ENHANCING VOCATIONAL AND TECHNICAL EDUCATION THROUGH MULTIMEDIA AND HYPERMEDIA INSTRUCTIONS

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Abstract
Instructional processes have ever been struggling through a transitional period in order to yield a better result among students especially in vocational and technical education where learning is more or less practically inclined. Multimedia and hypermedia are thus seen as instructional aids which can significantly enhance instructional processes in the field of vocational and technical education. This study examined the multimedia and hypermedia as tools for enhancing vocational and technical education instructions. The paper established that Multimedia and hypermedia seems to be the learner's paradise; it motivates, makes learning flexible, development of creative and critical thinking skills among others. However it usage had been constrained by some factors such as hardware intensity, lack of training, projection needs, integration, memory and storage problems. The paper thus recommends that multimedia and hypermedia applications should not be designed to provide "something for everyone", but it should provide exactly the type of information that is needed to enhance a particular learning situation.

Introduction

Instructional processes have ever been struggling through a transitional period in order to yield a better result among students especially in vocational and technical education where learning is more or less practically inclined. Multimedia and hypermedia are thus seen as instructional aids which can significantly enhance instructional processes in the field of vocational and technical education.

In the present time, survival of education especially vocational and technical education in Nigeria depends not only on good facilities alone but also on effective use of instructional aids and in this case multimedia and hypermedia. Multimedia simply means "multiple media" or "a combination of media." The media can be still pictures, sound, motion video, animation, and/or text items combined in a product whose purpose is to communicate information. Whereas, hypermedia refers to "linked media" that have their roots in a concept developed by Vannevar Reiser (2012) in his landmark article "As We May Think." In 1945. Bush proposed a "memex" machine that would let people quickly access items of information whose meanings were connected but which were stored in different places. The technology at that time was inadequate to produce Xanadu, but the idea was the forerunner of today's hypermedia systems in which information stored in various media are connected (often via the Internet), thus the term hypermedia.

In current technologies such as Internet browsers and authoring systems, most multimedia products also are hypermedia systems. That is, the media elements are linked with buttons to click on or menus from which to select. Clicking on or selecting one item sends the user to other, related items. The current widespread educational uses of multimedia and hypermedia systems augur an even heavier reliance on these products in classrooms of the future. Educators recognize and use these systems when they see the powerful capabilities they offer to enhance vocational and technical education instruction.

Taking cognizance of the foregoing, this paper therefore seeks to examine multimedia and hypermedia as inevitable tools for enhancing vocational and technical education. To this end this paper specifically sought to:

- Examine the concepts of multimedia and hypermedia as they relate to education.
- Determine the impact of multimedia and hypermedia in enhancing instructions in vocational and technical education.

Concept of Vocational and Technical Education

For the purpose of clarity, vocational education is that skill-based programme designed for sub-professional level education and based on a specific vocation. Technical education, on the other hand, facilitates the acquisition of practical and applied skills as well as basic scientific knowledge. The major

difference between the two terms is that, whereas vocational education is designed for a particular vocation, technical education does not target any particular vocation but gives general technical knowledge. Thus, while every vocational education programme is technical in nature, not all technical education programmes are vocational. This subtle relationship accounts for the interchangeable use of both terms in academic literature.

Multimedia

Multimedia has been defined in various ways. First, a technical definition: Multimedia is a combination of static and dynamic media in one interactive computer application. Looking at it from a more psychological point of view, multimedia could also be defined as a combination of information presented to different senses (like seeing, hearing, touching) that can be actively influenced by the user (Kozma, 1994). Despite the differences in the definition of the term "multimedia", most researchers would agree that it has had an enormous impact on various aspects of education.

Multimedia and hypermedia seems to be the learner's paradise: Important facts and complicated structures are understood at a glance. And everything can be remembered easily with the help of sounds, animation, and videos. Visual knowledge maps and new forms of navigating the multimedia knowledge space, allow incidental learning about medieval lyrics, the principles of evolution, and the theory of relativity. Not to mention the cyberspace: You can visit archeological places, museums, opera houses, and the human metabolism without leaving your living room (Jacobson & Archodidou, 2000; Ray, 2004).

Hypermedia

Hypermedia, an extension of the term hypertext, is a nonlinear medium of information which includes graphics, audio, video, plain text and hyperlinks. This contrasts with the broader term multimedia, which may include non-interactive linear presentations as well as hypermedia. It is also related to the field of electronic literature. The term was first used in a 1965 article by Ted Nelson. The World Wide Web is a classic example of hypermedia, whereas a non-interactive cinema presentation is an example of standard multimedia due to the absence of hyperlinks.

The first hypermedia work was, arguably, the Aspen Movie Map. Bill Atkinson's HyperCard popularized hypermedia writing, while a variety of literary hypertext and hypertext works, fiction and nonfiction, demonstrated the promise of links. Most modern hypermedia is delivered via electronic pages from a variety of systems including media players, web browsers, and stand-alone applications (i. e., software that does not require network access).

Hypertext is considered to be very promising to support complex learning processes (Picking, 1994). Picking also observed that users of a hypertext Stack about Jazz music while solving different tasks: To get a brief overview users stick to the paging facilities and the subject index; to perform a goal directed search they rely on key words and indices; only if the users are free to get an impression of the system, they use hypertext links more frequently. Retterer (1991) tested whether the use of hypertext features leads to better understanding. The author compared three conditions'. The first group read a written text, the second group read the same text on a computer screen, the third group studied with a hypertext, which contained ***links*** between those parts of the text where names and cities are mentioned and that parts where they were explained. Retterer (1991) found that learning with hypertext leads to the best results. Michas & Berry (2000) compared lectures, video, and hypertext in a course about public relations. The author found video to be the worst learning condition when tested immediately after having finished the course. She found no differences, however, four weeks later.

Enhancing Vocational and Technical Education Instruction through Multimedia and Hypermedia

Motivation: Given the boring and tedious nature of vocational and technical education, hypermedia and multimedia programmes offer such varied options that most people seem to enjoy using them and thus sustains students' interest in a practical class. Students who usually struggle to complete a project especially a practical project will tackle a hypermedia project enthusiastically. Bajraktarevic, Hall & Fullick, (2003), are among those who believe the most important characteristic of hypermedia is its ability to encourage students to be proactive learners.

Flexibility: Hypermedia and multimedia programmes can draw on such diverse tools that they truly offer

something practical for students who excel in any of what Gardner calls "intelligences". For example, a student who may not be good at written expression but has visual aptitude can document learning with sound or pictures which makes learning real and practical.

Development of creative and critical thinking skills: The tremendous access to hypertext and multimedia tools opens up a multitude of creative avenues for both students and teachers. Marchionini (1988) refers to hypermedia as a fluid environment that constantly requires the learner to make decisions and evaluate progress especially in vocational and technical which is full of creativity and critical thinking. The author asserts that this process forces students to apply higher order thinking skills. Doty & Byers (2001), report that the hypermedia environment encourages students to think in terms of metaphors, to be introspective, and to give free rein to their imaginations.

Improved writing and process skills: Doty & Byers (2001) also find that exposure to hypermedia and multimedia authoring tools helps students by giving them a new and different perspective on how to organize and present information and a new insight into writing. Instead of viewing their writing as one long stream of text, students now see it as chunks of information to be linked.

Hypermedia and multimedia tools also may permit sophisticated evaluations of learning practical issues in vocational and technical education. In the process of using hypermedia, people are said to "leave a track" (Simonson & Thompson, 1994), which may help teachers analyze how students approach learning tasks. Future hypermedia systems might apply pattern-recognition techniques from the field of artificial intelligence to help schools assess student mastery of higher order cognitive skills (Dede, 1994). Gibbs, Graves & Bernas (2000) says multimedia "may have unique capabilities to facilitate learning because of the parallels between multimedia and the natural way people learn" (p. 4), that is, through visual information and imagery.

Challenges/Limitations of Multimedia and Hypermedia in Enhancing Vocational and Technical Education Instruction

Although multimedia/hypermedia systems truly represent the communication method of choice both now and in the future. Education's use of these resources is hampered by several problems:

Hardware intensity: To take full advantage of the benefits of hypermedia technology, students need ample online development time. This presents a problem in most classroom settings due to insufficient numbers of computers. The problem is exacerbated when available computers are not configured for hypermedia authoring. For example, they may lack the capacity to digitize sound or to input video.

Lack of training: Although hypermedia programmes are becoming easier to use, they still require extensive training. Unfortunately, training is not a top priority in most school districts. One survey showed that staff development makes up only about 8% of technology budgets (Siegel, 1995). The toughest challenge instructional personnel face is not learning to use a particular programme, but learning to integrate it within the curriculum. To help alleviate this problem, hypermedia training needs to go beyond just learning how to make an authoring programme work. Training must also give serious consideration to effective curriculum integration. In addition, to ensure quality products, hypermedia training should extend to the areas of media, design, and the arts.

Projection needs: Teachers often want to project students' hypermedia projects onto large screens so that others can see the results. For this, the teacher must hook up an LCD panel or a video projector to the computer. This requires an additional piece of hardware, so every classroom may not have a projection setup. A compromise solution may be to use a converter that can project the computer signal onto a large television/ monitor.

Integration problems: Integration of hypermedia technology into the curriculum presents some major problems. To ensure quality projects, students need sufficient time to focus, build, and reflect. The conventional school schedule, often broken into 50-minute blocks, does not lend itself to serious project development. If hypermedia authoring is to have a major impact on learning, educators will need to look at ways of infusing more flexibility into students' daily schedules. One step in the right direction might be more integration of subject matter into interdisciplinary projects.

Memory and storage problems: A hypermedia project can fill a tremendous amount of storage space on a computer's hard drive; digitized video and sound files are the major culprits. Until the compression techniques promised by DVD improve and become more cost effective, this problem will persist. Another component of this problem is the difficulty of transferring a file from one computer to another, because even very small hypermedia files will exceed the capacity of a single data disk. There are some ways of getting around these problems. Students can store files on external hard drives or zip disks. These add another cost element, but the prices are dropping rapidly.

Conclusion

Studies from this paper show that multimedia and hypermedia has potentials to enhance and facilitate learning and working in vocational and technical education. Most of the recent multimedia and hypermedia systems, however, show small positive effects or none at all due to the aforementioned challenges. The effective use of multimedia and hypermedia should be influenced by many internal and external factors, like motivation, knowledge, mode and contents of media, learning strategies, features of the task.

Recommendations

Based on the finding of this study, the following recommendations were made:

i. Multimedia and hypermedia applications should not be designed to provide "something for everyone", but it should provide exactly the type of information that is needed to enhance a particular learning situation.
ii. Multimedia and hypermedia equipment should be made available by government, institutions and instructors so as to enable learners access them.
iii. Government, non-governmental organizations and institutions of learning should organize workshop so as to sensitize instructors on the significance and effectiveness of multimedia and hypermedia application in instructional process.

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