International Journal of Multidisciplinary Research and Development
Online ISSN: 2349-4182, Print ISSN: 2349-5979, Impact Factor: RJIF 5.72
www.allsubjectjournal.com
Volume 3; Issue 8; August 2016; Page No. 121-125

Teaching materials in phonology for pupils with hard of hearing in selected schools of Chongwe District, Lusaka province, Zambia

Rose Chikopela, Daniel Ndhlovu

Rose Chikopela and Dr. Daniel Ndhlovu, School of Education, University of Zambia, Zambia

Abstract
This is an extract from a PhD thesis based on one of the objectives which sought to investigate type of learning materials that help pupils with hard of hearing impairment to combine letter sounds into meaningful words (phonology). The study was conducted in selected primary schools in Chongwe district, Lusaka Province, Zambia. It was guided by applied Hermeneutic Phenomenological view. As a result, it focused on type of learning materials that were used by teachers to help learners become aware of letter sounds and translate them into meaningful words. To achieve this, a descriptive survey design was used. The descriptive survey design was chosen to help the researcher describe the phenomenon of teaching and learning awareness of sounds and translating such sounds in meaningful words to pupils with hard of hearing impairment. A sample size of 40 teachers of pupils with hard of hearing impairment were selected for the study. Since teachers of pupils with hard of hearing impairment were unique in terms of their characteristics, homogeneous sampling was used to select them. Semi-structured interview guide was used to collect data from the sample. Thematic analysis was used to analyse the data. The results showed that teaching materials used by teachers included; visual aids or charts, literacy games, television and video tapes, pictures, computer simulated programmes, concrete objects, sign language literacy books, flash cards and story books. Of these materials it was concluded that materials that could be seen and touched by pupils with hard of hearing were suited for teaching sound awareness to them. As a result, the study recommended that; Ministry of Education should provide adequate and appropriate teaching aids in schools.

Keywords: oral language, phoneme awareness, phonology and hard of hearing

Introduction

Background to the study

Oral language is essential for phonemic and phonological development and critical for pupils' academic success in initial literacy learning (Archer *et al.*, 2012) [12]. Oral language is key to development of initial literacy education even where use of sign language is involved. Right from the beginning of formal deaf education in the 18th century in the United States, sign language and oral language have been on opposing sides of a heated debate. Proponents of the oral philosophy felt that deaf people must be prepared to learn as much like hearing people as possible. Advocates of sign language base their argument on the belief that many deaf children do not learn to speak or speech-read well enough to use it as their primary means of communication. However, recent studies have helped validate the assertion that pupils benefit developmentally, educationally and socially from modern oral teaching methodologies such as the Auditory-Oral method (Lederberg *et al.*, 2013). The question for this study was what type of teaching/learning materials were suitable for creating awareness of sounds in pupils with hard of hearing? It therefore, became of necessity to investigate type of teaching/learning materials were suitable for creating awareness of sounds in pupils with hard of hearing in selected schools of Chongwe district in Zambia.

In order to guide this study, Phonological Sensitivity Approach (PSA) theoretical framework by Dickinson *et al.*, (2003) [1] was used. Dickson and his colleagues propound that oral language stimulates phonemic awareness in people with hard of hearing impairment. They further argue that vocabulary and other oral language skills play an important role in stimulating phonological sensitivity, phonological memory and phonological naming, and it is these skills that uniquely help predict reading skills once children enter school. Using the Phonological Sensitivity Approach, the study brought out new knowledge about how types of materials help in teaching phonemic and phonological development in pupils with hard of hearing impairment.

Methodology

Following the methodological assumptions of applied Hermeneutic Phenomenology by Husserl (1970) [2], the study used qualitative methods to collect and analyse data from the participants. Husserl argues that *we are always already in the world and that our only certainty is our experience of our world, thus to understand the structure of consciousness can serve as the foundation for all knowledge* (Husserl, 1970) [2]. Indeed, the purpose of using hermeneutic phenomenological research was to bring to light and reflect upon the lived meaning of the basic experiences by teachers of pupils with hard of hearing impairment. As Husserl puts it, researchers attempt to describe phenomena as they appear in everyday life *before* they have been theorised, interpreted, explained, and otherwise abstracted, while knowing that any attempt to do this is always tentative, contingent, and never complete, this study sought to describe the experience of teaching awareness of sounds to pupils with hard of hearing impairment. In addition, while describing the experience, an advance of the discovery about the type of teaching/learning materials suitable for stimulating sound awareness is made.

Applying phenomenology, then, became an issue not of "how" to do it but of developing a particular orientation to the world.

The Chinese philosopher Confucius famously wrote: "*I hear and I forget. I see and I remember. I do and I understand"* (Van Manen, 2014) [3]. This is an apt adage for learning hermeneutic phenomenology. As much as we might read about and study texts, we cannot truly begin to understand hermeneutic phenomenology until we practically engage in its activities. This involved formulating a phenomenological question - what type of teaching/learning materials were suitable for creating awareness of sounds in pupils with hard of hearing? Our assumption was that answers to this phenomenological question could be done by identifying and collecting experiential data, and reflecting on concrete experiences of teachers.

In order to aptly describe the lived experiences by teachers of pupils with hard of hearing impairment as they discover ways of creating sound awareness in pupils with hard of hearing, a descriptive survey design was employed in the study. Additionally, this design enabled the researchers to describe the phenomenon of using different types of materials to teach pupils with hard of hearing sound awareness.

Population

The study population comprised all teachers for the hard of hearing in selected primary schools in Chongwe district. This type of population was chosen because it met the typical characteristics of participants with knowledge about how to teach learners with hard of hearing impairment.

Sample

The sample comprised 40 teachers. The inclusion criterion for the sample was that these teachers had lived experiences of teaching pupils with hard of hearing and would provide required data. The sample size was arrived at with a view that by the 40th interview, the data collected will have reached saturation. The researchers were alive to the fact that sample size has remained a topical issue in research. As a result, this study made considerable effort to review literature on sample size of a phenomenological study like this one. The researchers analysed eleven (11) phenomenological studies and the mean sample size was 21 participants at a single site basing their sampling frame to be saturation. Six articles referenced the sampling strategy. Interestingly, four phenomenological studies that mentioned saturation; three were in health sciences.

Size of the sample is debatable in qualitative studies. What is prominently considerable is at how many interviews is saturation reached. For instance, Martins (2008) [13] conducted a phenomenological study of the experiences with the health care system among persons who were homeless in the U.S. She described recruitment procedures and mentioned a purposive sampling strategy. Martins conducted 30 to 60 minute interviews with 15 adults who were homeless and receiving care at a free clinic. She made a clear reference to the concept of saturation, explaining that she interviewed new participants until achieving saturation. Saturation was defined as "sufficient quality, completeness, and amount of information in addition to no evidence of new themes in the interviews." Martins reported reaching saturation after 12 interviews but completing three additional interviews to further ensure no new themes emerged. In addition, Beck & Watson's (2008, p.231) [15] study of breast-feeding experiences among 52 women who experienced birth trauma noted the number exceeded "what was necessary to achieve saturation of data."

Similarly, Guest *et al.* (2006) [16] conducted an experiment with a data set to determine when saturation is achieved and found that 12 interviews were optimal. Interestingly, except for one study, the studies reviewed exceeded this size. The finding is also consistent with Mason's (2010) [17] conclusion that PhD students employed a large sample size relative what was needed to achieve saturation, perhaps because they do not understand saturation or think that a larger sample will appear more rigorous to supervisory committees and peer reviewers. For this study the sample of 40 was representative and adequately sufficient to help reach saturation of data sought to understand how teachers stimulated awareness of sounds in pupils with hard of hearing impairment.

Sampling Technique

Purposive sampling was applied to select these sample. The choice of purposive sampling is in line with the view of Manion & Morisson (2007) [18] who argues that in purposive sampling a researcher uses his/her own judgment or intelligence to handpick the cases to be included in the sample on the basis of their typicality or possession of the particular characteristic been thought to meet the researcher's requirements. Since the teachers in the sample were the only ones with lived experiences of teaching pupils with hard of hearing, purposive sampling was an appropriate procedure to be used.

This choice of sampling technique was also based on the fact that with a purposive non-random sample the number of people interviewed is less important than the criteria used to select them. The characteristics of individuals are used as the basis of selection, most often chosen to reflect the diversity and breadth of the sample population. As simply posited by Bernard (2002) in using purposive sampling, the researcher decides what needs to be known and sets out to find people who can and are willing to provide the information by virtue of knowledge or experience.

Instruments and Procedure for Data Collection

As alluded to the purpose of using hermeneutic phenomenological research in this study was to bring to light and reflect upon the lived meaning of experiences by teachers of pupils with hard of hearing impairment. To this effect, semi-structured interview guide was used to collect data from the sample. Similar arguments for this type of instrument is advanced by Creswell (1998) who explains that for purposive sampling procedure data sources include an interview, observation, and electronic portfolio while the instrument for collecting data from such sources being interview guide, observation guide and electronic gadgets. In this study interview guide was employed because it allows for follow up questions thereby providing for in-depth understanding of the phenomena about how teachers teach pupils with hard of hearing awareness of sounds and the type of materials best suited for such teaching.

Data Analysis

Since the study followed a qualitative hermeneutics phenomenological approach, qualitative methods became appropriate in data analysis. As qualitative researchers, we recognise that the relevant reality as far as human experience

is concerned is that which takes place in subjective experience, in social context, and in historical time. Similarly, Bernard (2002) [15] posits that qualitative researchers are often more concerned about uncovering knowledge about how people think and feel about the circumstances in which they find themselves than they are in making judgments about whether those thoughts and feelings are valid. As a result, data was analysed qualitatively using the thematic and content analysis. Thus content of narratives by teachers were analysed to derive meaning to the teaching of sound awareness to pupils with hard of hearing impairment. Additionally, emerging themes were categorised in common thematic categories as away understanding what was common in the lived experiences by the teachers as they taught pupils with hard of hearing.

Findings and Discussion

Based on the study question which was; what type of teaching/learning materials were suitable for creating awareness of sounds in pupils with hard of hearing? The study found that visual charts, flash cards and pictures were mostly suited to stimulating awareness of sound in pupils with hard of hearing impairment. Table 1 provides details about how teachers ranked the teaching/learning materials concerning their suitability in helping pupils with hard of hearing impairment develop awareness of sounds.

Table 1: Type of materials used in teaching sound awareness to pupils with hard of hearing

Teaching material	Frequency
Visual aids/ charts	17
Literacy games	1
Television and video tapes	1
Pictures	6
Computer assisted software	1
Concrete objects	4
Sign language literacy books	1
Flash cards	7
Story books	2
Total	40

In explaining how teaching was done, one of the teachers said:

"Letters of the alphabet are put on a chart and taught to the pupils. Thereafter, sounds of the letters on the same chart are taught and pupils are asked to produce their sounds. For teachers of pupils in grade one, teaching letters of the alphabet and phonics is an everyday activity done as an introduction to every lesson. This is done to ensure that pupils are reminded of the letters and their sounds. I have come to believe that what they see on the chart helps them to remember their respective sounds."

Another teacher said:

"I make my pupils name the letters of the alphabet every day before I begin a new lesson. When they name the letters, I also ask them to produce their sounds. In addition, I have two other charts where one has vowels and the other has consonants and I ask them to sound the letters on each chart. The charts are very good teaching/learning materials for me and the pupils"

Another teacher said

I make letters on a chart and ask pupils to sound them and then blend them. When a correct word is formed, I ask them to name the initial and the ending sound in the word.

Similar findings were reported by Krystal & Melanie (2014) [10] who indicated that initial sound segmentation training increased children's performance on the initial sound segmentation assessment measurement in children with hearing loss. Results of this study have shown that use of charts, pictures and concrete objects helped to teach phonemic and phonological skills through oral language.

This study has also shown that literacy games were used to teach sound awareness to hard of hearing pupils. One teacher mentioned that he had a literacy game that he used as a demonstration phoneme frame to teach basic phonic spellings. When using this tool, the pupil was asked to click on the sound buttons and was able to hear each phoneme. Upon hearing the phoneme, the teacher asked the pupil to imitate the sound and also to relate it to the letter of the alphabet that it represented. Interestingly, this finding provided evidence that literacy games are teaching and learning tools that can help develop phoneme awareness in pupils with hard of hearing impairment. It is however worth mentioning that these games are not stocked in the Zambian government schools and that the only teacher who mentioned the use of this game used his personal game. These findings are similar to that by Dillon *et al.*, (2007) [11] who found that non-word repetition scores were strongly correlated with other measures of the component processes required for the immediate reproduction of a novel sound pattern: spoken word recognition, language comprehension, working memory, and speech production.

Watching video tapes was found to be one of the materials that can be used to develop sound awareness in hard of hearing pupils. One teacher mentioned that once a week she made grade one pupils watch a video tape of peers signing and making sounds of letters and blending them to form words. After watching the video, she asked each pupil to sign, produce some sounds he/she had heard and thereafter made a word. The teacher however mentioned that the video tape she uses was from Canada hence the accent on the pronunciation of the letters and words was slightly different from the Zambian language. For this reason, pupils' pace of sound development was slowed down. As a result, videos proved disadvantageous to pupils' progress. In some case pupils were even getting confused and in the end learnt very little or nothing at all from the video. This was attributed to the fact that pupils found it easy and interesting to learn from the language and accent they hear on a daily basis than from a foreign accent.

The findings also revealed that teachers used pictures to teach sound awareness skills to hard of hearing pupils. One teacher said.

I use pictures of letters of the alphabet and show pupils. I teach them what they are and ask them to repeat after me. Thereafter, I teach them the sounds they represent.

Use of pictures was found to be one of the most effective ways of teaching sound awareness to hard of hearing pupils. Majority of the teachers mentioned that they use pictures that have letters of the alphabet alongside a word and animal, fruit or food that begins with the initial sound of the letter presented. This means that, use of pictures when teaching sound awareness helped pupils to associate the initial letter of the word that the animal on the picture presents and the sound

it represents. In addition, teachers taught syllable segmentation using the actual word on the picture. Similarly Annalene (2009) in her study found that deaf children who mostly make use of visual-spatial abilities benefited from visual imagery training techniques. Encoding concrete words, both as images (pictures) and written labels (via fingerspell coding), facilitated retrieval because twice-coded items/words provide more potential retrieval cues than words that exist only in verbal form.

Computers were also found to be used in teaching sound awareness and reading to pupils with hard of hearing impairment in grades one and two. To this effect, one of the teachers said that she used a computer to teach letters sounds, sound blending and spelling. Similarly, Reitsma (2009) [5] reported that fingerspelling provided deaf pupils a phonological link to the print that they encounter on a daily basis. In practice, this implies that exposing deaf children to opportunities for fingerspell coding for example by means of computer-based exercises and sequencing worksheets can enable them to analyze finger spelt English words in the same way that hearing pupils apply their knowledge of letter-sound correspondences to decode words in their spoken vocabularies.

Concrete objects were also found to be one of the materials used to teach sound awareness to hard of hearing pupils. Teachers in the study explained that they used real objects when teaching sound awareness to hard of hearing pupils. For example one teacher said:

I use real fruits and food when teaching initial sounds. For instance, "a" apple, "b" banana, "c" cucumber, "e" egg "n" nshima.

Use of concrete objects when teaching helped hard of hearing pupils store mental images of objects being studied. Using concrete objects helped pupils to associate the letters they saw to the sound they represent and the food associated to them. This made them remember the sounds as well as the words. In turn the learning process in most hard of hearing pupils in the lower grades was speeded up. Similarly, Whitehurst & Lonigan (1998) [8] in their study revealed that the use of haptic exploration improved letter knowledge and because of this, phonemic awareness was easily acquired in pupils. Words are easily learnt when one is aware of phonemes in those particular letters or words and it all begins by being able to learn letter sounds and associating them to words.

A sign language literacy book was one of the materials used to teach sound awareness. However, only one teacher in the study used a sign language reading book to teach sound awareness. He mentioned that he used a book that has words and sign language in it to teach letters, letter sounds and words. He also explained that he used it to teach syllables and rhymes. This means that use of total communication through literacy books can help develop sound awareness skills in hard of hearing pupils that can eventually make them efficient readers in the lower grades and these skills can be used as they progress to upper grades. A similar study done by Wagner (1997) shows that pupils in the lower grades who were better at detecting and manipulating syllables, rhymes, or phonemes were quicker to learn to read than those who were not, and this relation is present even after variability in reading skill owing to factors such as IQ, receptive vocabulary and memory skills. In addition, studies done by Burgess & Lonigan (1998) [8] and Johnston, Anderson, and Holligan (1996) [6] reported that children who knew no letters never succeeded in phoneme segmentation or deletion tasks because letter knowledge leads to the acquisition of letter sounds. Hard of hearing pupils might have problems in phonological processing and any language related abilities if teachers do not orient them early in preschool years. This problem might manifest itself in the pupils' inability to form words and consequently read.

The findings have also provided evidence that using story books is an interesting activity in teaching sound awareness to hard of hearing pupils. In addition, story books were used in teaching rhyming skills. A similar study by Crossland (1990) also provided evidence that explicit awareness of a particular sound wasgained only when there was connection with a particular letter of the alphabet. This means that once the pupils miss out on the first parts of the letter knowledge skills which require them to know letters and associate them with letter sounds, it makes them have difficulties in rhyming and reading activities.

Conclusion and Recommendations

Based on the study findings, it is concluded that materials that could be seen and touched by pupils with hard of hearing were suited for teaching sound awareness to them. The study therefore recommends that; (i) The government through Ministry of Education should provide adequate teaching materials in schools that stimulate sound awareness in hard of hearing pupils. (ii) Ministry should conduct continuous profession development (CPD) for teachers to learn sign language. (iii) The government should ensure that teachers for the hard of hearing are adequately trained in sound awareness to ensure quality delivery of lessons in this area.

References

1. Dickinson DK, McCabe A, Anastosopolous L, Peisner-Feinberg ES, Poe MD. The Comprehensive Approach to Early literacy: The interrelationship among vocabulary, Phonological sensitivity, and print knowledge among preschool aged children. Journal of Educational Psychology, 2003; 95:465-481.
2. Husserl E. The crisis of the European sciences and transcendental phenomenology. Evanston: Northwestern University Press, 1970.
3. Van Manen, Van Manen M. Phenomenology of practice: Meaning-giving methods in phenomenological research and writing. Walnut Creek, CA: Left Coast Press, 2014.
4. Annalene van Staden, Natale A. le Roux. The Efficacy of Fingerspell Coding and Visual Imaging Techniques in Improving the Spelling Proficiency of Deaf Signing Elementary-Phase Children: A South African Case Study Published online: Springer Science+Business Media, LLC, 2010.
5. Reitsma P. Computer-based exercises for learning to read and spell by deaf children. Journal of Deaf Studies and Deaf Education, 2009; 14(2):178-189.
6. Holligan C, Anderson M, Johnson RS. Knowledge of the alphabet and explicit awareness of phonemes in pre-readers: The nature of the relationship. Reading and Writing, 1996; 8(3):217-234.
7. Creswell JW. Research Design: Qualitative and Quantitative Approach. New Delhi: Sage Publicatuions, Inc, 1994.

8. Whitehurst G, Lonigan CJ. Child development and emergent literacy. Child development, 1998; 69:848-872.
9. Wolfe M. Naming speed and reading: The contribution of cognitive neurosciences. Reading Research Quarterly, 1991; 26:123-141
10. Krystal LW, Melanie S. Phonemic Awareness Training with Children with Hearing Loss. Vanderbilt University School of Medicine, 2014.
11. Dillon MC, Jong de Kenneth, Pisoni BD. Phonological Awareness, Reading Skills, and Vocabulary Knowledge in Children Who Use Cochlear Implants. J Deaf Stud Deaf Educ. 2012 Spring, 2007; 17(2):205-26.
12. Archer P, Cregan A, McGough A, Shiel G. Oral Language in Early Childhood and Primary Education (3-8 years). Dublin, NCCA, 2012.
13. Martins HR, Figueiredo LM, Valamiel-Silva JCO, Carneiro CM, Machado-Coelho GLL, Vitelli-Avelar DM, et al. Persistence of PCR-positive tissue in benznidazole-treated mice with negative blood parasitological and serological tests in dual infections with Trypanosoma cruzi stocks from different genotypes. Journal of Antimicrobial Chemotherapy, 2008.
14. Bryant P, Bradley L, Maclean M, Crossland J. Nursery rhymes, phonological skills and reading. Journal of Child Language, 1989; 16:407-428.
15. Bernard HR. Research methods in anthropology: Qualitative and quantitative approaches (3rd ed.). Walnut Creek, CA: Alta Mira Press, 2002.
15 Beck TC, Watson S. Impact of Birth Trauma on Breast-feeding: A tale of two pathways. Nursing Research, 2008; 57(4):228-236.
16 Guest G, Bruce A, Jonson L, How many Interviews are enough? An experiment with Data saturation and variability. Field Methods, 2006; 18(1):59-82.
17 Manson M, Forum Qualitative Social Research. Sample Size and Saturation in PhD Studies Using Qualitative Interviews. 2010; 11:3-8.
18 Cohen L, Manion L, Morisson K. Research Methods in Education. Milton Park: Routledge, 2007.