MAXIMIZING COMPUTER AND INTERACTIVE BOARDUSAGE IN THE EDUCATION OF HEARING IMPAIRED STUDENTS IN VOCATIONAL AND TECHNICAL EDUCATION

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Abstract
In mainstreaming people with special needs, particularly hearing impaired students use sign language as a means of communication, while mere voice is used as a medium of communicating instructions in a normal-teaching physical class lecture. The sole teaching is carried out by mere voice of the lecturers while sign language is adopted to convey the teaching to hearing impaired students. As a result, sights of hearing impaired students become the only receptive organ of communication, while regular students' use both sense of sight and hearing as key organs of receiving instructional contents. This singular inability deprives the hearing impaired students the opportunities to benefit from verbal expressions except for the use of sign language. In schools of Vocation and Technical Education, students are trained in entrepreneurship and learning taken place mostly through demonstration by lecturers while hearing impaired students are indecisive about whom to focus on between the interpreters and the lecturers. Consequently, this study proffers maximization of interactive whiteboard and computer in the education of hearing impaired students in School of Vocational and Technical Education as they are faced with diverted attention.

Keywords: Hearing Impairment, Interactive Whiteboard, Sign Language Interpreter

Introduction

Teaching has gone beyond traditional use of mere voice of teacher in teaching learning process. The use of Technologies in Education has gone a long way in enhancing both lecturers and students' teaching learning processes. Olelewe and Amaka (2011) opined that teacher is termed to be good when using various teaching and learning technologies such as video camera, fax machine, computer, internet and multimedia equipment, interactive smart board which are now widely being used by teachers to enhance teaching and learning process through pedagogy that will assist both the teachers and students to exchange information with adequate knowledge required of a student to properly decode, retrieve, retain and analysis for decision making in a conducive learning environment.

The constant computer technology improvement has made educational technology

become increasingly more imperative most especially in higher institutions of learning in Nigeria. Educational research studies reveal that different ways of incorporating computer technology and the context in which computers are used have different impacts on student learning. One of these different ways of incorporating computer technology is the innovations that technology has made in the forefront in recent years is Tablet computers. There are mobile communication technologies, mobile phones, smart phones and tablets, including the use of Personal Digital Assistant (PDA) (Kenar, 2012).

Hearing Impairment

Hearing impairment is the inability of the individual to freely receive sounds through the ear cavity. Hearing impairment is the inability of the individual to functionally use verbal language in daily life due to a problem in the hearing aid (Timur, 2006) as a result, verbal communication is blocked. As a result of this inhibition, the hearing impaired individuals are not able to fully acquire the speaking and literacy dimension of their mother tongue. When the characteristics of the individuals who need special education services are examined, it is revealed that their requirements and characteristics are quite different (Boulares, 2012). Hearing impaired individuals can face with many important problems in school achievement and social life most especially in where mainstreaming system of education is practiced. Despite all these, hearing impairment should not be viewed as barriers to academic achievement, especially with the rapid advances in educational technology. Although the number of deaf students attending universities and colleges has increased lately, several studies have shown that most hearing impaired students do not complete their higher studies because of several difficulties.

Technologies are used as compensatory tools for disabilities in question, providing greater independence in everyday life and technical support for specialists in the recovery and education of hearing impaired students. The term support technologies means any item or piece of equipment acquired commercially, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities (Robitaille, 2010).

Sign language is used to teach the hearing-impaired students, while voice is used in a normal-teaching physical class lecture. The interpreters are human resources trained in the usage of sign language to convey the teaching to Students with hearing impairments. As a result, where mainstreaming is adopted for the education of students with hearing impairment, regular students

use sense of sight and sense of hearing as key organs of instructional contents reception while students with hearing impairment utilize only the sense of sights. This singular inability would have deprived the hearing impaired students the opportunity to benefit from verbal expressions except for the sign language interpreters. This poses a greater challenge for the hearing impaired students in Vocational and Technical education as they are faced with diverted attention; whether to concentrate on the interpreters or on the practical demonstration of skills by lecturers. Cavender (2007) researched on developing technologies that help managed the academic tasks required by the individuals; by testing a classroom platform for these individuals to access inaccessible interpreters and cautioners, avoid visual spreading and simplify interaction in the classroom; and support sharing and capture of instructional materials (Cavender, 2007).

Interactive Board

A traditional white board is a glossy surface where teacher can write by using special pens, usually called marker and erase what has been written. "Interactive" means that the information paths in this electronic device move in two directions; writing is not done by a traditional ink, nor by a chalk, but through touching where the teacher uses a pen from the instrument panel, and writes on the surface of the device, accompanied with special sensors and then the device sends the data to a special program in the computer that the points that have been touched are transferred into a colour that is displayed by a data display device; data is moving from the interactive board to the computer, and then from the computer into the data display device to be shown again on the board (Sabri, 2008).

An Interactive boards also known as a smart board**,** have brought unimaginable improvement in the education sector and have been regarded as one of the most popular educational technologies in today's world (De Vita, Verschaffel & Elen, 2018). Beeland (2002) confirmed the first use of interactive board in education in the late 1990s. The United Kingdom is one of the leading countries in interactive board use. Between 2003 and 2005, the UK made an intensive effort to increase interactive board use in schools with a budget of £50 million. In a study conducted in 2007, it was stated that all primary schools and 98% of secondary schools in the UK were using interactive boards (Lai, 2010). Other countries have not been indifferent to the interest in interactive boards.

Interactive Boards offer great convenience to teachers during lessons. The teachers can use the board by touching the screen with a pen or a finger. The teachers can use the interactive

board to perform many functions such as: to draw, paint, drag, cut and copy items; to take handwritten notes, convert these into text and highlight them; add annotations, notes, drawings and save them for printing and sharing; show animations and videos to all students in the classroom; capture and save screenshots, to retrieve, review and change these if necessary; to use the contents of websites (Balta& Duran, 2015). Interactive boards are developed with their own software. However, they also serve as a digital center that enables teachers and students to integrate the Internet and other hardware resources into the lessons (Mercer, Hennessy & Warwick, 2010). All these functions of interactive boards are thought to have a significant effect on the quality of education.

Use of interactive boards includes possibilities offered by the regular whiteboard, together with other means that enable interactive teaching and learning (Manny-Ikan, Dagan, Tikochinski, & Zorman, 2011), as well as connecting to students' computers from home (Hadad&Gazit, 2012). Blau (2011) listed three characteristics that transform the interactive board into an efficient pedagogical tool:

A. ***Divergent learning*** - the ability to skip from pages on the screen to the internet in a structured and fluid manner. This ability simulates the associative organization of the student's brain and contributes to the organization and clarity of the lesson as perceived by the student.
B. ***Interactive whiteboards***– it serve as a cognitive tool that expand students' mind and facilitate supported joint thinking. Since some of the mental load is transferred from the students to the board, they are free to engage in higher thinking processes.
C. ***Interactive learning*** - interactive whiteboards enable interactions between study contents and the students themselves, both face-to-face and online.

Benefits of Interactive Boards in Classroom

The followings are main benefits of interactive boards in the classroom:

1. ***It makes review or revision of lessons more easy and convenient:*** One of the greatest benefits of using interactive whiteboards in the classroom is that it allows students to save lessons for later playback and/or review. Interactive board features offers the teacher an opportunity to share screen, text, audio and video files with students in real-time. Students can also record full lessons and share them with friends who weren't able to

attend classes. Recorded lessons also provide a more convenient reference point during revision, which makes grasping important points quite easier. That will result in better understanding, quicker learning and improved performance. Many studies show that students' achievements increase significantly once interactive whiteboards are used for teaching purposes. Teachers who use interactive whiteboards in class report a rise in the quality of teaching. This rise is facilitated by the ability to conduct lessons that combine multimedia, which attract the students' attention. The interactive board has the advantage of adapting the manner in which the study material is conveyed to the students' personal learning style (Becker & Lee, 2009).

2. ***The use of interactive board makes it easier for the teacher to structure lessons*:** Interactive boards allow the teacher to easily formulate and plan for the lesson beforehand. Students with hearing impairment can view and understand how to handle naming tasks quite profoundly as the images are displayed right in front of them. While on the hand, teachers will have an easier time delivering on what they have on their lesson plan. The major contribution of interactive whiteboards is that they afford choices on various topics, contribute to understanding the material, to developing knowledge, organizing information, self-efficacy in carrying out assignments in a friendly environment, increase the efficiency of learning at any location and contribute to it, as well as to the representation of products that generate a sense of success, pleasure, and contribute to a more creative and higher standard learning product (Dori & Kurtz, 2015).
3. **Makes the teaching-learning process more fun:** The days of using dry chalkboards with powdered erasers which was hazardous to teachers' health or whiteboards with inky felt pens are long gone. Nowadays, teachers in learning institutions are using LCD monitors displays together with shared whiteboards to deliver lessons and presentations. With such technology in class, every student will be anxious to try out how the board works. That can spur the students' enthusiasm to get involved in learning process using the interactive whiteboards. Images and presentations are delivered in full HD display accompanied by interactive computer capabilities. Students in such learning environment will find syllabus coverage more fun and most of them won't miss school or skip classes. The use of interactive whiteboard makes lessons and learning fun, increases the interest,

motivation and concentration towards the lesson and also contributes positively to the interaction between teacher and student (Akar & Karakaş, 2020).

4. **Increases and sustain teachers and students' participation:** Instead on making the often boring one-way presentation, a teacher can use interactive whiteboard to engage hearing impaired student in class. Hearing impaired Students will find a lesson engaging if it integrates text, images, videos and/or audio files. Use of videos footages in teaching can also trigger hearing impaired students to think outside the conventional classroom environment. Kristin 2008 affirms that the implementation of interactive board in inclusive classroom could benefit all students and specifically hearing impaired students by increasing their participation due to the interactive nature of the technology or deepen their conceptual understanding by linking visual imagery to information that is difficult to understand when presented solely by text. It is noted that students were more willing to attempt communication with the teacher and peers like being involved in an activity, using their multiple senses. That triggers a creative and fresh perspective to learning, which can lead to hearing impaired students contributing in their ideas in class sessions. In the long run, lessons will be more vivid, more engaging and certainly more productive.
5. **Allows hearing impaired students with various disabilities to learn better**: In mainstreaming each student in a class enjoys learning in different ways. While some are good auditory learners(able to learn better with audio), others who are hearing impaired students can as well learn from visuals; including text, images, audio and video in a presentation allows hearing impaired students and other with learning disabilities, to enjoy the lesson. Another benefit of using interactive board in the classroom is that it helps hearing impaired students to benefit from visual presentation..
6. **It gives room for Convenience and Flexibility in teaching-learning situation:** With the increasing use of video conferencing systems many schools have adopted e-learning options in their curriculum. That means students with hearing impairment can attend classes and learn vocational skills with ease. The software comes with interactive boards that allow teachers to share notes and other learning tools over a video conference.

7. ***Saves on teaching costs:*** **A lot of costs of materials such as dry markers, erasers, chalks and even blackboard painting are incurred each year by both governments and private institutions. The use of interactive boards does not require all these materials. All that's required is an LCD touch screen display and/or a channel through which the same content can be displayed on other computers. Class assignments and student performance lists can simply be displayed on the whiteboard for hearing impaired students to see. That increases convenience of evaluating students and releasing their results. In the long run the school will save more money while improving the learning environment. On the other hand hearing impaired students will spend less on writing materials as they enjoy class presentations.**

Conclusion

The benefits of interactive boards in the classroom are so many that any learning institution most especially mainstream system of education cannot afford to ignore. In the education of hearing impaired students, where senses of sights are the only receptive organs, interactive boards should be effectively maximized to afford the hearing impaired students the opportunities to learn. Apart from bringing convenience and flexibility in education, usage of interactive boards increase hearing impaired students' engagement as they will be able to see the instructional contents, master the spellings of each terms and boost performance in the long run.

Recommendations

Adopting this technology can be great for any school or learning institution because it streamlines areas that were a challenge before. While acquiring the interactive boards and related tools might eat into the school's budget, the advantages will be greater in the long run. These boards will not only stimulate hearing impaired students learning but will also save on learning materials and inspire performance.

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