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# Technology Integration in Teaching Music in Nigerian Higher Institutions of Learning



**Kayode Samuel**

Emmanuel Alayande College of Education,  
Oyo, Nigeria  
sonatakay@yahoo.com

## ABSTRACT

### Background

*Information and Communication Technologies (ICTs) are generally becoming prevalent in Nigerian higher institutions. Although studies have shown that utilization of ICTs has great potential of ensuring effective delivery in teaching music as well as serve as valuable complimentary resource materials in musical arts educational endeavours, not much is however known about how Nigerian musical arts educators use ICT especially the music related softwares and the individual-level factors that affect ICT use, a gap in knowledge this study attempted to fill.*

### Materials and Method

*A questionnaire was administered to thirty-eight musical arts educators proportionally selected from ten higher institutions in Nigeria offering music with the aim of finding out levels of information technology adoption and utilization, characteristics of ICT use by lecturers, and factors which influence ICT use.*

### Findings

*The results show that ICT is used by 94.7% of respondents in the survey. Regular use of ICT was independent of gender and academic rank but varied by institutions. Constraints faced by the music educators include lack of adequate organizational facilitation and lack of skill necessary to use ICT effectively. Other hindrances to ICT use are financial and epileptic electric power supply as well as volume of academics' workload. Even though use of computers appears high, the potentials of ICTs for facilitating and enhancing music education in Nigeria are still not being fully explored.*

### Conclusions

*There is need for formulating educational policies and designing appropriate training and mentoring programs, as well as providing infrastructural support, to help musical arts educators explore the potentials of ICTs to facilitate their job functions.*

## INTRODUCTION

Information and communication technologies (ICTs) are currently being used effectively in higher education for information access and delivery in libraries, for research and development, as a communication medium, and for teaching and learning (Jacobsen, 1998). Many higher institutions worldwide, especially universities, offer courses on-line via telecommunications and computer networks. Nigeria also joined the bandwagon of the trend toward distance education via virtual institutes through the introduction of the National Open University (NOUN) and the once available National Universities Commission's Virtual Institute for Higher Education Pedagogy (VIHEP).

One of the reasons probably responsible for the increased demand for ICT-based courses in many developing country institutions of learning, including Nigeria, is globalization, which is making the entire world shrink into a village. Indeed, Dolfisma (2005) submitted that globalization affects the music industry more than many other industries, and it is primarily induced by developments in Information Technology. With national boundaries playing a lesser role in the information age, graduates are increasingly expected to compete for jobs in a global marketplace and higher institutions. It therefore goes without saying that to become and remain relevant in this information age, Nigerian educational institutions need to take advantage of the opportunities offered by information and communication technologies (ICTs) to enhance teaching, learning and research. Samuel, Okunade, and Abegunde (2006) posit that any country that fails to join the globalization train risks falling behind the rest of the world in terms of both income and human development. While arguing that it is rather too late to cry foul against this neo-colonization banditry under the cloak of globalization pitched against developing countries such as Nigeria, it is their view that the way forward is for the government and people of these

underprivileged countries to identify practical ways to take advantages of opportunities provided by the growing openness in the world economy, while making serious efforts at seeking ways of minimizing the risks involved.

ICTs possess great potentials to enable teachers and students alike have access to the best resources available in any field regardless of distance (Gell & Cochrane, 1996; Poehlein, 1996). They are responsible for the changing roles in academia today. For instance, Jacobsen (1998) observes that with information technology also comes latent power to transform lecturers' present role from being the traditional "sage on the stage" to become a "guide on the side" and that students' roles could also be changed from being passive receivers of content to being more active participants and partners in the learning process.

Although ICTs brings with it such enormous benefits, it could be well argued that technology itself is not enough (it is not an end, but a means to an end); as a result, it is its utilization in exploiting information in support of educational goals and mission that really counts. This submission is very much in consonance with that of Beller (1997) who aptly pointed out that the value of any organization's investment in ICTs is realized only when information systems are utilized by their intended users in a manner that contributes to the strategic and operational goals of the organization. In other words, successful use of ICTs depends not only on the technology itself, but also on the levels of skills and expertise of the individuals using this technology (Holt & Crocker, 2000). Strongly linked with acquisition and improvement of individual's skills through proper training is the attitude of a user towards the technology (which ultimately affects his/her willingness to learn about the technology), the decision to use the technology, as well as the actual uses to which the technology is put. In conclusion, suffice is it to note that, within the higher education arena, in order for a new learning tool, be it print, multimedia, or any other, to be adopted, an instructor must be aware of it, willing to use it, and able to use it.

### **GENERAL STATE OF AFFAIRS IN DEVELOPING COUNTRIES**

UNISIST (1999) sees ICTs as crucial to the continued survival of universities and research institutes in developing countries. It provides a sure way for Nigerian scholars and researchers to catch up and bridge the ever-increasing knowledge gap between them and their counterparts in developed nations. Quickened by these realizations, quite a number of international

and local initiatives were made to improve access to and use of ICTs in universities in developing countries. A notable example was in 1991 when the World Bank initiated a project known as the African Virtual University (AVU) which linked 25 sites or learning centres in fifteen (15) African countries with learning institutions in the US, Canada and Europe via voice-conferencing and other Internet technologies. Phombeah (2000) noted that this action was part of an attempt to bridge the digital divide by aiding the digital have-nots and broadening access to education, particularly science and technology.

The Federal Government of Nigeria formulated a National Policy on Computer Education aimed at making Nigeria a computer literate society by the middle of the 1990s. The objectives of the policy included the introduction of computer education in the curriculum at all levels of education from primary through university and other tertiary schools. To this end, it could be suggested that the level of computer awareness in Nigeria, especially among the urban populace, is not only high but also growing rapidly. Judging by the level of ICTs awareness and efforts of many Nigerian higher institutions in acquiring computers and other ICTs (including VSATs) for the use of staff and students, it is however safe to sound a note of caution that awareness of information and communication technologies does not necessarily lead to their immediate application. This is because in acquiring ICTs, higher institutions very often do exhibit a blind faith in technology - a sort of technological determinism that seems to suggest that merely installing a machine will lead to its efficient and rational use. This attitude of technological determinism appears to be true about the process of ICTs acquisition in Nigerian higher institutions.

### **ISSUES OF CONCERN WITH THE NIGERIAN SITUATION**

Despite the upsurge in knowledge for the need in Nigeria's ivory towers for educators to be ICTs compliant, there has been little or no empirical studies carried out to assess the level of compliant, trends and development (by way of appraising the knowledge and actual utilization of ICTs to the teaching of music as a discipline in Nigeria's higher institutions); a gap that this study attempted to fill. There is the need to understand the trends and directions if any meaningful recommendations including appropriate intervention strategies that could bring about improvement in music teaching and learning could be made, thereby enhancing a more fulfilling and rewarding experience in musical arts education especially at higher educational level.

Nigeria's National Commission for Colleges of Education (NCCE) stipulated that computer literacy/education forms part of the requirements for the promotion of academic staffers in all colleges of education in Nigeria. Consequently, any lecturer without the required certificate in computer skill or education aspiring to be promoted to the next rank/cadre was required to enroll at any institution of learning specified or approved by each college for programme leading to the award of either a certificate or a diploma in computer education. The practice in some colleges however is such that as long as the certificate presented by any of the teacher trainers during promotion exercise is from any of the "recognized institutions," such a candidate is deemed to have satisfied the requirement of computer education not minding if such a candidate can operate a computer set or not. This policy has often encouraged sharp practices among some academic staff since they either "swim" or "sink" as it is commonly reported that some college authorities through their Appointment and Promotion Committee (A & PC) had often rejected certificates issued from any other source such as private business centres (even if the contents of studies of such computer centres are more practical oriented in their approach and programme in ensuring acquisition of desired skills through different packages in computer programming and operation), simply because they are not part of the approved institutions.

## OBJECTIVES OF THE PAPER

This paper reports on the levels of information technology adoption and use by musical arts educators in selected higher institutions in Nigeria to music teaching. It examines the characteristics and challenges to ICTs use by the music lecturers. In addition, the paper explores the relationship between training and ICTs utilization as well as the implications for musical arts education at tertiary level.

## MATERIALS AND METHODS

### Sampling

Thirty-eight (38) musical arts educators from eight higher institutions (including two universities, the only polytechnic offering music technology and five colleges of education) in Southwestern Nigeria comprised the sample for this study. A 32-item questionnaire was designed, pre-tested and administered. Efforts were made during the process of questionnaire administration to ensure that all cadres of lecturers, from lowest point of entry such as Graduate Assistant/Assistant Lecturer to the highest such as Professor/Chief Lecturer as applicable to each institution, were sampled.

### Data Collection

Table 1 shows the distribution of usable questionnaires by institution.

**Table 1: Distribution of Usable Questionnaire by Institution**

<i>Institution</i>	<i>Frequency</i>	<i>Percentage</i>	<i>Valid Percentage</i>	<i>Cumulative Percentage</i>
<i>Federal College of Education, Abeokuta</i>	07	18.4	18.4	18.4
<i>Osun State College of Education, Ilesa</i>	05	13.2	13.2	31.6
<i>The Polytechnic, Ibadan</i>	07	18.4	18.4	50.0
<i>Obafemi Awolowo University, Ile-Ife</i>	03	7.9	7.9	57.9
<i>Adeniran Ogunsanya College of Education, Otto-Ijanikin, Lagos</i>	03	7.9	7.9	65.8
<i>Federal College of Education (Special), Oyo</i>	04	10.5	10.5	76.3
<i>University of Ibadan, Ibadan</i>	02	5.3	5.3	81.6
<i>Emmanuel Alayande College of Education, Oyo</i>	07	18.4	18.4	100.0
<b>Total</b>	<b>38</b>	<b>100.0</b>	<b>100.0</b>	

Data from the questionnaire were analysed using the Statistical Software for the Social Sciences (SPSS) Version 14.

## RESULTS

### Demographic Profile of Respondents

Thirty respondents (78.9%) and 8 respondents (21.1%) were males and females respectively. Length of time for which respondents had been teaching in the various institutions (cognate experience) ranged from less than one year to above 20 years, with a mean of 9 years. In addition, respondents held various academic ranks within their institutions. Two of the respondents (5.3%) were on the one year youth corp service programme, a total of 12 (31.6%) were Graduate Assistant/Assistant Lecturer; nine (23.7%) were Lecturer II; five (13.2%) Lecturer I, while 7, representing 18.4% stated they were Senior Lecturer, a total of 3 respondents (7.9%) were Principal Lecturer & Chief Lecturer/Reader. No Professor took part in the study.

### Use of ICT

36 respondents (94.7%) reported that they used computers. Some who reported that they did not operate computers on their own also reported that they used it only when needed. Further probing revealed that such people employed persons to perform computer-related tasks on their behalf, usually for a fee.

Respondents had been using computers for periods ranging from less than a year to over 30 years, with a mean of 5.5 years and a median of 4.0 years. Length of time for which respondents had used computers differed significantly by level of institutions ( $F = 7.665$ ,  $df = 6$ ,  $p < 0.001$ ). Respondents from Universities had been using computers longer than respondents from the other two kinds of institutions, while respondents from the Colleges of Education had been using computers for the least time.

The number of tasks for which respondents used computers ranged from one to over ten with a mean of 17.23. The most common use of computers was for word processing in which half of the respondents (19) reported that they used it at least within two days. This is followed by Web browsing, including the Internet search (47.4%) and Email (44.7%). The least used applications were presentation programmes such as Power Point (5.3%), spreadsheet applications such as Excel, lotus, SPSS (10.5) and library CD-ROMs (13.2%). The use of music software applications such as Finale, Sibelius and Noteworthy was also very low, as it was reportedly used only by five respondents (13.2%) as shown in Table 2 below:

**Table 2: Frequency of Use of ICTs**

Type of application <sup>o</sup>	Daily	Once in 2-3 days	Once a week	Once a month	Never	Occasionally	Total
Word processor (Microsoft Word, Word Perfect, etc)	13	6	3	1	9	6	38
	13.2	15.8	7.9	2.6	23.7	15.8	100.0
Spreadsheet program (MS Excel, Lotus 123, etc)	0	1	3	0	28	6	
	0.0	2.6	7.9	0.0	73.7	15.8	100.0
Presentation programs (MS Power Point, etc)	0	1	1	4	23	9	
	0.0	2.6	2.6	10.5	60.5	23.7	100.0
Musical software program (Sibelius, Finale, etc)	2	3	4	5	13	11	
	5.3	7.9	10.5	13.2	34.2	28.9	100.0
Desktop Publishing software (CorelDraw, PageMaker, etc)	2	7	4	1	14	10	
	5.3	18.4	10.5	2.6	36.8	26.3	100.0
Library CD-ROM	4	0	1	1	23	9	
	10.5	0.0	2.6	2.6	60.5	23.7	100.0
E-mail	8	9	9	2	1	9	
	21.1	23.7	23.7	5.3	2.6	23.7	100.0
Internet Search (WWW)	6	12	6	2	3	9	
	15.8	31.6	15.8	5.3	7.9	23.7	100.0
Other programming, e.g. games)	0	7	3	1	14	13	
	0.0	18.4	7.9	2.6	36.8	34.2	100.0

The mean score for ICTs use was 17.2/50 for the whole group, with the highest score being 43/50 and lowest being 1/50. The standard deviation was 10.9. The study investigated ICTs use based on gender, age groups and institutions. Findings revealed that, although males on the average had higher mean scores than women (17.60 and 15.87 respectively), this difference was however not statistically significant (Mann-Whitney  $U=40322.00$ ,  $p=.695$ ). The highest mean scores clustered around age group of 36 – 50 years. This may not be unconnected with the fact that members of these group are mid-career people who naturally would require computer for various works including research and publications more than any other group in order to beat the “publish or perish” syndrome widely known among the academia.

With the exception of the FCE, Abeokuta, the universities, generally had higher mean scores than colleges of education, while. In terms of use of computers for work, those with the Higher

National Diploma (HND) seem to lag behind with a mean score of 4.4 when compared with those with the university degrees.

### ACCESS TO ICTS

When asked where they used computers, respondents reported a variety of places. For instance, 71.1% used computers at home, as much as 94.7% use it at cyber cafés/commercial centres. A couple of respondents also used computers in a friend/colleague’s home or office. This data was used to create an index of computer access as follows: weights of 1 each was attached to access from home, office and cyber café while a weight of 0.5 each was attached to access from a friend/colleague’s home or office. An index of the level of access to IT for each respondent was computed by adding up the weights for each reported access point. The mean index of access was 1.7 with a median of 2.0 and a mode of 1.0.

**Table 3: Where do you use computers?**

	Total
Computer use in office	46.90%
Computer use at home	50.10%
Computer use in cyber café/commercial computer centre	56.10%
Computer use in friend/colleague's house	18.40%
Computer use in friend/colleague's office	29.70%
Do not use computers	7.20

### Ownership of computers

Twenty-five respondents (65.8%) reported that they owned computers, while 13 respondents (34.2%) stated they did not own a computer. Ownership of computers was not independent of frequency of ICT use (Pearson Chi-square=13.307,  $p=.000$ ). Computer owners used ICTs more regularly than expected, and those who did not own computers used ICT less often than expected. This suggests that policies and programmes that enable musical arts educators

to personally own computers are likely to promote regular use of computers.

### Training and utilization

Respondents had learnt to use computers through a variety of methods. The most common method reported was those who attended computer training centres/schools (47.4%), followed by self-taught (23.7%) using books or software. This is further illustrated in Table 4 below:



**Table 4: How did you learn to use computers?**

Method	Frequency	Percent
Self taught using books/software	9	23.7
Taught by colleagues/friends	7	18.4
Attended computer school/training centre	18	47.4
Department/faculty organized training workshop	3	7.9
Never formally learnt to use computers	1	2.6
Total	38	100.0

A positive correlation was obtained between the number of ICT-related training courses and the frequency of ICT use by respondents (Spearman's  $\rho=0.173$ ,  $p=0.002$ ). In addition, computer owners had on the average, attended a significantly higher number of training courses than non-owners ( $t = 2.131$ ,  $p = 0.034$ ).

### Organizational facilitation

In order to find out the level of organizational support for ICTs use by music lecturers, respondents were asked to report on the types and numbers of technical musical equipment available in their departments. They were also asked to estimate the number of functional technical gadgets including computers available in their departments. Most of them reported that their department had either only one computer set or none at all. Most respondents reported that most of the equipments were functional.

### Hindrances to ICTs use

Respondents were also asked to indicate the extent to which a range of factors inhibited their use of ICTs. The most significant inhibitor according to the respondents was infrastructure, followed by lack of commitment by the various institutions in providing ICTs equipment especially computers. High cost of acquiring computer systems was also mentioned as another prominent inhibitor, but lack of funds to purchase new musical software as well as possible high cost of maintaining computers were not considered hindrances.

High volume of respondents' workload as academic staff was a major factor according to the respondents, while the possibility of having to share access to computer with others (staff/students) ranked least as factors causing hindrances to ICTs use. Although some of the respondents had had certain previous unpleasant or frustrating experience with computer use including loss of valuable data in the past, they however did not consider these strong enough factors as to inhibit their utilization according to their responses.

## DISCUSSION AND IMPLICATIONS FOR MUSICAL ARTS EDUCATION IN NIGERIA

Projected gains from the use of ICTs in musical arts education can only be achieved when the technology is used, and in a manner that supports each user's mission. From the study, 36 musical arts educators (94.7%) in this survey use computers. The figure might appear quite high and point to the fact that, whatever limitations they might be facing in the way of access to and use of computers as well as other ICTs, they are finding ways to overcome such limitations. The need to "publish or perish" in the academic system has meant that many lecturers have had to learn, at the very least, basic word processing skills. Confirmation of this fact could be seen in that word processing was the most frequently used computer application (50.0%).

Many of the institutions are also applying pressure on all lecturers to learn to use ICTs in their job functions. This is further attested to by the fact that most of the institutions were either in the process of installing VSATs for Internet access and use by their academic communities, or had already done so and academic staffers are expected to use these facilities.

The findings of this study bring a number of issues to light. Many respondents had access to computers, however the levels of departmental or institutional organized trainings appear quite low. This implies that respondents most often had to pay commercial vendors to receive training on the use of computers (as evidenced by the fact that almost 50% had attended a computer school or training centre). The drawback of this is two-fold. First the music educator has to bear the cost of training, which s/he might not be willing to do unless the gains from doing so are quite outstanding. Secondly, such training programmes may not include or may omit content relevant to academic work especially music software programmes. So we have a musical arts educator who can use computers or the Internet but not in a

manner that contributes to effectively his or her job functions as an academic.

Quite a number of musical arts educators in this study had been taught to use computers by friends or colleagues. This is a good development as it is common knowledge that many academics learn to use ICTs by benchmarking their skills and abilities against those of their peers. However, there is still need to ensure that those who teach others to use ICTs also know how to use ICTs effectively. It also points to the need for establishing active mentoring programmes in the various music departments.

The number of those who reported that they had learnt to use computers using books and software (by trial and error) is substantial. This appears to be an interesting finding as computer users generally learn from peers and colleagues – the use of books and software by this population may be because they are academic staff and have over the years tended to acquire knowledge from printed or formal sources. In any case, this is an area that needs further investigation. In general, the findings on training indicate a need for musical arts educators to take a more pro-active approach to the issue of ICTs integration. It is not enough to have access or equipment; they need to learn how to use ICTs effectively in their job functions.

Another implication of this study is that there are many areas in which the potentials of ICTs are yet to be tapped. Higher institution administrators, therefore, need to identify skill lapses in effective ICTs use by academics including music educators, with a view to setting up training programmes (including peer mentoring and students teaching teachers) to correct such skill lapses and equip them with the necessary skills to survive and thrive in this globalized world.

Most of the factors hindering use of ICTs by musical arts educators appear to be infrastructural, which can mainly be addressed by institution administrators. This is in line with other findings about ICTs use in Nigerian universities (Oduwole, 2000; Ogunleye, 1997) However, the music educators themselves need to seek for more pragmatic answers and evolve innovative ways to solve the problem of personal access to computers. A very good and notable example recently occurred at the *Emmanuel Alayande* College of Education, Oyo whereby through a collective response, the academic staff union (COEASU) negotiated the purchase of computer systems with computer vendors, on behalf of its members on a layaway basis. Many academics including music lecturers in this study had

thereafter acquired personal computers through such an arrangement.

Volume of workload was also cited as a major hindrance to use of ICTs by the respondents. It appears that ICTs use is a double-edged sword; on one hand, use of ICTs can help music lecturers carry out their functions more efficiently, but on the other hand, they complain that they do not have time to learn to use the technology effectively. Some writers have suggested that academics need to be rewarded in some way for time spent learning to use ICTs so as to be better motivated to use to technology. This is an area that needs further exploration.

Expectedly, respondents cited lack of regular power supply as a major hindrance to ICT use. This is one major problem confronting the entire nation especially the educational sector, which requires that higher institutions rise up to the occasion to seek pragmatic solutions if the goal of integrating ICTs into higher institutions' teaching, learning and research is to be realised. Previous negative experience does not seem to be a major hindrance to ICTs use by the respondents. This implies that the music lecturers will be quite receptive to appropriately designed and targeted training programs.

## CONCLUSION

A core set of skills that musical arts educators in any modern higher institution need are ICTs skills. It is commonly argued that technology is all about people. In which case, technology integration in any educational institution should be about equipping people with the skills and knowledge to continually adapt to changes in their work environment and carry out their job functions effectively. In fact, human skills are the most important issue in implementing information and communication technology, far outpacing the need for new equipment or information technology support staff (NEA Higher Education Update, 2002).

Technology integration in Nigerian higher institutions of learning should therefore facilitate the potential of their academics to use ICTs effectively and by active participants in the knowledge age. In planning for technology integration, they should therefore plan for training and providing academics with the resources and infrastructure to help them develop the skills and knowledge that will allow them to keep pace with their counterparts in other parts of the world as well as meet the expectations of the students and their parents.

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