BENEFITS OF TECHNOLOGICAL EQUIPMENT TO DEAF LEARNERS: A CASE STUDY IN MASVINGO PROVINCE, ZIMBABWE

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ABSTRACT

The problem of irrelevant equipment for learners who are deaf was created by the traditional trend of issuing hearing aids to all learners with hearing impairment in the education system without considering the degree level of hearing loss. The study explored the extent to which deaf learners access technological equipment that promotes Sign language acquisition while in regular primary schools. A case of Masvingo was used to assess equal opportunities to deaf learners in accessing visual equipment since the official launch of Sign language in Zimbabwean Constitution 2013. Learners with profound hearing loss had been forced to articulate speech yet they are beneficial of non-verbal language. The qualitative interpretive methodology was employed. Open-ended questionnaire, semi-structured interviews, focus group discussions and document analysis techniques were employed to complete data triangulation for qualitative research. Purposive sampling was employed to choose information-rich cases from four regular primary schools with established resource units in Masvingo province. Constant comparative approach was used to analyse data into categories and themes. The study unveiled that the equipment in most schools could not accommodate learners who are deaf since they were audio equipment. The major challenges were lack of knowhow and misconceptions about the equipment for learners who are deaf by stakeholders. Also, financial crisis in the country affected procurement of relevant equipment. The study recommended the Ministry of Primary and Secondary Education to provide relevant equipment as well as educating regular school teachers on relevant equipment for learners who are deaf. Furthermore, the government had to increase the procurement budget for technological equipment supporting learners who are deaf.

Keywords: Audio equipment, visual equipment, visual learners, Sign language, deaf learner.

INTRODUCTION

The advent of Human Rights model gave birth to equalization of opportunity principle in order to create a leveled ground for learners with diverse needs. The UN Declaration on Human Rights (1948), The Salamanca Statement (1994), the UN Convention on the Right of the Child (1989), just to mention a few reinforced equity practices to every child. The emphasis of the equality principle is to shift from deficit model to asset-based model whereby the focus is on developing available intrapersonal assets through full support to compromise weaknesses of the individual. The equality principle was supported by international and local legislations outlining mandatory that every child has the right to access appropriate resources fordeveloping language competence during primary school education (Universal Declaration on the Education for All 1948; Nziramasanga Commission; World Health Organisation 2008). When Zimbabwe attained independence in 1980 she agreed to comply with international Declarations and Conventions since it was a signatory of the United Nations.

LITERATURE REVIEW

The recognition of Sign language in Zimbabwe implies adherence to full support for the acquisition of Sign language by learners who are deaf while in regular primary schools so that they access education at par with their non-disabled peers. Zimbabwe enacted the Disabled Persons Act (1992) and developed the Constitution in (2013) that support and regulate the services of persons with disabilities. The most vital support services in the education of learners who are deaf is the provision of technological equipment that accommodate Sign language (Chitiyo and Chitiyo, 2007; Ahmad, 2015). Visual equipment assist learners with hearing impairment to acquire Sign language in the same way their hearing counterparts acquire spoken language (Charema, 2007).

Developing countries including Zimbabwe face challenges such as ineffective policies, limited government input, economic crisis and inadequate provision of equipment and materials as they implement inclusive education (Chitiyo and Wheeler, 2004; Chitiyo, 2007; Charema, 2007). Equalization of opportunities to learners who are deaf becomes a cause for concern in terms of equipment that facilitates communication between the teacher and the learner. The researcher was warranted to find out if learners who are deaf receive relevant equipment for acquiring mother language during primary education.

Several studies about language acquisition by deaf learners in Sub-Saharan Africa, by Mpofu and Chimhenga (2013), Musengi, Ndofirepi and Shumba (2012), World Federation of the Deaf (2008), Zimba, Haihambo and February (2004) and Kiyaga and Moores (2009) confirm the availability of audio equipment for teaching spoken language at the detriment of visual equipment to visual learners as an indication of lack of knowledge about the secrecy and relevance of the visual equipment in the acquisition of Sign language. Leve (2009) agrees with the above authorities that regular primary schools become restrictive environments for learners who are deaf because most assistive devices provided are for auditory development instead of visual equipment for Sign language acquisition. UNESCO (2006) and Otic Foundation (2007) concur that visual equipment that should assist visual learners was scarce in most regular schools. Inadequacy of visual equipment was also unveiled by Joel, Kochung, Kabuka, Charles and Oracha (2013) in their studies in Kenya. They carried out a study with a sample of 32 teachers and 16 school heads in Kenya and found out that the challenge was the inaccessibility of visual equipment.

Massa and Mayer (2006) as well as Marschark and Knoors (2015) indicate that videos and overhead projectors are crucial in the acquisition of Sign language by deaf learners because they provide visual instruction, visual information and visual language to these visual learners.

According to the above text, the child has the chance to identify where he/she went wrong when signing as shown in the video which is not possible with the audio equipment that requires hearing. Furthermore, the visual equipment provides access to self-evaluation since appropriate way of signing such as position of hands, palms and wrists of the instructor is presented visually (Massa and Mayer, 2006; Gilakjani, 2012; Ahmad, 2015).

Visual teaching equipment ⟹ **Visual stimulatio**n ⟹ **acquisition of visual**
language

Illustration of the secret in visual equipment in teaching
Studies have shown that the secret of technological equipment for learners with profound hearing loss is in accessing information through sight (Marschark and Hauser, 2012; Syverud, Guardino and Selznick 2009; El-Zraight and Smadi, 2013). Therefore visual instructional equipment provides visual communication to visual learners than audio equipment which these children are exposed to when they cannot access any sound.

Cummins (2005) criticises auditory equipment for failing to assist learners who are deaf in the acquisition of any comprehensive language either verbal or visual language for social interaction. Joel, Kochung, Kabuka, Charles and Oracha (2013) as well as Bertoil, Staehelin, Zomp, Bodnner and Prosbst (2009) suggest that the focus should now be on visual instructional equipment that assists in the acquisition of the mother language through sight hence equalization of opportunities.

The socio-cultural perspective views provision of visual instructional equipment as a birth right for learners with profound hearing loss since disability is a normal condition to them. On the same note, the Human Rights concept of instructional equipment is the right for deaf learners to access the natural language using visual equipment that involve the sense of sight, an intrapersonal asset for learners who are deaf (Charema, 2007; Ahmad, 2015). Also, supported by the World Federation of the Deaf (2008), indicating that visual equipment is culturally appropriate for learners who are deaf. The educational concept of teaching equipment is that they are assistive devices that mediate between the learner and the teacher in the teaching of language (Nziramasanga Commission, 1999; Massa and Mayer, 2006; Gilakjani, 2012). The researcher therefore conducted a study to find out if schools have access to visual equipment that benefit deaf learners since audio equipment has failed develop proficient language as indicated by several studies.

Statement of the Problem
The issuing of hearing aids to every learner with hearing impairment seems to have contributed to poor Sign language acquisition, during primary school education. It seems that support service in visual technological equipment is not given serious attention in regular primary schools. It indicates poor understanding of deafness among educators since the focus of education system has been to make these learners acquire or comprehend spoken language using hearing aids. The philosophy of inclusive education with full support as a right becomes rhetoric due to inequality opportunity in the education of deaf learners.

Purpose of the study
-To establish the accessibility of visual technological equipment for teaching deaf learners in regular primary schools in Masvingo.

 Research questions
- Do stakeholders understand the secret between visual equipment and visual learners?
- Are deaf learners provided with relevant and adequate equipment for acquisition of non-verbal language?
- In what ways does visual equipment benefit deaf learners in the acquisition of Sign language?
- What is the attitude of teachers towards the shift from audio to visual equipment?

Methods and materials

The interpretive methodology which is grounded in the qualitative paradigm was employed in the case study of Masvingo. The qualitative methodology allows the researcher to access multiple realities as opposed to one objective of the quantitative methodology (Cresswell, 2007; Neuman, 2006). The interpretive methodology was suitable for the case study research design, multiple instruments, purposive sampling and the constant comparative analysis approach (Silverman, 2005, Mason, 2002; Corbon and Strauss, 2008). The current study chose the case study research design (Yin, 2011; Silverman, 2005; Corbon and Strauss, 2008) to establish the equalization of opportunity for deaf learners in accessing visual equipment for the acquisition of Sign language in regular primary schools. The purposive sampling was adopted in order to select information-rich cases for the study (Patton, 2002). According to Cresswell (2007) and Neuman (2006) open-ended questionnaires, semi-structured interviews, document analysis and focus group discussions techniques suited the case study research design in generating data. The generated data was analysed and presented in thematic approach employing the constant comparative approach to deduce themes.

The techniques completed triangulation of the qualitative research methodology. The researcher chose the open-ended questionnaire because of its flexibility and freedom to the participants who provided data without any interference from the researche r(Gillham, 2000, Denzin and Lincoln, 2005; Saldana, 2009; Morgan, 2013).Semi-structured interview questions generated information from school heads. The researcher preferred the interviews because they facilitated in-depth understanding of the phenomenon through probing (Gill, 2008; Silverman, 2005). The analysed documents confirmed data generated through discussions (Morgan, 2013; Merriam, 2009).Focus group discussion is a qualitative method for generating data from many participants at the same time (Barbour, 2007; Krueger and Casey, 2009; Morgan, 2013). Constant comparative analysis approach (Saldana, 2009; Maykut and Morehouse, 1994 Corbon and Strauss, 2008) was employed in data presentation and analysis. Themes were formulated from coded responses**.**

Findings

Some of the raw data from participants were provided in italics to substantiate the findings with the voices of participants reflecting what transpired during the study.

Theme: Inaccessibility of visual equipment relevant for Sign language.

The study unveiled that learners who are deaf were either exposed to inefficiency and ineffective hearing aids or have nothing to assist in their acquisition of mother language.

Secrecy of visual equipment to visual learner

- *From the way we understand learners with hearing impairment, they need hearing aids so that they can communicate with others in the class. It is rather unfortunate that most of our learners do not have the hearing aids.*
- *Our wish is to make them fit in the hearing family and community. We cannot use Signs only but to augment with speech. The equipment you are telling us uses the sense of sight only.*
- *We do not have equipment that is specifically for Sign language. What we have are the hearing aids and a carpet that were donated. We sign as we speak so that they acquire both Sign language and spoken language. Yes, visual equipment promotes visual access to Sign language, but we do not have such equipment. We just feel that hearing aids can assist us in our teaching of Sign language.*

The sentiments from teachers, school heads and remedial tutors reflect lack of understanding about visual equipment for deaf learners.The participants had a belief that persons who are deaf should wear hearing aids as the only assistive device to participate in the hearing world.

From the findings the participants revealed that donated hearing aids should be issued to every deaf learner despite the degree level of hearing loss. The participants lacked knowledge about the secret of visual equipment for visual learners

Accessible instructional equipment in schools
The following responses were from different participants:
- *We are satisfied with the carpet, audio cassettes because that is what we can afford. The School Psychological Services provided us with the carpet to protect disturbance from outside. The lip- reading approach has taken us far since our interaction with deaf learners has improved.*
- *Our teachers have two pieces of equipment namely the mirror for lip-reading and the carpet for sound proof. I don't think there is any other equipment that can make miracles*
From the responses made by school heads and teachers, equipment indicated was inadequate and irrelevant for teaching deaf learners. The participants had shown that they were used to traditional equipment for speech reading for auditory training despite launching of the official Sign language that requires visual equipment. School heads were confident with the two pieces of equipment they had in the school.

Benefits of visual equipment in teaching Sign language
- *It's true, visual equipment provides visual information and visual images for signs and objects, but we have financial crisis in this school. They enhance acquisition of Sign language because they involve all senses such visual and tactile during learning. Unfortunately, we do not visual equipment in our schools what we have is the audio equipment which we expect them to acquire spoken language since they live with hearing society.*
The responses from remedial tutors and psychologists indicate that they were aware of visual equipment on the acquisition visual language through sight but could not value them the way they value audio equipment. Most remedial tutors expressed their concern in having the visual equipment in their schools, but they indicated that their worry was to enable these learners to interact with hearing society. Remedial tutors and educational psychologist showed little understanding on the benefits of deaf learners from visual equipment than from audio equipment.

Attitude of teachers towards visual equipment
Participants had the following sentiments towards visual equipment:
- *Visual equipment is relevant and appropriate in developing correct Sign language skills but we were not taught how to operate them. They should be in Special schools.*
- *We have been teaching these learners using lip-reading, why then should we change? We train them to interact with both hearing and non-hearing people. Sign language should be taught in Special schools that are likely to have relevant equipment.*
- *We do not have time to focus on technological equipment because of big classes we are having.*
Despite lack of knowledge about the secret of the visual equipment, the participants showed resistance to change by preferring use of lip-reading to visual equipment. Most participants showed negative attitude towards visual equipment revealed in a diplomatic way by suggesting special school placement of these learners. They could not sail in the same boat with proponents of inclusive education due to negative attitude towards visual equipment for deaf learners.

DISCUSSION AND INTERPRETATION

The findings indicate that there was lack of visual equipment in schools that could benefit deaf learners as well as lack of knowhow about the relevance of visual equipment in the acquisition of the non-verbal language. This calls one to wonder why the government went on to introduce Sign language without introducing visual equipment as well as educating stakeholders. The introduction of oral approach was quickly accompanied by audio equipment that was not relevant to the non-verbal language. The practice in schools is not tallying with equalization of opportunity philosophy which is mandatory to every child despite colour, gender, race, ethnicity and disability (Salamanca Statement and Framework of Action, 1994; Universal Declaration on Education for All, 1948).

Furthermore, most participants had ignorance about the visual equipment for manual approach. The study revealed deplorable situations of deaf learners in inclusive schools where they are forced to hear when they cannot hear. Marschark(2007); Rekkedal et al (2012) as well as Shalrilyn (2011) concur with the findings that schools are furnished with irrelevant equipment used to teach visual learners. Also, findings from analysed documents showed that the teaching media column reflected audio tapes that were used to aid the teacher in the delivery of lessons focusing on auditory training and development of spoken language. As a result, deaf learners fail to access their mother language for social and academic activities
The adoption of the equalization of opportunity policy by the Zimbabwean government was a noble idea, but studies have shown that deaf learners were not yet fully supported. The findings were in agreement with Chitiyo and Wheeler (2004) as well as Charema (2007) who propound that provision of equipment and materials in Sub-Saharan Africa does not tally with the inclusion of learners with diverse needs.

On the same note, the report by Nziramasanga Commission of Enquiry (1999) chapter 11 (article 3.3) indicates that the investigation targeted adequacy of sound proof equipment and hearing aids in regular primary schools which were commonly in use by then. The education system focused on the availability of equipment for developing verbal language since Sign language was not considered to be a language. Furthermore, teachers and other stakeholders were not aware about the benefits of visual equipment to a visual deaf learner. In agreement with the findings, Charema (2010); Mpofu et al (2007); Chireshe (2012); Musengi and Chireshe (2012) as well as Ahmad (2015) indicated shortage of audio equipment that were in use by that time. This implies that equal opportunity for deaf learners is not yet achieved in regular primary schools.

The previous studies and the current study had the concern with instructional equipment for developing comprehensive language of deaf learners for social and academic interactions. Another agreement was that the studies found out that neither the audio nor visual equipment was found to be adequate in most schools that were under study. The interest of most participants was found to be on audio equipment that develops speech with the view that the learners with hearing impairment will one day articulate speech and fit well in the hearing world. Most participants were not knowledgeable about the benefits of visual equipment in accessing the mother language by deaf learners.

CONCLUSIONS AND RECOMMENDATIONS

In conclusion, inaccessibility of relevant equipment militated against acquisition of Sign language by deaf learners in regular primary schools in Masvingo province. Another

conclusion is that most stakeholders lacked knowledge about the relevant equipment for acquisition of non-verbal language by deaf learners. The study concluded that, the government budget for visual equipment was very minimal since teachers were complaining about the problem of inaffordability of the equipment to meet the needs of deaf learners. It also concluded that, the Ministry of education through the Special Needs Education is not fulfilling its obligations of inclusive education with full support to every learner despite the unique needs so that every mother language is developed to the optimum.

The study recommends that The Ministry of Primary and Secondary Education through the Special Needs Education and School Psychological Services should shift from a deficit paradigm to asset-based paradigm and develop the asset of sight in acquiring visual language by visual learners. Also, government should be sensitive to its budgets for procuring relevant equipment. A further recommendation is that in-service training and workshops should be organized and conducted at cluster level familiarizing teachers with visual equipment and on how to implement them in teaching Sign language.

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