EFFECTIVE COMPUTER-BASED VOCATIONAL TRAINING FOR NATIONAL DEVELOPMENT

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Abstract

In this age and time, the computer has entangled its self so much to human activities and operations, in such a way that it has become an indispensable tool and a crucial asset in every human undertaking. Through the use of application packages for automation and simulation, the computer acts as models for real world phenomenon by providing platforms for prototype labs and workshops. Against this backdrop, this paper discusses, describes and advocates the use of computers, vis-à-vis Information and Communication Technology (ICT) tools in the teaching of vocational skills in the country. This entails immediate use of ICT tools like Video CD-ROMs, DVD-ROMs, projectors, computers, computer networks and the Internet. Evidences abound that computers can be used to teach vocational skills such as plumbing, carpentry, automobile mechanics, welding, etc and this will reduce the amount of time needed to train students in the labs and workshops.

Introduction

It is acknowledged that the use of Information and Communications Technology (ICT) in education has provided the means for improving teaching and learning. Even though the importance of computer has been fully recognized in business, government and formal education, it is yet to be so in vocational training in this country. Vocational job training has been an integral part of national development strategies because of its impact on human resource development, and production of economic growth. The Nigerian National Policy on Education (2004) recognized this fact, and thus placed very high premium on vocational and technical education. The policy's perception was that, the training will equip any candidate who passes through the training with occupational manipulative skills that can make one self-reliant as well as employer of labour.

Dike (2006) opined that 'despite its proven contribution, Nigeria does not seem to give vocational education the attention it deserves; and this appears to be one of the reasons for the rising unemployment and poverty in the society.'

It is not in doubt whether vocational training is relevant in the development of any nation, as their products are always in constant demand both in the rural and urban areas. The society needs competent auto mechanics, truck drivers, carpenters, plumbers, electricians, computer and network technicians, medical technicians, etc for national development and economic growth. Nowadays, the labour market has become more specialized and economies demand higher levels of skills. Thus, vocational jobs now exist in the traditional crafts (plumbing, carpentry, automobiles, etc), and funeral services, cosmetics, entertainment and information technology.

Presently, the federal government is encouraging students and graduates to acquire vocational and entrepreneurial training to help make them employable, self-employed and employers of labor too. This is sequel to the fact that readymade paid jobs are difficult to find. In line with this, Egwu (2010) emphasized the need for Nigerians to embrace Vocational and Technical Education (VTE) to address the skills gap in the economy as well as provide means for young people to be self employed. He further stated that:

a. Vocational Enterprise Institutions (VEIs) and Innovations Enterprise Institutions (IEIs) have been launched in the country in April 4, 2009 to enable people obtain

Vocational and Technical skills Education as an alternative to higher education.
b. The Federal Government endorsed the establishment of VEIs and IEIs under the supervision of National Board for Technical Education (NTBE) to offer trainings in vocational skills and award nationally recognized certificates, known as National Vocational Certificate and National Innovations Diploma.

Consequent upon these, NBTE released a document on minimum standards for VEIs and IEIs. For VEIs, the entry qualification is Basic Education Certificate, while that of IEI is Five (5) credits at Senior Secondary Certificate (NECO, WAEC and NABTEB). The VEI will run three-year modular programme, whereby each year of study could be terminal, and at the same time equip the trainee with practicable working skills. The qualifications obtainable at the end of each modular programme will be known respectively as National Vocational Certificate Part I, II and Final.

The IEI, on the other hand, will run diploma programmes either as full time for two years or part time for 3-4 years. Again the curriculum is expected to run in modules of employable skills. Information released by NBTE in the Internet indicates that as at the end of 2009, only Kano state and Federal Capital Territory (FCT) Abuja, have set up VEIs in the country.

It is important to note that government (at any level), or its agency, the private and non-governmental organizations such as churches and clubs can set up VEIs and IEIs. Before the involvement of Federal Government in VEIs and IEIs, vocational schools abound in the country, mostly on fashion designing, catering and hotel management, but their certificates were not nationally recognized due to lack of standard and regulation. Now that the NBTE has taken over the supervision of VEIs and IEIs, graduates of such institutions can now tender their certificates for further training or employment.

With the introduction of the basic education curricula in the country in 2008, Nigeria now operates a 9-year Basic Education (which comprises Lower Basic education - primary 1-3; Middle Basic Education – primary 4-6; and the Upper Basic Education – JSS 1-3) and a 3-year Secondary Education. In line with this development, Obioma (2007) called for the establishment of post basic education Vocational Enterprise Institutions (VEIs) and post secondary education Innovative Enterprise Institution (IEIs). He pointed out that:

- VEIs vocational courses should include those for requisite skills to operate in the labour market, and strong desire to be engaged in productive technical / technological / business activities.
- Training should cover competencies and skills acquisition required for job opportunities in construction, beauty, hospital, music and travel industries and enterprises, and would provide ground work for career in a wide range of areas.

Okafor (2008) noted that the IEIs should take care of development of creative transformation of knowledge through technological and science processes into wealth and broader economic base. In this regard he called for the establishment of the following institutes:

1. Information and Communication Technology (ICT) Institute
2. The School for Oil and Gas Technology
3. Fashion Institute of Technology
4. The Film Academy
5. The Academy for Creative Arts
6. The Construction and Engineering Institute
7. The Paralegal Institute
8. Institute of Welding and Fabrication
9. Sports Academy

Some Definitions of Vocational Education

- The Oxford Advanced Learners' Dictionary (2006) defined vocational school as a place 'that teaches skills that are necessary for particular jobs.'
- Okeke (2008) defined vocational technical education as 'education which leads to any occupation, career or profession requiring specialized manipulative skills, knowledge and activities.' This encompasses the training of artisans, craftsmen and skilled technicians / technologists.
- Bustamante (2006) also defined vocational training as 'education in preparation for a specific career or trade.' According to him, it takes two years of school or less and does not include training for the professions that require a bachelor's degree or more advanced education.

From these definitions, one can deduce that vocational training prepares students for particular jobs, trades or careers by equipping them with the necessary skills to thrive. The jobs include automobile mechanics, welders, plumbers, construction workers, pipe fitters, computer systems technicians, health technicians, chefs, truck drivers, etc.

Vocational training excludes training for professions that require bachelor's degree and advanced degrees such as legal, medical, engineering and teaching professions. In most cases, the duration of a vocational training is two years or less; even though in a typical trade apprenticeship training it takes four or more years of hands-on-the job training.

Vocational training is usually post-secondary school affair, even though the foundation for it may have been laid in the secondary school. The introduction of Introductory Technology and the recent introduction of Computer Studies in our secondary school system are giant steps aimed at equipping our youths with vocational skills necessary to make them employable or self-employed in order to earn a living. Of course, the student can go for further studies in the university in the chosen or related field to obtain a bachelor's degree.

Concept of Computer-Based Vocational Training

Computer-based vocational training is concerned with the use of computers, vis-à-vis Information and Communication Technology (ICT) tools in the imparting of vocational skills / teaching of vocational subject to students. This can be done in both public and private schools at secondary and post-secondary levels. The current practice nationwide for imparting vocational skills is the sole use of labs and workshops (where available, as these facilities are scarce resources in our schools). Since we are in the era of Information and Communications Technology (ICT), a radical shift towards the immediate use of computers in the teaching of vocational subjects therefore becomes inevitable in the quest for national development and reduced unemployment. Learning with the aid of a computer is much faster than in the traditional classroom setting, and learning retention is also much higher. This fact is applicable to both pure academic and vocational skill-based subjects. Another advantage is that students can learn on their own at their own pace (i.e. it enhances individualized teaching).

As Nigeria aspires to be among the first 20 developed world economies by the year 2020, there is need to reduce unemployment rate and the high level of poorly trained technicians that exist in our societies to the barest minimum. Establishment of vocational training centres (by private, government, and non-governmental agencies) where computers can be used to teach some of these trades will help mitigate these problems.

Ways to Provide Vocational Training

Three possible ways to provide vocational training could be identified. These are:

    a.   The traditional use of labs and workshops in the secondary schools and post-secondary institutions

    b.   The Students' Industrial Work Experience Scheme (SIWES), which is usually done in partnership with industries

    c.   The application of Computer-based vocational training.

Given that (a) and (b) have been in commonplace in this country for decades, the time is ripe for enormous consideration to be given to the third option. Already software packages that teach some vocational skills are available on CD-ROMs, obtainable from computer vendors nationwide. It can also be downloaded from the Internet at no cost or with some cost depending on source and area of specialisation. For example, the British Columbia Institute of Technology, Canada, has in stock some of these software packages for download at their website: http://www.bcit.ca/apprliedresearch/multimedia/downloads.shtml.
Nigeria has many local software producers, who would like to re-engineer in this direction once development in this direction takes off.

Challenges in Providing Computer-Based Vocational Training

There is a very peculiar problem in Nigeria. Anyone residing in this country knows very well that availability of electricity has remained the bane of this country. It has hindered a lot of developments in all the sectors of the economy, particularly in the area of Information and Communications Technology (ICT) development and applications. Most rural and semi-urban communities are not electrified, while those electrified hardly get the supply as and when needed. Electricity is a necessity for the computer to function. It is needed 24 hours per day times 7 days in the week. The use of generators (which often broke down due to protracted use) leads to high cost of services, and can also damage any electronic equipment if it suddenly develops a fault. Therefore the greatest challenge facing the effective implementation of computer-based vocational training in Nigeria is the availability of electricity. Other challenges include:

1.   Availability of equipment. There may not be enough equipment such as computers and projectors for the teaching of all the vocational skills. A practical example of a situation where equipment could be in short supply is in the teaching of troubleshooting skill, which requires that a computer or the machine be assembled and disassembled by each student practically.

2.   Availability of personnel to teach both the simple and the advanced vocational skills as and when needed.

3.   Another major challenge and constraint is the availability of the necessary well-designed instructional multimedia software application package with flexible user-interface to teach the vocational skills from the simplest to the advanced ones.

4.   Financial involvement. Most parents may not afford the cost of putting their children into vocational training schools because of the high level of poverty prevalent in the country.

Problems of Computer-Based Vocational Training

1.   It is possible for a student to miss an activity, and will never have the opportunity of doing it again.

2.   In a large class, some students at the back may not be able to see clearly

the demonstration going on in the class. This shortfall can quite be addressed with the use of a projector anyway.

3. The number of demonstrations may be limited due to time and cost constraints.

Advantages of Computer-Based Vocational Training

1. A major benefit of using computers to teach vocation skills is that learners receive individualized instructions. With individualized instruction that is well designed, students can work at their own pace, proceed when they are ready, control their own learning path, and review as often as they want, experience an infinitely patient tutor, be actively involved in their learning and have immediate feedback, be objectively evaluated, learn without peer competition, learn when there is need and when they want (Fenrich, 2005).

2. Practical benefits students can receive include significant increases in learning and retention while at the same time, taking less time to learn the skills, participating in instructional strategies that are not possible in traditional settings, and an alternative method to learn skills (Fenrich, 2005).

3. Benefits instructors, facilitators and supervisors can gain include having a solution for teaching skills that they are not able to teach effectively through traditional methods as well as saving time through reduced teaching, marking and preparation time (Fenrich, 2005).

4. Saves cost for administrators of institutions in terms of reduced number of instructors, instructors' time (especially if instructors are paid per hours worked), reduced cost of certain equipment needed for practical trainings.

5. Computer-based training is multimedia in nature. This implies that instructions are delivered as a combination of texts, images, sound, animated and motion pictures which are not found in the traditional classroom setting.

Summary and Conclusion

Given the availability of electricity, which is a major constraint in the effective utilization of computers in teaching vocational skills, computer-based vocational training offers a lot of benefits to the student-learner, instructor/facilitator and the administrator. It makes the knowledge of experts available to all, enhances learning of vocational skills through distance, teaches difficult theoretical skills, reduces training costs, and provides a solution to the problem of limited or expensive equipment and materials. Computer simulation has been proven to be an effective tool for learning even complex vocational skills such as flying an aircraft or handling sophisticated military equipment. Thus, if pilots can learn how to fly by computer, then any other skill can equally be learnt through computer.

All these numerous advantages notwithstanding, there is still absolute need for students' hands-on training, so that a student cannot graduate as a carpenter, when in fact he cannot handle a hammer.

Suggestions

There is need for relevant government agencies and regulatory bodies, such as the National Board for Technical Education (NBTE)

to look inwards and fashion out ways to reap from this new technological trend, with a view to re-branding Nigeria towards achieving vision 20:2020, by empowering our youths and young school leavers with skills that will enable them earn their living and contribute their quota towards national development. The regulatory body (NBTE) shall also have the responsibility of enforcing assessment standards defined for the different vocational qualifications to be awarded to guarantee the quality of graduates.

National Board for Technical Education (NBTE) and teachers in vocational training schools should take up the campaign of re-positioning the country in this direction for national development and growth. UNESCO (2004) noted that revitalizing this sector is among the ways of improving the economic opportunities for our youths.

Setting up computer-based vocational training schools in every part of the country to teach a wide range of vocational skills will be a welcome development and a rewarding venture, which can be undertaken by the Nigeria Labour Congress (NLC), National Economic Empowerment and Development Strategy (NEEDS), National Poverty Eradication Programme (NAPEP), Petroleum Trust Fund (PTF), State Economic Empowerment and Development Strategy (SEEDS), like the Anambra State Integrated Development Strategy (ANIDS), and other government relevant agencies including local government authorities.

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