

The Role of Information and Communication Technology (ICT) in the Development of Technical and Vocational Education and Training (TVET)

Obadara, Olabanji E. & Adenaike, F. Abisoye

Department of Educational Management, Tai Solarin University of Education, Nigeria.

Abstract

Technical and Vocational Education is a means of empowering individuals to take control of their lives. It is an avenue for preserving and promoting indigenous knowledge and skills, particularly in relation to traditional arts and crafts. Yet, the quality of technical and vocational education and training (TVET) must be relevant to the needs of the labour market. This is because technical and vocational education and training is concerned with the preparation of learners for employment, through the provision of knowledge, skills, and attitudes desirable in the world of work. The challenges of technical and vocational training are to support economic development, create national wealth, and contribute to poverty eradication. In order to achieve this however, the TVET system must be labour- market relevant, equitable, efficient, and of high quality. This paper therefore reveals the challenges of globalization for TVET which call for inclusion of ICT applications use and training in the technical and vocational education and training curriculum.

Introduction

UNESCO (1997) defines Technical and Vocational Education as education and training to "acquire the practical skills, know-how and understanding necessary for employment in a particular occupation, trade or group of occupations or trades. The conceptual definition of TVET cuts across education levels (post-primary, secondary, and even tertiary) and sectors (formal or school-based, non-formal or enterprise-based, and informal or tradition apprenticeship). According to the United Nations Educational Scientific and Cultural Organization (UNESCO) and the International Labour Organization (ILO) recommendations of 2002 on technical and vocational education for the twenty-first Century, which is the revised recommendation concerning

technical and vocational education (2001), the "technical and vocational education" is used as a comprehensive term referring to those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences, and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life. Technical and vocational education is further understood to be:

1. An integral part of general education;
2. A means of preparing for occupational fields for effective participation in the world of work;
3. An aspect of lifelong learning and preparation for responsible citizenship;
4. An instrument for promoting environmentally sound sustainable development; and
5. A method of facilitating poverty alleviation.

There are several forms of TVET such as: formal, informal, continuous, in-service training with various ranges of providers: public, semi-public and private institutions. The system of the vocational education and training therefore needed to change to accommodate the new values and practices of the society. There are several prominent features that typify these changes. First, the transfer into a knowledge-based society should be noted. In the 21st Century, a high information and communication technology industry with a sophisticated service industry will make up the core section of the economy. In other words, the overall society will become more knowledge and information centred. Undoubtedly, knowledge-based industry and a service sector related to information and technology will play an important role in creating job opportunities for the country, while the size of the industry relying on the labour force and monetary investment will decrease.

Secondly, considering the change of the employment structure, the uncertainty of the labour market in the 21st century is expected to increase with the rapid change of the economic and industrial structure. An innumerable number of new jobs in the information, communication and technology area alone will come into being (Lee, 2000). The shift of the labour force will occur with globalization, a rapid change of the industrial structure, and the advent of a knowledge and information based industry.

Objectives of Technical Vocational Education and Training

Given the immense scientific, technological and socio-economic development, either in progress or envisaged, which characterizes the present era, particularly globalization and the revolution in information and communication technology, technical and vocational education should be a vital aspect of the educational process in all countries, and in particular should:

1. Contribute to the achievement of the societal goals of greater democratization and social, cultural and economic development, while at the same time developing the potential of all individuals, both men and women, for active participation in the establishment and implementation of these goals, regardless of religion, race and age;
2. Lead to an understanding of the scientific and technological aspects of contemporary civilization in such a way that people comprehend their environment and are capable of acting upon it while taking a critical view of the social, political and environmental implications of scientific and technological changes; and
3. Empower people to contribute to environmentally sound sustainable development through their occupations and other areas of their lives (UNESCO and ILO, 2002).

The most important role of TVET is enhancing economical and social development. It is, therefore, an essential approach in preparing human resources within the educational economic system. TVET by itself does not create jobs, but it is beneficial when it is associated with the actual need of the labour market. This is the reason its programmes should match current and future labour market needs. A standard TVET is expected to mobilize resources needed to face the present problems and future challenges. It should create a motivating environment that leads to effective interaction between all parties involved in the training process. Due to its concentration on the actual needs of the labour market and focus on the output, it designs flexible programmes that serve the needs of production and service sectors, and designs practices and learning experiences that best serve job requirements.

TVET focuses on training all employees in general, and paying special attention to those workers whose qualifications do not match with their jobs, those who have outdated skills, and junior workers that

are not experienced enough. It equally focuses on changes that occur in the structure, levels, and expectations of the labour force. Also, the impact of political, economical, social, demographical, and technological changes on the production and service sectors, the workforce in general, and training in particular is another focus of TVET.

It joins all efforts to maintain training up to the challenges to achieve higher standards in production and competitiveness. Its training should participate effectively in achieving the national objectives on the economic and social levels, and fully utilize human resource including minorities, disabled, females, and those with special needs. Also, an ideal TVET should participate in increasing the interaction and integration between the role of government, the production femalesc(n)14 Tw0.183 Tc(th0(g) Tj4.) Tj0 Tc(y) Tj0.95a Tj0 Tf 0 1 11.760 435.360 Tmj40 Tc(1)

of the labour market. Besides that, most young people have been reluctant to choose TVET because of poor training programmes, which cannot be furthered to higher qualifications in universities and because of other cultural reasons. Added to these problems is the scarcity of resources, which has made TVET system more difficult (Atchoarena and Delluc, 2002). In Nigeria, there was a dramatic decrease in the number of students of TVET before the year 2000. It wasn't until recently that the students are encouraged to offer technical education and vocational education in our universities, as a result of government quest for technological advancement in the country.

Modern society is characterized by the increasing application of information and communication technologies. ICT education therefore must form a strong component of all levels of skills training. In the globalizing labour market, employees are regularly required to update and upgrade their knowledge and skills, in order to remain abreast with the rapid technological changes in the workplace. Quality, relevance, flexibility, technology-mediated learning, and life-long learning constitute the education and training bench-mark for skilled human resource development in the knowledge driven economies of today. Interestingly, globalization offe Afrie

if

.(

individuals and teams within the organization and to manage the use of that knowledge in the achievement of corporate goals. As economic, social, and technological changes gather steam, people everywhere need to develop their knowledge and skills, on a continuous basis, so that they can live and work meaningfully in the knowledge society. UNESCO and the international community have set the ambitious goal "to ensure that the learning needs of all young people and adult are met through equitable access to appropriate learning and life skills programmes" (World Forum on Education, Darker, 2000).

As new sectors are emerging, many of them are based on the use of ICT products and services, including the internet. All these increases demand for new skills and competencies, including personal skills and ICT competencies. Education and training needs to respond to these new demands; both those related to ICT and those related to changing work organization.

Electronic networking provides opportunities for learners to assist each other more actively, for learners to be more active in the training and education process, and for formal no-conventional teaching methods to be utilized. In order to apply ICT in training, trainers must master these technologies and be systematically trained. Teaching methods need to be updated to accommodate the teaching of new developments in ICT, new types of organization of schools should be devised to take full advantage of ICT; and the individual needs to learn self-learning methods. New training is needed to provide trainers and individuals with these skills. Enterprises may provide ICT facilities or support schemes for workers for the use of ICT at home or in general, and to schools or other training providers, in order to promote the diffusion of ICT skills and access in the society. Appropriate government incentives could facilitate this development (World Bank, 1991).

Quality technical and vocational education and training (TVET) helps develop the individual's knowledge of science and technology in a broad occupational area requiring technical and professional competencies and specific occupational skills. National TVET systems therefore need to develop the knowledge and skills that will help the workforce become more flexible and responsive to the needs of local labour markets, while competing in the global economy. Some countries have introduced TVET reforms that endeavour to integrate workplace-based learning and training into the vocational education curriculum. TVET systems must also be open and inclusive to give even the most underprivileged access to learning and training. ICT

education at all levels of education is therefore important for survival in a globalizing labour market.

For many developing countries, the challenges are much more basic. Societies with huge and growing levels of adult illiteracy and massive debt crises will not be able to design, fund or implement the modern education and training policies, which are prerequisites for development and economic growth. In the age of the knowledge society, 884 million adults in the World according to UNESCO (1997) are illiterate, unable to operate effectively even with the intellectual tools of the "old economy". UNESCO also estimates that, in the least developed countries, while 144 million adults were illiterate in 1985, by 2005, this rose to 188 million. In other words, the number of illiterate adults grew by 30 per cent in the least developed countries. Additionally, structural adjustment programmes have in specific instances operated to reduce public investment in education, thus further weakening the longer term capacity for economic growth and development.

Most of the developing world lack access to the physical infrastructure through which much of the new knowledge could be enjoyed or utilized. The lack of electricity and telephones, the high cost of computers and internet access, all contribute to deprive citizens, enterprises and workers in developing countries from benefiting from the ICT revolution, and create the conditions for a "digital divide" to grow between countries. Developing countries should make greater efforts to invest in ICT and to develop ICT-appropriate methods of teaching rather than simply adding computers to existing teaching methods (World Bank, 2000).

ICT accelerates the management trends and changes in the world of work in general. It has the potential to improve, enormously, people's access to quality education and training, including in the workplace. There is, however, a danger that these technologies may create a "digital divide" and worsen existing inequalities in education and training between urban and rural areas, between rich and poor, between those who possess and those who lack literacy and numeracy skills, and between developed and developing countries. Countries should therefore expand their investment in the infrastructure needed for use of ICT, in education and training hardware and software, and in the training of teachers and trainers. Such investments should be undertaken by both the public and the private sector, and make use of collaborative local, national and international networks (Johanson and Adams, 2004).

Government may also provide incentives for the private sector and individuals to encourage computer literacy and to develop new communication skills. New modes and methods need to be deployed for training and learning when using ICT. Distance-learning methods can be used to make training available at convenient times, at accessible places and at reduced cost. Distance learning should not replace all other learning-teaching methods, but can be a valuable part of the total teaching tools available. Distance learning should, as far as possible, be combined with traditional training methods, in order to avoid a sense of isolation of the learner. The social framework for training needs to be adapted to these new forms of training.

The international community should, as part of creating the conditions for skills formation in the least developed economies, undertake bold and substantial debt relief or, where appropriate, debt cancellation; help mobilize resources for programmes to secure basic literacy and numeracy and the development of communication and information infrastructure; and assist with training in the new information and communication technologies. This is a direct challenge to the ILO and international development agencies. Multinational corporations should be encouraged to agree to fair technology transfer agreements, to develop local high-level skills in developing countries, and to help create the infrastructure for the new knowledge economy.

The contributions to development that multinational companies can make through training as elaborated in the Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy should be recalled. These measures, taken together, contribute to developing the economies and societies of the poorest parts of the world. They provide a ladder through which developing countries can move up the value chain in production, making goods and providing services which add significant economic value, and which receive significant economic return in the global economy (Atchoarena and Delluc, 2002).

Conclusion

The challenge of globalization for TVET in Africa is the tension it has created between developing skills for poverty eradication and skills for global economic competitiveness. Although the primary objective of technical and vocational training in Africa is to help alleviate poverty through the acquisition of employable skills, a strategic approach to skills development on the continent cannot ignore the effects of

globalization. In a globalized world economy, driven by the ease of information exchange, financial flow, and the movement of people, labour, goods and services across national boundaries, each country will have to adopt skills development policies and strategies that give them a competitive edge.

For this reason, the acquisition of "industrial" skills is as important to Africa as the basic vocational and technical skills. In the advanced developing countries like Singapore and Malaysia, the rise to economic prominence was supported by the development of high level technical skills. However, the experience of these countries shows that their industrial lift-off was preceded by high level of literacy and basic skills. The sheer lack of skills of all sorts in Africa and the demands of poverty alleviation mean that African countries must pursue the development of skills at all levels of the spectrum (basic, secondary, tertiary levels), with each country emphasizing the skill levels that correspond best to their stage of economic development and the needs of the local labour market.

The curriculum of technical and vocational education and training should be recognized in accordance with an analysis of potential prospective jobs in the labour market. Also, the conditions of the teaching environment should also be taken into account in order to facilitate the achievement of its objectives, while the role of distribution for technical and vocational education training on the local level, as well as the national level, will result in a more efficient system and provide a driving force to the nation-based on knowledge and information technology.

It is therefore inferred that the use of information and communication technology in the implementation of technical and vocational education and training is highly needed. Cyber School is one of the ways to use information and communication technology. Meanwhile, the so called digital divide as mentioned above emerges as one of the issues these days as technology continues to become more sophisticated. The policy makers and experts should consider how to use technology seriously and profoundly so as to prevent or to minimize its negative effects.

References

- Atchoarena, D. and Andre, Delluc (2002). *Revisiting Technical and Vocational Education in Sub-Saharan Africa*. Paris: IIEP-UNESCO.

- Conference of Ministers of Education of the African Union (2007). Strategy to Revitalize Technical and Vocational Education and Training (TVET) in Africa. Addis Ababa, Ethiopia, 29-31 May 2007. 'Dakar Framework for Action' Adopted by the World Education Forum (Dakar, April 2000) on:
http://www.unesco.org/education/efa/wef_2000/index.shtml.
- HRST Department (June 2006). "Recommendations for Member States on How to Revitalize VTE in Africa".
- Johanson, R.K. and A.V. Adams (2004). *Skills Development in Sub-Saharan Africa*. Washington DC: The World Bank.
- Lee, Y. (2000). *Technical and Vocational Education and Training in Korea*. Seoul: KRIVET.
- UNESCO (1997). *International Standard Classification of Education*. Paris.
- UNESCO and ILO Recommendations (2002). *Technical and Vocational Education and Training for the Twenty-first Century*. Paris.
- World Bank (1991). "Vocational and Technical Education and Training." A World Bank Policy Paper. Washington DC.
- World Bank (2000). "African Development Indicators 2000." Washington DC: The World Bank.