

# INTEGRATING COMPUTER LITERACY-BASED INSTRUCTION INTO THE TEACHING AND LEARNING OF MUSIC IN ANAMBRA STATE SECONDARY SCHOOLS

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## **Abstract**

Computers are fast becoming an important part of educational setting. This has therefore necessitated its integrations into the teaching and learning of music in secondary schools. This paper has x-rayed scholars views about computer literacy, the concept of music and national development. The author highlighted the relevance of computer literacy based instruction in music as: awakening of students' interest, employment opportunities and self directed learning. Equally, justification for integration of computer in music education for national development and Integration methodology were explained. Also, envisaged problems that can effect computer literacy integration in music education were discussed. Recommendations were put forward which were that, the Federal and State governments should supply enough computers to all the secondary schools in Anambra State. Again, teachers who are the implementers of new policy should be highly motivated for the challenges of the information age.

## **Introduction**

Musicians and music educators have been involved with computers since the first computers were developed. In the early days, computers required a great deal of space and musicians and educators needed strong skills in computers and computer programming. Consequently, applications were limited to large computer systems at Universities and corporations. The influence of computers on human being and on the development of civilization will continue to increase exponentially in the years ahead.

All students need to be educated to respond positively and productively to the growing influence. Computer literacy and education, therefore, are essential outcomes of contemporary education supporting this fact, Sotonwa (1998) stated that the twentieth century witnessed the beginning, development and expansion of information technology (IT) in education. The use of books and other print materials in the classroom were augmented by the introduction and use of other kinds of IT, such as over-head transparencies, slide, film strips, audio-tapes, language laboratories, radios, videos, televisions, computers and telecommunications (Collins, 1994).

Much of the research that has traditionally been conducted, has been in the area of music software and testing (Bartle, 1989, Eddins, 1981; Hodges, 1992; Robinson, 1987). As early as 1968, Kun and Allvin (1967) focused on the use of programming techniques for music instruction which used a musical response mode. It is essential that our educational system be modified in such a way that students begin learning about and interacting with computers from the time they first enter school. The use of computers as both objects and instruments of learning should be thoroughly integrated into the music school program. Though the use of computers in the schools had been an important part of the educational process since 1983, music educators have been reluctant to implement them into the music education classroom (Faber, 1988). Many reasons exist for this lack of implementation. One reason may be the lack a systematic implementation model for the music educators. If computer usage in music education classroom is to be successfully implemented, the implementation must be systematic. Music educators often use a "Hit and Miss" strategy to

implement computers into their classrooms, then later find the cost has exceeded their budget, result fall short of expectations, or incompatible equipment was purchased. It seems that a general yet systematic guide for all music educators for implementing computers into music education classroom would be of great assistance. In this paper attempts will be made to discuss the following points as shown below.

### **Concept of Computer Literacy**

Nwosu (2002) defined computer literacy as an awareness of computer as a system. It entails enlightenment on the computer system. Computer literacy is all about acquisition of general knowledge of computer. It includes reading computer pamphlets, textbooks, journals and magazines. Perhaps this description of computer literacy can help lead us to a definition. For the purpose of this write-up, the writer's working definition of computer literacy will be used.

Computer literacy can be divided into two segments: computer awareness and computer programming. (Computer programming is the art of conceiving a problem in terms of the steps to its solution and expressing those steps as instructions for a computer system to follow). Computer system encompasses the areas of computer history, the computer's impact on the society, applications of computers, computer languages, components of a computer system, data representation, files and data processing, and understanding computer's vocabulary. The areas covered under computer awareness can be taught effectively in a classroom without access to computers. Computer programming, on the other hand, must be taught when and where students have access to computers.

### **Concept of Music**

Hornby (200:766) defined music as "the arrangement of sounds in a pleasing sequence or combination to be sung or played on instruments". The language music, however, is not so straight forward as the language of some other disciplines. Besides expressing purely musical thoughts, it is able to suggest definite emotions. With a little help from words or drama, it can even be made to paint picture and it is capable of awakening in the listener, strong emotions.

Music may also involve generative forms in time through the construction of patterns and combinations of natural stimuli, principally sound. Music may be used for artistic or aesthetic, communicative, entertainment, ceremonial or religious purposes and by many composers purely as an academic instrument for study.

The definition of what constitutes music varies according to culture and social context, with varied interpretations of the term being accepted under sub-genres of the art. Within "the arts", music can be classified as a performing art, a fine art, or an auditory art form.

### **National Development**

National development according to Richard (1980:15) is the "ability and willingness of an individual in a society to contribute his best in any form to the collective output of service from those things that enrich him materially and culturally. It includes such things as education, health/medical services, social security as well as developing an appropriate value system that will last among children, youth and adults". Actually, nation's development is seen in the process of continuous positive change in the quality and span of life of a person or persons. From all these expositions therefore, one can regard a developed nation as one in which there is a high percentage of literacy, self-discipline, greater freedom, political stability, buoyant economy, all kinds of material goods and modern social justice.

### **Relevance of Computer Literacy Integration in Music Education**

The need to integrate computer into the teaching and learning of music cannot be over-emphasized. More of our students need to be computer literate in order to contribute to the development of the nation. The major aim of education is to prepare pupils to be effective in their society. Therefore, the relevance of computer-literacy based education into the teaching and learning of music in secondary schools are seen in the following areas.

#### **1. Awakening of Student's Interest in Music**

Music teaching should not shy away from these new ways our society has of making and listening to music. On the contrary, these new resources help students learn how to listen and also learn how music is made, and therefore promote awareness and a more critical attitude towards music. The use of technological resources in music education does not only awaken the student's interest in learning, it also prepares them for integration into the increasingly technological society in which they live.

#### **2. Employment opportunities**

Computer education helps to prepare our students for job after school and even got them more acquainted with tertiary institution curriculum. Student can now create projects which will help in producing their own C.D of original music. Themes that are important can be developed such as using music to make people aware of environmental or human rights issues. No doubt, these ventures can make music learners to be self-reliant.

#### **3. Self Directed learning and learners Learn at their own pace**

The use of technological resources in the classroom foster independent, learning in an informal and entertaining ways. It also leads to experimentation and discovery of knowledge. The final results of music education are more satisfactory and lasting than when more traditional resources are used, partly because the learning is more individualized and autonomous and the students can practice and advance at their own pace.

#### **4. Computer Eases Teachers' Work (Computer Assisted Instruction (CAI))**

The integration of computer into the teaching and learning of music assists the teacher in teaching. The teacher can put his music instruction into diskettes, C.D Rom for tutorial instruction. It helps students to study at their own pace.

The use of technology entails a need for constant training and self-instruction on the part of the teacher and implies professional motivation and challenge. Furthermore, when teachers introduce technology into the classroom, important changes occur in teaching and learning. First of all the teachers loose their status of being the only source of knowledge and take on the role of collaborating with the students and helping them in their process of discovering and acquisition of knowledge.

#### **5. Tools for Teaching**

Computer are today being used in an extremely versatile way to aid the understanding of a wide variety of subjects. The computer can guide a user through the instructions at a Video Display Unit (VDU) in such a way as to facilitate understanding of the subject matter. The computer is used in music classes for students not only to learn music but also to gain a technological education that can apply to other areas of the curriculum. The computer is a

tool to help achieve the aims of music education. The music students learning process is speeded up, sometimes than when the case of a human teacher, the student can re-learn any position of the subject matter as is necessary for total mastery, guiding himself by the type of choice he makes during interaction with the computer.

6. **Motivation and help in Career Choice**

Through computer literacy education, students are shown and made to know the different areas they can direct their potentials. When they browse the internet, they see new innovations, job opportunities, scholarship enjoyed by their counterparts in other parts of the world. Therefore, they are sensitized to develop their own nation. The use of computer in music education can sensitize students to show more interest in the study of music, tackles more difficult tasks and above all makes them to be very productive in this computer dominated era.

7. **Access to Information and Research for Pertinent Literature**

One of the wonders of the 21<sup>st</sup> century is computer technology which has revolutionized the way music educator process, store and retrieve information especially when we are dealing with a large chunk of data. Dike (1998) posited that with computer, information that can take several hours to sort out and retrieve can be accomplished in a split second depending on the capacity of the microprocessor, with the advent of network systems (Internet, E-mail), music students can now browse for information all over the world and this will help in their literature review for research works.

8. **Computer Managed Instruction (CMI)**

The use of computer in music education helps also in administrative work. It helps the music teachers to keep track of music students records, and thereby facilitate teachers works.

9. **Self-Reliance**

Self-reliance calls for absence of over dependence but at the same time it encourages inter-dependence. In this present age of information technology revolution, self-reliance implies technological revolution and productivity. With music/computer education, music graduates will not be waiting for government jobs. They could be self-employed. Onuigbo (2001:100) asserted that, "Nigeria is still far from an educational programme that adequately prepares its citizens for self-reliance for the task of nation building. To this end, music/computer education offers a relevant education by producing self-reliant individuals towards national development.

10. **Using Computer to make Music**

In learning to use these technologies, you are not only empowering yourself to harness the power of the computer, you are also learning skill and techniques which you can impact to your students. In using computer to make music and to learn about music, John Dewey's axiom that the most powerful learning is to "learn by doing" is reinforced here. A student can learn to compose music and score for various settings as well as learn to synthesize and sequence sounds for their own use.

### **Justification for Integration of Computer in Music Education for National Development**

The integration of computer in music education will contribute to National development in the following ways.

#### **1. Functionality in Education**

The Oxford Advanced Learner's Dictionary defines 'functional' as 'practical and useful'; so for education in Music sector to be functional, it must be practical and useful. Ali (2000) posited that functional education will ensure and/or produce effective citizens, provide services and lead to democracy. Nwaokolo (1997) sums up functional education thus:

The education of our dream in the 2010 should be capable of producing Nigerians who can manufacture raw materials, machines and tools needed for our industries, produce enough food for local and international markets, invent new designs, discover drugs capable of curing diseases hitherto incurable and transform the nation from a consuming one to a manufacturing one.

The implication of the above assertion is that the use of computer in Music education will achieve the following to facilitate National Development.

- i. Produce learners that will be self-reliant individually and as a nation, whereby contributing effectively to the economic and social well being of the Nigerian citizenry.
- ii. The quality of instruction when computer is integrated in music education will inculcate the acquisition of competencies needed for self-reliance, and useful living within the society.
- iii. Helps to develop and promote Nigerian languages, arts and culture in the context of world cultural heritage.
- iv. Inspire music students with a desire for self improvement and achievement of excellence for the overall national development as computer will provide the opportunity for them to view the world as a global village.
- v. Music whether tradition or Western, could be likened to the "Prophet" or "Teacher" who directs the nation to the path of Truth and light. Music could also be the "Mount Piece" of the Nation because it does not only educate, entertain and inform but could also be instructional. Therefore, music instructional packages could be developed and uploaded into the computer. People can down-load them and listen to them.

Through music education, the followings are being achieved for National Development.

Music preaches Freedom and need for a democratic society.

Music preaches justice and equity in our society and

Music preaches national unity with an emphasis on the common ties that unit us in our diversity. These could be viewed and copied when computer is integrated in music education.

The integration of computer in music education is of course in line with section 1 page 6 of the National Policy on Education which stated that, the five (5) main national objectives of Nigeria and endorsed as the necessary foundation for the National Policy on Education (NPE 2004:6) are the building of:

1. A free and democratic society
2. A just and egalitarian society
3. A united and self-reliant nation
4. A great and dynamic economy
5. A land of bright and full opportunities for all citizens.

### **Integration Methodology**

According to Iyayi (2006), every effort to avoiding the traditional process of teaching requires a methodology through which the change ideas are realized in practice. Methodology defines the activities that must be undertaken in the integration process. There seem not to be a one-way approach in integrating computer into the teaching of music as this might differ from one level of education to another. However, one basic step which is very important is Agreement by the stake holders of the school. Stakeholders' acceptance and commitment are very vital to the computer integration process into music education. The stake holders here are the Government, school administrators, PTA, Town Unions, Non-governmental Organizations, Old Boys and Girls Association.

Other methodological processes could be viewed from two angles:

1. The initial preparation and
2. The teacher/student classroom activities.

1. **Initial Preparation**

- a. **Training of Skilled manpower in ICT**

The need to train the music educators to be very competent in computer operation should not be over-emphasized. No level of education can be above the teachers. Therefore, training of music educators in ICT will facilitate the integration of computer into music education.

- b. **Building of Computer Laboratory**

There is need for stake-holders to build spacious computer laboratory as a strong base for computer literacy integration into the Music education. The laboratory should be well protected with burglary proof.

- c. **Provision of Adequate Computers**

The provisions of adequate number of computers to cater for the exact number of music learners is a necessary step for effective integration of computer into the teaching and learning of Music. If computers are not enough, we might run the risk of producing half-baked music learners who will not be productive in this computer dominated era. For learners to be effective in computer music class, they should have active and effective hands-on activities.

- d. **Provision of Computer Gadgets**

Computer gadgets like Un-interrupted Power Supply (U.P.S), Printers, diskettes, CD. Roms, flash and automatic stand-by generators for the initial take-up of computer integration process into the teaching of music education should be provided.

- e. **Adjustment of school curriculum**

The school curriculum should be adjusted to accommodate emerging technologies. Computer networking and its numerous components should be included in the school programme. The suggestions of Drucker and Dike in Ebong (2002) added credence here. According to them, 'the school curriculum should reflect the use of computer and other audio equipment.

These include record players, cassette recorders, filmstrips, slides, tapes, and calculators. These would be used as alternative channels of communications in music class.

2. **The Teacher/Student Classroom Activities**

For effective integration of computer into the teaching of music, the following gradual activities as stated below should help students to be acquainted with computer in music classroom .

1. **Computer Assisted instruction (CAI) and Computer Managed Instruction (CMI)**

Integrating computer into music education can be done through using computer to perform two broad functions namely:

Computer Assisted Instruction (CAI) and computer managed instruction, (CMI). CAI is an element of the computer instructional functions. According to the Association of Machinery )ACM) 1967. CAI is a method of instruction in which a learner interacts with a computer to produce learning. For this interaction to be a success, the computer music lessons should be developed using a computer language in the following ways.

a) **Use of Learning Packages**

This involves the building or development of a body of knowledge in music into a package by music experts so that music learners can use it in the classroom. The materials for such programmes must have been prepared and scrutinized by a team of experts before use. The music educators can therefore use such packages for music lessons and as such integrating computer into the teaching of music.

b) **Other manifestation of CAI**

- i. **Drill and Practice:** Any secondary education in music must have had a spell with drill and practice exercise, for instance, in the learning of songs. Memorization of songs rhymes begins after a teacher must have taught lessons on songs. The essence of such drill and practice is to enhance recall. Drill and practice are found useful in training that demand recall of step by-step procedures. The drill and practice is a good way of integrating computer into the teaching of music in that the music teacher arranges for prior instruction, then the computer asks questions while the music learners practice the content already taught and also responds to question.
- ii. **Tutorial:** Here the music educator selects materials to be used in presenting a new information which he can copy into a diskette, flash or CD Rom. The computer presents the information to the students and the students interacts with computers.
- iii. **Simulation:** This could be used to integrate computer into music teaching in a manner that the music educator can present the subject based on realistic models, then the computer maintains the models and its database, while students received results of decisions and also evaluate decisions.
- iv. **Gaming:** In Gaming, the music educator sets competitive drill and practice in a motivational format and monitors the results. The computer acts as a competitor, judge and score keepers. The music students learn facts/strategies/skills and competes with computer. This interaction of teacher/student with computer perfects integration of computer into music education and aroused students' interest to study music education.
- v. **Testing:** The music teacher can use computer to assess the performance of his students on what he has used computer to teach. Taking a test on the computer is very straight forward. The computer asks the questions, the students responds with

his answers and stores the information in terms of percentages or other similar formats for latter inspection by the instructor.

### **Computer Managed Instruction (CMI)**

#### **Record Keeping Tasks**

Music educators can use computer to keep records of information about music learners. This could be done by way of keeping students attendance to classes or to school, grades, instrument and equipment inventories, uniform storage and check-out budgets, library cataloguing and mailing lists. Computers could also be of use in music classes for keeping information about music students' names, ages, towns, hostel and academic progress assessment. Infact, it could serve as a diagnostic equipment, thereby exposing each students strength and weaknesses in music lessons.

### **Problems of Computer Literacy Integration in Music Education**

Several problems beset computer literacy integration in music education at the secondary schools in Nigeria. Some of these problems are discussed below:

1. **Non availability of Facilities and equipment**

Most public schools do not have needed facilities and equipment. Such facilities include computers, computer laboratory, musical equipments, musical laboratory, chairs, tables, uninterrupted power supply (UPS).

2. **Quality of music teacher education programme**

The quality of music teacher education programme especially for computer must be improved upon so that music teachers can integrate technology in their teaching. Collins (1994:18) noted that, "if teacher education programmes... are to meet their responsibility to prepare teachers for the 21<sup>st</sup> Century, then we have a responsibility to help teachers employ technology in support of teaching".

3. **Music Teachers incompetence**

Music teacher's competence, experience and ability are vital to implement computer education in secondary schools. Unfortunately, most music teachers are not computer literate. Akudolu (2000:11) reported that in her study involving 514 secondary school teachers, only 0.58% or 3 teachers are computer literate'. Since the music teachers who should help students learn computer literacy skills are not computer literate themselves, an alternative strategy should therefore be adopted to achieve teacher/student computer literacy. This issue should be viewed seriously by the federal government with the aim of finding a lasting solution to it.

4. **Finance**

Another big question when computers are discussed is funding for these tools. The implication of music/computer programmes in schools need the assistance of the government and other stake holders.

5. **The School Curriculum**

The present pattern of teaching and learning of music at the secondary schools seems not to based in a sound basis scientific and technological programmes as stated by the National policy on Education (NPE, 2004, p. 13): The school music curriculum should be redesigned



in such a way that it will be flexible and resourceful to integrate technology into teaching and learning of music.

**6. Power-supply**

The state of electricity in Nigeria is nothing to write home about. The implication is that no technological education will be effective without steady supply of electricity. It therefore, goes without argument that automatic standing generator will be installed in all the secondary schools otherwise, the music computer education will be rendered ineffective.

**7. Organizing Space/Laboratory**

The computer is a tool to help achieve aims of music education, it is not an end in itself. It is important to organize space and time. The perfect place would be a music room equipped with computers and peripherals in sufficient number for the whole class to work with at the same time-in pairs or groups of not more than four.

**Conclusion**

Nigeria is a developing nation and needs computer technology education for her national development and growth. With the advancement of computer applications, music educators need to be aware of the impact that computers will have on their students and in their classrooms. Computer is an indispensable tool in the execution and planning of education system and also helps to achieve the aims of music education. Music educators cannot close the door on this new technology. They must learn how to successfully use computers in their classrooms to increase student's interest and knowledge of music.

**Recommendations**

To achieve successful integration of computer education into the teaching and learning of music, the following recommendations are put forward.

1. There is need to review and restructure the existing academic programmes and curriculum to meet the current technological challenges in this 21<sup>st</sup> century. This should be done throughout the country.
2. Music teachers should as a matter of urgency have some of computer training, so as to champion the lead of the new direction.
3. The Federal and State Governments should supply at least 100 computers to each secondary school in Nigeria depending on their population. The population of the school will determine whether to increase or reduce the number of computers in question.
4. Automatic stand by generators with security should be installed in all secondary schools in case of power failure.

Most of the recommendations above would not be realized without funding. The secondary school Principals should involve members of PTA, town Unions and non-government organization in the provision of accommodation, music equipments and other Computer Assisted Instruction (CAI) facilities.

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