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A case study of the Cognitive Approach to Literacy Instruction (CATLI) in a grade 3 class at a school for the deaf

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2008-08-11T08:52:50Z
http://hdl.handle.net/10539/5319

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CHAPTER ONE

INTRODUCTION

1.1 Background to the present study

This study investigates the Cognitive Approach To Literacy Instruction (CATLI) with the Deaf child. The background of the study is the exclusive education system established in the apartheid era, which was transformed recently into a single non-racial education department, which had to recognize and address the diverse needs of all learners. An inclusive education system using the Outcomes Based Education (OBE) approach was put into place to accommodate all learners as well as those with barriers to learning. One of the barriers experienced by Deaf learners is their underdeveloped language and communication skills, which is mostly due to hearing loss and deafness. The CATLI makes use of psycholinguistic theory and practice as well as constructivist and metacognitive theory and practice and is expected to improve the cognition, language and literacy skills of the Deaf learner.

1.2 Inclusion

Exclusive education was based on the psycho-medical model with the premise that learning difficulties were largely located in the learners. Consequently this meant they were usually educated in institutions out of mainstream education. According to this model, very little was said about system deficiencies i.e. the education system, the method of teaching and learning, parenting style, social-economic conditions, discrimination into categories based on race, ethnicity and ability, etc. as being the cause of some of the problems (Donald, Lazarus and Lolwana, 2002; Harcombe, 2003).

To move away from this exclusive model South Africa needed an education system that would help alleviate many of the barriers caused by the above problems. Therefore, inclusion can be seen as a

more progressive way forward and as part of a global agenda that conceives an education system that is more responsive to the needs of the learners (Naicker, 1999; Swart & Pettipher, 2001). Inclusive education, according to White Paper 6 is described, "as supporting all learners, educators and the system as a whole so that the full range of learning needs can be met" (2001: p17). Inclusive education aims to provide education for all learners, irrespective of learning diversity or the type of barriers to learning such as inadequate teaching and learning practices, parental absence, poverty, processing differences, deafness and inadequate language communication, etc. The ideology behind this move in education is to create a learning environment which does not expose the learner to any form of discrimination, therefore promoting the full personal, academic and professional development of all learners irrespective of "race, gender, social class, language, religion or ability" (Donald et al, 2002: 23; Department of Education, 2003).

This shift in education delivery includes, amongst others, a move away from psycho-medical models to ecosystemic models of understanding development and learning. From an ecosystemic perspective or framework, learners would be viewed as experiencing barriers to learning situated within the environment or emanating from it or from the interaction between the individual and environmental influences (Harcombe, 2003). Such ecosystemic influences that can impede learning can include "poverty, ideology, physical access, inflexible curriculum, inappropriate language, communication channels, inaccessible built environment, lack of or inappropriate transport and similar factors within the system that impede access to learning"(Department of Education, 2002: 17). In addition, sensory challenges such as a hearing loss, which causes underdeveloped language and communication, could also be considered to be a barrier to learning (Donald, 2002), as could interactions between any systemic influences and learners' individual differences (Harcombe, 2003).

From an ecosystemic viewpoint, language breakdown and communication has been further aggravated by political factors in South Africa, which impacted negatively on access to learning. Political factors have had a very definite influence on the lives of black South Africans, through the deliberate creation of an environment which fostered poverty, unemployment, poor education, crowded living conditions, violence, a breakdown of family life and high rates of illness (Turton, 1986; Wilson & Ramphele, 1989). These factors lead to the breakdown of cultural transmission (Feuerstein, Rand, Hoffman and Miller, 1980) as politics aimed at devaluing Non-European cultures and repressive socio- economic policies resulted in the breakdown of black communities in South Africa. The deprivation promoted an unreliable, poorly resourced and insufficiently sustained education system and an impoverished acquisition of literacy skills and related oral traditions of story telling reducing the learner's ability to learn and enjoy literacy related activities. The state also created disparities in funding and educationally disproportionate policies resulting in inferior education where certain cultures were over-valued to the detriment of others. Language acquisition, in particular mother tongue languages, were not given the same status as the two official languages, therefore children did not learn to speak their mother-tongue well. Many learners were also expected to learn to read and write in a second and third language and since their first language was often not well acquired, further problems arose (Harcombe, 2003; Turton, 1986; Wilson & Ramphele, 1989).

In addition the majority of schools used methods of teaching that disadvantaged the individual differences of learners e.g. the phonics approach to learning disadvantaged second language speakers (especially those who had little literacy experience) and those whose learning styles favoured the verbal and conceptual process (Harcombe, 2003). These learners, according to Donald et al (2002), were contextually disadvantaged as they were denied access to resources and privileges as a result of the social context in which they found themselves. Learners became demotivated and discouraged

about acquiring literacy skills, thereby delaying the acquisition of those very skills necessary to access an integrated and comprehensive learning experience (Harcombe, 2003).

Currently South Africa is facing the challenges, which other developed countries such as New Zealand and the USA encountered, of introducing inclusion and a curriculum to cater for educationally disadvantaged learners. Since 1994, in the post-apartheid period, the education system was compelled to remove curriculum content and practices that did not address learners' needs and to implement a curriculum that would foster the principals of social justice, equity and redress (Engelbrecht, 1999; Gultig, Hoadley and Jansen, 2000).

1.3 Deafness and Inclusion

As mentioned above, under the exclusive education system certain disabilities, such as deafness, were often viewed from a medical model deficit standpoint. Smuts (1997) comments that disabled people were labeled in a derogative and discriminatory manner e.g. deaf mutes, deaf and dumb, hearing and speech impaired, language impaired, abnormal, etc. She also noted that Deaf children were subjected to "treatment" e.g. attempts were made to remediate deafness, and to promote hearing, speech and speech reading while the first language of the Deaf, which is Sign Language, was totally excluded. In addition, the level of hearing, the spoken/written language levels achieved, as well as the ability to speak, were measured against the norms of hearing children in terms of the level of functioning. Deaf children were continuously compared to hearing peers and separated from society because they were thought of as being "abnormal" (Smuts, 1997:3). In rural areas learners were also often found in mainstream settings, in some instances their hearing loss remained unnoticed. For a learner whose hearing loss was not detected, it meant that he/she would struggle in large classes because teachers were unaware of their barriers. This often developed into severe learning and adjustment difficulties (Donald et al, 2002; Lomofsky & Lazarus, 2001; Mutukrishna, 2001).

It is evident that the above exclusive education policy was not working for the Deaf as the statistics published by Deaf Federation of South Africa (DEAFSA) confirmed that in 1997 one out of three Deaf adults were functionally illiterate and that the average South African Deaf- school leaver had a reading level equal to that of an eight year old hearing child (Smuts 1997). Mutukrishna (2001) and Smuts (1997) further state that Deaf learners could not succeed in accessing skills as special schools offered an inadequate choice of subjects and a very narrow curriculum, poor study direction, non-specialized educator training and inappropriate teaching methods. In addition, teachers were not sufficiently prepared for the task of teaching the Deaf (Storbeck, 1998). Further to this, the language policy of South Africa did not give any preference to Sign Language. Deaf learners were thus denied the right to access their first language that is Sign Language (Smuts, 1997).

Inclusive education could work better for Deaf learners if they were to be accommodated with other learners in a regular classroom. Within the inclusive system of education creative methods had to be found to address barriers to learning. Inclusive education for the Deaf must increase the participation of learners in order to reduce their exclusion from the curriculum (Dept of National Education 2002). Marschark (1997) and the Dept of Education (2002) emphasize that Deaf learners should be provided with a supportive and non-discriminatory learning environment, in which educators should rethink their roles and responsibilities. Within the inclusive approach, which is based on a constructivist framework, educators should continually engage learners in actively constructing relevant knowledge and learning new skills in order to adapt to the desired change expected from the learners (Swart & Pettipher, 2001: Dept of National Education, 2000).

CHAPTER TWO

LITERATURE REVIEW

Outcomes Based Education (OBE) was used as a vehicle for delivering inclusive education and formed the foundation of the curriculum in South Africa (Donald et al, 2002). OBE was designed to respond to diverse learner needs and is based on the premise that all learners can be successful and, instead of encouraging conformity, the uniqueness and individuality of each learner is promoted and respected (Lomofsky & Lazarus, 2001). Thus, the curriculum is flexible and can be adapted to suit the learners, rather than the learners having to fit the curriculum.

OBE is inclusive, learner centered and based firmly on the constructivist conceptual framework (Harcombe, 2003; Donald et al, 2002; Naude, 1996). In other words learners construct their own knowledge, and therefore learn generic and individualistic metacognitive skills to help them develop more effectively.

Constructivism as the name implies emphasizes the building of knowledge that occurs in people's minds when they learn (Brencze, 2004). This theory posits that learners develop an internal representation of knowledge that is created from personal interpretation of their own experiences, allowing learning to become an active process. Furthermore when learners construct their own knowledge with guidance and assistance this knowledge is constructed more efficiently, and when this is done in collaboration with others or groups, this knowledge becomes even more easily constructed (Lee and Smagorinsky, 2000; Vygotsky, 1978; Lazarus, 2002; Marsh, 2004: Donald et al, 2002).

This knowledge according to Vygotsky when conceptualized through mediated social interaction develops cognitive thinking, reasoning processes and language (Donald et al, 2002). Mediated social interaction is therefore an important aspect of constructivism as it provides learners with cognitive tools to construct knowledge more efficiency and effectively (Skuy, 1996; Donald et al, 2002; Green, 1996).

Research carried out by Skuy and Mentis, (1990) with disadvantaged black South Africans in cognitive education based on the Feuerstein Instrumental Enrichment Programme, suggests the effectiveness of helping learners to learn metacognitive strategies. Metacognitive strategies encourage learners to think about their own thinking and become more conscious of the strategies they employ so that they can broaden their abilities (Naicker, 1996). This allows learners to become more metacognitively, motivationally and behaviorally active participants in their own learning process. Such cognitive education has also been proven to be internationally effective. Research cited in Naude (1996) carried out by Thickpenny and Hawie, (1989) on Deaf children in New Zealand and by Haywood, (1989) with Deaf adolescents also showed that learning metacognitive strategies was effective in fostering co-operation, understanding, assimilation and integration.

Language, which stimulates cognitive development, is given particular attention in the constructivist classroom (Marsh, 2004). According to the guidelines for the implementation of inclusion (Department of National Education, 2002) constructivism should be linked to a variety of academic subjects, particularly language usage and reading based activities. Language also maintains the importance of the social environment in which naturalistic and experiential approaches are emphasized (Cooper, 2000; Paul, 1998).

The education department therefore sees literacy skills as a priority, and one of the central goals of our education system is the importance of developing learners' ability to read and write the common language of the society in which they live (Quigley and Kretschemer, 1982**;** Gregory, 1998; RNCS-Language policy, 2002). Literacy skills also form the foundation of other important literacies of the curriculum, as these skills are necessary for acquiring other aspects of academic education (RNCS-Language policy, 2002). Therefore, the implementation of a constructivist curriculum, which forms a firm basis of OBE thinking and planning, is more likely to achieve this goal than the previous curriculum.

2.1 Literacy Instructions and Deafness

One of the most well documented difficulties of Deaf children is their difficulty in attaining literacy skills. For example, it has been found that Deaf learners lag behind hearing peers in language development, reading and writing (Marcsharck, 1997; Paul, 1998; Gregory, 1998). In addition, researchers (Paul and Quigley, 1984; Bamford and Sanders, 1991; Gray, 1995) show that Deaf students on completing school, only seem to acquire a functional level in second language (English) at about fourth grade level. Such inadequately developed English skills will clearly impact on all aspects of the Deaf learners' development.

The question is whether constructivist curricula will help Deaf learners to increase levels of literacy. Numerous case studies have documented the literacy achievements of early readers. For example, Rottenburg, (2001) cites research carried out by Maxwell (1984) and Williams (1993) in which their findings reveal that Deaf children through social interaction, by constructing knowledge in a meaningful manner and then linking knowledge to print, developed learners into readers in much the same way as hearing children. Therefore since Deaf learners learn literacy in much the same way as

other children, and since everyone constructs knowledge for himself or herself, a constructivist approach in teaching literacy is likely to work.

In addition Gregory (1998) acknowledges that for many years Deaf learners access to the curriculum has been limited not by their ability to learn, but because the curriculum was presented only in English without Sign Language, in addition there was no flexibility of curriculum and teacher transmission methodology was not constructivist. This study aims to prove that Deaf learners will benefit from the constructivist, nationally prescribed curriculum, which will be made accessible to them through Sign Language.

Schirmer, (2000) has found that the constructivist approach to teaching language to young Deaf children has proven to be most appropriate. By constructing and creating experiences for these children they become aware of the relationship between spoken or Sign Language and written language, and reading becomes more meaningful for them as they are involved in creating the text. Deaf learners then become more motivated to discuss and read about their own personal experiences and gain confidence in themselves as readers.

2.2 Literacy Instruction Methodologies

2.2.1 Phonics

A variety of methods have been employed to teach literacy instruction to both hearing and Deaf learners, these methods of instruction included phonics, whole language and the balanced approach. The traditional method of teaching children to read was the phonic approach. Vacca and Vacca (2000) describes phonics as being the child's ability to identify and sound out individual letters that make up words. Educators felt that in the initial stages of reading, learning the sounds and an awareness of phonic skills and practicing these skills within the text, were critical to reading.

Educators later found that although learners were able to sound the words, they did not understand the meaning within the sentence; therefore no real reading took place because no meaning was conveyed within the sentence (Cooper, 2000). In South Africa phonics is still a method of teaching reading in the majority of classrooms. However, this presented many difficulties for the Deaf who could not hear the sounds as well as second language speakers who were taught in English since the English language has many inconsistencies` and is not phonetically regular (Lomofsky, Robert and Mvambi, 1999).

For the Deaf learner, deafness limits the ability of using spoken English and therefore interferes with the development of phonological awareness. Letter- sound instruction makes no sense to a child who does not have any hearing (Paul, 1998; Stahl, 1992). My own observations as an educator of the Deaf, and borne out by research, has shown that many educators of the Deaf do not expect Deaf learners to utilize phonemes when reading English since they suppose Deaf children cannot manipulate consonants and vowels because they cannot hear them. Even though these learners cannot access words through sound relationships they must be able to distinguish and recognize words they read (Schimmel, Edwards and Prickett, 1999). Additional research carried out by Bekho, (1998) Hanson, (1998), Paul, (1996) and Kresmer (1998) cited in Schirmer, (2000) show that phonics work better for highly skilled Deaf readers than for less skilled Deaf readers. Research carried out by Leybaert, Content and Alegria (1987) cited in Marschark (1997) also showed that phonic proficiency is derived through a combination of lip reading, finger spelling, articulation and exposure to writing, and not learning it in isolation.

2.2.2. Whole Language

Psycholinguistic theory led to the development of whole language instruction. Whole language encompasses “the idea that children learn language holistically rather than in bits and pieces”

(Cooper, 2000:6) meaning that reading, writing, speaking, listening, viewing and thinking do not develop as separate components and should not be taught as separate subjects (Goodman, 1985; Weaver, 1985; Cooper, 2000). The Whole Language Curriculum is based on learners' interests, strengths and needs allowing it to become meaningful for learners. Whole Language approaches reflect constructivist theory, which promotes literacy through activities, emphasizing meaning rather than phonological analysis (Westby and Castlow, 1991; Dias 1998; Weaver, 1985; Lerner, 1993; Schirmer, 2000).

A more structured form of Whole Language is Concentrated Language Encounters (CLE). It provides a practical way of applying whole language principles to improve literacy skills if learners' first language differs from language instruction (Walker, 1992). Research cited in Walker (1992) carried out with beginning Aboriginal students in Australia found that these learners were destined to fail because of the inability to communicate in English. After the implementation of the CLE programmes, the following was documented: a marked difference in their language participation, they were more responsive and confident to teachers' questions and initiated interaction, they could interpret what was said and done within the context of an activity. The results of the research showed that learners benefited from CLE techniques for literacy teaching and these learners became more enthusiastic readers and writers.

Ostrander (1998), suggests that Deaf education methodology in the area of literacy should aim at more holistic approaches such as Whole Language emphasing word recognition over phonic approaches and relating real world knowledge to word and phase meaning for reading allowing learning to become more meaningful and acquiring literacy skills faster.

According to Schirmer (2000), Whole Language approaches have been commonly used and have been proven to be very successful with young Deaf learners in elementary school in the USA. They become aware of the relationship between spoken, written and Sign Language, experiencing success in reading and understanding the text accurately because they created the text. Whole Language approaches also provide Deaf learners with motivation and helps them to gain confidence in themselves as readers. Anecdotal evidence collected by pre-school teachers in a school for the Deaf in North Carolina, USA, suggests that through the Whole Language approach opportunities were created for young Deaf learners to connect meaning to printed words in context, to identify letters of the alphabet quicker, and to link signs to words (Hardison, 1998).

However, many educators and theorists are still not entirely convinced that the Whole Language approach is the best way of teaching literacy to learners as Whole Language is viewed essentially as a language-learning model, which emphasizes meaning and not phonics.

2.2.3. Balanced Approach

Whole Language methodologies saw a decline in reading achievements and this contributed to a call for a balance in the teaching of literacy (Tompkins, 2000). This approach emphasized both whole language methods and skills development, which centers on word-level recognition, comprehension, understanding the main idea and making inferences. Balanced Approaches emphasizes teacher directed instructional approaches as well as student centered instruction (Schirmer, 2000; Vacca et al, 2000).

Shanahan and Neuman (1997) cited in Vacca et al, (2000:59) carried out research with hearing learners using the Balanced Approach states that they "found that no instructional approach was

superior to the others for students at either high or low levels of readiness". Instead, the findings suggest that although no single method proved best, combinations of methods were associated with the highest achievements.

Shimmel, (1999) used the Balance Approach in a pilot study with 48 Deaf learners at a residential school for the Deaf. The combination of phonic awareness, Dolch words and bridging skills enabled learners to sign phrases conceptually instead of word by word. Furthermore, reading comprehension improved and learners were able to use contextual clues taught through a commercially available reading series and language experience stories. Overall, the Balanced Approach showed dramatic gains in students reading levels and academic behavior as well as in growth in Sign Language. This resulted in more organized approaches to literacy development.

2.2.4. The Cognitive Approach to Teaching Literacy Instruction (CATLI)

The CATLI is considered to be a cognitive approach, which is grounded in constructivism. It is contextually inclusive and it is based on a sound ecosystem framework (Harcombe, 2003). It accommodates learners preferred processing styles i.e. bottom-up (successive processing) and top-down (simultaneous processing) into the teaching and learning process (Das, Naglieri and Kirby, 1994). It also integrates the two processing styles and makes use of well researched aspects of Whole Language, which will enable learners to read and write more easily (Harcombe, 2003).

The Phonics Approach, the Whole Language approach or the Balanced Approach is not entirely constructivist. These models do not consider the ecosystem background of learners, they do not take into account cognitive theories of development, nor do they consider ways of accommodating learners' cognitive development and their processing styles.

The CATLI, like OBE, is learner centered and provides learners with cognitive tools to construct knowledge. Learners work at their own level through mediation and collaboration with educators. Also, co-operative learning among learners is encouraged with the result that they pass from one stage of cognitive development to the next (Donald et al, 2002). Cognitive development promotes thinking skills, and encourages autonomous learning to optimize academic and intellectual growth (Skuy, 1996; Harcombe, 2003).

Muma, (2001), and Martin, (2001) have shown that Deaf learners too can optimize their intellectual growth if they are provided with the relevant cognitive tools to construct knowledge. They have found that cognitive education has great potential for improving the education for Deaf learners thus allowing them to consciously direct their own thinking and solve problems. This is especially the case because of the difference in ability to acquire language and the different educational experiences they need. When learners problem solve they are using metacognitive strategies to monitor themselves. This awareness can be most useful in reading (as they monitor their comprehension) and writing (Brooks, 1989). The CATLI will provide Deaf learners with metacognitive skills to make meaning out of what they are reading, resulting in better comprehension skills and more meaningful written texts.

Many South African learners, including the Deaf, have been affected by negative contextual factors, which have interfered largely with the acquisition of their literacy skills (Donald et al, 2002; Harcombe, 2003). Therefore the literacy levels of many of our learners are very low, so it is likely that no one particular method of literacy instruction will benefit these learners. They need an approach such as the CATLI, which will integrate both top-down and bottom-up instructional methods to accommodate these disadvantaged learners in the teaching and learning process.

Deaf children also experience great difficulty in reading. This lies in the auditory nature of deafness and lack of knowledge due to a paucity of learning experiences and limited reading experiences. Deaf children lack internalized auditory forms of language and its associated experiences of cognitive and linguistic skills. Therefore for the Deaf reading becomes a process of experience building, cognitive development and language learning (King and Quigley, 1985). The CATLI will allow educators of the Deaf to design individual programs for these learners taking into account the processing style so teaching and learning will become more meaningful to them.

One of the principles of constructivism, which the CATLI provides, is experiential learning through Concentrated Language Encounters (CLE), which is based on Whole Language principles. CLE makes learning to read and write easy as learners themselves are involved in the activities and in the process of signing, talking, reading and writing. These activities allow thinking, problem solving, talking, listening, signing reading and writing to take place at the same time which increases schema and language development (Harcombe, 2003). This approach is particularly useful to second and third language learners, which is appropriate to South African learners (Harcombe, 2003; Lomofsky et al, 1999)

Deaf children as well as disadvantaged South African learners do not only lack educational experiences they also lack appropriate environments and developmental procedures in infancy and early childhood. This accounts for them having a very limited knowledge basis, poor schema and inadequate developed cognitive and linguistic skills (Webster, 1986). They therefore need an assortment of experiences and activities to improve this very limited knowledge base and poor schema. By building and constructing knowledge they are improving their poor schema allowing learners to use this knowledge to increase comprehension while in the process of reading (Vacca et al, 2000). Deaf learners need to be exposed to print rich environments and real world experiences as

well as understanding language associated with events (Rottenberg, 2001). This eventually is a means of making reading and writing more easy and meaningful.

Research has shown that experiential learning has been implemented with Deaf learners. According to Mcannally et al. (1994) cited in Paul (1998) learners' experiences were expressed in Sign Language and written in English. This then became their own reading material. Learners can learn that signing can be linked to words; this process integrates thinking, listening, speaking, reading and writing (Rottenberg, 2001). These processes linked with metacognitive strategies encourage learners to become more consciously aware of the strategies they use and gain control of their thought processors and learning strategies (Lomofsky et al, 1999).

By implementing the CATLI educators of the Deaf are essentially adding considerable and motivating quantities of information into the lives of Deaf learners. They are also creating the proper circumstances for their exposure to greater levels of suitable stimulation and success (Paul, 1998).

All the above activities, which need to be carried out by the educator, are expected in the new constructivist curriculum. Educators are to create opportunities for success, and are expected to be flexible and to adapt the curriculum to suit the needs of the learners (Department of National Education, 2003). The CATLI uses both cognitive processing to understand literacy processes as well as appropriate teaching methods to link reading and writing strategies together to create the opportunities to increase literacy levels of our Deaf learners.

CHAPTER THREE

RESEARCH METHODOLOGY AND DESIGN

3.1 Rationale

The Deaf, largely, do not have high levels of literacy skills both in South Africa as well as in overseas countries. Since the cognitive approach to literacy instruction (CATLI) has had excellent results with learners who have various kinds of learning diversities, it is hoped that this method would work well with the Deaf learner too.

This approach has particular relevance for the Deaf due to its social constructivist and cognitive psychological and theoretical underpinnings. For example, because of the Deaf learners' limited experience in the world due to economic deprivation and/or disability deprivation and /or very low knowledge and experiential threshold, significant learning limitations in general as well as in literacy learning are encountered. In addition, the teaching of metacognitive strategies is not generally done. The CATLI provides this as part of the process and supports the social and emotional development of learners, which enhances the development of learning.

With the new approach towards inclusion the CATLI is ideal as it accommodates the policy of inclusion because of its constructivist approach. Many of the Deaf learners in South Africa in particular the learners in this research who start school with no prior knowledge should benefit greatly from this approach.

3.2 Aim

The general aim of this study is to implement the Cognitive Approach to Literacy Instruction (CATLI) in a grade three class with Deaf learners.

3.2.1 Specific Aims

- To fulfill the educational needs of Deaf learners by increasing levels of competencies in vocabulary, reading, writing and communication.
- To increase the Deaf learners' general knowledge and ability to link such knowledge to vocabulary, Sign Language, reading and writing.
- To increase Deaf learners ability to use and implement metacognitive strategies.
- To support Deaf learners' social and emotional development.

3.3 Research Design

This research will be of a qualitative nature, and will take the form of a case study. "A case study proves to be a descriptive study, par excellence and in-depth", it also serves "as the most complete and detailed sort of presentation of the subject under investigation" (Hamel, Dufour and Fortin, 1993:33). In this instance it will be an in-depth study of the grade 3 class in a school for the Deaf.

The case study can also be regarded as an in-depth investigation (Hamel et al, 1993) and is best carried out in its natural settings and is employed to gain a close understanding of the situation and meaning for the person involved (Merriam, 1998). A case is a single unit, such as a student, a teacher, a principal, a school or a group of children, which make up a class (Merriam, 1998). This case study is the single unit, which is the grade 3 class.

This study also took the form of action research in which the researcher was a full participant action researcher (Wagner, 1993). Action research can be regarded as self reflective enquiry undertaken by participants in social situations in order to improve the rationality and justice of our own social practice, our understanding of our practices and the situations in which these practices are carried out (Car, 1988). Action research can be carried out by an educator (as in this case study) in order to improve her practice. Having identified a problem in practice, the educator engages in action research by planning, by acting on the problem, observing and reflecting on her action and then re-planning (Bell, 1987). Action research is also a practical problem solving approach. It is attractive to practitioners and researchers, who have identified a problem during the course of their work, having

seen the advantages of investigating and improving it (Cohen and Manion, 1980). Action research also takes heed of people's history, emotions, cultures and interactional practices.

3.4 The Context of the Study

3.4.1. The School

The study was conducted at a school for the Deaf. The school is a combined school catering for Foundation Phase learners, General Education and Training (GET) learners (grades 4-9) and Further Education and Training (FET) learners (grades10-12) or skills based learners. Education in the Foundation Phase and GET caters for learners who are Deaf. In the FET phase both Deaf and hearing learners are offered skills training programmes.

The learners attending this school are largely from low to middle social-economic backgrounds. In addition to learners coming from surrounding areas learners are transported from Soweto, Orange Farm, Kagiso, Randfontien and Carltonville. The majority of the Deaf learners originate from families who are unable to use a Sign Language system and communicate mainly through gestures.

3.4.2 The Participants

The sampling procedure was a non-probability, convenient sample. Convenient sampling uses selective criteria such as location, availability of sites, respondents, etc. The aspect of convenience plays a role in this sampling procedure. Non-probability sampling, otherwise known as purposeful sampling, assumes that the researcher wants to ascertain, understand and gain insight and therefore must chose a sample from which the most can be gained (Merriam, 1998). The participants in this research were the learners in my class of whom I am the sole teacher for all learning areas and with whom I am in contact with for the entire day. Four of the five learners have a severe to profound bi-lateral sensory neural loss and one of the learners has a moderate to severe bi-lateral loss.

	LEARNER 1	**LEARNER 2**	**LEARNER 3**	**LEARNER 4**	**LEARNER 5**
AGE **GENDER**	**9 YEARS** **FEMALE**	**9 YEARS** **FEMALE**	**MALE**	**FEMALE**	**MALE**
HISTORY OF	***Meningitis at age 6 months.***	***Mum first took her for hearing***	***Normal birth. At 2 years parents***	***Pregnancy full term. Mum***	***Delivered by Caesarian***

LIFE EVENTS	***Hearing loss noticed at 14 months. Speech milestones delayed.***	***assessment at age 3 when she noticed learner was not talking. Hearing loss was then discovered. Started pre-school in 2001.***	***were concerned about delayed speech milestones. Clinic referred him to an ENT specialist who confirmed hearing loss. He was fitted with a hearing aid. Started pre-school in 2001.***	***noticed lack of response to sounds at 8 months Milestones in speech and language delayed. Attended pre-school.***	***section. One month pre-mature. Measles at 1st year. Tongue tight had an operation to release tongue. Very Non-verbal. Learner is hemiplegic. Attended pre-school.***
SOCIO ECONOMIC STATUS	***Parent's deceased. Living with granny who is a pensioner. No siblings.***	***Parents separated. Mum works at a garage. They live with granny who does not work. She has an older sister who is 15 years old.***	***Dad works. Mum stays home***	***Lives with granny and sister who is 11 years old. Mum does not live with them and visits occasionally. No contact with dad. Granny works in a hairdresser leaves home at 5.30 in the morning and returns at night.***	***Live in an informal settlement. Dad takes on piece jobs. Mum unemployed. He has 3 brothers older than him.***
SOCIAL SUPPORT	***Receives emotional and financial sup-port from aunty. Well liked by educators. Goodness of fit between learner, school, peers and educators.***	***Receives support from home. Goodness of fit between learner, school, peers and educators.***	***Receives more support from dad, mum tends to be impatient with him. Goodness of fit between learner, school, peers and educators.***	***No support from mum. Granny works the entire day. Older sister takes care of her. Grandfather who is separated from grandmother visits school to see to her financial needs and school***	***Receives emotional support and assistance with schoolwork from his entire family. Goodness of fit between learner school, peers and educators.***

				requirements. Poor goodness of fit between peers and educators.	

3.5. Methods of Data Collection.

Qualitative measures were employed to elicit information. Qualitative data collection will be my means of written materials that will be pertinent and applicable to the study at hand (Merriam, 1998). Data will be gathered in the participant's real-life situation i.e. on a daily basis and analyzed, allowing for an in-dept and substantive description of the research. Data in this study will be learners' work, various forms of assessments and field notes made from observations of learners. In order to obtain data from this study, the CATLI was implemented over a six-month period. The interaction with the learners over this period of time enabled data to be collected from pre and post testing using the following

- Stanford Diagnostic Reading Test
- Informal reading
- Informal writing
- Continuous assessments
- Observation sheet indicating social/ emotional /cognitive progress

3.6. Pre- Intervention programme

3.6.1. The Stanford Diagnostic Reading Test (SDRT)

The SDRT measures the major components of the reading process. Its primary purpose is to diagnose pupils' strengths and weakness in reading. The results can assist educators to develop appropriate teaching strategies and materials. The SDRT was designed to provide particularly accurate assessments of low achieving learners. It has four major components decoding, vocabulary, comprehension and rate.

SDRT provides 4 levels of evaluations which are the red level, the green level, the blue level and the brown level. The red level which was used in the study is used for grades 1and 2 and extremely low achievements in grade 3. The red level has 5 sub-tests, which measures auditory vocabulary, auditory

discrimination, phonetic analysis, word reading and reading comprehension (Karlsen, Madden and Gardner, 1977).

The following subtests were administered, as the other two subtests, which are the auditory discrimination and the phonetic analysis subset, were not applicable to the Deaf.

Auditory vocabulary: this subtest samples vocabulary from three general content areas: reading and literature, mathematics and science, and social studies and the arts. Learners are asked to select words, which best fit the meaning of sentences. This gives an indication of the learner's competence in vocabulary.

Word Reading: measures pupils' ability to recognize words and attach meaning to them. It provides an assessment of applied reading of pupils who cannot read sentences or paragraphs. Learners are asked to identify words that describe a particular illustration. All words, including distracters, were limited to those found in reading materials for grades 1, 2, and 3.

Comprehension Part A: requires pupils to identify the picture that best illustrates the meaning of a printed sentence or riddle.

Comprehension Part B: measures the pupil's ability both to read and understand short passages presented in a multiple-choice format.

3.6.2. Informal Reading

Reading materials, which were interesting to the learners, were chosen. Learners have to recognize at least 80 % of words to be able to read fluently. Miscues (errors) were viewed as diagnostic opportunities for revealing underlying reading difficulties. The miscues are used positively for improving reading and increasing comprehension (Lerner, 1993)

The reading was assessed on the following miscues:

- Hesitations indicating learners could not recognize words instantly.
- Repetitions indicating learners could not recognize words as well as conditioned responses due to anxiety.
- Substitutions indicating learners could not recognize words instantly as well as saying words based on the first sound.
- Omissions indicating learners could recognize words and were not paying attention to detail.
- Self-correction indication learners did not recognize words and used contextual clues to self-correct.

3.6.3. Metacognitive Strategies used to Aid Reading/Writing/Comprehension

- Using the context/prediction.
- Sequencing content to give learners a sense of meaning.
- Inferencing and drawing conclusions.
- Problem-solving.
- Planning using graphic organizers.
- Self- regulation/self monitoring.
- Getting meaning from print.

3.6.4. Informal Writing

Learners either choose a picture or a topic on which they would like to write. According to Schirmer (2000), informal approaches offer the best potential for providing a link between literacy assessment and instruction.

The informal writing was assessed on the following concepts

- Writing conveys meaning
- Sequence of story
- Planning writing using a graphic organizer.
- Uses dictionary to check spelling of words
- Creativity/ideas.
- Literacy conventions.
- Predicting using a picture (Harcombe,2003)

These strategies were specifically concentrated on for the 6 months of the research.

3.6.5. The CATLI -Intervention Description

Step one: Theme planning.

Step two: Theme Initiation.

Step three: Shared Reading.

Step four: Activity- Based Tasks.

Step five: Publishing.

Step six: Literacy Based Practices.

STEP 1: Theme Planning

The theme is negotiated with learners. In this way, the interest of the learners is accommodated. This keeps curiosity and motivation high. While planning it, it must be assessed what concepts (knowledge) are not developed in learners, so that gaps can be filled and linked to the curriculum (Harcombe, 2003).

STEP 2: Theme Initiation

Themes were introduced, stories, visits, activities, etc. The learning experience was made as real or authentic as possible. This allows current knowledge (concepts) to be activated and linked to new experiences. Children with barriers to learning often have large gaps in their knowledge, especially of school- related knowledge. These gaps have to be filled by real experiences. Direct instruction to enlarge their knowledge was necessary at all times (Weaver 1991, Harcombe 2003)

STEP 3: Shared Reading

Books were carefully selected. In most cases, books were theme-related and above their own reading levels. In most instances preparatory work was done regarding the content. The book cover, pages and pictures were discussed as well as open-ended questions about literacy conventions, content, etc. This activated schema and gave the researcher an indication of gaps in the knowledge. While reading, the teacher/researcher taught strategies such as prediction and problem solving and drew their attention to literacy conventions. Questions were asked when the story was finished. In this way they are also being taught evaluation skills. Difficulty with phonics and punctuation were taught separately i.e. instruction out of process (Harcombe, 2003).

STEP 4: Activity-Based Tasks (ABT)

Practical activities were designed for the learners in the context of the theme. The groups did the activity. While doing the activity, they listened (watched) and talked (signed) to each other about what they were doing while the teacher/researcher assisted with vocabulary if it was needed. The results of their activities were described. They then dictated to the teacher the process of the activity, which the teacher/researcher wrote. They then read the text together and the teacher/researcher published the text. Some associated writing practices were done. The published text was read repeatedly. Learners were involved in talking, reading, writing and listening and the teacher/researcher generated language before writing. The teacher/reseacher in the process helped them to develop strategies such as prediction, grammar production and problem solving. ABT were practical and authenic so that it arouses their interest, and improved motivation to read and write (Harcombe, 2003).

STEP 5: Publishing

The teacher/researcher typed up the story into a big book and a small book was made for each learner. It was taken home and read for homework, as well as read in class. Learners showed an interest in books they have contributed to, and read them often. Publishing the book gives meaning to reading and writing as well as create opportunities for the learner to practice reading (repeated reading). It helped to build vocabulary and concepts and allowed them to enjoy what they have made, giving them a sense of mastery and motivation (Harcombe, 2003).

STEP 6: Literacy Based Practices

These steps allowed the teacher to design strategies that provided extra work and practice according to the individual needs of each learner.

Repeated Reading: Reading the text, which they published, over and over again.

Sentence Matching: The learners were given duplicate copies of a few sentences from the dictated text. In pairs the learners cut up the duplicated sentences and mixed and matched them to the intact sentences. They read sentences aloud. This task helped the child to get practice in many skills, such as sentence construction, the concept that words make up sentences, linking meaning to vocabulary and punctuation, as well as invaluable practice in associative linking to meaning for individual words.

Word Matching: Learners played matching games such as Lotto, Bingo, etc. with individual words they did not recognize. Many function words and irregular spelled words were used, as poor successive processors do not easily automatise these words.

Shared Writing: Learners wrote their own stories, individually and sometimes in groups. Planning was done with the learners allowing them to be more confident when they wrote.

Handwriting Practice: Learners copied the sentences generated. Eventually, they wrote their own sentences.

Simple Phonics and Sound Families: Teacher and learners talked/signed about words that looked the same when reading and writing. The learners' attention was drawn to words that look the same e.g. cat, hat, sat that is, they have the same endings. It soon became evident that learners were unable to rhyme many of the sound families. After discussion with my supervisor it was decided not to continue with sound families but rather implement dictionary work. Dictionaries were created for the learners. As new vocabulary was learnt learners wrote them in their dictionaries under the correct alphabet. This was extremely useful, when learners were unable to spell words they looked for the word in their dictionaries. The words were used when they wrote their own stories.

3.7. Data analysis

The results of the learners, progress will be documented in the following areas by means of the comparative method i.e. data will be compared with another set of data (Merriam, 1998). The data from pre and post-tests as well as social, emotional and cognitive data will be analyzed. The date will be analyzed according the following questions:

- ✓ 1.A. Did vocabulary usage improve when reading and writing?
  Data was obtained from SDRT pre-post results, written work, vocabulary assessments and the researcher's observations.
- ✓ 1.B. Did reading comprehension improve: ie getting meaning from texts, using contextual clues and instant word recognition?
  Data was obtained from SDRT comprehension, pre and post results and the researcher's observations.
- ✓ 1.C. Did written language improve: was writing more meaningful, was there correctness of word order, use of literacy convention and correct use of spelling?
  Data was obtained from self-generated written work and published texts and the observer's observations.
- ✓ 1.D. Did signing improve: linking Sign Language to vocabulary learnt and knowledge gained from activities?
  Data was obtained from signs representing vocabulary and signs representing grammar.
- ✓ 2. Did general knowledge improve in the following themes: Our Country South Africa (i.e. geographical location), Transport and The Circus and Circus Animals?
  Data was obtained from themes, linking knowledge to writing and the researcher's observations.
- ✓ 3. Did metacognitive strategies improve?
  Data was obtained from the researchers' observation in the use of planning and sequencing, use of contextual clues, predictions, self-monitoring, self-corrections and focusing on meaning.
- ✓ 4. Did social and emotional development improve: i.e. confidence in working in a group or on their own, performance anxiety, motivation to learn, knowledge of social skills and collaboration?
  Data was obtained from the researcher's observations.

Informal Reading

The informal reading was analyzed according to hesitations, repetitions, substitutions, omissions and self-corrections.

Informal Writing

The writing was analyzed according to the planning and use of a graphic organizer. Informal writing conveyed the sequence and meaning of the writing, creativity, spelling, literacy conventions and grammar.

The SDRT

The reading results of both the pre-test and the post-test were analyzed and interpreted according to grade equivalents set out in the SDRT scoring manual.

Researcher's Observations

Throughout the implementation of the CATLI and after every theme, observations of learners interactions and progress were noted.

3.8 Permission

- Information letters were given to the principal of the present school. The letter detailed the purpose of the research study. The letter requested permission from the principal to implement the CATLI as part of the language and literacy programme.
- Information letters for the parents, explaining the purpose and consent of the research study and requesting parent's permission for the learners to take part in the research were sent to learners' homes.
- A copy of the research proposal was sent to the G.D.E. requesting permission to do the research at the present school.

3.9 Ethical Considerations

This study was conducted after permission was obtained from the University of the Witwatersrand ethics committee on research with human subjects. Ethical procedures were adhered to. Parents were requested to provide permission for the learners to participate in the research project. Parents were also informed of their rights to withdraw their children from participation in the study at any point. Confidentiality of subjects was maintained by using pseudonyms rather than the learners' names in writing up the research report.

CHAPTER FOUR

RESULTS

4. Introduction

An analysis of the result indicates that the learners have largely benefited from the CATLI. The majority of learners have shown improved results in all areas of the investigation. It is evident that even though one learner did not improve at the same rate as the other learners, there was evidence of limited improvement.

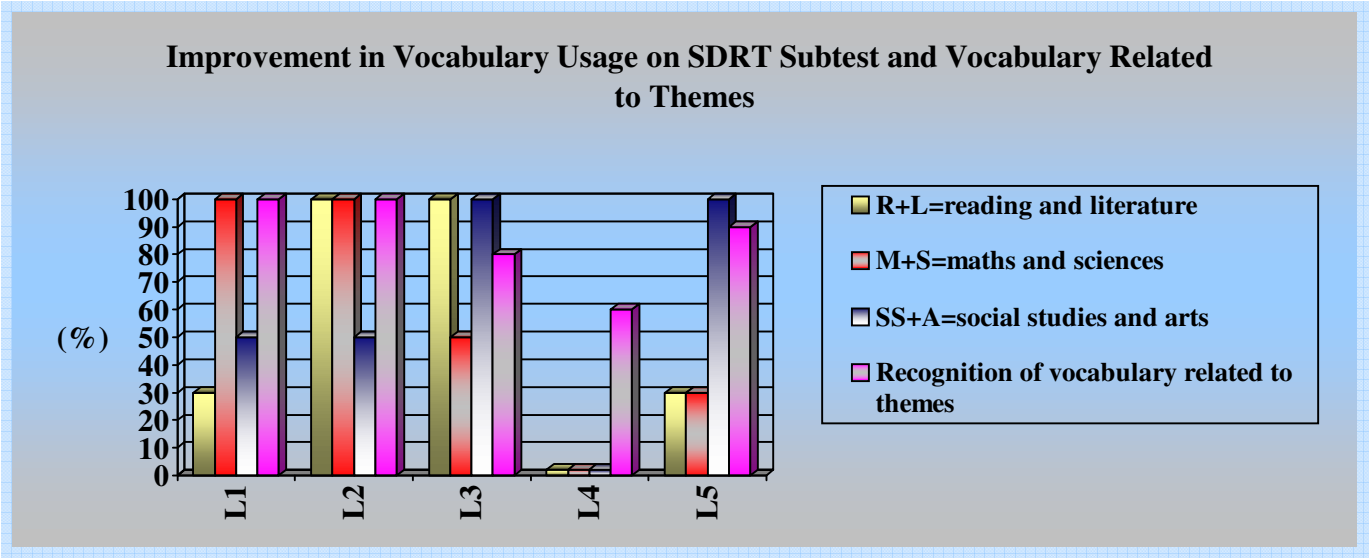
4.1. A. Improvement of vocabulary usage

Did vocabulary usage and understanding improve when reading?

Evidence was obtained from SDRT pre and post auditory vocabulary (see appendix 1), continuous vocabulary assessment related to themes and researcher's observations (see appendix4).

Learners' improvements in vocabulary usage have been summarized in table1.

Table 1



*** L = Learner**

*** 100 % Improvement of one and more than one grade level**

*** 50% remaining on the same level**

*** 30% some improvement**

*** 0 % no improvement**

*** Percentage of vocabulary reflects actual percentage of vocabulary recognized**

The auditory vocabulary subtest represents samples from three general content areas: reading and literature (R+L), mathematics and science (M+S) and social studies and the arts (SS+A). Learners have to select words, which best fit, the meaning of the sentences. This gives an indication of learners' competence in vocabulary. Learner 1 showed improvements in M+S and vocabulary related to the themes. This learner remained on the same level in SS+A and showed some improvements in R+L and was able to recognize all vocabulary related to themes learnt. Learner 2 showed improvements by one grade level in R+L and M+S as well as recognized all vocabulary related to themes, but remained on the same grade level for SS+A. Learner 3 showed improvements in R+L, SS+A and vocabulary related to themes and remained on the same level in M+S. Learner 4 showed no improvement on the SDRT test but was able to recognize vocabulary related to the theme. Learner 5 showed some improvements in R+L and M+S, improved by one grade level in SS+A and showed improvements in vocabulary related to themes. The majority of the learners showed improvements in this area.

One of the main usages that improved was the learners' ability to instantly recognize and understand the vocabulary taught and learnt during the intervention. Once learners had completed activities having first learnt the vocabulary and generated texts on the activities, the vocabulary was reinforced through reading, matching of words and word games. This enabled learners to instantly recognize many of these words. Learners could then use the vocabulary meaningfully in daily written pieces as

well as sign out sentences. They could then recognize the vocabulary in commercial readers, library books and magazines.

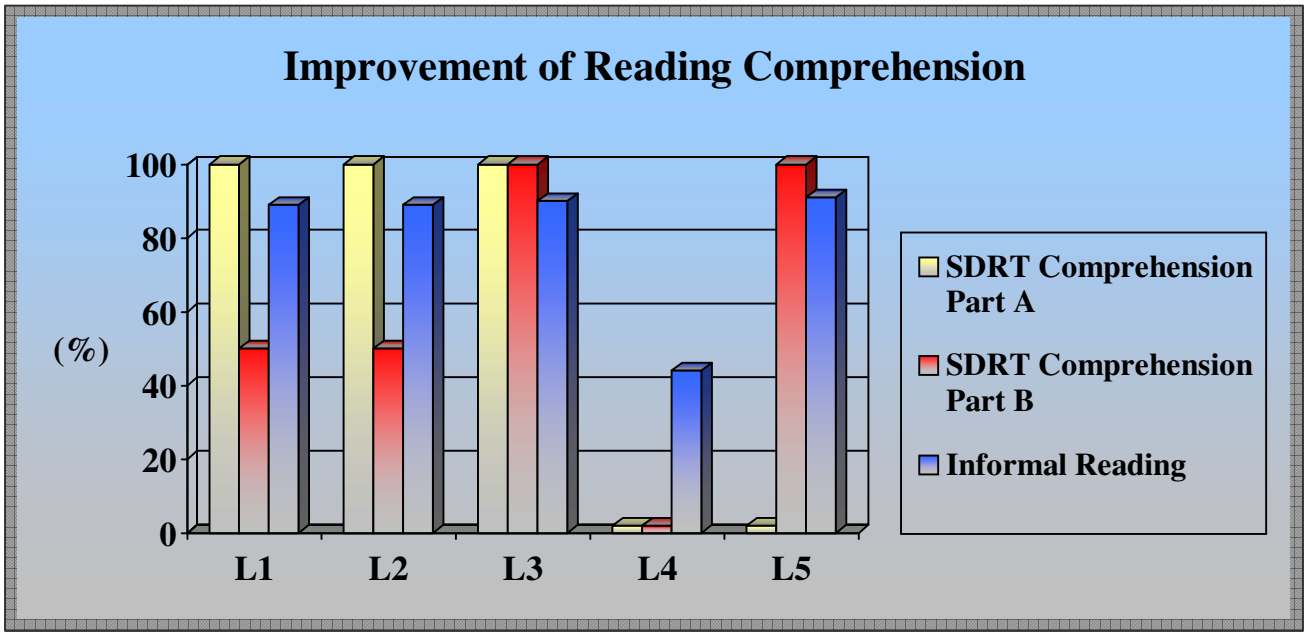
4.1. B. Improvement of reading comprehension

Did reading comprehension improve i.e. getting meaning from the text, using contextual clues and instantly recognizing words?

Evidence was obtained from the SDRT comprehension pre and post subtest, pre and post assessment of informal reading and researcher's observations (see Appendix 2).

The learners' improvements in reading comprehension are summarized in table 2.

Table 2



*** L = Learner**

*** Improvement of one grade level**

*** 100 % improvement by one grade level**

*** 90 % improvement just below one grade level**

*** 50 % remaining on the same grade level**

Part A of the comprehension test required learners to identify pictures that best illustrated the meaning of a printed sentence or riddle, while part B measures the learners' ability both to read and understand short passages presented in a multiple-choice format. Table 2 shows that 3 out of 5 learners had improved in comprehension part A by one grade level, while two learner showed no improvement in this area. Two learners had improved by one grade level in part B, two had remained on the same level while one learner showed no improvement at all. The results also indicate that the majority of the learners' informal reading had improved.

The learners showed evidence of improved comprehension due to improved schema and concept development. Having developed the relevant schema learners knew enough about the text to approach it with better understanding. They were able to link the knowledge they had to the content in the themes therefore enhancing their understanding of the text.

The learners' enhanced comprehension and instant word recognition meant their sight-word pool had increased, therefore improving their informal reading. Before intervention, the learners' informal reading reflected miscues such as hesitations, substitutions, omissions, repetitions and self-corrections, which are reflective of an insufficient sight-word pool. After intervention, the learners reading had less miscues suggesting improved sight-word pool and instant word recognition.

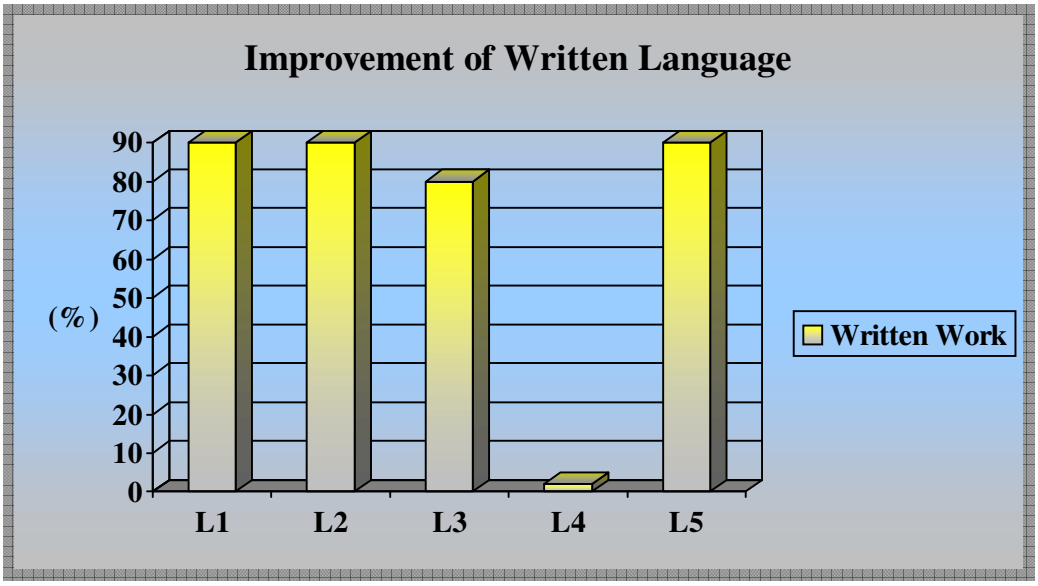
4.1.C. Improvement of written language

Did written language improve i.e. was writing more meaningful, was word order correct, was there use of literacy conventions and was there use of correct spelling?

Evidence obtained from informal writing pre and post assessments, written work and researcher's observations (see appendix 3).

Table 3 provides a summary of the results of the improved written language.

Table 3



*** L = Learner**

The table indicates that the majority of learners writing had improved. Their writing samples indicated that sentence construction has improved and that sentences were more meaningful. The word order at a simple level was correct. Learner 1 was able to construct sentences at a complex level. Sentences were grammatically correct but would omit parts of words such as 'ing', 'ed','s' in plurals and would substitute 'is ' for 'are'. On the more complex level, learners 2, 3 and 5 were able to construct complex sentences with word order mixed up but ideas evident. Student 4 was able to construct simple sentences but not complex sentences.

The learners' writing also showed evidence of improvements in literacy conventions. Before intervention there were no capitals or full stops used in their sentences. After intervention, there were clear indications that they knew when to use literacy conventions such as capitals and full stops. With regards to story writing, learners were able to plan on a graphic organizer, give their story a title and then sequence their stories.

Learners' written work also showed evidence of improved spelling. Learners had a dictionary in which difficult words were written. When they wrote sentences, they could refer to these words in their dictionaries. As a result, their work reflected fewer spelling mistakes. In addition to written language improvement, the writing process also gave them the opportunity to practice their handwriting which at the end of the intervention period was more legible.

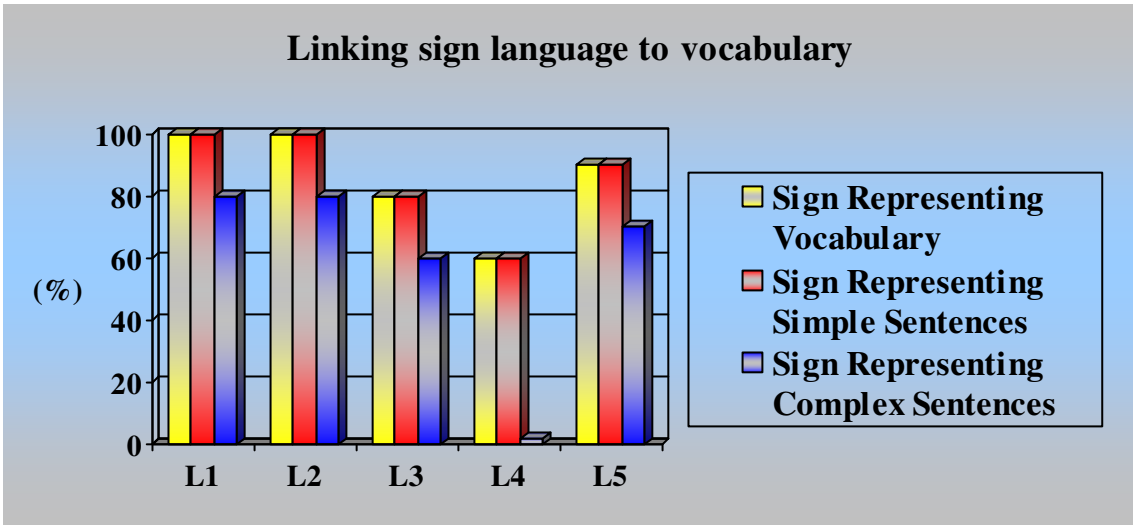
4.1. D. Linking Sign Language to vocabulary

Did signing improve i.e. were learners able to link Sign Language to vocabulary learnt and knowledge gained from activities?

Evidence obtained from continuous assessments of signs representing vocabulary, signs representing grammar, signs representing complex sentence construction and researcher's observation (see appendix 4).

Table 4 provides a summary of the results of learners' ability to link signs to vocabulary.

Table 4



*** L= Learner**

The results of this research question provides evidence that learners were able to link Sign Language to the vocabulary and general knowledge learnt from the themes and activities related to the themes. Learners were also able to link sign to all the texts that were generated around the themes as well as link sign to sentences, which were constructed with the vocabulary. However, linking sign to sentences had improved on a simple level. While on a complex level, the sentences were signed in Sign Language structure.

Vocabulary assessments after every theme reflect that most learners were able to link the word to a sign and the sign to a word. The improvement in sign can be attributed to the improvement in general knowledge as well as to an increased word pool. Improved signing was noticeable during discussion times as learners were more enthusiastic to sign about what they knew and experienced as related to the discussions. Observation of learners on the playground showed that learners were accepted into social circles of the senior learners because of the improved ability to sign, which led to better communication skills.

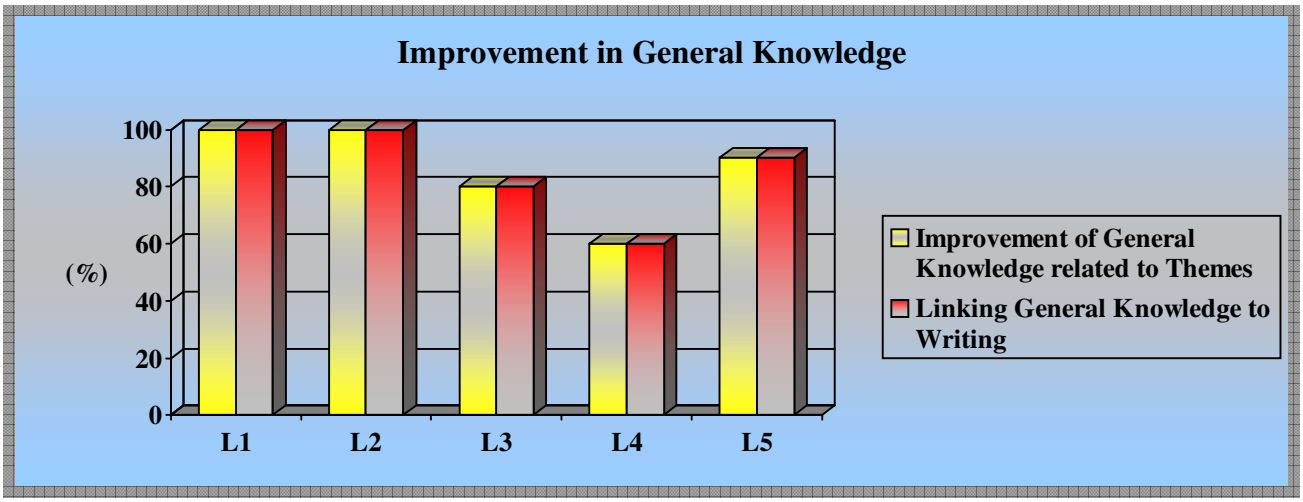
4.2. Improvement of general knowledge

Did general knowledge improve in the following themes: our country, transport, the circus and animals of the circus?

Evidence obtained from themes, linking knowledge to writing (writing samples) and researcher's observations.

Table 5 provides a summary of the improvements in general knowledge.

Table 5



*** L = Learner**

All learners showed considerable improvements in general knowledge in the themes that were completed. All themes were initiated by reading about that particular theme and was then followed by a structured activity related to the theme. In this way schema was being activated and meaning constructed. This knowledge was then transferred into the writing process and a story was written, therefore strengthening the language and literacy process. Learners then read and signed the knowledge they had gained. Since they had gained this knowledge, literacy based practices were generated and knowledge transferred to these practices. This allowed learners to gain practice in sentence construction and in linking meaning to vocabulary.

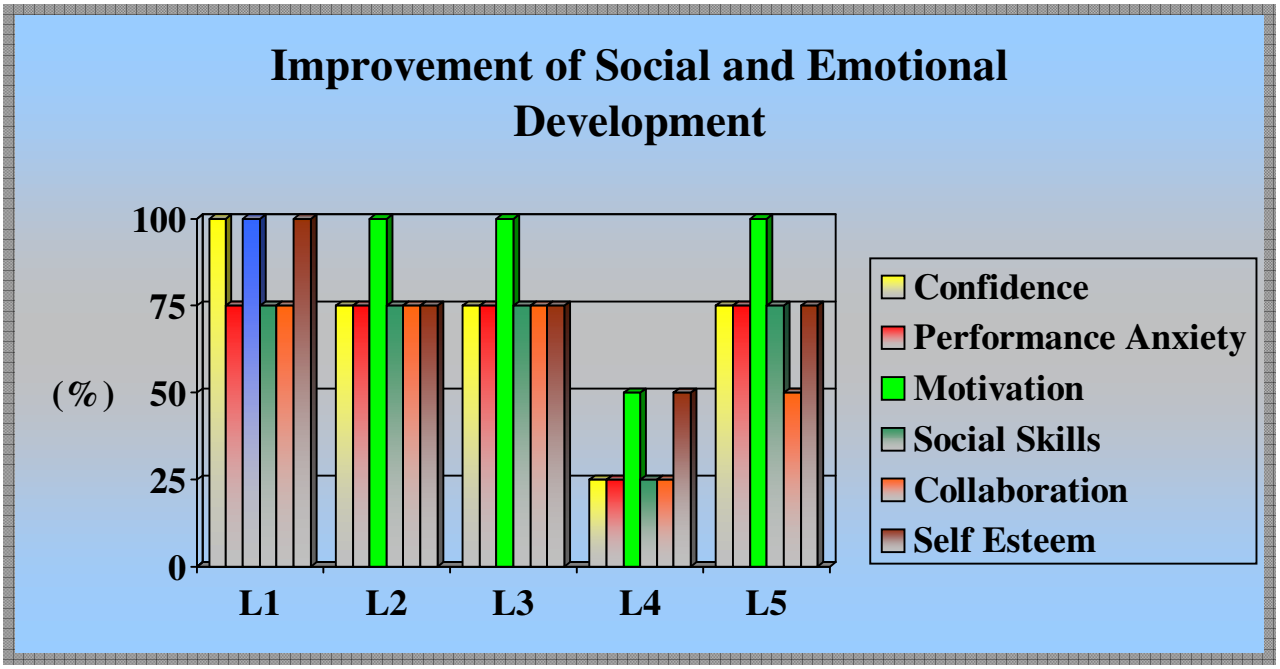
Learners' general knowledge had improved in the areas of geographical positions of South Africa, modes of transport, the circus and circus animals. Learners were eager and confident to sign and discuss these topics when seen in different contexts such as newspapers, magazines and library books.

4.3. Improvement of social and emotional development

Did social and emotional development improve i.e. confidence in working on their own or in a groups, reduction of performance anxiety, greater motivation to learn, and improved knowledge of social skills, collaboration and self-esteem (see appendix 5).

Evidence was obtained from researcher's observations.

Table 6



* **L = Learner**
* **No improvement = 0%**
* **A little improvement = 25%**
* **Some improvement = 50 %**
* **Most improvement = 75%**
* **Total improvement = 100%**

The results on the above table demonstrate that the majority of the learners have shown substantial improvement in their social and emotional development. Four of the learners were extremely motivated to learn as the CATLI focused on changing factors that have stifled learner motivation. Many of the authentic tasks taught to the learners meant gaining greater comprehension while learning therefore encouraging their motivation to read and write.

Since the CATLI employs learner centered methods the environment was managed to enable learners to discover knowledge and understand processes for themselves thus increasing motivation. In addition, many of the gains in their social and emotional development can be attributed to co-operative learning. Through co-operative learning, learners provided each other with the social and emotional support they needed. Peer-tutoring and group work made learners more confident and eager to work with peers. Learners were tolerant of one another, and their knowledge of social skills increased as evidential in turn taking and not interrupting while others were signing.

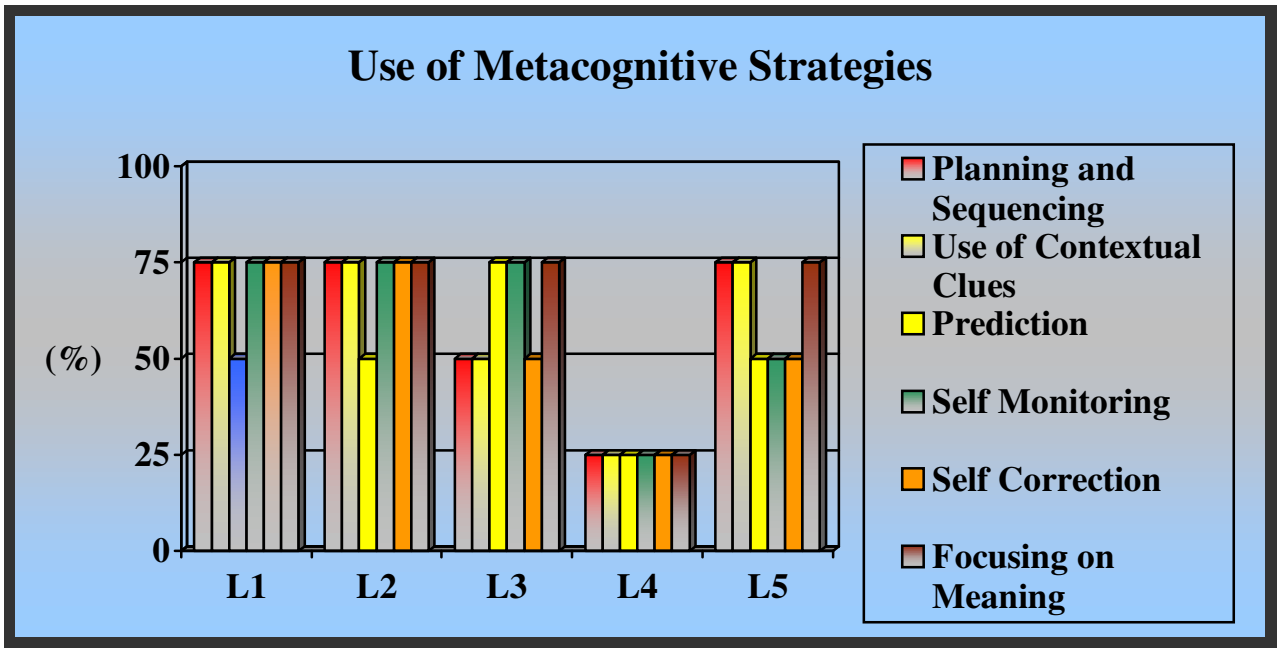
The above positive factors improved the classroom environment. Working in groups created an element of fun and lowered anxiety. This resulted in less performance anxiety and improved self-esteem therefore producing better results. Before intervention learner 4 showed very poor social and emotional behavior as well as a poorness of fit between other learners and the curriculum. After intervention there was evidence of some improvement indicating that the CATLI was beneficial to all learners.

4.4. Improvement of metacognitive strategies

Did metacognitive strategies improve?

Evidence obtained from the researcher's observations of the learners when using the following strategies:- planning and sequencing use of contextual clues, prediction, self-monitoring, self-correction an focusing on meaning (see appendix5).

Table 7



* **L = Learner**
* **No improvement = 0%+-**
* **A little improvement = 25%**
* **Some improvement = 50 %**
* **Most improvement = 75%**
* **Total improvement = 100%**

The results in table 7 show that most of the learners had improved in the use of metacognitive strategies when doing tasks. Before intervention learners were not sure of how to use metacognitive strategies. Many of these strategies had to be modeled to the learners before they understood what was expected of them.

While four of the learners needed little assistance when planning and sequencing stories using a graphic organizer, one learner struggled with this area of work and needed constant assistance. Learners first answered questions related to the sequence then progressed to the graphic organizer. This helped learners to understand the meaning of the story or text and write out their own stories in proper sequence.

The majority of the learners were able to use contextual clues to get meaning from the text. They were also able to predict what would happen in a story or picture. Learner 4 found difficulty with this strategy, as it appeared too abstract for her. Four of the learners were able to self-monitor before writing. They would sign out their sentences to themselves, and then write it. When written work was complete, these learners were encouraged to self- correct by thinking about what they had written and spot the mistakes they had made. Learner 4 showed very little improvement in this area.

By using the above strategies as well as encouraging learners to think about what they were doing, they were able to focus on getting meaning from the tasks at hand, resulting in more meaningful work.

CHAPTER FIVE

DISCUSSION

Deaf learners have failed to develop adequate literacy skills due to the fact that they lack the exposure to experiences as well as the correct teaching methodology, which fails in helping them construct knowledge while experiencing activities. The aim of this study is to implement the CATLI to improve literacy levels of Deaf learners. This study implies that if the CATLI were to be implemented with Deaf learners, one would see a cycle of learning, which could have a rippling effect on the different areas of literacy development. Through the CATLI learners are exposed to experiences which then leads to knowledge; knowledge with usage leads to the development of language skills particularly vocabulary; vocabulary linked with signing improves and increased sign and the ability to sign. This enhances the ability to read and write. The enhanced ability to read and write increases motivation and confidence in learners thus having a positive effect on their social and emotional development. All of this, enriched with cognitive strategies, allows the learner to use strategies that will improve his ability to think and learn.

5.1. Vocabulary

The ability to recognize words is critical for the mastery of the printed page. Previous research shows that vocabulary knowledge is a primary component of reading and that a direct relationship exists between vocabulary knowledge and reading comprehension and fluency in word recognition enables readers to concentrate on the meaning of the text (Cooper, 2000; Lerner, 1993). Research also indicates that Deaf children typically show their largest reading related deficits in areas of vocabulary knowledge (Paul and Quigley, 1984; Moores, 1987). These vocabulary deficits are a result of the linguistic and experiential shortages they encounter (Marschark, 1997).

The results of this research have found that there was an improvement in vocabulary, while one learner remained on the same grade level. It became evident in the research that the Deaf learners were able to recognize vocabulary, link it to sign and comprehend the written text. These learners were also able to use the vocabulary meaningfully in sentence construction and when communicating. Learners were able to expand their vocabulary by exposing them to real life experiences, print and sign. Conceptualization of real life experiences became very meaningful. By using vocabulary in a practical, experiential way learners' comprehension abilities improved and learners remembered detail related the vocabulary. The vocabulary they used further enhanced their use of Sign Language with the equivalent English vocabulary as it helped to build their vocabulary in both languages. Vocabulary was integrated with background knowledge; repetition of vocabulary provided learners with more than one encounter with the meaning and use of the word. Indirect vocabulary instruction included using contextual clues, word games, matching words and developing dictionary skills.

The results in the area were similar to the results in a study by Nolen and Wilbur (1984), which shows that Deaf learners need to construct reading around vocabulary and content. Only then the necessary context is provided. Vocabulary learning in isolation is difficult and has little meaning. This study supports the theory in general as well as the theory related to the CATLI, which informs that vocabulary is a primary component of reading. Because learners were able to recognize the vocabulary, they were more confident when they read. They enjoyed reading their own printed material as well as recognising vocabulary learnt in commercially printed readers, library books and magazines. Deaf children's vocabulary skills are better when words are presented in context than in isolation. Through instant word recognition, there was an increase in learners' sight word pool. They were able to associate meaning to these words, which led to better comprehension.

5.1.1 Reading Comprehension

The purpose of reading is comprehension. Learners must be able to gather meaning from print. As readers comprehend the material they read they must bridge the gap between the information presented in the written text and the knowledge they possess. Reading comprehension depends on the reader's experience, knowledge of language and recognition of vocabulary (Lerner, 1993). A direct relationship exists between vocabulary knowledge and reading comprehension, as new knowledge is critical to reading comprehension (Lerner, 1993; Schimmel et al, 1999).

The gains in the results of the reading comprehension can be attributed to expanding the learners' vocabularies by exposing the learners to print and sign, increasing literacy experiences as well as increasing their general knowledge through experiential activities. Research cited in Moores (1997), showed that reading comprehension depends on bringing in ample background knowledge or schema to the text and depending on the schema they already have, the Deaf reader may be able to handle the complexities of the reading process. When Deaf learners build new knowledge based on experiences they are adding new information to their schema. This results in them understanding what they read. Learners are then able to construct meaning in the light of what they have knowledge of (Cooper, 2000).

The finding in this area is significant in the light of the fact that the literacy acquisition of the Deaf learners in this study was affected by many ecosystemic factors. The learners brought a very limited knowledge base to the tasks (Webster, 1986). These learners lacked exposure to a wide range of meaningful, real world experiences needed to develop schema. Since the CATLI makes use of experiental learning and meaning driven approaches, ie using the constructivist approach through experience, learners gained knowledge which they are not exposed to. They were able to understand

what they read as the written text conveyed meaning because it related to what they knew. Reading as well as writing therefore became more meaningful to these the Deaf learners.

5.1.2 Writing

Learners can increase their reading skills through writing activities and can improve their writing skills by means of reading activities. Research has suggested that reading and writing are reciprocal processes. They are interrelated and learning environments encourage the development of literacy (Schirmer, 2000; Paul, 1998). However, Deaf learners' linguistic experience leave them with a restricted set of grammatical rules, they will never be familiar with the language of most book materials because language patterns will be much more sophisticated than their own It is for this reason that educators have to constantly tailor written material to suit their grammatical levels (Webster, 1986).

Many theorists and educationists of the Deaf also agree that the area in which the Deaf learner is weakest, and which spills over into other areas such as writing, is his/her limited language abilities (Moores, 1997). These learners experience difficulty in writing. They tend to put words in incorrect order, add unnecessary words or leave out necessary words. They also use inappropriate word endings and are limited by a restricted vocabulary.

The present study found a definite relationship between reading and writing. It substantiates the notion that writing and reading need to be integrated. When this integration is done in a thoughtful way, it shows that the learners' motivation is greatly stimulated and their written language much improved. Learners were keener and were also able to write about what was discussed and printed in their own personal readers and big book. Their sentences were more meaningful with evidence of literacy conventions. Their writing samples however showed evidence of very concrete literal

Subject-Verb-Object structures indicating that sentences were on a simple level and that in the construction of more complex sentences the word order was incorrect although ideas were evident. Deaf children according to Webster (1986), use shorter and simpler sentences, which contain more content words, such as nouns, verbs and adjectives and fewer function words such as prepositions and conjunctions. Deaf children also tend to keep to one particular sentence pattern such as Subject-Verb-Object (SVO). Any sentence pattern beyond SVO may be difficult.

A study carried out by Shanahan and Lomax (1986) cited in Schirmer (2000) showed that second and fifth grade learners used both their reading knowledge in writing and their writing knowledge in reading and that in general the learners used more reading information in writing than the other way round. They transferred strategies learned in writing to reading and reading to writing. The research concluded with very similar results to the present study showing that reading and writing are mutually supportive and connected to learners' knowledge.

Although research has shown that writing poses great difficulty and takes a longer time to see better writing samples, the CATLI integrated the reading and writing processes, and found that learners were able to write about the themes that were covered, as well as what they could read, revealing that there was a relationship between the reading and writing process. While this research was intended for a period of 6 months and improvements were noticeable, one must bear in mind that the more learners read and write the more they improve at reading, writing and learning. It is important to remember that the problems Deaf learners have in acquiring English is because they cannot hear, so they cannot acquire structures of English as hearing children do. In fact, some researchers suggest that one can expect clarity of expression but not grammatical perfection (Livingston, 1997). It is considered, however, based on the evidence of this study, that increasingly correct grammar can be expected, as the CATLI is used over longer periods of time.

5.1.3 Linking of Sign Language to Reading and Writing

Many researchers suggest that sign serves as a very powerful foundation to facilitate Deaf learners' progress in the acquisition of English literacy, as English serves hearing children to mediate the learning of reading and writing (Nelson, 1998). The Deaf learners' first language, which is Sign Language, facilitates the learning of English literacy instruction and as Sign Language improves it leads to better English literacy skills and academic achievements (Nelson, 1998).

According to Grushkin (1998), signing provides a strong link to the printed word and literacy for the Deaf learner. Linking sign to words is a way of introducing new vocabulary. It allows Deaf learners to acquire English vocabulary during daily conversation by associating the new word and its meaning through the context of the discussion. Linking sign to vocabulary can also be considered to be a form of direct vocabulary instruction and at the same time serves as reinforcing and retention of the word. Grushkin also states that rather than just seeing the word the learners are literally given the opportunity to get a feel for the word and how to use it in daily discussion and communication.

This study shows that the large vocabulary pool that learners acquired was linked to their signing ability. The research also found that linking allowed the learners to develop a measure of control over their environment. The experiential learning that learners were exposed to increased their knowledge and usage of vocabulary. This vocabulary in turn was linked to sign. These signs were then used daily during the duration of a theme. It was reinforced continually allowing them to retain both word and sign. According to Schirmer, (2000) when Deaf learners link vocabulary to Sign Language they are comparing and contrasting the Sign Language equivalent to English vocabulary and in the process becoming familiar and building vocabulary in both languages. This research proved that as learners became familiar with the vocabulary, it increased their word pool. By using this vocabulary in daily

conversations it allowed learners to move back and forth between sign and written English encouraging reinforcement in both sign and vocabulary recognition. The present study can be compared to a study carried out by Hirsh and Pasek (1986-1987), which shows that there is a strong correlation between the use of sign and vocabulary development. The study showed that when learners were encouraged to link words to sign, Deaf learners experienced an increase in their vocabulary recognition. When the learners were taught the link between sign and written language, these learners realized that words they were using were the same words that have a print form.

The improvement of linking sign to vocabulary allowed learners to sign and read with an increased amount of speed and fluency as well as a better understanding of the text they read. The more words the learners were able to sign the better they were able to comprehend text. In addition when reading aloud to the learners and simultaneously using signs, the signs kept the written word visible to them allowing learners to move back and forth between the Sign Language version and the English text (Schirmer, 2000).

This study, as well as other studies, has shown that learners also form links between writing skills and Sign Language. This is then associated with better writing skills. Since learners were able to link sign to all the vocabulary they knew which was related to themes, as well as do repeated reading on the themes, their writing showed that they were able to write about what the signed and read. Their writing reflected improvement in simple sentence structure, whereas more complex sentence reflected typical Sign Language structure, and not English grammatical structure. Nelson (1998) explains that when learners are able to link reading and writing to Sign Language, there is an improvement in written language skills, which should then lead to better narration, and an increase in general knowledge which in turn stimulates further Sign Language progress. Higher Sign Language

progress then supports high literacy prowess thus a self-sustaining cycle of growth in Sign Language and English are engendered.

As a result of the linking the learners improved use of Sign Language had a positive effect on many areas of work. Robbin (1983) cited in Martin (1884) found that Deaf students have significantly greater comprehension of a text when it is supplied with signs. Learners improved use of Sign Language fostered better communication between learners and educator thus allowing increased understand of each other during teaching and learning practices. What was essential to note in this area is that the researcher/educator was competent in Sign Language. Had the CATLI been implemented to these learners with limited sign the outcomes would have been different.

5.2 General Knowledge

Background knowledge is the first step to comprehending a new piece of reading. Prior knowledge in many of the studies refers to general knowledge of a topic, which is essential for comprehension to occur. The reader must be able to relate information in the text to knowledge that exists in their minds i.e. schema (Cooper, 2000). According to Paul (1998), functional visual environments must be created because the Deaf learners' concepts must be built about meaningful stimuli. General knowledge and language must be developed naturally so that learners participate actively in the life around them. They must comprehend the language associated with these everyday events and use this knowledge, language and communication skills to deal with the environment around them.

The Deaf learners in this study had huge gaps in their general knowledge prior to the start of this study. Knowledge takes a long time to develop and improve. Improvements noted in this study are noticeable are in areas that the themes covered. These learners started school with very little, and in some cases no prior knowledge of the themes that were covered. The CATLI, through its

constructivist approach, created meaning for the learners through planned activities that were interesting and authentic. While knowledge was being constructed a certain level of discussion and communication took place between educator and learners. This acquisition of knowledge, which the learners gained, was the first step of a new piece of reading which activated prior knowledge and provided learners with new information to help them comprehend the particular theme.

The general knowledge the learners had gained was reflective of all the topics covered. Accordingly opportunities were created to learn language with the topics or subject matter simultaneously. This prior knowledge became helpful in comprehension, learning and remembering information during reading. The learner's store of prior knowledge also helps them to interpret and recall information from the text. It also played an important part in the planning stages of story writing.

What was essential in the research (and can be one of the important explanations for learners gaining knowledge) was that it was shaped and re-constructed in a social environment, which made the unfamiliar familiar. The CATLI is one of the most efficient and effortless ways of increasing general knowledge. Further research carried out by Horst, Woodward and Burke cited in Williams (1993), showed that by giving learners experience to build general knowledge and then to link it to reading contributed to the children's concepts of print and their ability to discuss this knowledge, with other learners as well as the educator. As a consequence this lead to improved confidence and motivation to learn.

5.3 Social and Emotional Development

The effects of a lack of early stimulation and implications of inadequate development language systems have a direct relationship on social and emotional development. This impacts particularly on the intellectual and social development of many young Deaf learners. Improved social, emotional and

motivational factors can be attributed to teaching styles, content and instructional methods using Sign Language.

The study shows that social and emotional factors improved considerably and that this played an important role in the development of literacy skills. The findings of this research were consistent with results of research carried out by Ewoldt (1985-1990) cited in Williams (1993), in which emergent literacy investigations examine the literacy development of Deaf learners and found that social interaction was a strong and important factor for the learners developing literacy. A further study by Williams (1993) as well as features noted in the CATLI show that through social interaction literacy skills were not individually acquired but were mutually constructed through learner-to-learner interaction as well as educator and learner interaction.

The present study also showed that learners demonstrated increasing amounts of confidence, knowledge of social skills, improved collaboration, self-esteem and lesser amounts of performance anxiety. The improvement in social interaction, emotional and motivational factors can be attributed to the instructional methods, style of teaching and the content which was linked to Sign Language. Nelson (1998:11) informs us "the creation of a supportive social environment contributes to improved self-esteem, positive culture identification, keen attention and strong motivation". The Deaf child is faced with considerable linguistic cognitive patterns in written English, spoken English and Sign Language. Therefore a positive social and emotional state such as motivation and a desire for achievement will help to develop literacy skills and academic success as well as psychosocial maturity (Marschark 1997).

The application of the CATLI also enhanced social skills by fostering communication and collaboration. The learners' improved Sign Language enabled them to use much more signs during

communication with the broader community of the school. Therefore levels of confidence increased both on a social plain and during group tasks. Much more positive interaction and co-operation were noticeable when learners worked together. In a study by Dyson cited in Williams (1993), when Deaf pre-school learners participated in activities, they talked and signed with one another, shared their own experiences, interests, concerns and personal needs. The talking and signing then became a part of the writing. Through talking they got contributions to, and criticism of, their work. For these children, literacy and their social world were inextricably bound. As they interacted socially, they constructed knowledge and understanding of written language. Their social interaction around print contributed to their development of literacy.

Similarly in this study literacy was socially constructed, encouraging written language and understanding of language through conversation (signing) as well as text production. The learners delayed language development and limited experience with literacy did not prevent them from participating in discussions. Characteristics that were noticeable in learners were more positive emotional states, improved self-esteem, keen attention and more engagement in activities, higher levels of motivation and confidence, enjoyment and faster rates of learning.

5.4 Metacognitive Strategies

Metacognitive and metalinguistic abilities are abilities used to reflect on the nature of thinking. Educators should teach learners how to use their mental powers in more effective and systematic ways (Harcombe, 2003). The linguistic deficits of the Deaf learner are often considered to be partly responsible for some of the difficulties in cognition. This should not however deter educators from providing Deaf learners with cognitive skills to construct knowledge for themselves, thereby improving cognition and language.

Prince and Nelson (1984) informs us that Deaf learners have intact cognitive skills, yet they fail to achieve similar general communication skills or equal reading and writing skills that match corresponding skills of hearing learners of similar intelligence or cognitive ability. The same writers inform us that by introducing cognitive skills when working with young children to establish both early reading and writing skills and to improve general communication skills, there is a strong possibility that a firm base can be established for Deaf learners to progress generally through the education system.

The CATLI took into account the fact that learners come from very economically and socially deprived backgrounds and that they had very little exposure to mediated learning (MLE). MLE is a crucial condition for adequate cognitive development (Haywood 1987). It provided learners with MLE so that adequate cognitive skills could develop. Feuerstein et al (1980) suggest two ways both of which are included in the CATLI to acquire basic cognitive processors, (a) through direct exposure to learning and (b) mediated learning experience. This enabled learners to acquire cognitive functions to think logically, perceive the world in an orderly and structured way, know how to learn, apply intelligence to new learning and problem solve. Learning therefore becomes intentional resulting in learners acquiring language to express what they are thinking about. It is important to note that the success of the CATLI will also depend on how much mediation the educator brings into the learning situation. An educator with a wealth of knowledge and experience as well as the ability to use Sign Language may implement the CATLI with more enthusiasm and better understanding, therefore achieving better results than others.

The areas of metacognition which this study focused on, indicated the learners had the cognitive ability to become capable readers and expressive writers. Initially the learners were not sure how to use the metacognitive strategies but during the research the learners were encouraged to be

metacognitive, to reflect on their own comprehension, recognize when they did not understand and strategically carry out activities to enhance comprehension. When some confusion arose while reading, it was monitored or recognized and acted upon or repaired through the use of specific strategies, such as rereading, integrating new information with old, drawing inferences or reading on (Brooks, 1989). Learners were able to plan the ideas of their stories on graphic organizers and sequence these ideas so that the story was meaningful. Learners were also able to self-correct and self-monitor their work. Learners would say and sign words that gave meaning to what they were about to write. In these instances, learners appeared to be talking to themselves, using language as a self-monitoring strategy in the writing process.

The finding in the present study confirms what was found in a study by Winser, (1988), cited in Schirmer (2002). The researcher found that second, fourth, sixth and eight grade learners benefited from instructions that helped them gain conscious control of reading strategies. The study found that good readers used alternative strategies when comprehension difficulties arose and that they were able to consciously choose appropriate strategies such as inferring, rereading, reading on to gain further meaning and awareness of the text, which indicated that they were aware of comprehension problems. These learners were encouraged to use inner voice or inner sign during and after reading.

Research has also suggested that cognitive strategies should not be taught separately. The CATLI allowed educators to mediate metacognitive skills in the process of learning a subject such as literacy; this allowed learners to use better strategies. One such strategy was role taking. This was used as a deliberate strategy to understand which learners were confused or not fully comprehending an area of work (Brooks, 1989).

Although research has shown that older and more skilled readers know more about reading strategies, detect errors more often during reading, and have better recall of text information, some of the learners in this research were capable of certain of these strategies. They were able to detect their errors when reading and writing, predict what would happen and use contextual clues to get more meaning from the text.

Even though the results indicated improvements noticeable in this area, there is definite room for further development in cognitive strategies. This area did pose a difficulty for the researcher and learners at the beginning of the intervention as making learners understand how to use metacognitive strategies appeared to be very abstract for them. In addition, research has consistently shown that recognising and repairing a breakdown in meaning while reading usually develops with age and proficiency in reading. Good readers are more capable of controlling their reading and verbalizing how they do this than weaker readers. If learners in this study are given continued direct practices in being walked through events, and if cognitive strategies are to be continually mediated, learning will therefore become intentional resulting in learners acquiring language to express what they were thinking about.

5.5 Implications of the Study

Levels of literacy achievements indicate that the learners benefited from the CATLI. Deaf learners are not receiving effective instruction in reading and writing and communication skills. Therefore these skills are deficient and they are not reaching high levels of achievement in most academic areas. The CATLI has a strong potential for impacting on the education of Deaf learners because, from the beginning of instruction, it takes seriously the integration of reading and writing. It emphasizes cognitive skills so that learners can acquire language to express what they are thinking.

Since the CATLI is underpinned by constructivist theory, it should become a significant component in learners' programs and educators' teaching methodologies. The earlier it is implemented, the sooner the learners' literacy skills will improve and narrow the gap in their language, reading and writing.

The results of this study show that the CATLI would benefit the Deaf learner if it were to be implemented in Deaf education in South Africa. The CATLI should be considered as a vision for future research and curriculum design for teachers and classroom practice.

What must be determined is how best to implement this method as part of the curriculum, as well as training educators to use this approach. The cycle of our Deaf learners achieving low literacy levels should be broken and they should be enabled to achieve high literacy levels. If Deaf learners are taught by means of this approach they should and will improve their literacy levels, if it is implemented competently. Studies, including this one, have indicated that Deaf students have the ability but do not always have the means to become successful and fully literate individuals.

It is hoped that the findings of this research will persuade other researchers in the field of Deaf education to pursue research in this field of study over a longer period.

Although this study appeared to be comparing learners it was not the intention. The main purpose of this study was to implement the CATLI with learners to investigate the improvement of literacy levels.

Finally, the CATLI is being implemented with learners experiencing barriers at the education clinic run by the discipline of special education and psychology at Wits University. The majority of learners

at the clinic may take up to two years before results are seen. Therefore this is an indication of what the CATLI can do if it is implemented in a school based setting.

5.6 Limitations of the Study

The main limitation of this study was the time frame in which the study was carried out. The intended time was six months, however, due to teachers' strikes and learners not attending school during this time as well as school holidays falling within this period, instructional time amounted to four and half months.

As this study took the form of a case study of 5 learners, the results cannot be generalized on the whole Deaf population. The CATLI takes a long time to see excellent results. If this research was to be replicated for a longer period, the results would be duplicated considerably.

5.7 Conclusion

Since Deaf learners literacy development is often delayed, the aim of this study was to implement the CATLI with Deaf learners so as to improve these learners' literacy levels. Through the instructional methods employed by the CATLI, the increased levels of competencies in vocabulary resulted in learners having a larger word pool, therefore improving reading abilities, writing and communication. Through the authentic activities, schema was created, allowing general knowledge to improve. Linking this general knowledge to sign had a positive influence on reading and writing. Although cognitive strategies did appear too abstract for the learners the use of effective mediation allowed learners to implement these strategies. Improved social and emotional development increased motivation leading to faster and more effective learning. It can therefore be concluded that the task of educating Deaf learners may be seen as a complicated one to some educators, but in no way an impossible one.

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