

ASSISTIVE TECHNOLOGY: A PANACEA FOR LEVEL CHANGE IN EDUCATING HEARING IMPAIRED CHILDREN

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Abstract

Problem of hearing can negatively affect a child in the areas of language /speech socio-emotional and psychological development as well as learning in school. But with the advent of technological appliances, hearing impaired students could now realize their dreams of having information at cheapest rate. However, this paper gave more emphasis on definitional concept of hearing impairment, assistive technology that could be used to change the level of educating hearing impaired students. The paper explained hearing aid and its types, telecommunication devices, cochlear implant alerting device is also discussed in the paper.

Introduction

Ali. (2012) cited Kassim, (2001) states that the impotence of modern technology cannot be over emphasized. In the past people used to travel long distances to reach their destination. With advent of technology things have changed for the better people now travel though different means of transportation. Postal system has really improved through the intervention of the internet, e-mail and computer.

According to Ozoji, (2005) stated that information and communication technology is the use of modern electronics to entre, process, store and communicate information. These ranges of technological applications include the technological aspects-assistive technology adaptive technology, wireless technology etc.

Assistive technology could be described as a modern electronic sources of acquiring linguistic information for all, special needs individual not exclusive no matter the level and the degree of the hearing problem, such devices could be adapted or adopted to access information through computer, telecommunication and others devices that integrate data, education system personnel and problems solving methods and controlling life activities.

Definitional concept of hearing impairment

What is primary for the hard of hearing is to make use of his hearing, he needs to hear in order to learn and the better he hears the more he will learn (Mark, & Thomas, 1978). These people usually have some residual hearing (often amplified by hearing aids). The sense of hearing is integral, and most fundamentals to human activities, it entails the use of language for communication. It is through hearing that the child acquires a linguistic system to transmit and receive information, express thoughts,

feelings and to learn (Kyanta, 2011). Abang, (2005) is of the opinion that, “Hearing is an invaluable asset of man, particularly young children. It is the most important sense for the acquisition of language. Loss of hearing, even when acquired later in childhood or youth does create difficulties in adjustment and the acquisition of knowledge. A hearing loss is a hidden handicap”.

Jampala, (2007) is of the opinion that the educational programme of hearing impaired children is not the same for all cases. The child with a severe hearing loss, the deaf, need specialized techniques and materials. He also added that, hard of hearing are not very different from the normal students except in speech and reading and they are seriously retarded.

He mentioned that, this instruction would consist of

1. Training in the use of hearing aids
2. Auditory training
3. Lip reading and
4. Speech corrections (Jampala 2007).
5. Kirk, (2000) is of the opinion that, technological advances, in the form of digital hearing aids, assistive listening devices and cochlear implant provides even more opportunities for the development of listening and speech skills among the deaf and hard of hearing population. Computers and internet have opened many doors to equal access of information and enhanced direct communication, opportunities among deaf and hard of hearing people.

Assistive technology, Virginia Department for the deaf and hard of hearing defined an assistive technology device as “any item, piece of equipment or product system, whether acquired commercially off the shelf, modified, or customized that is use to increase, maintain, or improve the functional capabilities of a child with disability” (www.vddhh.org) Ross, (1990). Added that the focus of all hearing technology is to enhance the reception and support their personal amplification technological advances, in the form of digital hearing aids, assistive listening devices and cochlear implant provides even more opportunities for the development of listening and speech skills among the deaf and hard of hearing population computers and internet have opened many doors to equal access of information and enhanced direct communication, opportunities among deaf and hard of hearing people (Kirk, 2000). Gowwa (2008). Added that assistive technology could be used to ameliorate and or assist the improvement of the condition of person with post Lingual hearing impairment.

Assistive devices can be grouped into four categories:

Assistive listening devices

Telecommunication devices

Computerized speech –to-text translations

Alerting devices

The term assistive technology as any device that could help to access and provide more hearing options. Assistive listening devices help a child access his/her residual (remaining) hearing (Melanie, & Linda, 2002) Deborah, (2007). Described assistive listening device as any devices that help people with hearing losses by increasing the amplification of sounds in the environment, including their, speech. Three general types of assistive listening devices are available: hearing aids, cochlear, and FM transmission system. According to Virginia Department of Education (2012) added a newly invented device Auditory Brainstem implants.

Hearing aid is the most commonly used assistive device that amplifies sound to enable hearing more easily. These assistive listening devices have improved greatly over the years. (Deborah, 2007 Babudoh (2008) added also helps to amplify sounds signals. Dan, (1989), stated that there are others whose lives have been transformed by the advent of hearing aids, by wearing them consistently many are able to cope in a normal school setting.

Types of hearing aids

Hearing aids vary in shapes, sizes, colours and in their ability to amplify sound. According to Melanie, & Linda (2002). Babudoh, (2008), the following are some types of hearing aids commonly on usage for life activities/ endeavours.

- ✓ Body worn hearing aids
- ✓ Behind the ear hearing aid (BTE)
- ✓ In the ear hearing aid (ITE)
- ✓ Eye glass hearing aid
- ✓ Bone conduction; headband oscillator or bone anchored hearing aid; or completely in the canal (CK); and
- ✓ Vibro tactile;

Another assistive listening device is **Telecommunication Devices**. Assistive telecommunication devices are designed to improve access to and enjoyment of cinema and televisions through sight. They are devices that provide oral information in alternative formats. Many different types of communication devices and systems help people with hearing loss. According to Virginia Department of Education, (2012). Stated that Telecommunication device for deaf /Text Telephone (TDD/TTY): thus device allows students who are deaf or hard of hearing access to telephone use. A TDD/TTY uses text –to-text communication as well as speech –to-text Telephones may also be purchased which use amplified handsets. Other devices as stated by Deborah, (2007). Hughes, (2002).

Visual safely /Alerting Devices

- Open captions
- Automatic speech recognition
- Closed captions

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- Universal newborn hearing Screening
 - Real Time Captioning
 - Telephone Relay Services
 - Voice carry over
 - Personal data assistants

Hughes, (2012). On his part stated other advances in communication technology which has connection to computerized speech –to-text translations these device continue to be made available on sale and include:

- Speech –to-text
- Speech /text to video sign language;
- Speech /text to computer generated voice; and
- Computer generated signing avatars

Cochlear implant as defined by Clark (2003), is a sensory device that is used to establish functional hearing in people with severe to profound hearing loss. Waltzman, (2000). The function of a cochlear implant is not to restore normal hearing per say. But rather to provide the individual with hearing sensitivity within the frequency range considered to be important for speech. These electrical impulses are then transmitted via the auditory nerve to the auditory centres of the brain, where it is perceived as sound (Rubinstein, 2004). Stach, (1998) added that cochlear implants differ from hearing aids because they directly stimulate the auditory nerve and bypass the dysfunctional cochlear, whereas hearing aids only amplify the sound, which then has to travel through the dysfunctional cochlear despite difficulty separating speech and noise from each other. When speech signals are interrupted, researchers showed cochlear implant users displayed improved speech recognition abilities postoperatively (Incerti, & Hill 2004)

Alerting Device: Make people who are deaf aware of an event or important sound in their-environment via a loud noise or the sense of sight or touch. A loud gong, flashing light, or vibration can signal a fire alarm, door bell, alarm clock, or telephone. Some alerting devices include sound –sensitive monitors that let the deaf person know about a baby who is crying or about an out-of-the –ordinary sound. Some such systems are now wireless, allowing great flexibility in placement of these devices and in the number of them that can be activated at any one time Vanderhoff & Lakins, 2003)

Criteria for device selection

There is need for observing other criteria before selection of any device, this is essential to the selection process, and include: Continues assessment of the child (Ross 1970) pure tone data (ling, 1971). Assessing auditory behavior of her child (Luterman, 1969) Stewart & Ritter, (2001). Suggested that children with hearing loss typically use amplification devices for both educational and personal use. Individuals requiring hearing aids are evaluated and fitted by licensed audiologist following examination by an otolaryngologist/ otologist before a device can be recommended, fitted and purchased.

Conclusion

In special education discipline identification process is important to ensure that students with varied special needs conditions are identified correctly and accordingly, however student with mild to moderate hearing losses are frequently overlooked and are often misdiagnosed and thought to have an attention or a learning problem. Some schools offer routine screening at their students for both audio and visual problems. Regardless, teachers should be attentive and should refer “who show signs of special needs” students for an initial assessment. It is important to notice that many student with mild hearing losses go unnoticed and that the educational (and social) result can be tragic with quick action, students whose hearing problem can be at least partially solved by the use of a hearing aid can profit from classroom instruction. (Deborah, 2007)

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