COLLABORATION, HEARING AIDS AND ASSISTIVE DEVICES AS MEANS OF TRANSFORMING THE EDUCATION OF THE HEARING IMPAIRED PERSONS IN NIGERIA'S INCLUSIVE EDUCATIONAL PROGRAMMES.

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Abstract

It is a right and mandatory that all school age children should be included in the UBE Universal Basic Education programme.The implementation remains problematic, especially for the hearing impaired learners, who have language, hearing and communication problems. More so, classrooms teachers in regular schools, cannot adequately meet up with the needs, challenges and demands of the hearing impaired learners with diversified needs ad goals. To overcome these problems in the successful implementation of an inclusive programme for hearing impaired person, there is a need for collaboration by teams of stake-holders including experts, parents, teachers, diagnosticians, special educators, consultants, psychological, otologists, audiologists, and others. There is a need to accept challenges, change our notions about school structures and services, that are meant to host the hearing impaired learners. There should be alternative resources, positive attitudes to teaching and methodology. To overcome some of these problems in the inclusive education for the hearing impaired, in the regular schools system. There is a need for amplification devices like cochlear implants

and hearing aids for the learners, as well as the use of other assistive devices like loop induction, group trainers, FM radio and other multi channel programmes, and aids in the classroom. All these are necessary, for transforming the education of the hearing impaired in Nigeria in the UBE programme implementation.

Introduction

Evidence abounds in literature by scholars that inability to hear either partially or completely affects the education and communication abilities of the hearing impaired. It further affects their overall integration into the society. (Elemukan, 2004; Mba 1991, and Ross 1982). Bakare (1985) attested to the fact that language is the means by which thoughts are developed in man. Mba (1981) summed it that defective hearing creates barrier to development and brings about the disorganization of the individuals. Aloba (1992) commented that language is assumed to be the primary means whereby experience is internalized, crystallized and structured, therefore the lack of it, leads to a restriction in the ability to integrate experience as well as to learn perfectly in the regular classroom for individuals with hearing loss. Meadow (1980) further remarked that language acquisition is the greatest victim of deafness and that it consequently affects communication ability.

Therefore, to overcome these anomalies, hearing aids and other assistive devices are in vogue all over the world, in order to redeem the image of the hearing impaired, coupled with collaborative efforts. The utility of these procedures remains problematic in Nigeria being a third world country without proper awareness and exposure to their applicability in our classrooms. There is inadequate supply of these devices while majority of parents and teachers are not readily aware of the potency in enhancing the communication ability of those with hearing impairment. The fact remains that users of hearing aids even

abandon it due to their ignorance, lack of proper education of its uses, and lack of early adjustment procedures.

This study is out to portray and emphasise the utility of collaboration, hearing aids and assistive devices and technology for individuals with hearing loss, so as to promote the early adjustment that is required for their usage. Since these aids improve the hearing and language competence and skills of individuals with hearing loss, if only they can be incorporated early in the life of the individuals concerned.

Inclusion

In recent time, Universal Basic Education (UBE) or Inclusion is the order of the day in Nigeria, since its proclamation by President Olusegun Obasanjo in December 1999. This implies that all and sundry, children and adults, able and disabled, hearing impaired and normal are to partake compulsorily in the Nation's educational programmes; which can either be via Adult education programme, nomadic education programme or Nursery/Primary schooling, Junior Secondary education and possibly tertiary after secondary school learning, if they do not drop out along the line.

To this end, the hearing impaired are to be included in the programme of UBE inclusiveness. The latent of preparation that is meant to cater for the unique needs of the yearning disabled remains to be desired in the Nigerian school system, since a successful implementation of inclusive programme requires accommodation and accessibility of facilities and environmental provisions. In facts, education is supposed to be both preventive and remedial or compensatory (Heward, 2000). The practicability of the implementation of inclusion for the hearing impaired in the classroom becomes problematic unless there are collaborative efforts of special educators, regular teachers, parents, volunteers, teacher aids and teams of other experts. Nigerian UBE did not make adequate provision for this aspect of implementation of

inclusiveness; hence, the success of it remains doubtful in the face of lack of adequate preparations and equipment to make it successful.

Staub and Peck (1995) see inclusion as the full placement of children with mild, moderate and severe difficulties in regular classrooms. It is a placement for all children, regardless of their disabilities. It does not preclude however the use of withdrawal services or instruction in a self-contained setting in advanced countries when necessary; one is not sure whether Nigerian implementation of the system has this in mind. Although, it focused on the right of students or children with disabilities to be educated in regular schools, it must however, involve differentiation, which is a word that describes various strategies that teachers may use to enable groups of students/children, with diverse learning characteristics, to participate in the mainstream type of programme along with special programming.

According to Quicke (1995), Good and Brophy (1994) and Byrne (1980), the purpose of differentiation in teaching practices and in curriculum design, is to ensure that all children maximize their potential, and to receive a curriculum through which they can experience success. This should be implemented in the Nigerian UBE programme also. It is a fact that it addressed the characteristics and needs of the gifted and talented as well as the needs of students with hearing impairment and other disabilities. This can be called adaptive education as it is used in Australia. It utilizes many different forms of teaching and classrooms organization in order to accommodate the differences among learners, and it caters for students' needs. Nigeria should borrow the implementation scheme of other countries in order to succeed. In essence, Stainback, Stainback and Stenfanich (1996) are of the opinion that if students with special needs are to be accommodated successfully in regular schools, the ways in which instruction is delivered will need to be flexible enough to respond to individual

differences. This flexibility comes in part from the re-thinking of teaching approaches, environmental provisions, the application of different assistive devices and amplification technology for the individual with hearing loss, as well as application of different grouping strategies in classroom situation, and the optimum use of whatever resources and support that may be available (Sebba and Ainscow, 1996).

The Hearing Impaired Persons

The Hearing Impaired persons are made up of the totally deaf and the hard of hearing which implies that they cannot functionally use their hearing, without amplification devices, to benefit from daily communication system (Oyebola and Elemukan, 2004). Therefore they need hearing aids and other assistive devices to compensate for their hearing losses as well as to learn adequately in the classroom conversations and interactions. The majority of hearing impaired students have sufficient residual hearing, so that they can benefit from wearing hearing aids and other assistive devices (Ling 1976, Patterson 1982). The improvement in hearing aid technology over the past 30 years has contributed to the acquisition of spoken language well beyond the levels that are traditionally expected for hearing impaired individuals (Quigley, Power and Kamp, 1977).

Melinich and Levine (1980) identified three major types of hearing impairment via a hearing test to include conductive, sensorineural and mixed or combined. All of them can benefit from the use of hearing aids and assistive devices technology in the classroom situations.

Campbell (1998) classified the hearing impaired, based on ANSI measurement (International Standard organization measurement); hence he listed:

10 to 26db – Within normal limit
27 t0 40db – Mild loss

41 to 55db – Moderate loss
71 to 90 db – Severe loss
91 and above – Profound loss

This classification system determined the need and quality of amplification system that the individual requires in the classroom situations, which hearing aids and assistive devices can easily compensate for, when properly utilized. However, Ysseldyke and Algozzine (1990) hinted that a hearing impairment whether permanent or fluctuating adversely affects a child's educational performance and this may not be included under the definition of deaf which is called hard-of-hearing. Francis & Niparke (2003) concluded that people with mild hearing loss (a lot of residual hearing) can have their hearing threshold raised if given proper amplification (hearing aids). Therefore, without proper implementation of amplification system in the UBE inclusion of the hearing impaired, the success of their educational endeavour remains a mirage. Hence, there is a need to use devices like cochlear implant, behind the ear, body worn aids, caption video, loop induction system, teletext communication devices, teletypewriter, and auditory trainers in the classroom for the hearing impaired learners. Fueller (1970) opined that the louder the auditory stimulus, the more conscious the responses of the hearing impaired, and the more he tries to imitate and benefit from it. Jacobson (1975) explained that listening is an aspect of the use of language in learners. A poor listener will definitely be a poor student in terms of academic performance. There is a need to train the residual hearing of the hearing impaired via better amplification devices; for the fact that Ross (1981) observes that the greatest deprivation of hearing disability is loss of language, specifically the spoken language. Meadow (1980) further maintained that, the greatest effect of deafness is its limitation on language acquisition, which consequently affects communication. Amplification devices enhance the communication ability of the

individuals with hearing loss (Ademokoya, 2003; Vanderheden and Vanderheden, 1992). It advances and increases the independence and functioning of individuals with hearing loss. The benefits of assistive devices is well documented in the literature by Johnson (1997), Clarke & Leslie (1980). However, it is the individual who decides to use or abandon a device or another especially when it is not properly fitted and introduced early in the life of the learners. The effectiveness of hearing aid in terms of its operability, durability, efficiency, simplicity, comfort, reliability and safety performance are documented in literature Breadley & Roaf 1995, (Brook and Health, 1988) . Hearing aids and assistive devices are needed by the deaf and hard-of-hearing learners in the inclusive education scheme. People who are hearing impaired often pay-out-of-pocket for aids and equipment that are needed for their adequate education, socialization and total integration in overseas communities, but the reverse is he case in Nigerian schools. Many have financial difficulty to meet up the purchase of such aids. There is a need for government and voluntary organizations to make it readily available for our learners in Nigerian schools, in order to make universal education programme a success for the hearing impaired in Nigeria.

Collaboration

Collaboration implies that two or more individuals with useful knowledge and classroom experience will work together to devise appropriate strategies for school level and classroom level interaction. They should share experience and expertise together.

Kaufman and O'Neils (1995) remarked, "one area which remains contentious, is the feasibility of providing special services, such as speech therapy, physiotherapy, orientation and mobility training, self-care training and the teaching of alternative methods of communication successfully in the regular schools, which can be reasonably provided in special schools at a lesser cost, but

difficult to address in the regular school without the special skills of the regular teachers". Therefore, it calls for cooperative effort. Givener and Helger (1983) suggest that, inclusion of students with special needs will be facilitated, if only special education teachers and regular classroom teachers increase their level of communication and learn from one another. It ensures the feelings of shared commitment, responsibility, and accountability of outcomes (Davis and Kemp, 1996). It will assist them to diagnose and solve the learning and behaviour problems in the classrooms when they work together. There is a need for networking, community interaction, state interaction and collaborative efforts of special and regular teachers within Nigeria as resource personnel to one another. They need to consult to plan and deliver the needed services, to students with disabilities in regular settings. Sabba and Ainscow (1982) concluded that team decision making was generally consistent, effective and superior to individual decision making in the placement and implementation of curriculum for the exceptional children. It affords a broad and enriching school programme for the learners.

The organization, content and delivery of the educational system in inclusive settings require significant changes for the hearing impaired. It needs restructuring of schools to accommodate a wider range of diversity of learning needs and student characteristics. There is a need for active support and collaboration of parents, teachers, service personnel and paraprofessionals. There is a need for pro-active and not reactive thinking, planning and responding to school problems in a whole – school approach, involving formal and informal arrangements. There is a need for special needs coordinators, visiting schools as special advisers to contact/consult with other experts. This is called collaborative consultant model, and it is the order of the day overseas. He works with classroom teachers, to make meaningful decisions, plan solutions to problems together. There can also be

intervention assistance team, that helps classroom teachers to devise and implement adaptations for students in difficult areas. This is called pre-referral intervention. Cooperative work is better to solve problems that may arise in regular schools, that involve the hearing impaired and other disabled lots. There can be multidisciplinary team combining different disciplines who visit schools on appointed dates and months, to assist teachers on interdisciplinary bases and on interactive meetings, as well as regular education initiatives, where all resources are joined together. Teacher consultants or instructional consultants can also be used occasionally for the success of regular programming in the UBE scheme.

Uses and Types of Hearing Aids and Assistive devices for the Hearing Impaired in Regular School settings.

The types of hearing and amplification devices include the portable desk type, which a single person can use in one place. This can be placed on a desk or table. It is better than wearable aids and draws its power from a wall socket as a radio does. There is also the group hearing and which consists of one or more microphone, an amplifier and as many as ten pairs of over-the-ear or insert receivers. It may connect a turntable for playing recorded speech or sound effects. Inductance loop around a classroom can be used, it enables the individual with hearing aids to pick sound more accurately than wearable aids. Loop system is sometimes used with auditory trainers, where the room is wired in a loop arrangement. The speaker talks with a microphone while each listener adjusts his personal hearing aids into telecoil 'T' positions to benefit from the speaker. This can be used in a large classroom auditorium, churches, theatre or cinema rooms. It enhances signal-to-noise ratio.

Campbell (1993) emphasized that auditory trainers are personal/group amplification systems, used frequently in

classroom settings in order to enhance the signal-to-noise-ratio, for persons with hearing loss. It uses hard-wire system and the child is linked to the teacher. It limits mobility, but improves sound audibility. It sometimes has FM transmission system. It can be used by the profound group and it enhances intelligibility of speech/sound.

Other hearing aids may be worn on the body, such as body-worn aids, spectacle aids, in-the-ear aids, in the canal aids, completely in the canal aids, behind-the-ear aids. All allow the free movement of the hearing impaired within the classroom and outside the classroom. Many students benefit from its use especially if it is custom – fit to the child's needs and degree of impairment. They are called conventional aids. Cochlear implant is another device for those who cannot benefit from conventional wearable aids. It provides better amplification for binaural profound cases of hearing impairment, as well as for sensorineural cases. Pauka 1987 noted that cochlear implant mimics the function of the auditory system and transmits sound information to the auditory nerve. The child only wears the relay outside the body like body-worn aids, but it requires surgical operation and children must be above 2 years to use it.

Assistive Listening Devices (ALDs) consist of microphone transmitters which are positioned close to the speaker's voice, through the air or by cable to a receiver worn by the student. This should be provided in every class; that houses the hearing impaired in regular schools. It assists to provide a clear sound over long distances; it eliminates echoes and reduces the distraction of surroundings noises, while it allows the student to easily attend to the instruction. They can be added to radio, television or handset directly. These transmit sound to the child's headset, in-line amplifier, portable amplifier or a control by cellular phones. There are Tele Type (TTY), Telecommunication device for the deaf (TDD), Text Telephone (TT). The person with

hearing impairment types her part of the conversation into a TTY and the message is read by a relay operator, who also has a TTY. The relay operator reads the message to the other hearing party. As the other party responds orally, the relay operator types what is spoken into the TTY unit, which is read by the person who is hearing impaired. They have small keyboard and visual display, TTY, TT, Text Telephone or Telecommunication device for the deaf (TDD). The person using the equipment only types what they would like to say and the text is shown on display. It uses a coupler/modem to convert electric impulses into acoustic signals, which are then transmitted to a telephone receiver. They must also have video or film information, which can also be used and assessed.

We also have captioning which uses decoder to view the captioning and it can be relayed the television sets or recorded on video cassette for replay on video machines. It is a fact that anyone who has troubled hearing, should be considered for amplification. The fitting of hearing aid is however, a complicated process which requires experts advice and series of tests and diagnosis. With few exceptions however, amplification devices can be used to improve virtually all forms of hearing impairment; hence it should be implemented in our school systems. Essentially, assistive listening devices (ALDS) are situation specific amplification systems designed for use in different listening environments. It commonly uses a microphone that is placed close to the desired sound source, such as the television, theatre stage or other speakers or podium, so that sound is transmitted diretly to the listeners. The transmission methods include infrared, audio loop, FM radio, or direct audio input. These enhance the desired sounds and reduces the competing noises (signal-to-noise-ratio). It further improves understanding and reduces the isolation imposed by the individual disability, to hear a sermon, play or poetry and public address/meetings or discussion. Examples of these further

include amplified telephones, low frequency door bells, amplified rangers, closed captioned television decoder. They are currently in the market for classrooms and everyday uses. Flashing alarm clocks, alarm bed vibrations, and flashing smoke detectors, further provide valuable help for severely hearing impaired individuals.

Hearing aids and other assistive devices are not panacea to hearing loss without adequate monitoring and training, (Oyebola and Elemukan, 2004). Therefore, close monitoring by both parents and teachers are vital to its successful implementation, while constant overhauling of knowledge based information, training methods using these devise. In fact group assistive listening devices can solve the problems of distance, noise and reverberation in the inclusive classrooms. Although they do not replace the children's personal hearing aids, but they augments hearing, especially in group listening situations (Zeliski and Zeliski, 1985). An 'FM' radio frequency can also be employed, which does not require wiring. Essentially. Classrooms amplification systems can be used in both special classes and mainstream settings, where students with hearing impairments are integrated with other counterparts. Levitt (1985) describes the hearing aids as the most widely used technological aid of all . . . . a low cost, acoustic amplification system, that can be programmed to best match the needs of each user. One study found that the academic performance of students with hearing impairments was positively correlated with the length of time they had worked with their hearing aids (Blair, Peterson, and Viehweg, 1985). Ross (1986) even considered residual hearing to be the 'biologic birthright' of every hearing impaired child, one that should be used and depended on, to whatever extent possible; while it is necessary, for teachers and the audiologist as well as parents to cooperate with each other to reach the goal (Heward, 2004). Whatever its shape, power or size, a hearing aid picks up sound, magnifies its energy and delivers that louder sound to the

user's ear and brain. In many cases, children with profound and severe hearing impairment can benefit from hearing aids in the classroom, home and the community, regardless of whether they communicate primarily in oral or manual mode. It allows them to hear at a distance, but the length of time for which individuals use hearing aids matters.

However, it is the wearer of the hearing aid that does the work of interpreting the conversations and not the aid in itself; since no hearing aid can cure deafness, it only enables the child with hearing loss to function normally and properly in a regular classroom. There are dozens of kinds of hearing aids. They are now more powerful and versatile. Recently automatic signal processing devices have been added to hearing aid, in order to improve the signal-to-noise ratio. Many hearing aids are also available with a remote control device, that can be used to adjust the volume or tone quality of the instrument. Disposable aids and digital aids have also become available in recent times.

Moore (1996) attested that binaural hearing aid fitting is better than fitting one ear, since it improves speech discrimination in background noise, and it assists precise localization and natural judgments, as well as it promotes the sense of balancing. The use of a single aid, can use double cord to boost the hearing, on the two ears or to support a better ear. Hearing aids and cochlear implants are adaptive devices that enable individual with hearing impairment to hear at conversational levels of between 45 to 65 decibels (Stone, 1988). They are good for mild, moderate, severe and profound individuals, especially the cochlear implant as well as other vibro-tactile aids. It assists the hearing impaired to understand the segmental features of sound, as in voice and voiceless sound, consonants, tempo, and speech rhythm, as well as word stress. It provides information regarding the sound intensity and improves speech discrimination ability of the user. It further assists better lip reading.

Teachers and care givers should check daily, to see that a child's hearing aids is functioning properly. Thus Ling (1976) five sound test, is a quick way to determine whether a child can hear. Have the child back you in order not to confound the result, and to ensure that the child did not receive any visual cues. Ask the child to repeat the five sounds /a/, /oo/, /e/, /sh/ and /s/, which represent the whole speech energy in every English phoneme. Any child that can detect these five sounds, should be able to detect every English speech sound. Absent of abnormal hearing aid functioning, should be checked immediately, because most hearing aids may breakdown due to problems of battery, lose cord and other causes, like fallen off the ear onto the floor, or accumulated dirts and sweats, blocking the speaker or receiver. The individuals after proper fittings of aids should be exposed to listening skill development, speech therapy, speech reading, language instruction, and training, in order to adjust the individuals to hearing aid usage, both at school, home, churches and other environment therefore, all these call for collaborations.

The participation of the patients after hearing aid fittings, depends on his motivation, parental support and education. Teachers should understand the child's problems and programmes. The family or close friends should be involved in specific segments of the therapy, in order to have much beneficial effects, all these call for inter disciplinary interactions and collaborations. This implies that successful application of this technology, is highly dependent upon a sophisticated multi-disciplinary team approach, in order to address the varied needs of the recipients of hearing aids and other devices alike. There should be lessons and activities that help the individuals to improve listening abilities. Auditory training and learning to listen, as well as learning by listening, rather than learning to hear. It should involve detecting, discriminating and identifying sounds, and the comprehension of meaningful sounds. Other

senses, such as vision, and tactile modalities must also be used to compensate for the hearing loss and the information received by the student with hearing impairment. All senses should be used to complement and supplement hearing and it should be constantly utilized by parents, teachers and significant others. They should hear sounds all the time, when eating breakfast, apart from the classroom situations, when in the supermarket doing shopping; and when riding in the school bus, or at home. It is important to note that residual hearing cannot be effectively developed, if the aid is removed or turned off outside the classroom, hence it calls for joint efforts, all the time to manage it properly. It is a fact that cochlear implants (CI), represent the current treatment for patients affected by profound sensorineural hearing loss (SNHL). Early identification of hearing loss, early hearing aid use and language intervention, as well as cochlear implantation by age of 2years, were the main positive factors, that ensure the development of language skills to that of normal children. (Francis and Niparke, 2003). However, cochlear implant is costly, requires surgical operation by team of experts, which are not readily available in Nigeria. There must also be selection of patient for it, medical assessment, audiological assessment, trials of other conventional devices, before the final surgical implantation. The duration of deafness and residual hearing, further afftect cochlear implantation. Cochlear ossification, cochlear malformation and chronic otitis media, are still some of the reasons why surgeons do not embark on cochlear implantation. However, auditory brainstem implants have changed the approach to the problem of these patients, who may still benefit from hearing rehabilitation, especially with experienced surgeons.

Conclusion

A hearing aid is an amplification instrument that assists the hearing impaired to overcome their classrooms learning and language difficulties. The effect of hearing loss is pervasive and

complex. The earlier the child is fitted with hearing aid, the better and easy for his communication and awareness of sound. Lowell and Pollack (1974) opined that, it should be integrated into the child's personality. A child should wear it throughout the day. In the classroom, problem of distance, room reverberation, and background noise, should be limited with the use of group and individual assistive devices. Ability to process auditory information depend highly on the perception as well as the production of speech therefore hearing aids should be used by individuals with hearing losses, be it behind the ear, in-the-ear, body worn aids or cochlear implant/Assistive devices.

Although profound hearing loss poses a monumental obstacle to the acquisition of effective communication skills, cochlear implants have dramatically changed the treatment and outcome for patient with profound and sensorineural hearing loss. Deaf adults and children can be successfully re-integrated into the hearing world through an approach that involves otolaryngologists, audiologists, speech language pathologists, parents, classroom teachers and host of professionals which actually requires collaboration. Copeland and Pullsbury (2004), observed that, cochlear implantation is a valuable procedure with important implications for speech perception and verbal language in children with severe to profound hearing impairment. Auditory rehabilitation, language intervention and close coordination between parents, schools and the implant centre are necessary for maximum effectiveness (Francis and NiParke, 2003).

All the foregoing are pointers to the needs for collaboration in the successful inclusion of the hearing impaired in the UBE programme. To further transform their education, hearing aids, cochlear implants should be incorporated for the individual child, while assistive devices should be utilized in the classrooms and other environs hosting the hearing impaired learners. Teachers should be ready to accept challenges, review school structures. In service training is needed to enliven and educate the teachers, via seminars and workshops. Teachers must use modeling, peer

tutoring, thematic studies, explicit teaching, video teaching, group work tutoring, alternative resources, as well as having positive attitude towards inclusive notion/UBE programme. Multi-disciplinary team should work with the regular teacher, using pullout, resource room services, consultation and collaboration for a successful implementation of the UBE programme for the Hearing Impaired learners in Nigerian schools with hearing amplification devices.

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