Developing Vocational Education Through Computer Literacy in Nigerian Junior Secondary School Curriculum

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Abstract

This article presents possibilities for integrating computer education programs into various vocational subjects currently taught in Nigerian junior secondary schools. The author critically examines the concepts of vocational education and computer literacy as well as reviews teacher education programs for vocational education in Nigerian junior secondary institutions. An in-depth analysis of the impact of computers in pre-vocational and academic classrooms and suggestions for the development of vocational education that incorporates computer literacy are provided.

Introduction

A developing nation needs efficient services of technicians, engineers, and technologists who have received formal training from vocational-technical institutions. Akanbi (1994) notes that in businesses, most customer service records are stored by computers. Likewise, banking operations are electronic and utilize on-line, real-time access and updating methods. Many vocational and technical enterprises in developed nations like the United States, Britain, Germany, France and others now employ the use of computer packages and software. In order to work in an industrial nation, vocational professionals clearly need to be computer literate.

Unfortunately, in many vocational-technical institutions in Nigeria today, technicians, engineers, and technologists are not trained to use computers for business purposes (Abimbade, 1996; Oni, 2000). In a study investigating the computer attitudes of teacher educators (Jegede & Owalobi, 2005), it was found that vocational-technical education teachers held the least positive attitudes about computers. Lamentably, these teachers are the very ones saddled with the task of training the junior secondary school teachers. The study seems to suggest that vocational education in Nigeria is particularly disadvantaged in that the curriculum still emphasizes manual traditional skills over the use of technology. This has implications for teacher education and the curriculum for junior secondary schools in Nigeria. Therefore, this paper explores the possibilities of revising and improving teacher education programs in Nigeria by creating a computer-integrated vocational education curriculum.
Concept of Vocational Education

Vocational education is regarded as education which provides the recipient with the basic knowledge and practical skills needed for entry into the workforce. Vocational education nurtures skills that are necessary for agricultural, industrial, commercial, and economic development. In effect, vocational education is focused on building a self-reliant society as well as a self-reliant nation. In the United States, the Smith-Hughes Act in 1917 established vocational education as an integral part of the individual’s total education. The act created education programs in agriculture, home economics, trade, and industrial occupations (Lazerson, 1979).

Vocational education, as part of a general education program, essentially constitutes any form of education with the primary purpose of preparing people for useful employment in a recognized occupation (Okoro, 1993; Oranu, 1992). Olaitan (1994) describes vocational education as that type of education which is concerned with the development of skills, knowledge, and attitudes necessary for success in any occupation. Vocational education includes technical education that provides both practical and theoretical instruction (Oni, 2000). Such instruction is usually given to those who need employment in commerce and industry or in any type of enterprise which involves the use of tools and other machinery. Aderemi (1997) explains vocational education as that aspect of the total education process that focuses on individual occupation.

Today, most of the vocational-technical education programs in Nigeria are computer oriented. Courses in content areas such as mathematics, electronics, agriculture, commerce, administration, and medicine include the use of computers. Thus, many vocational practitioners—without experiencing computer training earlier in school—may be left behind in their later professional practices. It is, therefore, important that computer education components be introduced into vocational subjects in junior secondary schools. The Universal Basic Education (UBE) recently made a Junior Secondary Schools Certificate compulsory for the entire growing citizenry. Implementing computer education into the required curriculum at this level can provide a unique opportunity to ensure that individuals are optimally prepared for advancement.

Definition of Computer Literacy

The precise definition of computer literacy varies widely. Generally, being literate (in the realm of books) denotes that an individual can read an arbitrary book in his or her native language(s), looking up new words as they arise. Likewise, an experienced computer professional may consider the ability to self-teach (i.e., to learn arbitrary new programs or tasks as they are encountered) to be central to computer literacy.
Being computer literate often suggests little more than the ability to use several very specific applications (usually Microsoft Word, Microsoft Internet Explorer, and Microsoft Outlook) for certain very well-defined, simple tasks. However, real problems can arise when such a “computer literate” person encounters a new program for the first time. This level of computer literacy is analogous to children claiming that they “can read” because they have basically memorized several short children’s books.

Ideally, a computer literate person has the knowledge and ability to use computers and technology efficiently. The computer literate person demonstrates the ability to use technology to access, manipulate, evaluate, use, and present information; he or she is also comfortable using computer programs and other applications for professional and personal purposes. Shourhanov (1984) defines computer literacy as the art of being able to tell a computer to do what the user wants it to do. It implies knowledge of how a computer operates (e.g., calculates, compares, and copies). Computer literacy can also require a conceptual understanding of system analysis and design, application programming, system programming, and data center operations.

In this article, computer literacy is defined as one’s ability to work effectively with a computer system. This level of computer literacy highlights that Nigerian junior secondary school students need to be trained and equipped with the necessary skills to work with operating systems (e.g., Windows, Mac, Linux) and common applications such as spreadsheets, word processors, and databases. Nigerian students should graduate with the ability to perform computer specific tasks and understand various computer languages and programs.

**Teacher Education Program for Vocational Education in Nigeria Junior Secondary School**

If vocational education in Nigerian junior secondary schools is integrated into content areas, integration practices will need to be taught in teacher education programs. The challenge for teacher education programs is determining what computer training is needed for prospective teachers. Teacher education programs fall into two categories. The first category constitutes current teachers who lack the computer skills to integrate technology into course content. The other category concerns the pre-service teachers presently undergoing training in various colleges of education in Nigeria.

For any of these two categories, the content of computer training should be the same except for the training format and procedure. The current teachers and their professional development should take the form of in-service training over three or more consecutive days. This can be coordinated by various ministries of education in the states supervising the secondary schools. For prospective teachers, computer integration can be taught in the different vocational education subject areas.
Computer training could emphasize hands-on experience and application of computers to classroom situations. In other words, teachers are not to undergo mere “one-shot” computer literacy courses, but computer skills should be integrated into their subject areas. Gan (1989, 1990) enumerated what should be included in the content of computer training for teachers: (a) the administrative use of the computers for classroom management; (b) the integration of Computer Assisted Instruction (CAI) into the school curriculum; (c) the use of utility packages; (d) the selection and evaluation of course ware; and (e) the design and authoring of course ware.

Brownell (1990) reached conclusions similar to Gan (1989, 1990). Computer training content needs to be reviewed periodically because the computer domain itself is dynamic. Furthermore, computer training opportunities in Nigeria should not be restricted to holders of college education certificates teaching in junior secondary schools. Computer training should be extended to all teachers of diverse qualifications, including university graduates and teachers with technical degrees.

Computers in Junior Secondary School Vocational Subjects

The junior secondary school in Nigeria is both pre-vocational and academic. The pre-vocational electives according to Nigerian National Policy on Education (2004) include agriculture, business studies, home economics, local crafts, and computers. Thus, computer education should take the form of vocational specialization (i.e., teaching computer as a discrete subject) and also a permeated approach (i.e., introducing and integrating some components of computer studies into subjects such as local crafts, home economics, business studies, and agriculture). Some other possibilities for implementing computer education in vocational programs emerge. For example, computer programming languages at the secondary school level should ideally include Logo and BASIC, and computer components in agriculture should employ some measure of Geographic Information Systems (GIS). Similarly, Computer-Aided Design (CAD) can be used to teach product design principles such as size and proportion, and Computer-Aided Manufacture (CAM) as well as Computer-Integrated Manufacture (CIM) can be taught in upper secondary classes. Utility software could likewise be integrated into a variety of business studies. Clearly computer education is vital to an array of vocational subjects.

Further Suggestions and Implications

- In order to engage and advance students, teachers will need to feel confident and competent in their computing abilities. Therefore, considerable in-service training will be needed.
• Teachers may also need personal computers to practice their newly acquired skills. Jegede (2006) notes that laptop computers can help teachers practice at home, prepare lessons, and present instruction in class. Additionally, interactive whiteboards may enable classroom computer teaching.

• The curriculum and individual subjects are already overcrowded; thus, a comprehensive review and replacement of outdated concepts are necessary to create space for permeated computer education.

• Teachers often feel tremendous pressure and may be resistant to change. As a result, administrators will want to include teachers at every step, assessing their needs and creating an atmosphere of excitement about the potential benefits of computer use.

• Vocational institutions will want to be prepared to train teachers and may need to seek grants from both federal and state governments to supplement equipment purchase, computer servicing, and teacher training.

Conclusion

This paper explores and proposes the possibilities of integrating computer instruction into various vocational subjects in Nigerian junior secondary schools. Vocational institutions must be prepared to train teachers with modern technology computer components so that they can, in turn, train their students adequately and effectively with appropriate computer devices. The implementation of computer instruction into secondary school programs is a national, educational, and economic issue. National policy can be developed that supports the integration of computer instruction into Nigerian education. Integrating computer education curriculum into various schools obviously holds enormous financial implications for Nigeria. On the other hand, failing to embrace and integrate computer education may have far greater implications for the youth, society, and nation of Nigeria.
References


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