capacity building of teachers and institutions, which led to the establishment of Microsoft IT Academies, in order to “bridge both the knowledge and digital divide in Nigeria, creating an information and communication technology (ICT) literature workforce and helping students to realise their full potential” within the programme time frame of November 2004 and March 2008 [10]. In 2004, Nigeria established the Digital Bridge Institute (DBI) an International Centre for Telecommunications and Information Studies; hosted the world Digital Africa 2006 Conference on the theme << ICT for education development and empowerment: children and learning for learning>> in September 2006; launched the one-laptop- per-child (OLPC) NBO initiative in collaboration with the Nigeria government which has resulted in the provision of 1,000,000 100-dollar laptop for the e-secondary school project in Nigeria. In this regard, Nigerian software developers are concentrating on integrating local curriculum content into the project, covering << every subject in the school system from JSS 1-JSS 3 and then SSS 1-SSS 3 [11].

In September 2006, the Gambia, a country of about 1.5 million inhabitants, launched the ICT for development media and youth networks in the Gambia in partnership with UNECA (United Nation Economic Community for Africa). According to the Secretary of State for Information, Communication and Tech-

nology << It is envisioned that this initiative will complement the realisation of the goals and objectives of vision 2020, the PRSP and MDGs (...) the main objective of the ICT 4D media Network is to create a conducive enabling environment for involvement of the media in reporting stimulating debates, raising awareness on the potential of ICT[12].

3. Macro Level Plan Strategy For Sub-Sahara Africa

The following components are critical:

- The political will of the seventeen first-wave countries of sub-Saharan Africa must be total, not just political declarations or policy statements.
- Building of strengthening the capacity of teacher training institutions in terms of physical plant and conventional and new ICT infrastructure, recruitment and supply of teaching manpower and IT/EMIS managers.
- Provision of alternative/solar energy driven ICT facilities for equitable access especially in rural contexts.
- Building sustainable partnerships with all stakeholders (especially educational, policy and legislative), multilateral and bilateral agencies, SouthSouth sub- regional cooperation, collaboration with IICBA, UNITWIN CHAIR, BREDA and National Offices and Commissions for UNESCO.
- Strengthen the leadership role of higher education institutions especially universities. Higher education adopting a top-bottom strategy should be the focal point for the establishment of operational networks; training and research and innovative; and creating virtual learning environments; building knowledge/information data bases; and sector analysis (with formal and non-formal education).
- A corps of national coordinators, assistant national coordinators (ICT) to work closely with the UNESCO TTISSA National Coordinator as facilitators of the ICT capacity building of teachers across the school subject curriculum.
- Time frame for action of this proposal will also be 2007-2009 for all 17 countries to promote concrete action to promote teacher training in accordance with the action plan as defined and adopted yearly (UNESCO Report 2005).
- Priority in this regard will be given to << actions with multiplier effects such as training of trainers and school heads, the setting up of documentation centres and teacher support centres ... the national use of the new technologies the development and use of research and cooperation with universities>> (UNESCO Report).

The task, therefore, before all stakeholders is to get the basics right and functional: manpower, infrastructure, condition of service, sustainable partnership and training and retraining, failing which the integration of ICTs becomes an exercise in futility.

3.1 Micro Level Plan Strategy

At the micro level of Faculty or School of Education, Department of teacher education the following programme components should be considered. While education systems in sub-Saharan Africa differ, the programme contents are the relevant factor here.

3.2 Main Programme Levels (with goals and objectives)

- Postgraduate Diploma in Education,
- BA/BSc (Education) 400 Level

- Sub-degree qualification (in-service; short term intensive training, plus certification).
In each case, there would be (i) introduction to ICTs in Education and (ii) ICTs in the various subject curricula. In this paper the subject curriculum focus is on language teacher education and the language learner.

3.2.1 Resource Level would include Human (teaching/training, technical, administrative); Material Equipment; conventional and new technologies support system; Infrastructural /facility: Intranet, Internet access, dedicated websites, power (generated, solar) Financial (capital, recurrent), institutional and extra institutional partnership/budgeting sources; and Research and Development

3.2.2 Process Level

This should target three aspects: attitudinal, cognitive/knowledge, and operational/ manipulative competences. **Attitudinal:** ‘Technophobia’ has been identified as a significant hurdle that teachers in the Arts and Humanities have to overcome to be able to accept the IT revolution and their crucial role. Secondly, the computer should not be seen as a threat to their time worn or tested ways of doing things in the classroom. There is also scepticism about the significant differences that ICTs could make in student learning. The **Cognitive/Knowledge** skills relates to: i.) Understanding the ICT revolution and developments in ICTs, and their potential role in education, and their uses or impact on teaching and learning; (ii) a ‘get by’ or functional understanding of the computer system and a user appreciation of the various components as well as decision-making about adopting ICT in Language Education. (iii) appreciation and critical assessment of the outcomes of various research into ICT teaching and learning, and . (iv) When to use traditional technology with maximum effect. **Competences** comprise the following main skills and subskills. They were collated from the literature and student guides used in teacher training in England. (i)**Operational:** which involves 10tasks ranging from connecting IT devices, loading disk, formatting disk, saving a file, retrieving a file, using a mouse. (ii) **Word –processing:** comprising seven sub skills such as highlighting text, inserting text, formatting character and paragraph, searching text, formatting page margin. (iii) **Database:** comprising seven sub skills: retrieving data, using simple search, display data graphical from database, printout data. (iv) **Spreadsheet:** five sub skills including comprehending data, entering data, manipulating data, entering formula and setting on spreadsheet. (v) **Internet /Multimedia:** This includes at least 14 sub-skills ranging from browsing, writing and send e-mail with attachment; chat/e-conversation to web authoring to website design, accessing dedicated teaching resources to job hunting, taking online courses or tutorials to using Internet as a virtual library (vi) **Further Skills:** include : Using a Video Camcorder; Making audio recordings; Taking still photographs; Using the photocopier; Using the overhead projector; Preparing transparencies for the DHP; Creating power point ‘slides’ Setting up equipment to give a Power Point presentation; etc

Table I shows components of the skills development framework for language teaching and learning. Skills 1-vi should be applicable to a teaching subject, across the curriculum.

Table I: Examples of Functions and Learner related issues

Functions	Learner Skills	Pupil Learning Issues
Call website	Oral practice	Differentiation
CD-ROMs	Writing	Motivation
Word processing	Reading comprehension	Independent learning
School website	Communication	Immediate feedback
Text manipulation	Grammar	Accuracy
e-mail links	Vocabulary acquisition	Revision
Spreadsheets	Cultural awareness	Text level literacy
languages clubs		Language authenticity
Databases		
Internet		
Web pages		
Power Point Presentations		

Source: PGCE Handbook, Cambridge University 2003/4.

4.0 Conclusion

The proposed action plan strategy is not meant to be a broad spectrum solution to the wide and diverse range of needs, peculiarities and challenges of teacher education systems on the sub-region. It is a modest roadmap for most countries because they all share a common need to bridge the digital divide and meet the challenges of globalisation, the knowledge economy and information society.

References

- [1] UNESCO, Using ICTs to Upgrade the Quality and Reach of Education in Asia and the Pacific (2003).
- [2] Ibid.
- [3] V.B.Owhotu, Information and Communication technology in initial teacher education and the secondary school modern foreign languages curriculum 2003-2006. A study report. (Unpublished) . (2003).
- [4] Her Majesty's Stationery Office The Educational System in England and Wales, London (1981).
- [5] Wasył Calkler, The Official Perspective-Modern Languages and IT in the 1990's In J. Higham, and E. Macaro, (eds) Information Technology in Initial Teacher Education. The Modern Languages Perspective York: University of York (1993), pp. 5-34.
- [6] Ibid.
- [7] TTA, The Teacher Training Agency Report and Corporate Plan 2003-2006 (2003).
- [8] OFSTED, ICT in School. The Impact of Government In initiatives. An Interim Report, (April 2001).
- [9] UNESCO High-Level Experts meeting in the UNESCO Teacher Training Initiative for sub-Saharan Africa, 19-21 October, 2005.
- [10] Nigeria Monthly 2, 1. (2005).
- [11] The Vanguard, Thursday September 14, 2006, pp. 25-32.
- [12] Foroya, Friday 2 October, 2006.