THE ABILITY OF ADOLESCENTS WITH HEARING LOSS IN SPECIAL SCHOOLS TO ACCESS AND USE ACADEMIC INFORMATION

by

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This thesis is lovingly dedicated to

My late mother Susan Maré

The most inspiring, caring mother in the world for always believing in me. Her faith,

support and encouragement in me as a deaf child was amazing and her belief that

God does not create failures has formed the basis of my entire life, my faith, and my

academic career

AND

To my husband Cornelius and my children Susan and Marié, without whom life

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"*I have the strength to face all conditions by the power that Christ gives me*".

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ABSTRACT

TITLE	:	The ability of adolescents with hearing loss in special schools to access and use academic information
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Access and use of academic information by adolescents with hearing loss is important to assure their academic success. Learners with hearing loss experience problems regarding communication, literacy, and information literacy, which has an impact on their ability to access and use various types of academic information sources. This leads to problems in achieving tertiary education and employment in later life. In order for learners to develop their abilities and skills to access and use academic information, they need to learn to work independently, be familiar with all the types of academic information, and utilize the media centre. An urgent need existed to determine the abilities of adolescents with hearing loss to access and use academic information in order to make suggestions for an information literacy programme to be implemented for learners with hearing loss. The suggestions could be highly relevant for teachers and media teachers.

The research design was a descriptive design comprising of a questionnaire survey followed by an assignment survey. A set of questionnaires was a quantitative tool implemented for systematic and objective gathering of information from a representative sample. The survey assignment employed qualitative methods to investigate characteristics of a group of adolescents with hearing loss with regard to their ability to access and use academic information in the media centre. The questionnaires were distributed to 326 learners with hearing loss, 19 teachers, and 6 media teachers; and the quantitative survey assignment involved 48 learners with hearing loss. The research was done in order to develop an information education programme based upon scientific findings, for use within the planned educational system in South Africa.

The results from the study indicated that the majority of the participants always found academic information difficult to access and use, except where information was readily available in the classroom setting. Sub-goal 1 indicated that the majority of the participants always found academic information difficult to access and use except where information was available in schoolbooks. They mainly accessed and used academic information during and after school. There was not much consensus as to the purpose for which they accessed and used academic information. The participants regarded themselves as unsuccessful and relied on role players to help them to understand, find, and access academic material. They also preferred visual (graphical) information above printed information. The participants indicated they found OBE material difficult to access and use. It became clear that they did not visit the media centre regularly and did not have adequate computer and Internet facilities.

Sub-goal 2 indicated that the teachers displayed the perception that the adolescents experienced problems when accessing and using academic information. They indicated that the adolescents occasionally accessed and used information, but needed them as role players to assist them. The teachers and media teachers also suggested lack of motivation, lack of funds, insufficient training, and degree of hearing loss as possible constraining factors. They indicated that hearing loss has an impact on language and communication skills and consequently has an effect on literacy and information literacy skills. They also considered low literacy and information literacy skills and underdeveloped cognitive skills to have an effect on the adolescents' ability to access and use academic information. This has impact on learners' ability to access, apply, and analyse information. It is important to note that teachers seemed to be of more assistance to learners than media teachers and research is needed to determine the reasons for this. The teachers indicated that sign language influenced the subjects' ability to access information as the subjects seem to think in pictures rather than using words. This also calls for further research. Sub-goal 3 indicated that the media teachers' perception was similar to that of the teachers. They indicated that the subjects found English as a second language difficult to understand.

Sub-goal 4 indicated that the subjects were not able to complete the assignment in the media center with ease. The subjects also had poor knowledge of catalogue use and no knowledge of the Dewey classification scheme which is used to locate books on the shelves.

These findings were utilized to propose an information literacy programme at school media centres, to be implemented in the context of content-based courses and assignments. It is clear that adolescents with hearing loss are a heterogeneous group and due to the differences in the degree and type of hearing loss, they have varying frames of reference, language bases, and cognitive skills. Adolescents who have a language delay due to hearing loss, experience problems with access to formal as well as informal education.

Keywords: Hearing loss, information literacy, adolescent, special needs education, special school, , academic information, information literacy programme,

SAMEVATTING

TITEL	:	Die vermoë van adolessente met gehoorverlies in spesiale skole om toegang tot akademiese inligting te kry en dit te gebruik
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Die verkryging van toegang tot en die gebruik van akademiese inligting deur adolessente met gehoorverlies is van groot belang om hulle welslae op akademiese gebied te verseker. Leerders met gehoorverlies ervaar probleme ten opsigte van kommunikasie, geletterdheid en inligtingsgeletterdheid, wat 'n negatiewe invloed het op hulle vermoë om toegang tot die verskillende soorte akademiese inligtingsbronne te verkry en dit te gebruik. Dit lei tot probleme met die verwerwing van tersiêre opvoeding en ook verminderde werkgeleenthede. Ten einde hulle vermoëns en vaardighede met betrekking tot die verkryging en gebruik van akademiese inligting te kan ontwikkel, moet leerders leer om onafhanklik te werk, bekend wees met al die soorte akademiese inligting, en daartoe in staat wees om die mediasentrum te benut. Daar het 'n dwingende behoefte bestaan om te bepaal wat die vermoë van adolessente met gehoorverlies is om toegang tot akademiese inligting te verkry en daardie inligting te benut, sodat voorstelle gemaak kan word vir 'n inligtingsgeletterdheidprogram vir leerders met gehoorverlies. Sodanige voorstelle kan vir sowel onderwysers as media-onderwysers van groot nut wees.

Die navorsingsontwerp was 'n beskrywende ontwerp en het 'n opname deur middel van vraelyste behels, gevolg deur waarneming met behulp van 'n opdrag. 'n Stel vraelyste is gebruik as kwantitatiewe werktuig vir die stelselmatige en objektiewe insameling van inligting van 'n verteenwoordigende steekproef. Die waarneming met behulp van 'n opdrag het gebruik gemaak van kwalitatiewe metodes om die kenmerke van 'n groep adolessente met gehoorverlies na te gaan ten opsigte van hulle vermoë om in die mediasentrum toegang tot akademiese inligting te verkry en

die inligting te gebruik. Die vraelyste is verskaf aan 326 leerders met gehoorverlies, 19 onderwysers, en 6 media- onderwysers; en die kwalitatiewe waarneming het 48 leerders met gehoorverlies betrek. Die navorsing was daarop gemik om 'n opleidingsprogram vir inligtingsgeletterdheid op die grondslag van wetenskaplike bevindings te ontwikkel, vir gebruik binne die beplande onderwysstelsel in Suid-Afrika.

Die resultate van die studie het aangedui dat die meerderheid van die deelnemers dit altyd moeilik gevind het om toegang tot akademiese inligting te verkry en die inligting te gebruik, behalwe waar die inligting geredelik in die klaskamer-opset beskikbaar was. Sub-doelstelling 1 het daarop gedui dat die meerderheid van die deelnemers dit altyd moeilik gevind het om akademiese inligting te kry en te gebruik behalwe waar die inligting in hulle skoolboeke vervat is. Hulle het akademiese inligting hoofsaaklik tydens en net na skool-ure opgesoek en gebruik. Daar was nie veel konsensus oor die doel waarvoor hierdie inligting benut is nie. Die deelnemers het hulleself as onsuksesvol beskou en het op ander rolspelers staatgemaak om hulle te help om akademiese materiaal te verstaan, te vind en te benut. Hulle het ook visuele (grafiese) inligting bo gedrukte inligting verkies. Die deelnemers het aangedui dat hulle moeilik toegang tot UGO materiaal gekry het en dit moeilik gevind het om te gebruik. Dit het duidelik geword dat hulle nie die mediasentrum gereeld besoek het nie en ook nie voldoende rekenaar- en internetfasiliteite tot hulle beskikking gehad het nie.

Sub-doelstelling 2 het daarop gedui daar by die onderwysers die persepsie bestaan het dat die adolessente probleme ondervind het met toegang kry tot en gebruik van akademiese inligting. Hulle het aangedui dat die adolessente wel soms inligting gevind en gebruik het, maar dat hulle die onderwysers se hulp nodig gehad het. Die onderwysers en media-onderwysers het verder voorgestel dat gebrek aan motivering, gebrek aan fondse, onvoldoende opleiding en die graad van gehoorverlies moontlik beperkende faktore was. Volgens hulle het gehoorverlies 'n invloed op taal- en kommunikasievaardighede en gevolglik ook op geletterdheid en inligtingsgeletterdheid-vaardighede. Hulle was ook van mening dat lae vlakke van geletterdheid en inligtingsgeletterdheid en onderontwikkelde kognitiewe vaardighede 'n uitwerking het op die adolessente se vermoë om akademiese inligting na te slaan

en te gebruik. Dit het 'n invloed op die leerders se vermoë om inligting te vind, toe te pas en te ontleed. Dit is belangrik om daarop te let dat onderwysers blykbaar vir die leerders tot groter steun was as die media-onderwysers en navorsing is nodig om die redes hiervoor te bepaal. Die onderwysers het aangedui dat die gebruik van gebaretaal die leerders se toegang tot inligting beïnvloed het, aangesien dit lyk of die leerders in prente eerder as in woorde dink. Ook hier is verdere navorsing nodig. Sub-doelstelling 3 het daarop gedui dat die persepsies van die media-onderwysers soortgelyk was aan dié van die onderwysers. Volgens hulle het die leerders Engels as tweede taal moeilik gevind om te begryp.

Sub-doelstelling 4 het daarop gedui dat die adolessente nie daartoe in staat was om met gemak die opdrag in die mediasentrum te voltooi nie. Hulle het min kennis van katalogusgebruik gehad en geen kennis van die Dewey-stelsel, wat gebruik word om boeke op die rakke op te spoor, getoon nie.

Hierdie bevindings is gebruik as grondslag vir 'n voorgestelde inligtingsgeletterdheid-program in skool-mediasentra, wat in die konteks van inhoudsgebaseerde vakke en opdragte geïmplementeer kan word. Dit is duidelik dat adolessente met gehoorverlies 'n heterogene groep is en dat hulle as gevolg van verskille ten opsigte van graad en tipe gehoorverlies ook verskillende verwysingsraamwerke, taalbasisse en kognitiewe vaardighede vertoon. Adolessente wat 'n taalagterstand het as gevolg van hulle gehoorverlies ervaar probleme met toegang tot formele sowel as informele onderrig.

Sleutelwoorde: Gehoorverlies, inligtingsgeletterdheid, adolessent, buitengewone onderwys, spesiale skool, akademiese inligting, inligtingsgeletterdheid-program.

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CHAPTER ONE

INTRODUCTION AND ORIENTATION

"…It is universally recognised that the main objective of any education system in a democratic society is to provide quality education for all learners so that they will be able to reach their full potential and will be able to meaningfully contribute to and participate in that society throughout their lives"
(Department of Education, 1997:11)

1.1   INTRODUCTION

Chapter one aims to present the rationale and problem statement for the present study, to give an outline of the chapters and to clarify the terminology used during this study.   The study aims to determine if adolescents with hearing loss in special schools have access to academic information and whether they are able to use such information.

Information is a wide concept that forms an integral part of any person's life.   The simplest illustration of this statement may be the number of current definitions of the term, ranging from "a message received and understood" to complex expositions involving various technical terms.   Information as a concept, therefore, has a diversity of meanings, depending on the context in which it is used.   For the purpose of this study the term *academic information* will be used when referring to specific information in the school context.   Information may be regarded as the core of education, since education aims at equipping individuals to select, assimilate, and apply relevant information in all situations throughout life.

No community, culture, or industry can exist without a flow of information (Freebody & Welch, 1993:11).   Information, or the lack thereof, is a decisive factor in either demolishing or maintaining the link between illiteracy, poverty and underdevelopment (WFD Policy, Education rights for deaf children, 2007: 1).   The acquisition and utilisation of information, or the *information process*, is associated

with the development of an individual in totality and leads to self-improvement. Most people aspire to higher standards of living, longer lives, and fewer health problems. They desire education for themselves and their children that will increase their earning capacity and leave them more in control of their lives, give them a measure of stability and tranquillity, and the opportunity to do the things that give them pleasure and satisfaction (Harrison, Simpson & Stuart, 1984:1; WFD Policy, Education rights for Deaf Children, 2007:3). One of the keys to realising all of these ambitions is the access and use of information.

Several publications provided relevant in-depth background for this study, particularly the work of Moores (1987), Norton (1992); and Lang (2002:267). These authors present a significant body of knowledge about the barriers adolescents with hearing loss face in gaining access to information. Much less has been published, however, regarding possible ways to surmount these barriers.

Historically, individuals with hearing loss were not afforded tertiary education (Nieuwenhuis, 1980:33, 62, 63), and educational programmes provided deaf people with limited educational opportunities, as well as opportunities for participating in society and making decisions (Special Needs Education, 1993:86). Less than two decades ago UNESCO painted a gloomy picture of training and mentioned that only a minority of 58 countries provided sufficient teacher training regarding disability issues (Framework for Action on Special Needs Education, 1994:62).

Literature in the current millennium still reports that children with hearing loss are often severely delayed when compared to hearing children, especially in earlier development (Yoshinaga-Itano, 2003:24). Adolescents with hearing loss are still seen to have multifaceted problems involving literacy (reading and writing) and language that can influence their attitude to their ability to access and use academic information (WFD Policy, Education rights for deaf children, 2007:1). This also has implications for how they regard academic information and whether they are willing to apply it (Slyh, 1998; accessed 2007-04-17).

It must be stressed, however, that although there is abundant research comparing children who have hearing loss to their hearing peers, there is a definite lack of research regarding the effect of cognitive delays on academic achievement (Yoshinago-Itano, Sedy & Cloulter, 1998:116-1171). This refers to a language base dependent on auditory processing skills that are intertwined with higher-order cognitive processing skills as well as visual patterns (Katz, 2002:496). A growing body of research demonstrates, however, that intensive early intervention can alter the cognitive and developmental outcomes of the young person with hearing loss and facilitate speech, language, and social-emotional development as well as academic achievement (Northern & Downs, 2001:155, 267).

A concept that features significantly in the current study is *information literacy*. Information literacy is a person's ability to access, evaluate, and use information effectively. It calls for a wide range of skills in order to solve problems and make informed decisions; share knowledge; use a variety of information resources, such as books, newspapers and journals as well as computer-based resources such as software, CD-ROMs, e-mail and the Internet; adapt to new technology; and learn independently throughout their whole life (Gregory, in The Association of College and Research Libraries, 2000:28).

It can be argued that access and use of information is the one language-related academic ability that can possibly be developed through training, also in the case of adolescents with hearing loss (Nowell & Marshak, 1994). This would imply cognitive training that involves language and auditory training, vocabulary development, and the teaching of organizational skills (Northern & Downs, 2001:203). Research in the field of information access and use by adolescents with hearing loss can provide valuable information to everyone working with this population.

It is generally accepted that problems in accessing information have an impact on academic achievement (Lang, 2002:267). If adolescents with hearing loss are able to access and use academic information sufficiently, they will be able to fulfil a more significant role in society, as well as to study and work well. The acquisition of academic information will enable adolescents with hearing loss to function in such a

way that they will be able to maintain their independence and improve their knowledge base throughout their education years (Northern & Downs, 2001:462). This underlines the importance of relevant research and suggests directions for educational researchers interested in enhancing academic success.

The current discussion will aim to explain the importance and value of information access and use for adolescents with hearing loss as background to a description of the scope and objectives of the study.

1.2   BACKGROUND: THE IMPORTANCE OF ACCESS AND USE OF ACADEMIC INFORMATION

An information literate society is characterised by the use of theoretical knowledge, scientific decision-making, and problem-solving. Its members depend on accurate and reliable information, and a well-developed infrastructure exists for the production, distribution, retrieval and use of information (Fouché, 1982:41; Martin, 1988:40). Society has so many challenges involving information issues, including recreation, enculturation, and self-actualisation, that the acquisition of academic information can be regarded as absolutely necessary in order to maintain an individual's independence and improve his/her knowledge base (Bench, 1992:20).

Adolescents with hearing loss need to acquire essential knowledge and skills in order to help them to plan and carry out complex projects, and to be critical, creative and reflective thinkers, decision-makers, and problem-solvers. If adolescents with hearing loss are able to learn how to access and use academic information successfully, it will enable them to live independently and to lead a life based on self-exploration and knowledge. This can help to develop their self-esteem and confidence and increase their feeling of independence (Murray, 2000: 8). They will learn to display emotional intelligence, a positive attitude, respect, and positive behavioural traits towards themselves and others. Without appropriate education, an adolescent with hearing loss will not be able to advance in society as an independent, employed, contributing citizen (WFD Policy, Education rights for deaf children, 2007: 2).

Literacy (reading and writing) is traditionally regarded as the most important skill area needed to obtain academic information (Bench, 2001:19-20). Literacy involves the communication of thoughts and process of learning through conversation, reading, and writing , but…"the conceptualisation of the reading process has changed a lot over the years from being a 'compilation of splinter skills' to be taught in a prescribed sequence to that of a strategy-based, meaning-making, interactive process acquired by the reader" (Chaleff & Ritter, 2001:190). Research indicates that educational outcomes for adolescents with impairments in secondary schools, especially those with additional disabilities, leave school unprepared to live and function independently. Children should be able to leave school with independent living skills, employment readiness, and a set of 'learning how to learn' skills (Davila, 2002:13).

If limitations are placed on literacy, it will continue to prevent many adolescents with hearing loss from reaching their full potential to become information literate (Northern & Downs, 2001:355). However, with the ascent of the information era, characterised by the access and use of modern academic information technology and the globalisation of economical processes, the emphasis has changed from literacy to information literacy. Breivik (in Riedling, 2007:13) emphasises the general education or core curriculum where adolescents should access, organize, and present information "from all the real-world sources existing in today's information society." Information literacy involves critical thinking, problem-solving skills, and applying newly acquired knowledge in practice. In fact, the USA's Department of Labour regards information literacy as one of the five main skills that all workers should possess (Position statement on information literacy, 2009).

The ability to access and use academic information will also lead to an increasing awareness of attitudes, values, and norms in the case of the adolescent with hearing loss (Bench, 1992:20; Marx, 2000:79). This will only be achieved providing he/she learns to:

- Access, evaluate and use academic information efficiently, effectively, critically, competently, accurately, and creatively;

- Be an independent adolescent, pursuing academic information related to personal interests;

- Appreciate literature and other creative expressions of academic information and

- Strive for excellence in academic information seeking and knowledge generation (Information power, 1998; accessed 2009-04-07).

Eisenberg (in Van der Walt, 1992:39) discusses these issues from a different viewpoint by referring to the 'big six information skills', namely the skill to define his/her information needs, to find the relevant information, evaluate it, access it cognitively, interpret it sensibly and to apply and communicate it effectively (Van der Walt, 1992:39; Boekhorst, Koers & Kwast, 1999:57-68); in short, "…the location, retrieval, selection, organization, evaluation and communication of information" (Brake, 1980:1). The question remains – are adolescents with hearing loss able to achieve this?

Adolescents with hearing loss' learning performance and motivation are affected by the extent to which they manage to master academic material. Adolescents with hearing loss learn about learning as they learn other skills (Lloyd; Kameenui & Chard, 1997:177). Adolescents with hearing loss have to learn which skills to use, how to access and how to apply academic information, how to play an active role in mastering academic information and to construct knowledge while interacting with a perceived world (Lloyd *et al.,* 1997:241). Previous knowledge and experiences are the starting points for learning about new things and adolescents with hearing loss should be motivated to keep on mastering new knowledge and academic information.

Role players such as teachers, media teachers, families, friends, clinical personnel, and therapists make an important contribution to the adolescent with hearing loss' ability to access and use academic information (Stevens, 2004:4; Katz, 2002:761). Teachers and media teachers have a great influence on the education of adolescents with hearing loss because they have the most knowledge about this age group, but often they are limited in number and receive little training concerning the

effects of hearing loss on children. Teachers should have knowledge of adolescents with hearing loss' needs and be aware of appropriate educational facilities, available personnel, and suitable educational material (Northern & Downs, 2001:343; 352 & 355-356).

Literacy is valuable for use in everyday life. It is also the means to obtain, evaluate and use information for a wide range of work purposes. Literacy development is essential in order to function well at school and for participating in the classroom (Luckner, Cooney, Young & Muir, 2005: 443). Information is a basic right, as stated in the South African Constitution (chapter 2, article 32). It is important for economical, social, and political reasons (Boon, 1990: 2 & 1992a:232; Britz, 1996:243). Individuals, and specifically children with hearing loss in their school going phase, need academic information (Paul & Quigley, 1994:93-94) in order to develop their full intellectual ability (Boon, 1992: 232).

Adolescents with hearing loss in special schools experience limitations in literacy and information literacy skills. Lack of literacy, and therefore the lack of academic information, can lead to inferior intellectual abilities and limited career options. On the other hand, if an adolescent can succeed in obtaining information, it can lead to development with regard to personal well-being in areas such as career interests, community interests, health matters, and recreational interest, especially as an adolescent gets older (Riedling, 2007:4). Research over the decades has shown that employers are historically more likely to hire people with various other disabilities than people with hearing disabilities (Stapleton & Burkhauser, 2003:2; Lang, 2002:267). One of the reasons may be that literacy achievement of children with hearing loss is far below the average for the population at large (WFD Policy, Education rights for deaf children, 2007:2).

Well developed literacy and the acquisition of academic information will lead to more employment opportunities for adolescents with hearing loss after completing school and better prospects for pursuing career opportunities (Boon, 1992:4). An information literate person who is able to access and use academic information is also able to:

- Determine whether information is factual or analytical, objective or subjective;
- Distinguish between primary and secondary information;
- Determine the amount and quality of information that is needed;
- Distinguish between the different types of formats and
- Determine whether the information is recent and of value for specific purposes (Developing the information literate person: the UTS Statement, 2009).

These skills are relatively complex because there are different kinds of information: academic, personal, functional, business, marketing, statistical, political, etc. (Boon, 1992: 232). Pascual-Leone (in Sugden, 1989:235) distinguished between three sources of academic information which can take up mental space in the user, namely the executive, operative, and the figurative scheme of academic information. This refers to the ways in which academic information is absorbed and applied. Information is presented in written form such as books, journals, magazines, articles and files, but also by means of oral communication like radio, television and audio-visual methods, and increasingly through technological means such as computers (Owusu-Ansah, 2003:221; Spitzer, Eisenberg & Lowe, 1998:25-26).

Adolescents have to know how to access and utilize all of these sources: "…whether information comes from the computer, a book, a government agency, a film, a conversation, a poster or any number of other possible sources, inherent in the concept of information literacy is the ability to dissect and understand what you see on the page or the television screen, on posters, pictures, and other images, as well as what you hear" (Lenox & Walker, 1993:4-5). Furthermore, certain environmental factors play a role in the access and use of information including the learning environment; society and people's perception; education opportunities (Hull, 1998:587); qualification of the teachers and also issues such as the aim and the role of South African Outcomes Based Education (Truax, 1992:403; Kerschner & Chaplain, 2001:50).

From the foregoing, it is clear that the information era presents several challenges to hearing adolescents and adolescents with hearing loss. Ultimately, information literate people are those who have learned to learn. They know how to learn

because they know how knowledge is organized, how to find information and how to access and use academic information in such a way that others can learn from them (Foster, 1993:344-345).

1.3   RATIONALE

In the preceding paragraphs the importance of information access and use was discussed. This significance is specifically relevant in the case of adolescents with hearing loss on the brink of adulthood. If these adolescents with hearing loss are experiencing barriers due to a disability such as a hearing loss, they are unable to make full use of information that is available to them. Not all individuals and/or groupings within a specific structure have the same access to academic information. Research shows that people with a hearing loss are often limited in their utilisation of academic information both in quantity and quality (Kerschner & Chaplain, 2001:98; 104; Moores, in Kuder, 1997:144; 150). A good example of this is the fact that they have a tendency to concentrate more on the lower level skills of decoding and transcription, instead of trying to acquire background or content knowledge which can be achieved by means of accessing relevant information, extended reading, and discussion of text (Lloyd *et al*, 1997: 239-240).

The uncertain quantity and expanding quality of information pose large challenges for society, because the "sheer abundance of information will not in itself create a more informed citizenry without a complementary cluster of abilities necessary to use information effectively" (Avery, 2006:280). Neyhuss and Austin (1978:351) found in their research that adolescents with hearing loss are generally seen as "disabled" persons unable to access information. This can be attributed firstly to their limited access to auditory information but secondly to the language and communication loss they experience because of the hearing loss. On the other hand, Branson and Miller (1993:33) found that some people with hearing loss have proven to be just as successful as hearing peers in a world where information plays a crucial role. It is important to establish why some people with hearing loss succeed and some do not.

Marx (2000:45) emphasises that adolescents with hearing loss need the same career opportunities and training as their hearing peers in order to participate successfully in society. Unfortunately, lack of academic information can lead to financial losses due to the inability to acquire a job or career and to a loss in the areas of academic success, self-concept, and social acceptance (Hugo, 1987:9; Lang, 2002:267).

Children with hearing loss have different abilities that influence their educational experiences before entering high school (Stewart & Kluwin, 2001:5 &; Fouché, 1982:42). Factors that can also have an influence on the access and use of academic information are insufficient teaching methods, reading, communication, and literacy problems (Harrison, 1991:84). Although the method of communication has an influence on the adolescents with hearing loss' ability to learn, they are able to utilise literature, the Internet, and technology, as well as to go to certain colleges and universities depending on their individual goals (Stewart & Kluwin, 2001:121-123).

When adolescents with hearing loss are presented with suitable knowledge of the use, access, and application of academic information, they will express a need to obtain further knowledge and skills necessary to adapt in an ever-increasing society (Marx, 2000:3; 63; 79-81). Academic information is a prerequisite to education, task performance and scholastic achievement. Adolescents with hearing loss, especially those in special schools, need to benefit from academic information regarding general knowledge, career, professional needs and/or interest in a specific subject area. Well-trained teachers, appropriate teaching methods, and applicable academic information will enable them to stay abreast of new developments (Marschark, 2003:S41-S47 [Supplement]; Boon, 1990:2) and to understand the world in which they live.

Effective teaching practice in the education of adolescents with hearing loss is dominated by considerations of language, literacy and the communication facility. The type of academic information that teachers apply when teaching adolescents with hearing loss should reflect all that the adolescents with hearing loss need in

later life for successful integration into the hearing world (Lloyd *et al.,* 1997:181). A school is therefore an institution or enterprise, which focuses on the dissemination of knowledge, and on didactic principles as conditions for effective instruction and learning. Against this background the following facts are relevant.

- People with hearing loss are often unemployed or unsuccessful in the workplace; they are either not working or are doing menial work (Special Needs Education, 1993:81-82; Muller, 1984:87 and Goldstein, 1989:95).
- People with hearing loss tend to have low academic achievement despite the fact that they may have normal intellectual abilities (Nowell & Marshak, 1994; WFD Police, Education Rights for Deaf Children, 2007:1).
- People with hearing loss are often socially and emotionally unprepared and thus unsuccessful in the present-day information society (Zapata, 1994:124).
- Children with hearing loss are at risk for delayed development of verbal skills and reduced academic achievement (Northern & Downs, 2001:357). Early hearing deficits might have far-reaching perceptual and academic consequences (Northern & Downs, 2001:82) as well as social and emotional problems (Northern & Downs, 2001: 250).
- The profound effect of a hearing loss on communication, social, and academic achievement is often not realized by school officials, boards of education, and other significant persons (Northern & Downs, 2001:350).
- Intervention programmes, specifically early intervention, provide some children with the ability to overcome developmental lags in language and academic skills (Northern & Downs, 2001:3, 155).
- Despite overall documented improvements in education of children with hearing loss, the academic achievements of these children remains unacceptably low (Northern & Downs, 2001:355).
- Students with hearing loss face barriers in gaining access to information (Lang, 2002:267).

Although Gregory, Bishop and Sheldon (1995:258) indicate that lack of sufficient, available and understandable information stretches further than only a lack of

academic knowledge, it seems that this situation occurs due to a lack of "…expectations, appropriateness of behaviour and understanding of how various systems function". In the information era in which we live, it is apparent that information is a prerequisite for participating in different cultural, socio-economical, and political processes. Adolescents with hearing loss appear to have different needs, problems, and background factors which influence their process of adaptation or coping in society.

The challenge of finding ways to facilitate social adjustment faces the adolescents with hearing loss as well as their teachers and media teachers. These professionals are regarded as the specialists in providing education that is tailored to the needs of young people with hearing loss and, in the spirit of South Africa's current educational dispensation; it is incumbent upon them to support their colleagues in all schools that include adolescents with hearing loss. Based on this rationale, a statement of the problem can be formulated. Research is necessary to determine the extent of access and use of academic information by adolescents with hearing loss in special schools.

1.4 STATEMENT OF PROBLEM AND FINDING A SOLUTION

The central problem statement of this study is formulated against the framework of the preceding introduction and rationale. From the literature and from observation of society, it appears that adolescents with hearing loss do not have the ability to access and use academic information. It is possible that much of this can be attributed to the fact that they are not information literate – and furthermore that this phenomenon can be observed during their schooling years. The following research question can therefore be based on the preceding discussion: "*To what extent are adolescents with hearing loss in special schools able to access and use relevant information for academic purposes?*"

The study aims to determine the access and use of academic information by adolescents with hearing loss in special schools and subsequently to develop suggestions that strive to address these needs and provide support for teachers and

media teachers in special schools. In an attempt to answer the research question and to propose a solution, the study will consist of two parts, namely:

- A critical review of the existing literature on information literacy in general and the use of academic information by adolescents with hearing loss in special schools and
- a descriptive survey designed to investigate the quantitative and qualitative access and use of information by adolescents with hearing loss in special schools.

The survey is divided into Phases 1 and 2. Phase 1 aims to determine the access and use of academic information as perceived by the adolescents themselves, their teachers and media teachers. Questionnaires will be applied to determine the perception of the access and use of academic information. Phase 2 involves the direct assessment of access and use of academic information by adolescents with hearing loss and involves the process of how academic information is accessed and used in the media centre. This is observed by the researcher, noting what the pupil is doing while interacting with the print. The researcher takes note of the adolescents' skills in accessing and using the relevant information, the process they follow and whether they comprehend the assignment that is given to them in the media centre. The researcher makes notes according to a checklist.

1.5   OUTLINE OF CHAPTERS

A brief description of each of the chapters of the study follows.

CHAPTER 1: ORIENTATION AND STATEMENT OF THE PROBLEM

This chapter provides the rationale and statement of the problem of the study, the outline of the chapters, and the clarification of terms used in this study. The rationale for the study is discussed.

CHAPTER 2: INFORMATION LITERACY

In this chapter, information literacy is discussed. The types of information in everyday life are clarified and the various types and purpose of academic information described. The prerequisite skills for acquiring information literacy are described before the information literacy process is discussed. The characteristics of an information literate person are highlighted in order to emphasize why it is important to be information literate. Attention is given to the factors that influence information literacy such as personal, environmental, and physiological influences. The importance and role of the school media centre is described as well as information literacy programmes to be applied in the special schools. The chapter concludes with a summary.

CHAPTER 3: INFLUENCE OF HEARING LOSS ON THE ACQUISITION OF INFORMATION LITERACY

This chapter focuses on the influence of hearing loss on the acquisition of information literacy. The onset and identification of hearing loss and the intervention and role players in the life of the adolescent with hearing loss are described. The consequences of a congenital hearing loss are described in order to understand the impact of hearing loss on auditory processing and perception; communication, speech and language development; literacy, and academic achievement.

The chapter also describes the importance of educational placement with regard to inclusive education and the value of special education. Special attention is given to the influence of hearing loss on the development of academic literacy with regard to access and use of academic information. The barriers that adolescents experienced to develop academic literacy are discussed. The Information literacy skills of adolescents with hearing loss are discussed keeping in mind the advantages for the adolescent with hearing loss as well as the development of information literacy programmes. The South African context and teacher training gives some insight of the situation as it reflects the diversity of the adolescent population of the country.

CHAPTER 4: METHODOLOGY

This chapter describes the empirical study. The research design for the current study stemmed from the research problem or question, increasing the validity of the research findings, because it focused on the logic of the research done through systematic and objective gathering of information from a representative sample. Ethical clearance was obtained from the Research Committee of the Faculty of Humanities at the University of Pretoria. Ethical considerations were maintained in that informed consent was obtained from participants. Furthermore the researcher guaranteed confidentiality, ensured that no harm would be done to participants, and avoided all violation of privacy. The chapter provides a description of the research aims, research design, selection procedures, equipment and materials. The justification for and management of a pilot study are explained. The characteristics of participants and the procedures for data collection are discussed in detail, and the compilation of questionnaires expounded. The chapter is concluded with the data analysis and statistical procedures that were used.

CHAPTER 5: RESULTS AND DISCUSSION

This chapter presents an overview and discussion of the results obtained according to the various sub-goals of the study. There are four sub-goals. Sub-goal I was to determine the participants' perception of their own ability to find academic information. Sub-goal 2 related to the perception of the teachers with regard to the ability of adolescents with hearing loss to use and access academic information, while sub-goal 3 aimed to determine the perception of the media teachers with regard to the adolescent with hearing loss's ability to use and access academic information. Sub-goal 4 determined and described the *quantity* and *quality* of work rendered by selected adolescents during the execution of an assignment in the media center. Subsequently, the integration and discussion of the results are presented. The chapter ends with a conclusion.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

The final chapter contains the conclusions and recommendations of the study and a critical evaluation of the study is provided. Recommendations are made regarding further research possibilities. The recommendation of the researcher mainly concerns the implementation of an information literacy programme. The recommendations are based on the vision and aims of the special school, the roles of the various role players such as the audiologists, teachers and media teachers. The development of an information literacy programme for adolescents with hearing loss in the media centre is described with its aims, implementation, principles and ways to promote it. The interaction with academic resources is accentuated and the relevance of higher as well as lower-order ability skills is described.

The chapter proceeds with a critical evaluation of the study where the limitations of the study are discussed and its value is highlighted. The contribution of the study is described with regard to its educational value on national and provincial level as well as for the Department of Education and the relevant role players.

Recommendations for further research are given and the chapter ends with a conclusion.

1.6   CLARIFICATION OF KEY TERMS

It is necessary to clarify the following terms in order to facilitate the issues of the study and to avoid misunderstanding:

Table 1.1:   Clarification of Key terms

TERM	CLARIFICATION
Ability	Ability concerns "the basic capacity to carry out a behaviour" (Killen, 2007:13).
Academic information	This is the information that an adolescent needs in school in order to be able to do homework as opposed to information needed for sport, hobbies and activities.
Adolescent	A young person who has undergone puberty but who has not reached full maturity; a teenager (Answers.com, 2009).
Barriers to learning	Factors that prevent adolescents from accessing education provision. These factors can be located within the adolescent, the centre of learning, the education system or in the broader social, economic and political context (Department of Education, 2003:131).
Books	Can be a published work of literature, science, or reference, or a work intended for publication (MSN. Encarta, 2009).
Deafness	A hearing loss that is so severe that the child is impaired in processing linguistic information through hearing, with or without amplification (Deafness and Hearing loss, 2009).
Dewey Decimal Classification	The DDC attempts to organize all knowledge into ten main classes. The ten main classes are each further subdivided into ten divisions, and each division into ten sections, giving ten main classes, 100 divisions and 1000 sections. DDC's advantage in using decimals for its categories allows it to be both purely numerical and infinitely hierarchical. It also uses some aspects of a faceted classification scheme, combining elements from different parts of the structure to construct a number representing the subject content (often combining two subject elements with linking numbers and geographical and temporal elements) and form of an item rather than drawing upon a list containing each class and its meaning (Wikipedia, the free encyclopaedia, 2009).
Hearing loss	Hearing loss is generically used to describe a "wide range of hearing losses" including deafness and is defined by IDEA (The Individuals with Disabilities Education Act) as "an impairment in hearing, whether permanent or fluctuating, that adversely affects a child's educational performance" (Deafness and Hearing loss, 2009).
Inclusive education	"Inclusion is about recognising and respecting the differences among all learners and building on the similarities" (Department of Education, 2001:17).
Information	Information is the process of communication or reception of

TERM	CLARIFICATION
	facts or ideas; knowledge that is obtained from investigation, study or instruction" (Longman's New Universal Dictionary, 1982:508).
Information education	Is a process of acquiring "…knowledge of, attitudes towards and skills in information, as a major determinant of the way in which people exploit reality, develop, live, work and communicate in an information society" (Boon, 1990:2)
Information literacy	According to Lenox & Walker (1993:192), information literacy is "a person's ability to access and understand a variety of information resources. It is also a set of abilities requiring individuals to "recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" (Avery, 2003:279). It forms the basis for life-long learning.
Information literacy programme	A specific programme with the purpose to provide adolescents with the "knowledge and skills to excel in their studies, their teaching, and their lifelong learning pursuits" (Shinew & Walter, 2003:47).
Information literacy skills	The ability to "retrieve, obtain, assess and organize information relevant to one's needs that is vital skills in today's information society" (Drake, 2005:82).
Information literate society	Such a society has "theoretical knowledge, scientific decision-making and problem-solving skills and depends on accurate and reliable information. They acknowledge the existence of a well-developed infrastructure for the production, distribution, retrieval and use of information" (Fouché, 1982:41 & Martin, 1988:40).
Knowledge	Knowledge is born "of literacy, continuous self-education through reading and study, learning and action, observation and experience" (Keown, in Weissel, 1998:625).
Media library skills	Focuses on helping students "understand how to use specific resources" e.g. how to use an encyclopaedia, a poetry index, and the online catalogue as well as the Dewey Decimal Classification (Taylor, 2006:6).
Outcomes	Outcomes refer to results in terms of students learning, development and performance (Drake, 2005:364).
Outcomes-based education	Implies "focusing and organizing everything in an educational system around what is essential for all students to be able to do successfully at the end of their learning experiences. This means starting with a clear picture of what is important for students to be able to do, then organizing the curriculum, instruction, and assessment to make sure this learning

TERM	CLARIFICATION
	ultimately happens" (Spady, 1994:1).
Outcomes-based material (OBE material)	Refers to curriculum-based outcomes, hand-outs, posters, assignment materials, newspaper articles, brochures in order to reach specific outcomes (Spady, lecture at University of Pretoria, 2005).
Participant	Refers to the adolescent/teacher/media teacher taking part in the study
Quality of academic material	How useful the information is (Longman Dictionary of Contemporary English Advanced Learner's Dictionary, 2009).Determines the "usefulness" and the insight of the material (Avery, 2003:269).
School books	Are applied for the 'teaching of children' in schools (Merriam-Webster Online Search, 2009).
Signing	It is the use of "language to communicate to or between people who cannot hear well" (Longman Dictionary of Contemporary English - Advanced Learner's Dictionary, 2009).
Special needs education	Refers to a special school that has specialised skills available among its staff and has developed learning materials to specifically assist learners with …impairments and "learners with disabilities and impairments" (Education White Paper 6, 2001:21 & 7).
Special school	The place or institution where young people with special needs are educated (Education White Paper 6, 2001:21 & 7); the place or programme where an environment is created for learning that maximized the language acquisition processes of children with hearing loss (Northern & Downs, 2002: 344).

1.7   CONCLUSION

In reviewing the literature, the aspect of access and use of academic information by adolescents with hearing loss is clarified. Teachers at special schools face unique challenges and therefore require support from their respective schools and the Department of Education with regard to media centres at special schools. A need for research becomes evident in order to determine to what extent schools and the

Department of Education provide support to teachers of adolescents with hearing loss. Through research one can better understand the problems and approach solutions by planning and implementing programmes that improve retention and academic success and decrease failure rate for deaf students. This study aims to determine the access and use of academic information in special schools by students with hearing loss.

The study is of educational value. It will provide insight on national and provincial level regarding the access and use of academic information by adolescents with hearing loss in special schools. The topic fills a void in the literature and will be published in a scholarly journal (De Vos, 1998:61). The Department of Education will benefit from the study, due to the lack of sufficient information regarding the aspect of information access and use by adolescents with hearing loss. Teachers and media teachers at special schools will also benefit from the study seeing that it will give insight into needs and benefits of academic information amongst adolescent with hearing loss. The study will assist in the selection of teaching methods to improve the access and use of academic information to pave the way to tertiary or post-secondary education.

On national level the study will be of intrinsic value, due to exchange of further information and research to be undertaken on how to improve future access and use of academic information in special schools. The study will also lead to awareness of the importance of academic information amongst people with hearing loss. Successful access and use to academic information will lead to a productive human resource in South Africa.

1.8   SUMMARY AND CONCLUSION OF CHAPTER 1

In the introductory chapter, the importance of an information society is accentuated as well as the importance of access and use of academic information. The value of literacy and the importance of academic information for young people is the fact that in combination they lead to better career opportunities. The rationale describes the value of information skills for academic achievement. It shows that lack of access

and use to academic information leads to fewer career opportunities and low academic achievement. The problem statement of the research study was discussed. A brief discussion of the chapters was presented and the demarcation and terms were clarified. A conclusion as well as a summary was provided at the end of the chapter.

CHAPTER TWO

INFORMATION LITERACY

2.1   INTRODUCTION

The era of information is progressing at a tremendous speed, with both the volume of new information and the pace at which it accrues _{presenting} several challenges to people with information needs.   Individuals are faced with a wide diversity of information choices (SALIS, MSSW & UNESCO Workshop Proceedings and Workshop Report, 2006:64). Every community consists of different types of people with different information needs.   Society needs information for intellectual, economical, social, financial, political, and cultural reasons (Freebody & Welch, 1993:11). The need for information arises from daily activities in all aspects of community life such as housing, transport, educational services, community services, health and social services, and labour. At one stage or another in their lives, all people express the need for "...information, recreation, enculturation and self-actualization" (Fouché, 1982:41).

The concept *information literacy* is explained as follows in the Final Report of the American Media Centre Association Presidential Committee on Information Literacy (ALA, 1989:1): "to be information literate, a person should be able to recognize when information is needed and be able to locate, evaluate and use effectively the needed information". Information literacy can lead to more successful pursuit of careers, life quality, goal achievements, and to future success in life. It will also lead to lifelong learning, the ability to think critically, and to problem-solving (Bundy, 2004:4-5 & Joyce, 2006:33-36).

Martin (1988:40) described an information literate society as "...a society which is characterized by the use of theoretical knowledge, scientific decision-making and problem-solving, dependence on accurate and reliable information, and the existence of a well-developed infrastructure for the production, distribution, retrieval and use of information".   To function well in an information literate society,

individuals need to develop information literacy skills in order to access and use information efficiently. Foster (1993:344-345) made the statement that for a person to be part of an information literate society he or she should be able to recognize when information is needed and to locate, evaluate, and use the needed information effectively. Ultimately, information-literate people are those who have learned how to learn. They know how to learn, because they know how knowledge is organized, also how to find information and how to use information in such a way that others can learn from them. This knowledge and these abilities relate to information literacy skills.

Dickenson (2006:23-27) stressed the fact that a century ago our society underwent a transformation from a farming community to an industrial one, because the world moved from an economy based on manufacturing to one that is based on information. Communities faced a "global" economy influenced by electronic communication, and an increasing amount of information that was made available to all people. Owusu-Ansah (2003:220-221) indicated that in the print society "…literacy is the ability to read and write, and through this to be a fully participating member of a democratic society". With the arrival of the information era, characterised by access to and the use of modern academic information technology and the globalisation of economic processes, the emphasis has shifted from literacy to information literacy.

The present-day information age is typified by computer networks, telecommunication systems and databases. Faced with this profusion of potential information, users have to be aware of what is available, when to use it and how to find out about it. It is important to note that *information* does not only imply the printed word, but other communication sources such as the visual, media, computer, network, and basic literacies as well (Owusu-Ansah, 2003:221).

Information is the source of all education. Information is both the resource for and the product of organizations in the information era, and cultivation of information is the primary task for both the individual and the community. Information literacy, or the individual's ability to develop skills to access and use academic information, is

therefore regarded as a vital competence. Information literacy involves media literacy, information literacy programmes, computer literacy and thought skills (Behrens, 1990:353). From a media teacher's perspective, an information literate student is seen as a student who can organize a research strategy and then identify, locate, access, and evaluate the relevant information.

To have *information* is to be able to state a fact, but using *information* to solve a problem is a process of inquiry. The adolescent with hearing loss must be motivated by the use of the *information*, not the finding of it (Dickenson, 2006:23-27). Information literacy skills should be integrated with the school's curriculum, as well as be reinforced inside and outside the educational setting of a child with hearing loss (Spitzer, Eisenberg & Lowe, 1998:73).

When communication occurs between people, information exchange can also occur. This communication typically relies on language and can involve a certain set of symbols and/or signs conveying a message. The message can be in written form, or an oral message, or a manual sign - "…any representation of facts concerning any subject or object, which representation is perceptible or may be transformed into a perceptible form" (Geldenhuys, 1994:1).

According to Gregory (In Woolsey, Harrison & Gardner, 2004:263-279), information literacy demonstrates a person's ability to access, evaluate, and use information effectively. Access skills refer to print-related skills (e.g. word identification, knowledge of the language of print) and use skills refer to interpretation skills that adolescents use to perform tasks such as answering questions, making inferences and offering generalizations. Access is similar to word identification or decoding skills and interpretation is similar to comprehension skills (Paul, 2009:375).

Academic information refers to the material resources that a pupil needs in order to successfully complete homework, assignments, projects or research. This differs from information needed for sport, hobbies and other activities. Academic information expands the adolescent's range of knowledge and can generally be found in the media centre at school. The different material resources that can be

found in a school media centre can consist of schoolbooks, non-fiction publications, magazines, newspapers, encyclopaedias, dictionaries, outcomes-based material and educational videos. There can also be computers in the media centre with Internet that the adolescent with hearing loss can access and use.

Information is therefore not only acquired via visual (written) media, it can also be conveyed orally (radio, television), as well as technologically (computers). As Lenox and Walker (1993:4-5) remarked: "...whether information comes from the computer, a book, a government agency, a film, a conversation, a poster, or any number of other possible sources, inherent in the concept of information literacy is the ability to dissect and understand what you see on the page or the television screen, on posters, pictures, and other images, as well as what you hear".

2.2   TYPES OF INFORMATION IN EVERYDAY LIFE

There are different types of information that people use in everyday or professional life. Information can be found in libraries, community resources, special interest organizations, media, and on the Internet. This information increasingly comes to individuals in unfiltered formats, raising questions about its authenticity, validity, and reliability. Information is also available through multiple media (graphics, video, and sound in addition to formatted text). All these qualities as well as the quantity of information pose challenges for information users, and demand the ability to use information effectively (SALIS, MSSW & UNESCO Workshop Proceedings and Workshop Report, 2006:64).

Information can consist of factual information that is made up of facts and refer to sources such as dictionaries, almanacs, atlases, directories, government documents) or analytical interpretation of facts, and are found also in sources such as books, periodical articles, and governmental documents) (*Getting Started - Types of Information Sources,* 2006).

Objective information provides a sense of the whole subject and topic and typically appears in sources such as encyclopaedias and textbooks, while subjective

information reflects opinions and personal viewpoints and may give assistance in evaluating a subject. Subjective information typically appears in sources such as books and periodical articles (*Getting Started - Types of Information Sources,* 2006).

Primary information appears in its original form with little or no annotation or editorial modification, e.g. manuscripts, interviews, newspaper accounts, literary work and diaries. Secondary information examines, analyses, or interprets primary information. Secondary sources range from articles criticising a painting or novel, to interpretations of scientific research (*Getting Started - Types of Information Sources,* 2006).

Spitzer *et al.,* (1998:23) described the different types of information as "…printed words, illustrations, photographs, charts, graphs, tables, multimedia, sound recordings, computer graphics or animation". As stated previously, information should therefore not only be connected to the printed word, but to other literacies as well, such as visual, media, computer, and network literacy, which are briefly described below.

Visual literacy is the ability to "…understand and use images, including the ability to think, learn, and express oneself in terms of images" (Spitzer *et al.,* 1998:23). Visual symbols are used to express ideas and to convey certain messages. Visual communication can also be conveyed by using a camera or a computer graphics programme.

Media literacy refers to a person's ability "to access, analyze, and produce information for specific outcomes" (Spitzer *et al.,* 1998:24). Media sources involve using television, motion pictures, radio, newspapers, and magazines. It is widely accepted that media literacy can help to create ideas, reinforce and modify a person's values and attitudes, and help to shape people's expectations that could lead to certain actions.

Computer literacy refers to a computer as a tool that can facilitate and extend a person's ability to learn and process information, for example when using electronic

mail and/or presentation software (Spitzer *et al.,* 1998:25). Network literacy is similar to and related to computer literacy. It involves to using the World Wide Web, and in order to use it a person needs to be computer literate. The components of computer literacy include recognising the existence of global network resources and services, understanding how the system works, and how information is generated, managed, and made available to everyone.

To be information literate is to be able to use all kinds of information and to apply information literacy skills, strategies and tools, combining retrieved information with other resources. Network literacy can help a person to resolve work related problems and improve a person's quality of life (Spitzer *et al.,* 1998:25). A person who is competent in network literacy will have the advantage of applying networked information to his/her problem solving needs, and performing his/her basic life activities (Spitzer *et al.,* 1998: 25-26). Visual, media, computer, and network literacies relate directly to information literacy, and overlap and interpenetrate each other.

Behrens (2000:5-7) provides an analysis of printed information. She identifies three forms of reference sources, namely:

- Hard copy, which refers to information that is printed on paper, for example books and newspapers that are accessed manually. Pages are turned over manually and no special equipment is required in order to read.
- Microform, which refers to information that is photographically reduced, and that is stored as images in plastic form such as microfiche and microfilm and requires electro-mechanical equipment (readers) in order to be read. The information is read on the screen of the reader; and
- Electronic information, which refers to a computer that stores information and converts it to electrical impulses that are recognized by the computer. The electronic impulses represent numbers or characters, and are referred to as data. A computer is able to write the data on a variety of storage devices such as disks, floppies, flash disks, and CD-ROMs, all of

which form part of the computer system that one uses. Computers can also be linked to a network via the Internet.

It is evident that the type of information determines the type of access. If the information source is in hard copy or microform, it can be accessed manually. However, if the information source is electronic, one can use online searching to access such information (Behrens, 2000:9). Libraries play a vital role in storing information of all types and formats. The information should be organized in such a manner that it is accessible for retrieval.

The school media centre, which should make information accessible to adolescents including those with hearing loss, should optimally be organized in such a manner that it is accessible for retrieval of information in all types of formats. For this purpose, a media centre uses bibliographic control methods, such as a catalogue that lists all the information sources found in the media centre. A special school's media centre should also be able to access other libraries or the Internet (Behrens, 2000:11).

2.3   PREREQUISITE SKILLS FOR ACQUIRING INFORMATION LITERACY

There are several skills that a person needs in order to acquire information literacy skills for the information literacy process. According to Hart (1978:34), social, cognitive, and emotional development needs to take place. Cognitive or intellectual skills relate to sensory abilities, perception, comprehension skills, communication and language abilities, attention span, memory, problem solving skills and decision-making skills, abilities demonstrated through intelligence quotient and judgment skills, as well as the ability to apply newly acquired knowledge. All of these skills and abilities are basic to the learning skills that enable individuals to acquire information literacy skills. A number of the relevant skills are discussed in more detail below.

2.3.1 Auditory processing skills

One of the factors that play a role in the information literacy process is the auditory processing process. Perception is a cognitive process that supplies information from the moment that a person senses and observes something and forms an abstract thought or opinion. A hearing person appears to develop abstract ideas logically and instinctively, since language development is an important mediating tool for the development of thought processes. The adolescent with hearing loss finds it difficult to distinguish between subtle nuances in communication such as those conveyed by tone of voice or ambiguous word use, and often cannot make meaningful interpretations of auditory input (Hugo, 1987:7). **Figure 2.1** illustrates the auditory process from the stage of initial experiences up to the stage where total language ability develops, as will be discussed in Chapter 3.
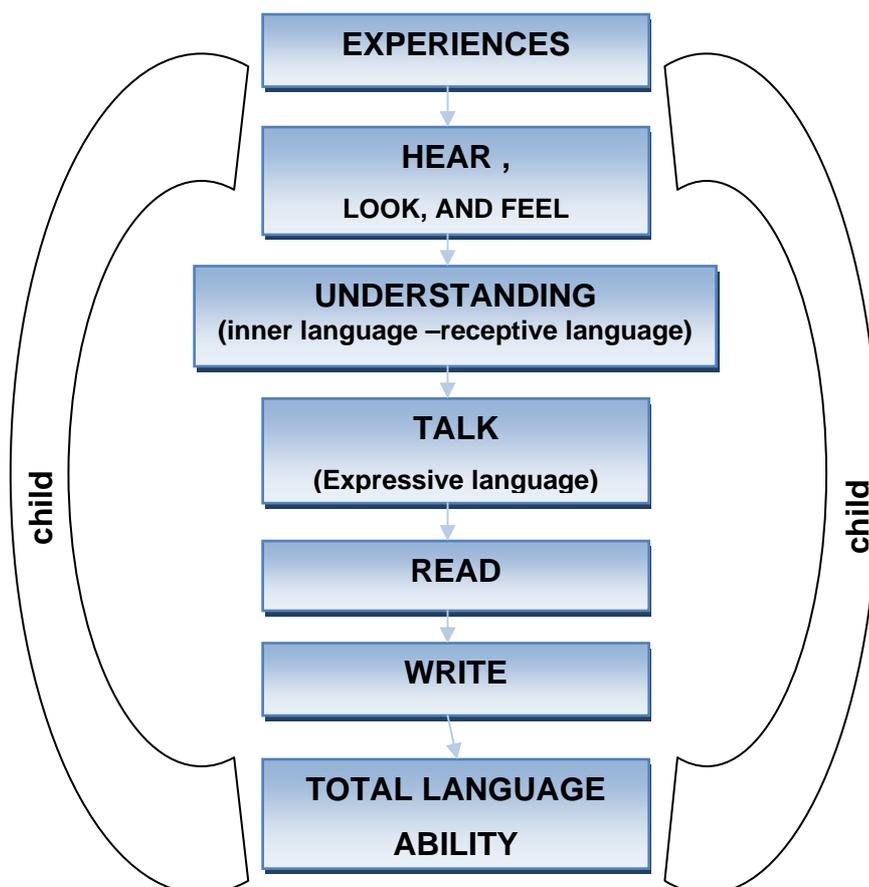
Figure 2.1: The communication and language process (adapted from Hugo, 1987:37)

From **Figure 2.1** one can observe that auditory processing starts from the stage where the child undergoes the sensory experience of hearing (together with looking and feeling), and progresses to understanding (which constitutes inner language and is dependent on receptive language). This underlies the expressive language that is manifested in reading and writing. The measure in which a child masters these abilities determines that child's total language ability.

The auditory processing skills are related to the oral language which appears to be acquired effortlessly by the hearing person (Katz, 2002:496 & 759) but not by the person with hearing loss. Sampson (1991:14) stressed that the process of reading should not be considered separate from the processes of writing, talking, thinking, and reasoning, as seen in **Figure 2.2.**
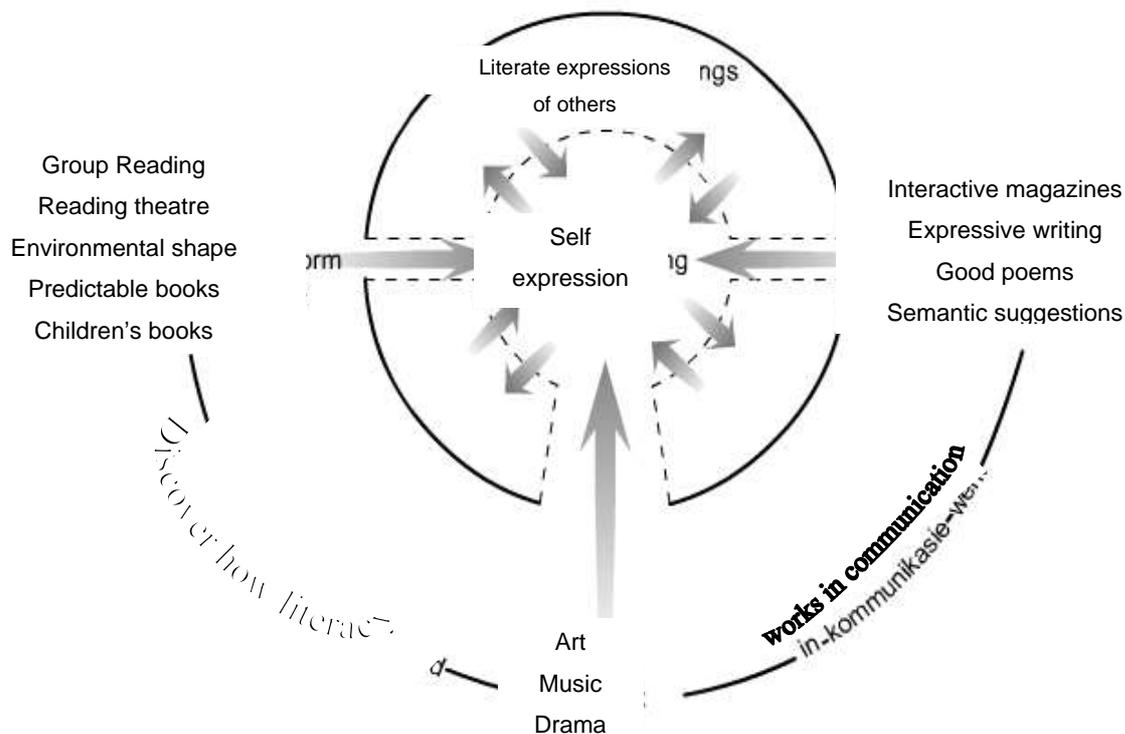
Figure 2.2: Communication process in relation to literacy **(adapted from Sampson, 1991:14)**

Figure 2.2 shows the communication process in relation to the process of literacy – a person first has to express him/herself in art, music and/or drama, as well as in written form such as reading, theatre, books and children's books. Information skills such as the appreciation of interactive journals, good poetry and semantic

presentations develop from literacy skills. This implies, however, that there is to be a constant interaction between the processes of writing, talking, reading, and reasoning.

2.3.2   Sensory observation

Sensory abilities refers to the senses of touch, hearing, and seeing, whereas perception is a cognitive process that supplies information from the moment that one feels/hears/sees things, observes, and forms a specific thought or opinion. It is apposite to discuss the process of *sensory observation* here, as it is underlying to the language process and therefore a prerequisite for information literacy.

Sensory observation relates to the ability to communicate with other people and to process information. If a person has poor sensory observation skills, it can delay the processing of information.   Sensory observation has an influence on the development of language.

It is often assumed that children born with limited sensory abilities will not learn language normally or adequately (Carey & Gelman, 1991: 294), but recent findings have indicated that those children can and do master language. In order to interpret these findings meaningfully, it is necessary to distinguish between *abilities* and *skills.* A person may have the basic *ability* to hear or see, but may not have developed the *skills* to utilize the ability *fully*. On the other hand, a person may have limited *ability* (e.g. hearing ability), but can develop excellent *skills* in working with the measure of ability that he does have. A child with limited sensory abilities may have good sensory perception skills and therefore be able to make full use of the measure of sensory ability that is present.

If a person does not possess sensory perception skills, it can delay the information process because this means information can not be transferred efficiently. A person needs to utilize all his/her available senses fully to be aware of what is going on the world because sensory inputs help the brain to process information.

2.3.3   Cognitive and intellectual development

Cognition refers to a person's intellectual abilities that enable him/her to communicate, solve problems, achieve academic progress, and to be able to learn. Cognitive development is linked to a person's experience, background and frame of reference, i.e. the ability to learn from experiences and how to apply the knowledge gained from them.   If the child with hearing loss experiences problems with cognition, it will lead to reading and academic problems.   Although there is much research regarding differences between children with hearing impairment and their hearing peers, there is a definite lack of research regarding the effect of cognitive delays on the academic achievement of children with hearing loss (Morris & Blatt, 1986:321-322).   The reason is that it is very difficult to interpret the results when tests of cognitive ability are administered to adolescents with hearing loss.

Comprehension and knowledge strategies are very important elements that play a role in a person's ability to access and use academic information.   *Comprehension skills* rely on strategic thought processes.   Comprehension strategies may be influenced by the reason why a person reads, whether for relaxation or for acquiring information.   Cooper (1993:5) holds the opinion that comprehension skills are very difficult to learn and are linked to a frame of reference or prior knowledge.   This also implies that if a person has come in contact with things in a specific situation, that context will support understanding, whereas a person who has not yet had personal experience will find no help from the context (Coetzee, 1977:51).   An experience-based frame of reference supports language performance and enables the person to express the associated thoughts/concepts in words.

Cognitive and intellectual skills are therefore linked to more aspects than a person's ability to communicate, to solve problems in order to achieve academically, and to learn.   Cognition and intellect are also linked to a person's past experiences, background, and frame of reference.   *Intelligence* is usually considered to refer to a person's ability to understand the world with all the problems connected to it.   It is linked to perceptual, language and numeric skills.   Intelligence implies that one is

able to solve problems, whereas intelligence quotient reflects one's level of intelligence as measured by specific tasks.

A child's potential in the area of intelligence is influenced by personal experiences, physical environment, values and acquired knowledge. It is linked to perception, language, and numerical capabilities. The Intelligence quotient (IQ) refers to the demonstrated ability to solve a specifically selected set of problems, and is used to determine a person's level of expected academic performance, whereas intelligence refers to the ability to solve problems in general. The adult level of intelligence is usually determined at the age of 16 years (Louw, 1991:11-12).

An IQ, in effect, tells you what your score is on a particular intelligence test, compared to your age group. The test has a mean score of 100 points and a standard deviation of 15 points. This means that 68 percent of the population scores (obtains an IQ score) within the interval 85 to115, and that 95 percent of the population scores within the interval 70 to 130 (*The Intelligence Quotient (IQ). The first intelligence tests used in the field of psychology*, 2008).

Cognition skills are necessary to form a realistic internalized reproduction of a text. Cooper (1993:13) emphasizes the fact that a reader should be able to link that which he/she is reading to familiar experiences: "...the meaning that the reader constructs or assigns does not come from the printed page; it comes from the reader's own experiences that are triggered or activated by the ideas the author presents". Smith (2006:764-773) concluded that cognition levels and processes are involved in becoming information literate, and in this connection discussed aspects such as knowledge, comprehension, application, analysis, synthesis and evaluation regarding a person's ability to access and use academic information.

2.3.4   Speech, language and communication

Parents facilitate their child's language development from birth (Schirmer, 1994:19). Bader (in Hull, 1998:121) pointed out that a child's language development should be

seen in the light of the environment and in particular the learning environment of his/her early childhood years.

Figure 2.3 indicates that the language environment can be influenced by a person's religious or spiritual environment. Adherence to particular principles can help a child to develop certain strategy applications that he/she can utilize to handle situations/problems (Sampson, 1991:311).
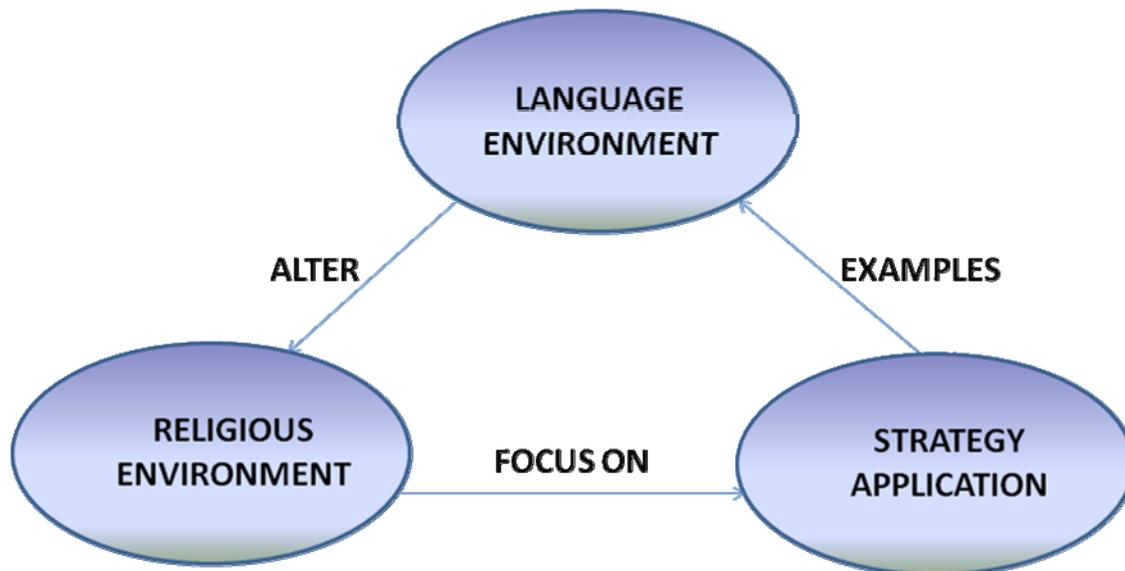
Figure 2.3:   Socio-psychological linguistic viewpoint of the language process (adapted from Sampson, 1991:311)

The complexity of language acquisition has been studied since early times, among others by Psammetichus I, a Pharaoh of ancient Egypt (Schirmer, 1994:4). In the 1990's it was studied in a systematic manner with relation to the development of syntax and semantics. Highfield (1999:8) made the statement that long before a baby produces his/her first word, he/she "has an ear for" the language of his/her home. The development of hearing-for-language demonstrates the extraordinary importance of this crucial ability. At one month or less, the infant is able to discriminate different phonemes. At the age of 4 ½ months, a baby can recognise an uncompleted sentence and at 7 ½ months a baby can distinguish between the various phoneme sequences (words) of a language (Owens, 2001:151-153).

Language development is a prerequisite for the development of information literacy skills. Language and communication are linked to information literacy, which in turn

is linked to certain values, systems of knowledge and a set of skills to access and use information (King & Quigley, 1985:59). *Communication* is the transfer of information, whereas *speech* concerns the way people talk and the transfer of words. *Language* is a system of rules for using sounds, symbols and words to communicate meanings, ideas, and thoughts. Spoken and written language and communication are complex processes that rely on decoding skills regarding the "…higher order cognitive, metacognitive, and linguistic skills, such as interference, syntax, and semantics, as well as lower order decoding skills and letter and word recognition" (King & Quigley, 1985:xi-xii). Language ability cannot be disassociated from reading comprehension.

Language problems lead to reading problems and can prevent a child from scholastic achievement. Encoding and decoding of written language (literacy skills) are related to the development of spoken language. Encoding and decoding skills determine the ability to read and understand, and are therefore significant areas to be tested or evaluated; however, this is an intricate and difficult process (Foster, 1993:245; Hugo, 1987:86; Moores, 1996:171, 286). The complexity of language development becomes apparent when one considers the wide diversity of aspects related to spoken and written language:

- the analysis and decoding processes involved in language comprehension (King & Quigley, 1985:xiii)'
- the ability to skim written symbols quickly in order to read or decode graphic symbols fluently (Cooper, 1993:15);
- phonemic synthesis ability that is closely associated with the ability to articulate, spell, and perceive language (Katz, 2002:517);
- text analysis to link main and subordinate ideas with one another;
- text evaluation to understand and appreciate the style, clarity, and coherence of both narrative and expository texts (Cooper, 1993:14);
- integration of information from different sources, and in the case of written language, juxtaposition of texts to confirm comprehension;

- tangentially related comprehension skills such as interpreting diagrams, understanding chronological order, etc. (Human Sciences Research Council, 1989:55 & Cooper, 1993:12-14);
- vocabulary for various areas of interpersonal and academic language use, as well as awareness of vocabulary strengths and deficits;
- factors that can influence the development of a positive attitude towards reading (Coetzee, 1977:8).

Schirmer (1994:6) emphasized the link between language acquisition and cognitive development. Highfield (1999: 8) confirmed this and mentioned that failure at school level often indicates a poor or incomplete mastering of language due to low level of intelligence, physical handicaps, hearing loss, and/or incomplete education. Having a language base helps a person to develop certain strategies involved in learning to read. This has an impact on information literacy and proves that it is important for each school to develop the language base of every child "...whatever language a child has developed" (Cooper, 1993:10). It is clear that certain language limitations lead to problems with regard to writing and reading (Highfield, 1999:8).

2.3.5   Reading and writing skills

Cognitive development influences the ability to make inferences, integrate information in a text, understand the story structure, and monitor understanding. General or procedural knowledge plays a role regarding reading comprehension processes (Garrison, Long & Dowaliby, 1997:78-94). Adolescents differ in their ability to comprehend text (Glazer, 2007:70). Research has shown that both single word reading skills and the ability to construct integrated text representations contribute to overall reading ability (Oakhill & Cain, 2000:51).

Reading comprehension problems can stem from poor decoding skills, poor linguistic competence, or a combination of both. Decoding refers to word recognition, linguistic competencies to one's ability to extract semantic information from words and to derive sentence and discourse meaning. Reading comprehension begins with the processing of print. Word identification causes difficulties for the child with

hearing loss, because letters in the alphabetic script represents the phonological form of the word. This grapheme-phoneme correlation presupposes access to phonological information, which is obstructed because speech sounds are not heard properly by the child with hearing loss. Speech identification is dependent upon the incomplete information derived from speech reading (Wauters, 2005:2).

Cooper (1993:10-11) refers to "schemata" as the structures that "...represent the generic concepts stored in our memory". Reading and literacy play a role in the cognitive adaptive capabilities of the person and one should not underestimate the power of the written word. The environment where a person lives exerts a significant influence on literacy. The cognitive skills that are required (King & Quigley, 1985: xiii) to become information literate can be seen in **Table 2.1 (**Eissenberg & Berkovitz, 1990:12) and this table also indicates the link between information literacy processes and cognitive skills. **Table 2.1** corresponds to **Figure 2.1,** which depicts the information literacy process (California media and Media Centre Educators Association, 1994:5).

Table 2.1: Information literary processes and cognitive skills (Eissenberg & Berkovitz, 1990:12).

INFORMATION LITERACY PROCESS	COGNITIVE SKILLS
Identifying the formation need	Knowledge
Explaining the relationship between information sources and the approach to finding a solution	Understanding
Choosing relevant information from different options	Application
Investigating elements and analyzing the relationship between the information sources	Analysis
Restructuring and organising the information	Synthesis
Evaluating information in relation to specific information needs	Evaluation

Table 2.1 indicates that each aspect of the information literacy process is linked to cognitive skills. It should be stressed, however, that the steps mentioned in **Table 2.1** are not necessarily followed in that fixed order. It will depend on a specific

situation that develops because of a specific need, as well as on the student who investigates the problem (Eissenberg & Berkovitiz, 1990:13). Cognitive skills such as those involved in acquiring knowledge and understanding, as well as skills in application, analysis, synthesis and evaluation are therefore very important in the process of becoming information literate.

2.4   INFORMATION LITERACY SKILLS AND PROCESS

Eissenberg (in Van der Walt, 1992:39) refers to the "big six information skills" as prerequisites to becoming information literate. These specific information literacy skills refer to the abilities to:

- access academic information efficiently;
- evaluate it;
- use it effectively, critically, competently, accurately, and creatively;
- be an independent learner, to pursue academic information related information, as well as information with regard to personal interests;
- appreciate literature and other creative expressions of academic information; and
- strive for excellence in academic information seeking and knowledge generation.

A student should therefore be able to define his/her information needs, know where to find the relevant information, evaluate it, access it cognitively, interpret it sensibly and know how to apply and communicate it effectively (Van der Walt, 1992:39; Boekhorst, 1999:57-68). Brake (1980:1) summed it up as "…the location, retrieval, selection, organization, evaluation and communication of information".

Information literacy complements literacy in that it refers to the ability of adolescents with hearing loss to access, use and evaluate information from different sources, to enhance learning, solve problems and generate new knowledge (Sayed & De Jager, 1997:12). Information literacy is in effect part of literacy and assists in the development of academic literacy skills. Dickenson (2006:23-27) stressed that

information literacy skills support curriculum based inquiry, and help to cultivate a learning process for students' daily lives. There are specific factors that influence the information literacy process.   By acquiring *information literacy skills* and *participating* in a special *education information programme* (as will be discussed later), an adolescent with hearing loss will be able to access and use academic information in the same way as his/her hearing peers. Information literacy skills are acquired through an information literacy process.

The process of an information literacy programme is described by the California Media and Media centre Educators Association (CMLEA), 1994:5) in 11 steps as depicted in **Figure 2.4.**
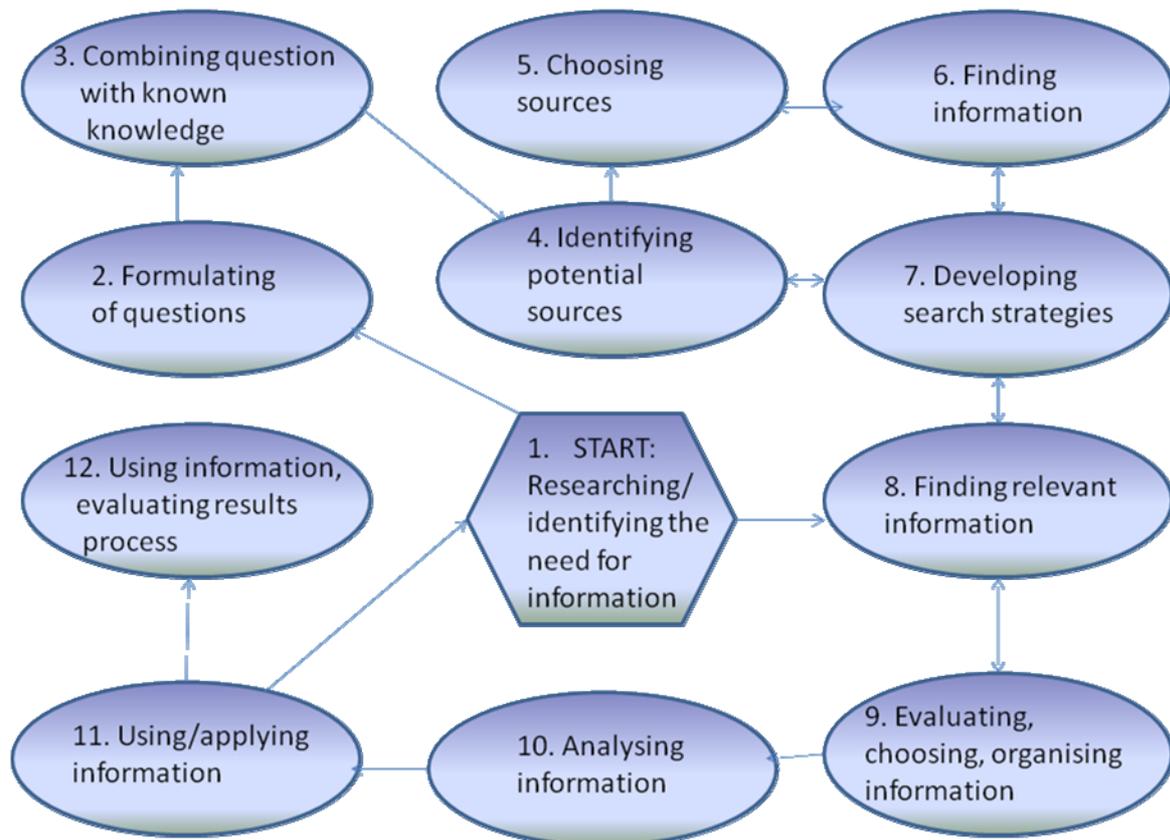
Figure 2.4:   The information literacy process **(adapted from California Media and Media centre Educators Association (CMLEA), 1994:5).**

Figure 2.4 describes how an information literate person starts to look for information, formulates the question in a proper manner, and combines it with his/her background

knowledge. This question leads him/her to identify relevant information sources and select the right sources according to learned search strategies. Then he/she will be able to find the relevant source, evaluate and analyse it, and apply it to his/her need. An information literate person should be able to ask the following questions:

- Can I find information regarding the specific topic?
- Am I able to evaluate the sources?
- Is it possible to establish the author of the sources?
- Can I determine whether the publisher of the information source is reputable?
- Will I know how to determine if the information is correct?
- Can I determine if there are any biases in the information presented?
- Am I able to determine whether the information is up to date?
- Is it possible for me to determine whether the style of the writing is suitable for my needs?
- Do I know how the information sources are arranged in the media centre? Is it logical and should I use the catalogue or computer?
- Will I be able to determine whether a computer is needed to access and use the information and do I know how to access and use a computer?
- If some of the options are not viable, will I be able to determine if there are other alternatives available? (Behrens, 2000:5).

These questions show that a person applying information literacy skills should pay attention to the selection of information sources, determine if the process that was followed was logical, and appraise how the information was organised. If a person can succeed in this, he/she will be able to reach his/her goal.

Figure 2.4 indicates the relationship of the language process to other processes. In the 1970's William Godwin (in Pumfrey, 1991:1) gave a striking description of the value of reading: "...he that loves reading has everything within his reach. He has but to desire and he may possess himself of every species of wisdom to judge and power to perform". Human beings are not born as readers, but a language base develops the thought processes that lead to the reading strategies as seen in **Figure 2.3.**

The reading process can be portrayed in the same way as the language process. Schirmer (1994:113) describes reading as a process of interaction between the reader and the text. Reading leads to the expansion of behavioural patterns and skills. Marschark (1997:136) refers to reading skills as "...the ability to distinguish arbitrary marks on a background, whether stone, paper, or computer screen". According to Neyhuss and Austin (1978:319), the hearing person acquires complex behavioural patterns that occur automatically. This statement refers to a language foundation based on auditory processing skills that are intertwined with higher-order cognitive processing skills (Katz, 2002:496), as well as visual patterns.

If a person is capable of developing his/her language and literacy skills, it can lead to information literacy, as well as academic literacy, which leads to *critical thinking* and *problem-solving skills.* Such a person will be able to apply his/her newly acquired *knowledge* to various practices. In fact, the USA's Department of Labour regards information literacy as one of the five main skills that all workers should possess (Information Power: *Information: Building Partnerships for Learning*, 1998).

Harrison, Simpson and Stuart (1984:1) indicated that the information literacy process leads to self-improvement, and pointed out: "Almost everybody today aspires to higher standards of living, longer lives, and fewer health problems, education for themselves and their children that will increase their earning capability and leave them more in control of their lives; a measure of stability and tranquillity; and the opportunity to do the things that give them pleasure and satisfaction".

2.5   THE INFORMATION LITERATE PERSON

Information literate people are those who have learned how to learn, because they know how knowledge is organised, are able to find information, and can apply it in such a way that other people can learn from them. They are prepared to become life-long learners because they are always able to find the necessary or relevant information for any task or decision (Doyle, 1992:2).

Mokhtar and Majid (2006:35-36) and Dickenson (2006:23-27) gave an explanation of competencies and indicators of information literacy that are used in developing teaching programmes, but that also demonstrate the advantages of information literacy, as seen in Table 2.2.

Table 2.2: **Teaching information literacy for in-depth knowledge (adapted from Mokhtar& Majid, 2006:35-36 & Dickenson, 2006:23-27).**

COMPETENCIES OF INFORMATION LITERACY	INDICATORS OF INFORMATION LITERACY
1. Learners will be able to recognize the nature and extent of information	i Will be able to define and articulate his/her need for information
	ii Will be able to identify the variety of information sources
	iii Will understand the purpose, scope and appropriateness of a variety of information sources
	iv Will know and take into consideration the costs and benefits of obtaining the needed information
2. Learners will learn to access the information effectively and efficiently	i. Will be able to select appropriate methods or information retrieval system for finding relevant information for his/her need
	ii Will construct and use well-planned search strategies
	iii Will be able to retrieve information using a variety of methods
3. Learners will be able to evaluate information and its sources critically and competently, and be able to incorporate selected information for their own knowledge base	i. Will be able to assess the information that he/she obtained
	ii Will be able to summarize the main ideas extracted from the information
	iii Will articulate and apply criteria for evaluating the information and sources
	iv Will validate understanding and interpretation of the information with other learners
	v. Will determine if it is necessary to revise the initial query
4. Learners will strive for excellence in their information-seeking efforts to expand their knowledge base	i. Will be able to understand bias and authority issues when he/she obtains the information
	ii. Will be able to distinguish between accurate and inaccurate, reliable and unreliable information

COMPETENCIES OF INFORMATION LITERACY	INDICATORS OF INFORMATION LITERACY
	iii. Will feel encouraged to seek and revise new search strategies and methods until he/she feels the information is enough or adequate
5. Learners will learn to use information appropriately and creatively	i. Will generate main ideas to construct new concepts
	ii. Will learn how to compare new information to prior information he/she acquired to determine its value, confirm contradictions and other specific or unique characteristics
	iii. Will then be able to apply new and prior information to the planning and construction of his/her new knowledge or product
	iv. Will reassess and revise the development process for the new knowledge or product
	v. Will then communicate the new knowledge or product effectively to other people who can benefit from it
6. Learners will now be able to understand many of the legal, economic and social issues surrounding the use of information and have learnt ethical and legal access and use of information	i. Will adhere to laws, regulations, institutional policies and etiquette related to the access and use of information sources
	ii. Will also acknowledge information sources when communicating the knew knowledge or product that they generated
	iii. The learners will honour and acknowledge the ownership of information
7. Finally, the learners will be able to contribute positively to the learning community and the society and will have learnt the	i. The learner will now be able to recognise and respects different opinions in discussions, as well as all forms of printed and non-printed information sources

COMPETENCIES OF INFORMATION LITERACY	INDICATORS OF INFORMATION LITERACY
importance of information in everyday life and participate effectively in groups to pursue and generate information	ii. Will be encouraged to proactively seek to understand different perspectives to form informed opinion
	iii. The learners will share knowledge and collaborate with others to generate new ideas or products that can benefit the learning community and society where they live.

It is evident from **Table 2.2** that information literacy programmes can develop certain competencies that will learners to fully benefit from all information resources.

Thinking is more than just the ability to identify and connect two facts. Identification simply creates a moment disconnected from purpose. Recognition requires that one either remembers or intends to use the item in some process with which one is currently occupied. The difference between learning and mere recitation is the insertion of self-interest. Interest, as Dewey (1944:126) defined it, is "the engrossment of self in an object". Emotion, instead of preventing the thinking process, gives impetus to the problematic situation that keeps the thinking process alive. As Dewey (1944:145) noted, "thinking, in other words, is the intentional endeavour to discover specific connections between something that we do and the consequences that result, so that the two become continuous". True learning comes as meaning connects certain actions with responses that initiate other actions.

The *independent learning* category does not imply that learning is devoid of interaction with others. In fact, quite the contrary, Dewey argued that interaction is necessary to provide context. He noted that what individuals think about facts changes when they form associations. Facts are now viewed for the effect that they can have on others, as Dewey noted in his well-known publication *The Public and Its Problems* (1954). This work made it clear that collective groups are still composed of individuals. This collection of individuals, arriving at learning experiences and contexts of knowledge, must be aware of all learning experiences. Marschark (2003) applies Dewey's ideas to some of the information literacy standards, and in this way elaborates on the characteristics of the information literate person.

Weiss (2004:13-15) also examined the qualities of an information literate person, and the following skills can be added to those described in **Table 2.2.** An information literate person:

- can retrieve information from a variety of media;
- is able to decode information in a variety of forms, statistical and graphical;
- uses computer-based services for goal-orientated learning tasks;

- is able to analyze, write, present, and communicate such information to create the necessary knowledge and insight and
- Uses information technologies to create or use networks of co-learners in the pursuit of knowledge and to share information.

In addition to the aforementioned aspects, an information literate person will know how to formulate questions based on information needs, to develop successful search strategies, to assess the different sources of information, to organise information for practical application, and to integrate and use it for critical thinking and problem-solving in life. When an information literate person identifies his/her information needs, he/she will realize the value of information.

Cavaleri (2005:378-39) recognizes five *dimensions of thought processes or learning* of the information literate person. These thought processes are:

- attitudes and perception regarding learning processes;
- acquisition, understanding and integration of knowledge;
- expansion and refining of knowledge;
- meaningful use of knowledge and
- Productive thoughts.

The term *productive thoughts* refers to a person's ability to put assembled information back into the information cycle as input for further information activities of the person him/herself or other users (Behrens, 1992:3). If all these skills are mastered, such a person will be regarded as an *information literate person* in his/her environment. This will enable a person to face the demands of the information knowledge era.

Information literate people are therefore classified as people who have learned to learn. They know how to learn because they know how knowledge is organized, how to find information and how to access and use academic information in such a way that others can learn from them (Foster, 1993:344-345).

An information literate person who is able to access and use academic information is also able to distinguish between factual and analytical, as well as between objective and subjective information. Such a person knows the difference between *primary* (encyclopaedias, dictionaries) and *secondary* information (comments, reviews etc) and is aware of all the different information sources. An information literate person can also determine the amount and quality of information that is needed for specific purposes, and know whether the information is recent and of value for these purposes.

Based on the foregoing discussion, it is clear that an information literate person can access information. This implies that he/she recognizes the relevant information and knows that it is the basis for intelligent informed decision-making; is able to formulate questions based on his/her information needs and is able to develop appropriate search strategies; and is a competent reader. Such a person can also evaluate information, that is, establish authority; determine the accuracy and relevance of the information; recognize different viewpoints; distinguish between different factual points of knowledge; and create new information to replace inaccurate or even missing information when needed. Finally, an information literate person can use information (organize it for practical application; integrate new information into an existing body of knowledge; and apply academic information in critical thinking and problem solving) (Doyle, 1992:2).

The attainment of information literacy is especially important in the school environment. An information literate learner is able to know that he/she needs information, can define a problem; can ask the right question, knows how to answer it and to provide a solution; can find the relevant information, organise it and knows how to apply it to find a solution. These qualities will provide a solid foundation in a learning environment such as a school.

Information literacy skills will lead adolescents with hearing loss to become independent and learning-centred. Learners will take responsibility for their own learning skills and competencies, thereby becoming dynamic learners and thinkers who are able to be creative, analytical and efficient. They will be able to find the best

current information that they need to help them to do their work more efficiently. If adolescents with hearing loss are information literate, they will be able to keep up with the increasing amount of information that they encounter.

Truax, Foo and Whitesell (2004:321) expressed their belief that each child with a hearing loss has the unique ability to reach his/her potential if parents and professionals provide the necessary home and school activities and/or environment to help him/her to develop as a productive member of society. The information process is therefore associated with the development of an individual in totality and leads to improvement in human well-being.

Most people aspire to higher standards of living, a longer life, fewer health problems, and education for themselves and their children that will increase their earning capacity and leave them in greater control of their lives; give them a measure of stability and tranquillity; and the opportunity to do the things that give them pleasure and satisfaction (Harrison, Simpson & Stuart, 1984:1). One of the keys to all of these achievements for the adolescent with hearing loss is the ability to access and use academic information.

Information literacy is therefore essential "… to a citizenry to prepare to participate in the political decision making that affects their lives" (Lenox & Walker, 1993:316). It is also central to the economic development and growth both of the individual and the company or country. Information literacy leads to self-discovery and is the pathway to knowledge and a meaningful role in society.

2.6   OTHER FACTORS THAT INFLUENCE INFORMATION LITERACY

There are several factors that influence the acquisition of information literacy. These factors include personal influences, environmental factors, physiological influences, the nature and functioning of school media centres, and information literacy programmes.

2.6.1   Personal influences

Personal development, growth, age, personality traits, habits, intelligence, self-concepts, values, attitudes, decision-making, and aims for the future all impact significantly on the development of any skill (Louw, 1991:17). Personal influences such as cognition, values, emotions, judgments, and personal aims determine how the totality of a person develops and serve as the foundation of a person's ability to become information literate. Personality traits may have some bearing on how motivation, interest, training and background will influence a person's capability to work with (i.e. access and use) information in all forms (Louw, 1991:13).

Motivation encourages a person to complete things or projects, and interest directs a person to learn more or do more regarding a topic and this will influence academic achievement (Killen, 2007:41). Training and background involve the environment that contributes towards the formation of cognitive and intellectual skills.

Personal influences are linked to emotional feelings. Any person can experience negative feelings such as feelings of rejection; however, the inability to understand abstract concepts such as death, loss, and sympathy can also cause negative feelings. The comprehension of these abstract concepts usually poses few problems to hearing people. They develop an understanding logically and instinctively. Abstract meanings are brought to the foreground through language skills where they can be analyzed, understood and applied (Marx, 2000:66). People with hearing loss may experience problems with abstract concepts. This can have an impact on information processing, as information sources can contain abstract concepts that people with hearing loss may find hard to grasp.

2.6.2   Environmental factors

Environmental factors influence cognitive development. The most significant of these influences is socialization, which can take place within the family, associations, school events, work and group culture (Louw, 1991:17). Other environmental influences are

people that one meets, such as friends and relatives; communication media such as television, radio, and reading material; and visual influences such as culture and art. All of these play significant roles because they are all sources of information, whether direct or indirect, and they add to a person's level of information literacy (Louw, 1991:25). An unstable environment can prevent a person from becoming information literate, but it should be kept in mind that people differ from one another in how they react to environmental influences. Chapter 3 (section 3.7.9) will indicate how environmental factors influence adolescents with hearing loss.

Environmental factors also refer to social interactions between a mother and her child, interpersonal contact between people, behavioural traits of people, moral development, and sexual development (Louw, 1991:13). Where poor relationships exist between people, it can obstruct or slow down cognitive and intellectual development, because of poor stimulation. Louw (1991:29) indicates that environmental experiences can influence all aspects of one's life, and it is apparent that negative experiences can exert a negative influence. Although parents and teachers typically wish to avoid such consequences as far as possible, the characteristics of adolescence are often instrumental in the vulnerability of this age group. The maturational changes in the brain contribute to age-specific behaviour (Spear, 2000:417). The age related behaviours commonly seen in most adolescents reflect their need to attain independence. Definitive characteristics include eating and sleeping behaviours, but also reactions to perceived negative reactions to their self-perceived best efforts. Immature brain physiology is one of the main reasons why adolescents have poor judgement, especially with respect to emotional signals from others (Preston, 2004: 36). This can have an effect on the adolescent's cognitive and intellectual development, including his/her literacy development. The implication seems to be that there is a significant burden on media teachers to provide appropriate psychological as well as intellectual support if hearing impaired adolescents are to attach a positive connotation to literacy activities.

2.6.3   Role of school media centres

Effective media centres are essential if adolescent with hearing loss at school are to become information literate. Because schools vary in their mission and cater for a variety of pupils, an information literacy programme should be designed according to the specific needs of the pupils instead of following a prescribed set of criteria (Boon, 1992:40). An information literacy programme should bear the curriculum in mind, because it links or ties information literacy to all the students' experiences (Snavely & Cooper, 1997:53-62). Information literacy instruction is highly effective when offered in context with content-based courses and assignments (Jacobson & Mark, 2000:256-279).

With so many resources available, students now have more ways than ever to find information on how to do their schoolwork and projects and to add to their daily knowledge base. Students should be placed at the centre of the curriculum and be encouraged to use a variety of information resources for the information they need. Students should be able to find these sources at the media centre. Media teachers need to work together with other teachers in students' day-to-day lessons (AASL, 2000:40).

Teachers should seek the expertise of their school media teacher or specialist as partners in the curriculum planning process. This is necessary to provide pupils with the best possible education. Students have to be encouraged to develop media skills to cope in a complex world with an ever increasing wealth of available information from which they have to construct their own meaning. Adolescents with hearing loss also need to make informed choices regarding academic information sources and how to access them. For these reasons, teachers and media teachers need to receive training and acquire the necessary expertise to assist adolescents with hearing loss to access and use academic information in the media centre (Gross & Kientz, 1999:21-25).

It has been reported that pupils' academic achievement improved when media teachers spent more time collaborating with teachers, provided training to teachers,

made input to curricula, and managed information technology for schools (Russell, 2005). Collaboration between adolescents with hearing loss, media teachers and other teachers implies shared goals, shared vision, and a climate of trust and respect (Muronago & Harada, 1999:9-14). Callison (1999:38-40) remarked that collaboration is only visible or attainable after many years of training; it cannot be achieved in a short time. In fact, it could take from two to five years (Haycock, 1999:28).

Collaboration between teachers and media centres involves an understanding of the strengths, weaknesses, attitudes and interests of the pupils. The media teacher adds the understanding of information resources, the training of information literacy skills, and methods to integrate the use of these skills with the content to be learned (Doiron & Davies, 1998:20). The lack of time in school is, however, a serious constraint, as the media centre is not always open at convenient times (Bishop & Larimer, 1999:15-20).

According to Mancall, Aaron and Walker (1986:18-27), the role of the school media centre is to apply a media programme to help pupils develop thinking skills. This programme should take into account the existing research on how children process ideas and information, and assist them with the development of an information skills programme in all curriculum areas. Apart from the lack of time to access and use academic information at school for assignment or relaxation purposes, financial costs could impact on the resources that are available in the media centre. Another constraint is a lack of qualified teachers.

In spite of these obstacles, there are benefits to be derived from using a media centre. Murray (2002b:6) noted benefits that contribute to the development of students' self-image and confidence to achieve academically, which accrue from working in the media centre. They are the following:

- finding opportunities for teamwork or collaboration with other students;
- gaining independence;
- achieving success;
- working in a friendly learning environment;

- experiencing a challenge in the learning environment and
- experiencing a feeling of personal value or acceptance.

Fuhler *et al.* (2006:647) argue tha t if the media teacher is committed to instructing adolescents with hearing loss how to access and use academic information, these adolescents with hearing loss will be able acquire the following information literacy skills:

- to apply apply cognitive strategies for making sense of text;
- to form questions related to their topic of search;
- to survey and summarize information;
- to apply metacognitive strategies;
- to monitor comprehension;
- to display motivation for learning;
- to be knowledge-driven and
- to take part in social interaction.

Media teachers facilitate the development of pupils from a stage where the teacher assists the pupil, to a stage where the pupil is able to work independently, drawing from a vast amount of information sources. Working independently will enable pupils to develop into citizens who play a vital role in society. Independency involves the processes of decision-making, knowing where and how to establish a business, and recognizing deception and disinformation. Pupils who work successfully in a media centre will learn to appreciate the power of information, knowing that information can be applied to address problems and answer questions in their lives and lead them to become lifelong learners (Nassimbeni & May, 2006: 12-21; Bundy, 2004:4-6). This means that through resource-based learning, students will assume more responsibility for locating the materials from which to learn. This learning approach develops lifelong learning skills, because students will learn from the same sources that they will use in their daily lives such as books, newspapers, databases, documents, topic matters, and others.

Information source skills across the curriculum in all subject areas or topics should begin in the earliest grades. This requires collaboration between the school departments, the provinces, and the school principal to integrate media centre instruction into the curriculum, and to promote collaboration between content teachers and the media teacher (Rader 1995:13). It is clear that there is a need for media centres at schools. Information literacy can be achieved through information literacy programmes, as described in 2.6.4.

The task of implementing information literacy programmes is the responsibility of the *media teacher,* in collaboration with content teachers. At school it is the content teachers who promote a literacy culture. They can make adolescents with hearing loss aware of information, cultivate a knowledge base and improve their knowledge, experience, and imagination (Truax, 1992:403). Teachers understand how language develops and which factors play a role in the development process, and they can promote the literacy process (Truax, 1992:404). In cooperation with media teachers they can improve information literacy, by devising questionnaires to determine the needs of pupils; giving presentations; establishing contact with the parents; storytelling; making posters; encouraging book clubs and giving vouchers to the child who reads more books than other children; cultivating and encouraging pupils' interest in reading; and using the television as aid in the media centre (Marx, 2000:76).

2.7   INFORMATION LITERACY PROGRAMMES

The main goal of information literacy programmes should be to cultivate lifelong learners. As discussed in the previous sections, media teachers have the primary responsibility of implementing information literacy programmes. Adolescents with hearing loss in schools need a life-long learning process that is learner-directed and that can lead them to acquire the necessary ability and skills to achieve contextualized, customized, transformative, collaborative learning and learning on time (Lepani, 1998).

Adolescents and adults who participate in information literacy programmes require a certain set of attitudes and skills to access and use information. Information literacy programmes are offered at primary, secondary and tertiary levels and have to be correlated with the school curriculum. Behrens (1990:353, 1992:3), Boon (1992:3), Marais (1992:75-79), Van der Walt (1992:39-46) and Veldsman (1994:46-65) all provide valuable information regarding information literacy programmes. They emphasize the important role of information literacy programmes in the successful achievement of skills of information literacy, and underscore the potential of information literacy programmes to play a vital role in developing the ability and necessary skills to manage information.

Gilton (1994:5) stressed that information literacy programmes stretch beyond a search through a catalogue or other reference material. In fact, information literacy programmes should not only refer to techniques, but should allow adolescents with hearing loss to gain an awareness of how information systems form a link between information needs, sources and the channels that are required to satisfy those needs (Darch, Karelse & Underwood, 1997:24). The reason for this is that students face a daily load of information resources. Information literacy programmes address multiple challenges involved in using information sources effectively and responsibly (Ku, Sheu, & Kuo, 2007:67-77). According to these researchers, information literacy programmes promote the "ability to locate, manage, critically evaluate, and use information for problem solving, research, decision-making and continued professional development".

Learning in this regard has to take place in the school environment and preferably during task completion. Support should be directed at specific tasks and take into account the needs of the pupils of the particular school. The aim of an information literacy programme should be to encourage active continuous learning. It is clear that an optimal learning environment helps the adolescent to solve problems and teaches him/her to be innovative. This learning support should be available on demand at an adolescent with hearing loss' own pace.

Information literacy is the product of applying information literacy education programmes, which focus on information sources and systems and which cultivate skills that are necessary to manage information while also transferring values that result in the will to know more. The information literacy programme process can only occur if new information is generated and put back into the learning cycle. Information literacy programmes aim to facilitate the development of adolescents with hearing loss regarding their attitude to information, and to expand their knowledge of applicable information and systems. These programmes also aim to develop skills to locate and apply information with a focus on problem-solving skills and creative thinking skills, and to repackage the new information in such a manner that it can lead to further development of individuals and communities.

The content of an information literacy programme should educate pupils about the value of academic information. The purpose of information literacy programmes should be to teach pupils the required information literacy skills, to inform him/her of the techniques and problems associated with it, and to provide pupils with all the techniques, methods and systems regarding the access, use, and application of academic information. An information literacy programme should also accommodate the students' growth in skills and understanding throughout their training years (Ku, Sheu & Kuo, 2007: 67-77).

An information literacy programme should aim to teach information literacy skills through the development of knowledge of existing information sources, observation of information, cognitive development, and analysis, correlation and synthesis of information. The purpose of information literacy programmes is to cultivate lifelong learning as a critical outcome of all learning that is acquired by information literacy skills (Nassimbeni & May, 2006: 12-21). It must be stressed that these skills cannot be transferred without knowledge content, which is a prerequisite because an information literacy programme is a support activity.

In an information literacy programme, adolescents with hearing loss should learn to access, use all kinds of academic sources or information by themselves, and be able to use multimedia sources when and where needed to complete a specific task or

assignment. Information literacy programmes should strive for lifelong learning that is aimed at the future. It should promote learning outcomes, adjust to all types of people and circumstances, stay abreast of the latest technological developments, and be based on information science and educational principles (Boon, 1992: 8). Different information literacy programmes can be presented in different formats for adolescent with hearing loss' participation. By participating, adolescents with hearing loss can learn to work on their own, encouraged by the media teacher (Lorenzen, 2005).

Participative activities can take the form of classroom discussion, assignments, storytelling, and teacher- driven questions. Active learning and teaching practice is an integrated part of instruction of information literacy programmes and depends on language acquisition, literacy, and learning, as well as all associated skills depending upon human interaction, facilitation, and encouragement (Planning for literacy instruction, 2003).

Active learning is one of the outcomes that the content teachers and media teachers should attempt to help adolescents with hearing loss to achieve, because it will help them to participate in class. To achieve academically, it is important for the child with hearing loss to identify word/sound distinctions. These auditory discrimination skills or auditory processing skills, which are intertwined with higher-order cognitive processing skills are associated with the development of academic competencies that are necessary for academic success in schools (Katz, 2002:496). A child needs to "hear" phonemic distinctions; otherwise, he/she is doomed to failure in reading and writing (Alpiner & McCarthy, 1993:178). The listener's ability to distinguish between individual phonemes in words relates to the speaker's intelligibility, whereas the listener's ability to detect the speech is related to the speaker's audibility.

In information literacy programmes, the adolescent with hearing loss has to become an active participant who has to learn to create his/her own knowledge after interacting with information from a variety of information sources. This requires frequent opportunities to handle all kinds of information, as the processes of locating, interpreting, analyzing, synthesizing, evaluating, and communicating information

optimally should occur in every subject across the curriculum and topics (Spitzer *et al.,* 1998: 39).

Information literacy programmes need presenters. The presenters of an information literacy programme need to consider the design of the programme. Qualified presenters can present information literacy programmes that are best suited to the needs of their pupils and that focus on the lifelong learning process of pupils, providing that the programmes correlate with the curriculum of the adolescents with hearing loss at the particular schools. Teachers are faced with the challenge to teach information literacy programmes that require a shift in focus from teaching specific information resources to facilitating the development of a set of critical thinking skills involving the use of information.

2.8   SUMMARY AND CONCLUSION OF CHAPTER 2

Chapter 2 focused on information and information needs in society, the different types of printed information, and the skills that are required to acquire information literacy. The information literacy process was discussed, as well as the characteristics of the information literate person. The factors influencing information literacy were described. Information literacy programmes were described and presenters of information literacy programmes were characterized. The format of information literacy programmes and the advantages of information literacy for adolescents with hearing loss were presented.

CHAPTER THREE

INFLUENCE OF HEARING LOSS ON THE ACQUISITION OF INFORMATION LITERACY

3.1 INTRODUCTION

Information literacy is a prerequisite for participating in the activities involved in different cultural, socio-economic, and political processes. In the case of adolescents with hearing loss who have divergent needs and problems, and come from different backgrounds that influence their adaptation or coping in society, information literacy is a crucial key to participation in life.

In the fourth century, Aristotle made the comment that people who were born deaf are able to make sounds, but cannot speak and are therefore "dumb" (Branson & Miller, 1993:89). Historically, one of the consequences of congenital and early deafness has been that people with hearing loss were perceived as being "dumb" as a result of having a low level of intelligibility or lack of speech, and consequently had low expectations of achieving success in life (Marschark, 2003:236).

Dotter and Hilzensauer (2006:44) share Hindley's (1997:101) opinion that adolescents with hearing loss are generally seen as "disabled" persons unable to access information. This is attributed to their limited access to auditory information as well as the limited communication they experience because of the hearing loss. This traditional understanding of "disabled" is regarded as the cause of segregation and discrimination. According to Dotter and Hilzensauer (2006:44), when special schools for adolescents with hearing loss do not provide sufficient education that prepare children for inclusion in society, parents may decide not to place their children in such a school.

On the other hand, Branson and Miller (1993:33) found that some adolescents with hearing loss have proved to be just as successful as their hearing peers in a world where accessing and using accessed academic information play a crucial role. It is

important to establish why some adolescents with hearing loss succeed academically and some are not able to succeed.

The type and degree of hearing loss could be potential differentiating factors. There are different types of hearing loss. A hearing loss can be organic, functional, and/or auditory perceptive and the more severe the hearing loss, the greater the negative impact on the ability to communicate verbally.

Hearing involves not only the reception of sound, but the entire process of decoding, understanding, and application of the received sound stimulus. Organic hearing loss refers to a disturbance in the ability to hear sound correctly due to a physical problem in the organ of hearing. A person with this kind of hearing loss is not able to perceive sound correctly, to make sense of it, to an extent depending on the type and degree of the hearing loss. Organic hearing loss is categorized in three types: neural/sensorineural, conductive, or a combination of both (a mixed hearing loss) (Katz, 2002: 47-48).

The different degrees of hearing loss are classified as follows:

- Mild hearing loss is where the child with hearing loss has a pure tone average (PTA) ranging from 26-40dB.
- A moderate hearing loss is when a child with hearing loss has a PTA of between 41 to 70dB.
- A severe hearing loss is when a child with hearing loss has a PTA between 71 to 90dB and a profound hearing loss is the degree in which the child only hears sounds above 90 dB or more (Katz, 2002: 47-48). .

Hearing loss often goes hand in hand with other complications, as in the case of deaf-blindness (Hugo, 1987:133; Moores, 1996:120), and is often associated with other handicaps such as mental disability, cerebral palsy, central language disorder, or an emotional handicap (Hugo, 1987:135-137; Moores, 1996:116) as well as learning and behavioural problems (Moores, 1996:122; Nowell & Marshak, 1994:60). Whether they have a single handicap or multiple handicaps, people with hearing loss are dependent on others for assistance and this could have a negative impact on their quality of life.

Hull (1998:7) confirmed that the identification of hearing loss should take place as early as possible. This is essential in order to ensure that the auditory processing skills of the child, and consequently the associated higher-order cognitive processing skills (Katz, 2002:496) can develop. This will promote the development of language and speech and potentially the acquisition of information literacy skills.

The influence of a hearing loss on the cognitive development of the child **(**Marschark, 2003:47) will be discussed in more detail later in the study. Although it is clear that children with hearing loss are similar in many ways, they have different knowledge bases, different cognitive strategies, and some shared but also some different experiences. Therefore, they have different needs and teachers who work with such children will have to apply different teaching methods than in the case of the hearing peers.

Hearing loss impacts on the receptive and expressive language development of children because they have incomplete access to sound and therefore experience problems in learning spoken language naturally (Beck, 2006:3). There is a perception that only those children with hearing loss who are born into families that use sign language as a first language would be able to develop language naturally. Adolescents with hearing loss born to hearing parents find it difficult to master language, whether the language is spoken or visual (Beck, 2006:3). The *completeness* of a first language is considered to be more crucial than the actual language which is learnt. Language cannot be taught through print, it needs to be learnt in conversation. Language is linked to high level comprehension skills, and these comprehension skills will facilitate normal development and reduce language delays (Beck, 2006:3).

In the process of reading, and also in other tasks, associations have to be made between concepts in order for the reader to derive meaning from the text. Marschark (2000:47) states that people with hearing loss need to practice skills with reference to concepts and their relationships if they are to become competent readers. Research has shown (Traxler, 2000:337-348) that the reading levels of adolescents with hearing loss are consistently lower than those of their hearing peers. Woolsey, Harrison and Gardner (2004:264) remarked that this lower literacy skills level of adolescents with

hearing loss led to them being employed in manual positions and earning a lower salary than their hearing peers, and in some cases even to unemployment.

These consequences of hearing loss have a serious impact on the ability of adolescents with hearing loss to access and use academic information and it must be stressed that a child with a hearing loss is different in this aspect from a hearing child. The adolescent with hearing loss finds it difficult to access and use academic information and needs specific training in order to be able to access and use academic information.

It is clear that hearing loss has an impact on the lives of adolescents with a hearing loss and the way in which they succeed in functioning and adapting in life and an ever-increasingly information based society (Gregory, Shanahan & Walberg, 1995:258; Mokhtar & Majid, 2006:42). The person with a hearing loss needs information literacy in order to function in areas such as living in a community, being a functional citizen, being able to make information decisions regarding all matters of his/her life as well as being able to make legal decisions and live independently and successfully. This will lead to better career opportunities, as adolescents with hearing loss will be able to obtain a tertiary education and better quality of life.

Quality of life is often measured according to the ability of a person to excel academically, to adjust socially and personally in life, as well as to function well as an adult after finishing school (Rittenhouse, 1987:24). Cook and Hawkins (2006:234) and Katz (2002:761) discussed the effect of hearing loss on quality of life, stressing that hearing loss does not only affect the child, but also the family members and the role players and educators who are involved with the child with hearing loss (Truax et al., 2004:307).

The development of successful information literacy programmes for adolescents with hearing loss poses a challenge. It requires a constant process of evaluation in order to ensure that the children are making progress, and also a concerted effort to stay abreast of new developments and strategies that keep pace with the children's changing needs (Marx, 2000:79). Research has indicated that there are some adolescents with hearing loss who have managed to become successful readers and/or

writers (Luckner *et al.,* 2005:444).   However, the majority experience problems in becoming information literate.

In order to develop self-worth and to face career challenges, it is necessary that all people, including adolescents with hearing loss, develop information literacy skills to the highest level of their personal ability. Munoz-Baell and Ruiz (2000:40-44) noted that professional people who conduct research on the topic of adolescents with hearing loss, actually often have little knowledge of adolescents with hearing loss. In fact, they "...have very little or no 'gut' understanding of what childhood deafness is really like. Most of them received their knowledge and training from hearing persons who were similarly trained and from publications written mostly by hearing persons" (Munoz-Baell & Ruiz, 2000:40-44).

Teachers at special schools face unique challenges and require support from their respective schools and the Department of Education with regard to media centres at special schools. There is a need for research to determine to what extent schools and the Department of Education provide support to teachers of adolescents with hearing loss.   Through research, one can better understand the problems and approach solutions by planning and implementing programmes that improve retention and academic success and decrease failure rate for adolescents with hearing loss.

Being deaf is not a simple issue. Helen Keller, who may incontestably be regarded as a reliable judge, said: "…the problems of deafness are deeper and more complex, if not more important than those of blindness. Deafness is a much worse misfortune, it means there is a loss of the most vital stimulus - the sound of the voice that brings language, sets thoughts astir, and keeps us in the intellectual company of man" (Helen Keller, in Gregory *et al.,* 1995:1-2). This statement portrays how she felt about being deaf. A person with hearing loss does not know how to communicate, is cut off from the world and is not able to understand the world evolving around him/her (Gregory *et al.,* 1995:187).

3.2   THE ONSET AND IDENTIFICATION OF HEARING LOSS

The *onset* refers to the time when the hearing loss commenced, whereas *identification* of hearing loss refers to the time that the hearing loss is detected. Some time may elapse before the period of early intervention is established when hearing aids are supplied and the learning and teaching strategies can be established to be followed for the child with hearing loss (Weikle & Hadadian: 2004, 653).

The configuration of hearing loss refers to the extent of hearing loss at each frequency, and may reflect a high frequency loss with good hearing in the low frequencies, a low frequency loss with good hearing in the high frequencies, or a flat profile where the same amount of hearing loss applies to both low and high tones (Type, Degree, and Configuration of Hearing loss, accessed 2007-04-10). The configuration of the loss has an effect on the quality of sounds that the child with hearing loss hears. This, in turn, has an effect on the child's communication and speech as the child is not able to hear soft sounds of a specific type. The type, nature, and onset of the hearing loss affect the development of cognition and language in a different manner.
The onset of hearing loss can be:

- Congenital (at or near birth);
- Acquired (prelingual) (when the hearing loss is present before language and speech have developed); or
- Acquired (postlingual) (hearing loss that develops after the development of speech and language has started or has been completed) (Katz, 2002: 754; Tye-Murray, 2004:15).

A child with either a congenital hearing loss or a prelingual hearing loss experiences difficulty in the mastery of oral language (Katz, 2002:759). It is important, therefore, to identify the hearing loss as soon as possible to prevent language deficits by supplying appropriate hearing aids (Dobie & Van Hemel, 2004:164; Educational impact. The sounds of hearing loss, onset, type, impacts, accessed 2007-04-17.).

The impact of a prelingual hearing disorder becomes even more obvious in adolescence, as it influences the social, educational, and vocational aspects of the

young learner's life. Severe congenital or prelingual hearing loss has a much larger impact on language and speech development than mild to moderate hearing loss. The reason for this is that a person with a severe or total hearing loss often does not have the ability to develop listening skills normally even with the aid of some form of external hearing enhancement. As the child develops into an adult, this person may continue to have limitations in language development and usually uses sign language to communicate (Hull, 1998; Katz, 2002: 759; Kansas State Department of Education, 2009:2-3).

Postlingually deafened children have a sensory impairment that interferes with their ability to perceive speech and other sounds, but a postlingual hearing loss is superimposed on normal and completely developed language ability. The child's quality of voice may later be influenced by the lack of auditory feedback and speech can become distorted although he/she may still be intelligible. Despite the fact that the hearing loss can interfere with spoken communication, the person's reading and writing capacity may remain intact (Reynolds & Janzen, 2002: 285)

The prelingually deaf child cannot acquire language through the same natural process as a child with normal hearing. Most prelingually deaf persons when leaving school as young adults have a linguistic insufficiency in addition to their sensory impairment. This is evident not only in their oral language skills, but also in their reading and writing skills (Reynolds & Janzen, 2002: 285).

A child who is postlingually deaf displays better speech perception skills than a child who is prelingually deaf. The reason is that they have acquired language in a normal way before incurring a hearing loss. The critical factors discussed above help to determine the influence the sensory impairment will have on the person with a hearing loss. The earlier the hearing loss is identified, the sooner an intervention programme can be followed (Katz, 2002:760). If a child with hearing loss receives appropriate intervention at an earlier stage in his/her life, the benefit is more than if the intervention starts at a later stage. Such a child's language base, however, has already been formed and will not deteriorate (Hugo, 1987:10). If a child was born with hearing loss, there are more negative consequences that are manifested in the child's language and communication abilities.

Children with mild or moderate hearing loss seem to develop adequate speech and language and appropriate social skills in many cases, even if the loss is identified at a late stage. The reason is that, for them, speech is audible although parts of words or sentences may not be heard, depending on the configuration of the hearing loss. They may find it difficult to understand what they hear, that is, they may find words or sentences audible but not intelligible. A child with residual hearing often proves to be successful academically and can achieve competent spoken language.

From the above-mentioned discussion it is clear that if a child's hearing loss is identified very early and intervention is started at an early stage, the impact will be less serious (De Conde Johnson, Benson & Seaton, 1997:232).

3.3   SITE OF LESION WITHIN THE AUDITORY SYSTEM

The site of lesion may impact on a person's perceptual, cognitive, and linguistic abilities and consequently on the ability to communicate effectively. It can have an impact on a person's ability to learn to discriminate and to identify acoustic signals, to transform and transmit information through both the peripheral and central nervous system, to filter, sort and combine information at appropriate perceptual and conceptual levels, to store and retrieve information efficiently, and to restore information.

The site of lesion, therefore, can cause an additional auditory processing disorder (APD), which impacts on learning to use phonological, semantic, syntactic, and pragmatic knowledge, and to attach meaning to a stream of acoustic signals through utilization of linguistic and non-linguistic contexts (De Conde Johnson, *et al.*, 1997:374). The significance of APD lies in the fact that it can add to a child's hearing loss. It compounds the problems in auditory processing already experienced by the child with hearing loss (De Conde Johnson *et al.*, 1997:374).

The site of lesion, or the exact position where the pathology in the auditory system occurs, has several implications for the child with hearing loss. The site of a lesion producing a hearing loss is important for rehabilitation programmes, because it determines the symptoms of abnormal auditory function involved in the hearing loss

(Katz, 2002: 625). Hearing loss is classified according to the site of the lesion in the auditory system into three types.

3.3.1 Conductive impairment

A conductive hearing loss is the result of an abnormality of the outer or middle ear that causes a hearing loss in the presence of a normal inner ear. It can also imply that the child with hearing loss suffers from either a breakdown or an obstruction in some part of the external/middle ear (Katz, 2002: 47). The most common cause of such a breakdown or obstruction is otitis media (De Conde Johnson, *et al.*, 1997:231). Conductive hearing loss is typically not permanent and can be treated medically, whereas a sensorineural hearing loss is irreversible.

The degree of loss in the case of conductive hearing loss is usually from slight to moderate, not more than 60 dB. A person with a conductive loss shows delayed speech and language development and low academic skills (De Conde Johnson, *et al.*, 1997:231). A temporary conductive pathology can also occur in the presence of a permanent irreversible sensorineural hearing loss.

Conductive hearing loss means that the sound is not transmitted or conducted efficiently to the inner ear (Newby & Popelka, 1992:67). There is also a reduction in the intensity before the sound reaches the inner ear. There is not a distortion of sound but rather a reduction of sound energy reaching the cochlea (Newby & Popelka, 1992:67). If the sound is turned up more loudly or there is more amplification, a person with this type of hearing loss will be able to hear quite normally (Newby & Popelka, 1992:68).

A person with this type of hearing loss tends to speak in a relatively quiet voice and people may find it difficult to hear him/her. Such a person is even able to understand speech normally provided that people speak loudly enough, in other words, the speech should be well above threshold (Newby & Popelka, 1992:68).

Children who have fluctuating conductive hearing loss and those with *unilateral* hearing loss (one ear) are at risk for language and academic delays. They will need proper management in school in order to reach their potential and to achieve academically in

school (De Conde Johnson *et al.*, 1997:60). Regular testing may prove to be beneficial and if the teacher understands the nature of the situation, it can also help to improve the child's language and his/her development.

3.3.2   Sensorineural impairment

A sensorineural hearing loss is caused by damage to the cochlear mechanism and/or to the auditory nerve (Adams, 2004:10), or the VIIIth cranal nerve which is the neural pathway from the inner ear to the brain stem. These two structures (cochlea and auditory nerve) are very complex and are interdependent. A lesion along the cranial nerve will affect the function of the cochlea as well.

This impairment is usually medically irreversible and amplification can only help partially. This type of hearing loss can be caused by a variety of illnesses and conditions. It is usually permanent and can be severe to profound. It can occur in one or both ears and its prevalence is equal across different age groups of children and adolescents. Most cases of profound congenital (innate) sensorineural hearing loss result from abnormal development of the cochlea (Newby & Popelka, 1992:93). Many congenital sensorineural hearing losses are also associated with other abnormalities constituting a syndrome such as Waardenberg's syndrome or Usher's syndrome (Newby & Popelka, 1992:93-94). The aging process, however, can also lead to sensorineural hearing loss.

A sensorineural hearing loss usually affects the high frequencies, and increases dramatically with age especially when an individual is exposed to noise (De Conde Johnson, *et al.*, 1997:231). The effects of a sensorineural hearing loss can be seen in language development, cognitive development, learning, and psychosocial functioning. As the degree of sensorineual hearing loss increases, the effects are more severe (De Conde Johnson et al., 1997:232).

The degree of hearing loss can be severe or profound and the high frequency sounds are typically affected more than the middle or lower frequency sounds (Newby & Popelka, 1992:88-89). This has an effect on the individual's ability to interpret speech and music, and people with this type of hearing loss have problems with speech

discrimination, even with speech at a level above threshold (Newby & Popelka, 1992:89). A symptom of cochlear damage is recruitment, which means that the sound becomes too loud too quickly. The outer hair cells of the cochlea are responsible for the 'fine tuning' of what we hear. With cochlear damage the person cannot discriminate the words better even at higher intensities.

A person who has normal or close-to-normal hearing sensitivity through 1000 Hz and sensorineural hearing loss at higher frequencies has little difficulty in hearing people speak in normal situations. This is because the unimpaired low-frequency hearing sensitivity allows for detection of low-frequency voice and vowel sounds. People with sensorineural hearing loss typically have a problem with consonant sounds of the English language such as *f*, *k* and *s* and words with high frequencies and weak intensities. They may experience problems in differentiating between words that sound similar but that contain different high frequency consonants.

3.3.3   Mixed hearing loss

Mixed hearing loss is a combination of both <u>conductive</u> and <u>sensorineural</u> hearing loss where both the middle and inner ear are involved. This hearing loss can occur when a person has a permanent sensorineural hearing loss and then at some stage develops a conductive hearing loss. It can also happen in some cases that a mixed hearing loss is the result of the outer and inner ear being malformed, which causes both types of hearing loss. For the present study, no children with conductive or mixed hearing loss were used.

3.4   INTERVENTION AND ROLE PLAYERS IN THE LIFE OF THE ADOLESCENT WITH HEARING LOSS

The purpose of early intervention is to ensure appropriate cognitive and social development, (Kansas State Department of Education, 2009:ii) and ultimately to help the child with hearing loss to become an independent adult. For this to occur, the child with hearing loss needs well-adjusted parents, a good self-concept, sufficient amplification, and help with the development of auditory processing skills. Intervention methods are designed to help the adolescent with hearing loss to develop cognitive

skills over time, since auditory processing is indivisibly joined to higher-order cognitive processing skills, as well as communicative and language skills. Intervention management strategies include the following (Alpiner & McCarthy, 1993:160; Katz, 2002:496-252 & 768):

- Audiologic management, which involves hearing tests and hearing aids or cochlear implants, and hearing conservation (Katz, 2002:768);
- auditory management involving the development of skills for auditory learning and processing skills development;
- cognitive/linguistic development in order to develop a world schema with a symbolic system;
- speech management to develop the motor, acoustic, phonetic, and phonologic aspects of the spoken language;
- educational management to develop learning skills and to modify the learning contexts to facilitate learning for the child with hearing loss;
- social and emotional management to develop a perspective that will enable the child with hearing loss to participate actively in his/her social environment and to maintain a healthy, well-balanced self-concept; and
- parental management to help the parents to develop skills to teach and advocate for their child with hearing loss.

The provision of *early identification services* and the *age at which intervention commenced* may significantly help to reduce the influence of hearing loss on the developing child with hearing loss. When a person/child with hearing loss is taken to an audiologist for a hearing test, the audiologist can assess the child's communication requirements and measure the degree and type of hearing loss (Alpiner & McCarthy, 1993:31; Katz, 2002: 626). The audiologist aims to determine the threshold of the child's hearing. An audiologist will be able to determine the appropriate amplification and help the child with hearing loss to acquire spoken language (Katz, 2002:688). An audiologist can estimate the site of lesion within the auditory system and help to establish both the cause of the hearing problem and the extent of handicap produced by the hearing loss (Bess & Humes, 1990). Furthermore, the audiologist plays an important role in determining the intervention method and rehabilitation required to help the child to achieve academically (De Conde Johnson *et al.*, 1997:50).

The audiologist illustrates the degree of the child's hearing loss by using an audiogram. An audiogram is a graphic result of a hearing test, with the frequencies of the signal presented on the horizontal axis (in Herz) and the intensities of the signal on the vertical axis (in decibels) (Bess & Humes, 1990). During a hearing test, the audiologist aims to determine a threshold, defined as the lowest level in dB where a specific sound can just be heard 50% of the time it is presented at that level. These thresholds are used to determine if hearing loss are present and the amount of hearing loss at each frequency (De Conde Johnson *et al.*, 1997:51). It can also indicate whether a person with hearing loss has sensorineural, conductive or mixed hearing loss and whether the hearing loss is unilateral (one ear) or bilateral (both ears).

These thresholds can predict the effects of the hearing loss on the child's speech perception as well as giving significant role players such as the teachers, audiologists, support persons, and parents an understanding of the impact that hearing loss has on the child (De Conde Johnson *et al.*, 1997:51). The audiologist needs to determine the child's speech thresholds as well as thresholds for hearing pure tones. The audiologist can suggest to the parents that the child can benefit from assistive devices because these devices help the child with the communication process (Katz, 2002: 547, 628 & 768).

The other type of intervention that children with hearing loss benefit from is *amplification.* The sooner children with hearing loss obtain amplification, the easier it is to adapt to hearing aids and acquire and improve language acquisition and communication skills (Cook & Hawkins, 2006: 235-236; Katz, 2002:550-552 & 688). This will help children with hearing loss to achieve academically in school. These assistive devices help with the hearing process and help users to cope better in classroom settings (Katz, 2002: 628).

Amplification is delivered by assistive devices such as hearing aids and/or cochlear implants (Katz, 2002: 768).   It is essential that assistive listening devices meet the specific hearing and listening needs of the child with hearing loss as determined during the evaluation of the child's hearing (De Conde Johnson *et al.*, 1997:86).

Children often need motivation for using an amplification device such as an FM system (De Conde Johnson *et al*., 1997:86-87). They often experience problems with regard to learning and social contexts and find it difficult to utilise visual and contextual cues to fill in the necessary information that they do not hear or understand. If the environment is quiet, they may not experience undue trouble, but in noisy environments they may find it difficult to cope (De Conde Johnson *et al*., 1997:87). They may be subjected to sound distortion and then an FM system could help, especially in a classroom situation.

In some cases, a child might refuse to wear amplification. This will lead to a delay in the development of communication and listening skills and poor academic achievement (De Conde Johnson *et al*., 1997:89). Adequate training is necessary to teach the child how to wear the assistive device and how to care for it and to ensure its proper functioning.

The benefit of assistive listening devices is that they can improve signal-to-noise ratios, minimize distance, and reduce reverberation factors; they can also reduce distractibility, improve sound quality, and make children with hearing loss aware of sound and improve their discrimination skills (De Conde Johnson *et al.,* 1997:87). A significant benefit of assistive devices is that the children who use them develop better speech abilities from an early stage and they seem to do better academically (Sanders, 1982: 159-160). These assistive devices can reduce the impact of communication problems that adolescents with hearing loss might encounter in the classroom setting (Katz, 2002: 628).

Children with hearing loss using amplification can benefit from assistive devices such as FM systems, especially in the classroom environment where spoken language training is acquired (Katz, 2002:547, 550-550, 628, 688 & 768). Adolescents with hearing loss often vary in their response to amplification in utilizing hearing aids. Some learn quickly and easily to obtain maximum benefit from the auditory signal, whereas some never learn to do so. It has been found that children with residual hearing especially benefit from wearing assistive devices.

If an adolescent with a hearing loss can hear sounds better by means of a hearing aid or cochlear implant, academic information will be better transferred, assimilated, and

processed in order to attach meaning to it. He/she will be more aware of information (Katz, 2002:768) and this will lead to better academic achievement.

Parents also play an important role in intervention for the child with hearing loss. They are intrinsically involved when the child's needs are determined, during visits to audiologists and/or physicians, and the main recipients of consultation and advice with regard to intervention methods, school placement and the care and maintenance of the hearing aid or amplification system that the child wears (Katz, 2002:550-552, 758 & 760).

In the early life of the child with hearing loss, the parents make the final decisions regarding their child – to visit the doctor and audiologist, and to help to decide which amplification is necessary to help their child and to which school their child with hearing loss ought to go. However, when parents hear their child has a hearing loss, they need adequate support from physicians, audiologists and teachers (De Conde Johnson *et al*., 1997:22 & 146). They need advice with regard to intervention methods and placement in school, and should receive adequate counselling.

When parents decide on the kind of support their child with hearing loss needs or may need in the future (Katz, 2002: 547), they need to make informed decisions. This can only be achieved when parents and professionals "…work side by side driven by the belief that families must have choices and families must have access to the information that will allow them to make those informed choices" (Katz, 2002: 547).

If parents can make informed decisions with regard to school placement and send their children with hearing loss to the best school according to their type of hearing loss and need, their children will succeed better at school. It will also help the children to function better in the school environment (Sanders, 1982:254, 386; Katz, 2002:766).

Teachers and *media teachers* are other important role players in the life of the adolescent with hearing loss, as they have the knowledge and training to work with them. The classroom teacher and media teacher play a specific role in total education planning and programming for children with special needs (Mayer, Akamatsu & Stewart, 2002:485).

Teachers can play a role in intervention for the child with hearing loss with regard to his/her cognitive and emotional development as well as social competence. Teachers can help the child with hearing loss to learn to communicate, to develop speech, and to interact with peers. If teachers and media teachers provide an environment where the adolescent with hearing loss comes into contact with the printed material and provide a positive learning environment, it will encourage them to access and use academic information (Truax *et al.,* 2004: 309; Fuhler *et al.*, 2006: 646).

Teachers are therefore the facilitators, guiding and training adolescents with hearing loss in academic terrains and subjects in order to enable them to access and use academic information. It is important for the teachers and media teachers to be part of the team which assists the adolescents with hearing loss in their education (Murray, 2001: 5).

Teachers and media teachers support adolescents with hearing loss according to their needs and can include among others sign language interpreting/transliteration, speech-to-text technology, note taking, tutoring and academic advising assistance (help answer questions, clarify concepts and procedures, and provide background information on course content) as well as other forms of support.

Media teachers are also role players involved with adolescents with hearing loss, if they display a positive role and attitude and are willing to help the child in school. In most cases, adolescents with hearing loss value the media centre as a place to relax, to talk quietly with other pupils, or to use the sources that are available to them (Murray, 2000:7).

Apart from important persons, *school experiences* also play an important role in the lives of adolescents with hearing loss, and specifically in peer interaction (Katz, 2002: 546 & 626). It would therefore be beneficial if they could interact with child that can hear as well, and learn to participate in a hearing world.

Interpreters also play a role in the life of the adolescent with hearing loss, especially with regard to children's language development. An interpreter can facilitate

communication with/between adolescent with hearing loss and teacher as well as participation in classroom activities (Stinson & Liu, 1999:200).

If the adolescent with hearing loss only knows how to sign (Katz, 2002: 759) and does not use oral language, it will result in lack of knowledge regarding the syntax of written language, which is essential for proficiency in writing and reading skills. All young school children who begin to read will need to acquire the more formal syntax of written language; however, the syntax of written language, though different in some aspects from the syntax of spoken language, is still more familiar to the hearing person than to the adolescent who uses signing (Hindley, 1997:104; Katz, 2002: 758-759). There is no one-to-one correspondence between signed and spoken language, since a person who signs may use one sign for a whole spoken sentence, or require a set of signs to convey a concept that needs one spoken word. A person who signs does not have the same knowledge with regard to the syntax of spoken language as a hearing person, and even less knowledge of the stricter syntax code used in written language.

Interpreters (who are proficient in sign language, cued speech, and oral language) are professional people who repeat the teacher's instructional language in the school environment as well as other pupils' responses during discussion. They also provide a voiced version of the pupil's sign language response (Katz, 2002:759). Spencer, Erting and Marschark (2000: 280) made the interesting remark that interpreters in educational settings cannot provide information to adolescents with hearing loss if they do not possess sufficient linguistic competence to follow what is going on in the classroom. It is also significant that if there is a fundamental difference in the communication method of the child with hearing loss and the language needed for literacy, the child may face a barrier to literacy (Spencer *et al.,* 2000:281). Spencer *et al.* (2000:281) noted that sign language generally "…does not have widely accepted written forms", and that sign language users cannot acquire literacy skills in their first language to transfer to the written form of a second (spoken) language. This has severe implications for the adolescent with hearing loss.

The teachers and media teachers must therefore focus on the dissemination of knowledge, didactic principles as conditions for effective instruction, and the learning

style of the adolescent with hearing loss, in order to enable them to learn how to access and use academic information (Fraser, Loubser & Van Rooy, 1996:165).

Intervention includes *educational practice.* All adolescents with hearing loss need effective communication development strategies and instructional methods in order to succeed in school (Alpiner & McCarthy, 1993:161). The key to intervention strategies is therefore the interfacing of services he/she needs. It requires a team effort of doctors, audiologists, teachers and parents to successful integrate these services (Katz, 2002:626). There should be continuous assessment of the child with hearing loss and of the child's communication strategies regardless of the use of an oral or signing approach.

Well designed and successfully early intervention services can result in improved communicative and academic functioning and abilities and participation for adolescents with hearing loss (ASHA, 2004 in Kansas State Department of Education, 2009:3-1). Speech intervention, language intervention, and educational intervention are keystones for the development of the child with hearing loss as well as for providing extra help for those children experiencing additional learning difficulties (Alpiner & McCarthy, 1993:162-164; Katz, 2002:760).

3.5 CONSEQUENCES OF A CONGENITAL HEARING LOSS

The effects of a hearing loss are manifested on personal, emotional, and cognitive levels, in educational, career, and social spheres. Hearing loss can affect a child in different ways and these consequences will be discussed in detail. The most devastating effect is often a delay in the development of receptive and expressive communication skills involving speech and language. The resultant language deficit can lead to learning problems and subsequently lower academic achievement. The communication difficulties suffered by a child with hearing loss can also lead to social isolation that can have an impact on vocational choices (De Conde Johnson *et al.*, 1997:232).

Each child is unique, with outcomes depending on type and degree of hearing loss as well as language, academic, and psychosocial functioning ability. Early identification,

intervention methods, assessment, audiological services, and management programmes will help to counteract some of the effects of hearing loss. Parent support, counselling, and teacher training can be of beneficial value to the child with hearing loss (De Conde Johnson *et al.*, 1997:232-233).

Hearing loss is measured in decibels (dB) and the degree of loss is classified according to the pure tone average (PTA). A child with *minimal* hearing loss (16 to 25dB PTA) may find it difficult to hear faint or distant speech. If the child has 15 dB hearing loss, he/she can miss up to 10% of what is said if the teacher is at a distance greater than 3 feet. This is even more of a problem if the classroom situation is very noisy and the classroom instruction is verbal. This hearing loss has therefore an impact on the child's ability to understand speech and language although it is regarded as minimal.

With regard to the psychosocial impact of this hearing loss, the child may miss out on soft conversations and get tired due to having to concentrate to listen. This child may also have poor peer interactions that can impact negatively on the child's socialization and self-concept and lead to immature behaviour. Other people may perceive the child to be awkward

If the classroom is noisy, the child with this degree of hearing loss will benefit from the use of a hearing aid (Katz, 2002: 768) and/or FM system (Katz, 2002: 547; Newby & Popelka, 1992:167-168), to create a favourable classroom setting. He/she will also need special attention and training with regard to vocabulary and speech. A child with a conductive hearing loss is in need of medical management. It is very important that teachers working with children with this type of hearing loss receive in-service training, in order to understand the children's needs. A child with a minimal hearing loss will benefit from a special school but may be able to cope in inclusive education provided elements such as seating, assistive devices, training of teachers and educational programmes are taken into consideration (Hugo, 1987:45).

A child with *mild* hearing loss has a PTA of 26 to 40dB. A child with this hearing loss, especially with a high frequency hearing loss, will find it difficult to hear faint, distant speech as well as certain consonant sounds and will miss up to 10% of the sound signal. This will have a significant effect on understanding speech and language. This

child will need amplification and the child with a hearing loss of 35 to 40dB loss will even miss out on 50% of any classroom situation. This is especially the case if the voice of the speaker is faint, if the distance between the child and speaker is far, and if the child cannot see the speaker at all.

Children with this degree of hearing loss may have problems with self-esteem; they may be accused of not paying any attention or only paying attention when they want to, or that they are daydreaming. Children with this type of hearing loss find it very difficult to filter out background noise.They find the learning environment extremely stressful and get very tired trying to listen in the classroom.

Sanders (1982:160), Hull, (1998:25), and Katz (2002: 759) observed that when the extent of the hearing loss is mild, the consequences are not as severe as in the case of a child with a more severe hearing loss. However, it may affect speech and language development negatively. This child will miss hearing many consonants, will have difficulty in auditory learning, and demonstrate poor auditory processing skills that impact on higher-order cognitive processing skills (Katz, 2002:496).

Mild hearing loss has an effect on the child's education and needs in school. Apart from using a hearing aid and/or a personal FM system (Katz, 2002:550-552; 760 & 768) in school, favourable classroom seating, language evaluation, and educational follow-up are essential for this child. If amplification is supplied, the child will be able to acquire spoken language (Katz, 2002:688). The teacher working with children with this type of loss needs special in-service training in order to provide the children with vocabulary skill building capacity skills. This child may need specialised training with regard to language development, articulation, and speech reading, and/or support in reading skills, and may also need help in building his/her self-esteem. This child will benefit from placement in a special school.

Children with a mild hearing loss can be educated in inclusive educational settings, but may need support services, often because their needs are not recognised or identified. These children are at educational risk as they have delayed language development (Hugo, 1987:45). Their hearing loss may influence their speech and language development, which impacts their education. They may have a low self-esteem

because they harbour feelings of inadequacy in the hearing world. This, however, depends on their environment (Katz, 2002: 550-552; 759-760 & 768). Some children may need individual learning sessions and speech therapy (Clinical correlations related to the auditory system, 2007 & Katz, 2002:760).

A child with a *moderate* loss has a hearing loss between 41 and 70 dB. This child will be able to understand conversational speech face-to-face at a distance of 3 to 5 feet if there is structure and vocabulary control (Katz, 2002:250-252; 550-552; 688 & 760). If the child with a 50 dB loss uses no amplification system, about 50% of the speech signal will be missed. This will result in developmental delay with a defective syntax, limited vocabulary, imperfect speech, and atonal voice quality. There is a significant impact on the child's ability to understand language and speech.

Children with a moderate hearing loss may find it very difficult to socialize with peers who have normal hearing. Even though these children may wear hearing aids or FM systems, they may still be regarded as less competent learners. Such judgement will have a negative impact on their self-perception, and lead to a low self-esteem that can increase over time.

Children with moderate hearing loss may need special education support (Katz, 2002: 547) and auditory processing skill development (Katz, 2002:496). They will need additional help with regard to oral language development, reading, written language, and auditory skill development. These children will benefit more from placement in a special school than in a regular school, unless the teacher in an inclusive setting has received adequate in-service training.

If there is no amplification system at all, conversation will need to be very loud for a child with moderate to severe hearing loss to understand it (Katz, 2002:250-252; 550-552; 688 & 760). If a child has a 55 dB hearing loss, it can cause the child to miss 100% of speech information. In a classroom situation, verbal communication in one-to-one and in group situations will prove to be very difficult due to delayed language, inadequate syntax, reduced speech intelligibility, and atonal voice quality.

The psychosocial impact of hearing loss on the child with this degree of hearing loss is the same as for the child with moderate hearing loss. This child will need amplification. Others may regard this child as a less competent learner and this child will have a low self image, be socially less mature than peers, and feel rejected.

On an educational level it is important that the child with this degree of hearing loss should use amplification on a full-time basis. The child needs special education and the teacher should receive in-service training (Katz, 2002:250-252; 550-552 & 688). This is necessary because the child with this degree of hearing loss has a serious language delay, and needs special help in all language skills, language based academic subjects, vocabulary, grammar, pragmatics, reading and writing.

The more severe the hearing loss, the more the development of speech and language development is affected. A child with a moderate hearing loss's speech and language development is seriously affected unless he/she receives early intervention and help or support. Children with moderate hearing loss can be educated in inclusive education schools. They usually find it difficult to hear in a noisy environment and if there is too much distance between them and the speaker. This has an influence on their speech and language development. These children underachieve in school, especially in group-learning environments, and display various communication problems (Hugo, 1987:45 & Katz, 2002: 760).

With a PTA of 71 to 90 dB the hearing loss can be classified as *severe* hearing loss. This child will require a hearing aid or cochlear implant to be able to hear conversations (Katz, 2002: 768). Without amplification a child with severe hearing loss may be able to hear loud voices at a short distance (about 20cm from the ear) (Katz, 2002:250-252; 550-552; 688 & 760). With optimal amplification, a child with a 90 dB loss may be able to hear or identify environmental sounds and speech. If the loss is of prelingual onset, oral language and speech may not develop spontaneously and may be severely delayed (Katz, 2002: 754). If the child's loss is of recent onset, his/her speech is likely to deteriorate with the quality becoming atonal. The loss also has an impact on his/her ability to understand speech and language.

It has been found that children with severe hearing loss prefer children with the same degree of hearing loss as companions (Marschark, 2007:214). This leads to improved self-concept and develops a sense of cultural identity, even if it means that they are excluded from inclusive education. A child with this degree of hearing loss needs to be placed in a special school. This child may need a full-time special aural/oral programme emphasizing all auditory processing skills and the concomitant higher-order cognitive processing skills, all of which will have an impact on language skills, speech-reading, speech and concept development (Katz, 2002:496).

Children with severe hearing loss who were identified early and received appropriate intervention might have the opportunity to be educated in local regular schools (Denton & Hasbrouck, 2000:8-9). If these conditions were not in place, they should rather be placed in a school setting with peers with the same degree of hearing loss. Children with severe hearing loss can display linguistic and educational problems, but may perform better depending on the kind of assistance, amplification, and rehabilitation services they receive. Some of them will not be able to progress with the oral method and they will benefit from using sign language and cued speech combined with speech (Katz, 2002: 759 & 768).

A child with a hearing loss of more than 90 dB is classified as having a profound hearing loss and his voice and speech have a characteristically "deaf" quality. Such a child displays severe speech and language learning problems (Clinical correlations related to the auditory system, 2007; Katz, 2002:760). Children with *profound* hearing loss rely more on vibrations than on tonal patterns, and more on vision than on hearing for learning and communication. Detection of speech sounds is dependent upon the configuration of hearing loss and use of amplification. Speech and language do not develop spontaneously (Katz, 2002:250-252; 550-552; 688 & 760). If a child has a profound hearing loss of recent onset, speech tends to deteriorate rapidly. The loss has a serious impact on his/her language and speech ability.

A child with this degree of hearing loss also usually makes use of sign language to communicate with peers and depends on his/her parents for communication support. Depending on his/her auditory/oral competence or auditory processing skills (Katz, 2002:496), peer use of sign language, and attitude of parents, the child may or may not

prefer to associate with the Deaf culture. The child may need to be placed in a special school, as he/she will need training in all areas with regard to language skills and all academic areas.

Regarding educational training, this child therefore needs special programmes with emphasis on all language skills and academic areas, and requires constant supervision and support services. If the child uses amplification (Katz, 2002:250-252 & 550-552) from an earlier stage, he/she may benefit from it regarding the ability to acquire spoken language (Katz, 2002:688). This child may also be a candidate for a cochlear implant. Children with this loss need continuous appraisal of needs with regard to communication and their learning need.

If a child with a profound hearing loss wears a hearing aid, it might help somewhat, but the child will find it difficult to articulate words normally. This hearing loss has a severe impact on speech and language development. It results in poor language development, poor auditory attention skills, learning problems, and speech development problems (Hugo, 1987:45). Children with profound hearing loss usually underachieve in language-based subjects. They usually need a combination of speech, signing, and cued speech in order to have information relayed to them as correctly as possible (Katz, 2002: 759).

Hearing loss is classified according to type (site of lesion) and degree, but can also be classified according to time of onset (pre- or postlingual) and *period* of onset, that is, a hearing loss can have a progressive or sudden onset. If one has a hearing loss that occurs over the course of several months or years, he/she has a progressive loss, but an individual who lost his/her hearing suddenly, for example through head injury, has a sudden hearing loss (Tye-Murray, 2004:16). Each of these classification categories carries its own consequences and implications for communication, cognitive functioning, learning, and social skills.

3.5.1   Influence of hearing loss on auditory processing and perception

Auditory perception is a cognitive process that supplies information as soon as a person becomes aware of observing information or coming in contact with it. The child with

hearing loss experiences problems due to certain limitations, such as degree of hearing loss.

Auditory processing refers to a set of skills related to how a person's brain recognizes and interprets information presented orally. This can include not only speech, but also the processing of non-speech auditory stimuli like music and environmental noise (Other Sources of Reading Difficulty, accessed 2009-06-12.). Children with auditory processing disorders can experience problems with reading, they often find it difficult to pay attention, listen to, and remember orally presented information, and need more time to process information. They also find it difficult to recognize subtle differences between sounds in words (Phonological and Phonemic Awareness, accessed 2009-06-07).

Because hearing loss is "invisible", it is often ignored, and often the problems experienced by a child with hearing loss are associated with factors other than the hearing loss itself. Any type of hearing loss and degree of hearing loss can present a barrier to effective instruction in class (Alpiner & McCarthy, 1993:178).

If a child with hearing loss can manage to acquire auditory perception skills, it will benefit the active learning process in class. *Active learning* is a most desirable outcome for adolescents with hearing loss because it will help them to participate in class. In order to achieve academically, it is important for the child with hearing loss to discriminate between words/sounds. These auditory discrimination skills or auditory processing skills are associated with the development of academic competencies that are necessary for academic success in schools. A child needs to "hear" phonemic distinctions otherwise he/she is doomed to failure in reading and writing (Alpiner & McCarthy, 1993:178).

Prelingual hearing loss results in poor speech development unless intervention has occurred. A child needs to hear clear and consistent and intelligible sounds to be able to develop speech and language (Alpiner & McCarthy, 1993:178). Prelingual hearing loss can also secondarily cause several different disabilities affecting hearing ability, speech intelligibility, as well as language development. This impaired language development may result in academic or occupational problems and can diminish quality

of life for children with hearing loss especially after their adolescence period (Kunisue, Fukshima, Kawasaki, Maeda, Nagayasu, Katoaka, Kariya, Fukutomi, Takami & Nishizaki, 2006: 1671-1672).

Auditory learning involves the reception, processing, representation, recognition and comprehension of sound and is interactive with other sensory knowledge. Sensory perception is important in order to access and use information and to get a full picture of the world, to protect individuals, and to help in the process of orientation (Sanders, 1982:83). The adolescent with hearing loss experiences a serious challenge in acquiring language, and this can give rise to secondary problems such as communication, speech, personal and emotional development delays.

Sensory knowledge helps to create internal representations in the form of concepts and data. Lack of sensory knowledge and skills makes it difficult for the child with hearing loss to understand abstract ideas. He/she needs to actually 'see' the object in order to link it with the sound that he/she hears. It is important for the child with hearing loss to understand abstract words in order to form the concepts that are central to their academic learning and adaptation in school life. If school children cannot learn to understand abstract words and meaning, it can hamper their quality of life (Kunisue *et al.,* 2007: 1672).

A child with hearing loss experiences a breakdown in the detection of sounds, which limits the quantity and quality of the sound he/she receives. This has an effect on the child's ability to process auditory information accurately. The fragmented auditory information that the child receives does not present a true picture of typical auditory experience. He or she can therefore not form a true picture of the sound that he/she hears.

The child's interpretation of auditory information and the ability to associate the spoken symbol or word with the environment being experienced (Alpiner & McCarthy, 1993:146) are affected. It is difficult for the child with hearing loss to construct meaning, due to restricted auditory input. **Table 3.1** describes the different stages of auditory skill development.

Table 3.1: **Stages of an auditory skill development (De Conde Johnson et al., 1997 in Anthony & Lowry, 2008).**

Stage	Main theme	Behaviour examples
Stage 1	• Sound awareness • Early attending • Sound as meaningful event	• Obvious response to intense sounds • Obvious response to soft sounds • Obvious response to caregiver's voice
Stage 2	• Beginning localization • Early sound recognition • Beginning deliberate vocalization	•Search for sound, looking/ reaching • Increased vocalizations • Responds to different voice tones • Beginning vocal play
Stage 3	• Accurate localization and tracking • Meaningful sound recognition • Deliberate vocalization	• Manipulates toy to make sound • Attends to and follows voice • Searches for changes in sound • "Calls" for caregiver for basic needs • Unfamiliar sounds are upsetting • Anticipates events based on sounds • Makes gestures to familiar words
Stage 4	• Increased sound comprehension • Increased speech comprehension • Improved vocalization control	• Understands familiar phrases • Responds to name • Participates in familiar vocal play • Vocalizations sound like words • Better use of inflectional patterns • Plays with complex sound toys
Stage 5	• Early auditory comprehension • Meaningful use of oral language • Increased ability to converse	• Follows one-step directions without gestures • Expressive vocabulary increases • Attends to people despite background noise

Table 3.1 describes a child's auditory skill development in five stages, from the moment that he/she becomes aware of a sound as a meaningful event. Then the child starts to localize the sound and recognize the sound, starts to vocalize, and is able to track and recognize sounds. This leads to increased sound comprehension as well as speech comprehension and improved vocalization control. Stage five is where early auditory comprehension starts, oral language begins, and the child is able to converse.

The child's behaviour in response to auditory stimuli progresses over time. The child starts by reacting to intense sounds as well as to soft sounds and to the caregiver's voice and tones. He/she follows the voice, calls for basic needs, anticipates events based on sounds, makes gestures, understands phrases, responds to name and participates and plays with toys. Later on the child is able to follow one-step directions without gestures, his/her receptive as well as expressive vocabulary increases and he/she can attend to people despite background noise.

Hearing loss may have a significant effect on the development of cognition and language.

3.5.2   Impact of hearing loss on intellectual and cognitive development

Hearing loss has a significant effect on intellectual and cognitive functioning, and can eventually influence an adolescent's ability to access and use academic information. Research has shown that hearing loss has far-reaching effects on childhood development of cognitive (thinking) and linguistic (language) skills.

Before cognitive development was studied, there was a perception for many centuries regarding the "psychology of deafness" that was examined in literature by previous researchers (Spencer *et al.*, 2000:255). Three major perspectives emerged (Spencer *et al.,* 2000) from the literature:

- Deafness is a deficit (Spencer *et al.*, 2000);
- Deafness leads to concrete thinking (Myklebust, 1964) and
- To be deaf is to be different (Spencer *et al.,* 145-162).

Hearing loss has an influence on cognition, as cognition and cognitive development are perceived as interpersonal aspects. Social interaction influences cognitive development and is based on the use of meaningful symbols namely on language (Vygotski, in Spencer *et al.,* 2000:256). By means of language, an individual can create his/her own internal symbolic system that is used in his/her thinking ability. Language empowers intelligence because language development supports intellectual development (Spencer *et al.,* 2000:256). When adolescents with hearing loss display problems with regard to language skills, especially in their formation years, it has profound consequences for the developing child (Spencer *et al.,* 2000:256). Intellectual skills are based on certain processes such as stimulus recognition, response generation, following of procedures, terminology use, discrimination of words and concept formation, rule formulation and problem solving. These factors are all necessary in order to enable a student to facilitate learning at all levels (Gagne, accessed 2008-03-10).

Attention is the first process in successful instruction before a child can engage in the learning process (Gagne, 2008-03-10). If a child has a mild to severe hearing loss, he/she may find it difficult to pay attention in class as the hearing loss impacts on the auditory perception process. If school children cannot pay attention, they cannot succeed in the learning process.

Memory relates to the ability to retain or recover information about previous experiences. Memory is a function of the brain, which reconstructs information about things that a person has done or learned. Memory can be short-term (for recent knowledge or happenings) or long-term (knowledge from the personal past). There are also two types of memories namely explicit memories that one can recall consciously and verbally such as facts, people, and places that one encounters daily or encountered in the past. The other is implicit memory that describes the capacity for learning skills and procedures such as playing golf or dancing. The child with hearing loss finds it difficult to retain and recover information relating to verbal concepts.

Part of the process of intellectual and cognitive development is a child's capability to handle problems and to apply solutions. If a person does not have at hand readily

accessible methods to solve various problems, it can lead to failure (Sutton, 2003:1-2). The child with hearing loss finds it difficult to apply solutions to problems due to the impact of the hearing loss on his/her ability to remember things.

Learning and development necessitates the ability to solve problems. *Problem solving* is not necessarily active or conscious, but requires dynamic interaction with an accessible environment. Adolescents with hearing loss have different knowledge bases, strategies, and brain organizations that can or may affect learning because of cognitive development that is different (Spencer, *et al.,* 2000:278).

Early access to language, social interaction, and diversity in both object- and person-oriented experience also play a role in understanding adolescents with hearing loss' educational and their psychological interactions with the world (Spencer *et al.,* 2000:279). *Knowledge* and *comprehension* are variants that play a role in cognitive and intellectual development of a child with hearing loss. Cooper (1993:10) refers to this as the "schemata", the structures that "...represent the generic concepts stored in our memory" (Cooper, 1993:10-11; Luckner *et al.,* 2005: 445). Knowledge and comprehension play a role in the school systems and are dependent on a child's understanding of language (Paul & Quigley, 1994:94; Welch, 1993:195).

Vygotksi (in Nowell & Marschak, 1994:16) accentuated that although all people have mental activities (e.g. specific memory skills, organisation, and learning), these skills can only come to the foreground due to that which is being *taught or mediated.* These mental activities can only be substantiated by means of language. This learning process is an easier natural process for the hearing person, but in the case of a child with hearing loss, this process proves to be very difficult.

Language development also plays a part in the cognitive development of a human, the self-identification, access to information, deposition of information and it is also the manner in which the emotional feelings are expressed (King & Quigley, 1985:59). The child with hearing loss is able to develop thought processes but in a different manner from a hearing person and this is reflected in the language. The implications are quite severe.

The child with hearing loss finds it difficult to work with abstract ideas and thoughts such as the concepts of death, loss and sympathy (Hugo, 1987:8). A child with normal hearing grows up and understands these concepts whereas it is very difficult for the child with hearing loss to do so. All children need effective communication from the start with people around them. By communicating from an early stage, children will be able to develop problem solving and cognitive strategies, be able to successfully integrate socially, gain information about themselves and others and acquire a sense of being part of the environment (Spencer *et al.,* 2000:280).

3.5.3 Impact of hearing loss on communication, speech and language development

Whereas communication is having one's meaning understood and speech focuses on articulation and voice quality, a person's language is the combination of semantics, syntax, and pragmatics. Language is the cornerstone of human social interaction, is impacted by experience and evolves over time (Kansas State Department of Education, 2009: 6-1). Language development is linked to both *communication* and *speech*, which is a vehicle for the transfer of information during communication. Children with hearing loss experience delay with regard to communication, speech, and language development. "Because of impaired hearing, such children are unable to develop the same competent and intuitive grasp of the language as do their normal hearing peers" (Ross, Brackett & Maxon, 1991:21; Kansas State Department of Education, 2009: 2-3).

Communication can be formal or informal, planned or spontaneous, structured or unstructured, and all of these forms occur in a school context. Some see formal communication as that form of communication that is applied in a school setting for academic purposes whereas informal information communication is seen as social interaction. It appears, however, that the two forms often overlap (Stinson & Foster in Spencer *et al.,* 2000:193). All students, regardless of the degree of their hearing loss, need formal as well as informal communication in a school environment.

Speech is the way in which words are manifested. Children with hearing loss display speech problems because they cannot hear the acoustic cues during the time when the phonemes of spoken language forms are emerging (Brackett, 1997:358). They also

find it difficult to monitor their own speech and rely on visual, tactile, and kinaesthetic senses.   Speakers with hearing loss display substitutions, distortions, nasalisations, and inappropriate co-articulation of consonants (Ross *et al.*, 1991:29-31).

Language is a set of rules for verbal communication.   It involves   "...higher order cognitive, meta-cognitive, and linguistic skills, such as interference, syntax, and semantics, as well as lower order decoding skills and letter and word recognition" (King & Quigley, 1985:xi-xii).

Communication refers to interaction between two or more persons by means of which a person can learn about the world. "Everything he knows as a human being, man has had to learn from other human beings" (Levine, 1981:21).   This implies a constant process of encoding and decoding.   Communication that is meaningful, engaged and smooth is critical for the socio-emotional development of a child with hearing loss (Spencer *et al.,* 2000:171).

Communication through language is pivotal to human existence.   By means of language, ideas can be transferred, identities can be established, information can be stored, social interaction can take place, thoughts and emotions can be shared, and all of these processes can be applied in areas such as for example participation in family, community life and education, religion, and the politics (Paul & Quigley, 1994:2-7).

Language is not only a matter of symbols that are expressed, it must be organised according to specific rules in order to lead to complete understanding (Sanders, 1982:168).   Language has three aspects namely *content* (for example vocabulary), *form* (for example syntax), and *use* or pragmatics (Ross *et al.*, 1991:36; Tye-Murray, 2004:638-641; Paul & Quigley, 1994:105-117).   The latter may be regarded as the most significant aspect, as exemplified in the statement of Uys, Hugo and Louw (1994:2): "...the development of language in hearing-impaired children is a direct product of use, functions and extent of communication, regardless of the form, modality, or symbol used".

3.5.3.1   Vocabulary

Adolescents with hearing loss display slow development of vocabulary, and less flexibility in extended conversations, especially in abstract topics. They have difficulty in understanding analogies, multiple meanings of words, and synonyms. They find it difficult to learn both content words and those that do not literally convey dictionary meanings. They find academic tasks arduous because there is a misunderstanding of vocabulary and/or syntax, and they cannot make out the meaning of a new word when the language itself is understood insufficiently (Marschark & Spencer, 2003:99). This results in a correlation between reading vocabulary knowledge and reading achievement. Many adolescents with hearing loss display problems in understanding in addition to vocabulary and syntax, figurative language and expressions (Marschark & Spencer, 2003:100).   They display limited use of imaginative and idiomatic expressions (Marschark & Spencer, 2003:99).

3.5.3.2   Syntax

With regard to *syntax,* adolescents with hearing loss might have knowledge of words and still not be able to comprehend phrases and sentences. Syntactic knowledge is a good predictor of reading level because it requires the ability of a person with hearing loss' ability to integrate information across connected linguistics units such as phrases, sentences and paragraphs (Marschark & Spencer, 2003: 100). This would explain the reason why they find it difficult to create complex sentences. Adolescents with hearing loss may be able to decode and learn words from contexts if words are repeated in sentences that are relatively simple and appear a number of times (Marschark & Spencer, 2003:99).

3.5.3.3   Pragmatics

Pragmatic behaviours range from preverbal communicative acts to conversational devices such as signals (Marschark & Spencer, 2003: 282). Adolescents with hearing loss find it difficult to express themselves verbally although most of them are able to communicate in a non-verbal manner. They make use of gestures, facial expressions,

and intonation patterns. They also find it difficult to maintain a conversation especially when they try to repair a communication breakdown.

The social or pragmatic rules that a child constructs, reflects the child's understanding of who can say or write what to whom. These rules also help the adolescent with hearing loss to be able to say or write for certain purposes. Receptive development is reflected in how well a person responds to what is said or read. Expressively, pragmatic development is realised when the adolescent with hearing loss is able to accurately phrase what he/she says or writes within a specific environment. An adolescent with hearing loss has to have a basic knowledge and understanding of non-verbal routines as well as of social interactions that can serve as a foundation for his/her decisions as he/she learns linguistic pragmatic conventions or processes (Truax *et al.,* 2004:311). Pragmatic processes focus on the *reason* and *manner* why a person communicates whereas semantic conventions focus on the *what* or content of a discourse or conversation.

Each language is dependent on a set of symbols such as sounds and letters to construct spoken as well as written words for a specific discourse. Over years the adolescent with hearing loss will develop a repertoire of intonation and phonemes that will encompass words, phrases and sentences (Truax *et al.,* 2004:311).

3.5.3.4   Sign language

Signing as primary language has the implication that the communicator (for example an adolescent with hearing loss) relies on signs and non-verbal clues to be able to interpret what is being said. A person with hearing loss using sign language usually does not use the same sentence structure as a person communicating verbally, depending on the nature of the signing system (Bench, 1992:9). Only Signing Exact English has the same structure as spoken English. Children with the ability to use exact English, that is, children with adequate amplification or who use Signing Exact English, are able to understand the syntactical structure of sentences, and to comprehend abstract word and meanings.

Signing is considered amongst members of the so-called Deaf culture to be the natural language of deaf adults (Katz, 2002: 759). One has to keep in mind, however, that there are many variations of sign language and they have different signs for a single concept. This means that children with hearing loss may often not understand one another. Bench (1992:9) indicated that even deaf adults using sign language sometimes can not understand each other. Some children with hearing loss are multilingual, for example adolescents who are familiar with more than one sign language (Katz, 2002: 759) and those using sign language and a second spoken language such as Afrikaans and/or English. Adolescents with hearing loss often experience difficulties in mastering more than one language modality, such as signing, speaking and writing (Nowell & Marshak, 1994:30, 42; Braden, 1994:32). Tye-Murray (2004:638) found that, regardless of which communication mode is applied (signing, oral or total communication), children with hearing loss find it difficult to learn any language well.

3.5.4 Influence of hearing loss on literacy, reading, and reading comprehension

Literacy proficiency is usually measured in terms of a person's ability to read, to write, and to understand written material. In order to understand how adolescents with hearing loss learn to read and spell, it is necessary to consider which cognitive and language-based skills predict individual differences in literacy achievement (Kyle & Harris, 2006:273-288). Literacy is valuable for everyday life, as well as being the means to obtain and evaluate information for a wide range of work purposes. Literacy leads the way to gaining information, and access to information is a basic right, as stated in the South African Constitution (1996, Chapter 2, article 32, 2007). It is important for economical, social, and political reasons (Boon, 1990: 2 & 1992: 232; Britz, 1996:243; Marschark, 2003: 42-43; Luckner *et al.,* 2005:444).

Language and reading ability are issues related to training, schools, and resource centres. For the hearing child, phonological awareness (i.e. the ability to distinguish between and manipulate the constituent sounds of words) plays an important role in reading and spelling and is one of the strongest predictors of literacy achievement, especially in a child's early years (Kyle & Harris, 2006: 273-274). It is easy to see that

the development of phonological awareness can be a challenge for a child with hearing loss.

Individuals, and more specifically children with hearing loss in their school-going phase, need academic information (Paul & Quigley, 1994:93-94) in order to develop to their full intellectual ability (Boon, 1992 (a): 232). As a child grows older, he/she learns by means of repetition how content meaning is organized and coded, and he/she will learn the associative nuances and how stories are organized. Through effective training at their special school, adolescents with hearing loss can also learn information literacy skills, which will enable them to understand academic information and be aware of the importance of this information.

Research has shown that hearing loss has an impact on the adolescent's reading, writing, and comprehension skills. Reading and literacy play a significant role in cognitive ability and the power of the written word must not be underestimated. Reading implies a process of decoding, that is, the use of graphic symbols, contexts, phonetics and structural analysis (Cooper, 1993:15). Research has shown that though many pupils who are deaf or hard of hearing are skilled in literacy areas, the majority of pupils find literacy hard to master. Research indicated that the average pupil graduates from high school with reading comprehension of approximately at fourth grade level (Woolsey *et al*., 2004:264). Marschark and Spencer (2005: 27) also indicated that the average performance of reading comprehension for deaf and hard-of hearing students is roughly six grades lower than their hearing pears at the age 15).

Vocabulary knowledge is essential for a person with regard to his/her reading ability and to be able to comprehend what he/she is reading (Luckner *et al.,* 2005: 444). If a person with hearing loss has a restricted vocabulary due to the hearing loss, this is an additional disadvantage for literacy development.

Adolescents with hearing loss have difficulty with all areas of academic achievement, not only with reading text, but also with mathematical concepts (Charlesworth, Charlesworth, Raban & Rickards, 2006:29-51). Research has shown that adolescents with hearing loss may experience more problems as they progress through their school years and they come to depend to a large extent on their parents, support systems and

the training provided by teachers in their respective schools (Marschark, 2003: S41-S47).

3.5.4.1 Impact of hearing loss on reading

A child has to learn language before learning to read. The auditory channel for acquisition of language is very important before a child can learn to read. One possibility is that children with hearing loss who have good phonological awareness and coding skills can learn to read in the same way as hearing children by developing their knowledge about letter–sound correspondences. These skills are strong predictors of reading success among children with hearing loss (Harris, 2006:190). An additional factor is that the child with hearing loss needs systematic instruction in vocabulary, especially in order to understand multiple dimensions of words before they can become independent readers (Paul, 1998:2001).

Through reading, the child will be able to learn to link the visual with the auditory processing procedure (Katz, 2002: 496) which is very important, because the child has to learn to form associations at a later stage in the reading process; the reader needs the ability to evaluate the text. This refers to the way in which the style, clarity, and cohesion of the text is comprehended and appreciated. The style can vary between the narrative form (stories or novels) and the expository form that supplies information and facts as in academic information (Cooper, 1993:14). Language skill is an important determiner of text evaluation. Engel-Eldar and Rosenhouse (2000:460) found in their research that there were factors playing a role in the reading skills of adolescents with hearing loss such as lack of motivation; environmental factors; the mental-cognitive factor; the psychological-sensory factor, and the neuron-developmental factors. If the adolescent with hearing loss is not motivated to learn or does not find him/herself in a positive environmental situation, it can have an impact on the ability to read (Schein, 2000:34).

It is clear that hearing loss has a multidimensional impact on the adolescent's ability to learn to read. A hearing loss affects the reader's ability to learn to read (acquisition of reading); the ability to extract meanings from the written message; and the ability to express the written message. The more readers read, the more likely they are to enjoy

reading, which means their reading can improve, as researchers have indicated (Wurst, Jones & Luckner, 2005: 57; Gray & McCutchen, 2006:325). Steiner, Panofsky, Smith (1996:5) indicated that reading improves quality of life and children should therefore be encouraged to read.

Three important aspects related to hearing for reading are *discrimination* of particular phonemes within words, *auditory discrimination* of words, and *auditory synthesis* (Hall & Mueller, 1997: 492). The child with a moderate to severe sensorineural hearing loss experiences the following:

- inability to hear similarities in the initial and final sounds of words;
- cannot perceive the similarities in words;
- unable to hear the consonant combinations in consonant blends;
- an inability to discriminate short vowel sounds;
- cannot break words into individual sounds;
- an inability to combine parts of words to form a whole;
- cannot hear the sounds for the printed symbols or the names for the printed words;
- difficulty in distinguishing similarities and differences in sounds;
- an inability in retention of sounds or syllables long enough to make matches or blends;
- an inability to relate the visual components of words to their auditory counterparts;
- does not relate a part of a word to the whole word and
- unable to synthesize or analyze unfamiliar words (Hall & Mueller, 1997:492).

The above-mentioned aspects are prerequisites for learning to read and it is clear that the child with hearing loss experiences problems with regard to learning to read due to his/her hearing loss. Children with hearing loss show delays or differences when compared to their hearing peers with respect to literacy development (Tye-Murray, 2004:642). In addition to the problems listed above, Tye-Murray (2004:642) gave two reasons for the delays in reading. The first is that the problem could stem from inadequate language systems that are manifested in deficits in vocabulary and unfamiliarity with groups of related words and secondly, the reader can be unfamiliar

with complex syntactic structures, which interferes with their ability to understand printed text.   When the child with a hearing loss reads he/she is confronted with the full message for the first time.

Individuals with hearing loss have a tendency to concentrate more on the lower level skills of decoding and transcription when reading instead of trying to acquire background or content knowledge, which can be achieved by access to relevant information, extended reading and discussion of text (Lloyd *et al.*, 1997:239-240).   A reader has to be able to give a realistic account of the text and has to be able to reconstruct the contents of the reading material to own life experiences.   Cooper (1993:13) stated, "...the meaning that the reader constructs or assigns does not come from the printed page; it comes from the reader's own experiences that are triggered or activated by the ideas the author presents".

In order to read effectively, therefore, the adolescent with hearing loss must have a good language base and be able to understand what he/she reads (Schirmer, 1994:139; Paul & Quigley, 1994:145-147).   Reading involves a combination of *bottom-up* and *top-down* processing.   When one reads, there is an ongoing process of interaction involving the language being used, cognitive processes including memory, and knowledge (Marschark, 2003: S42).   The top-down and bottom-up processes that take place during reading are illustrated in **Figure 3.1.**
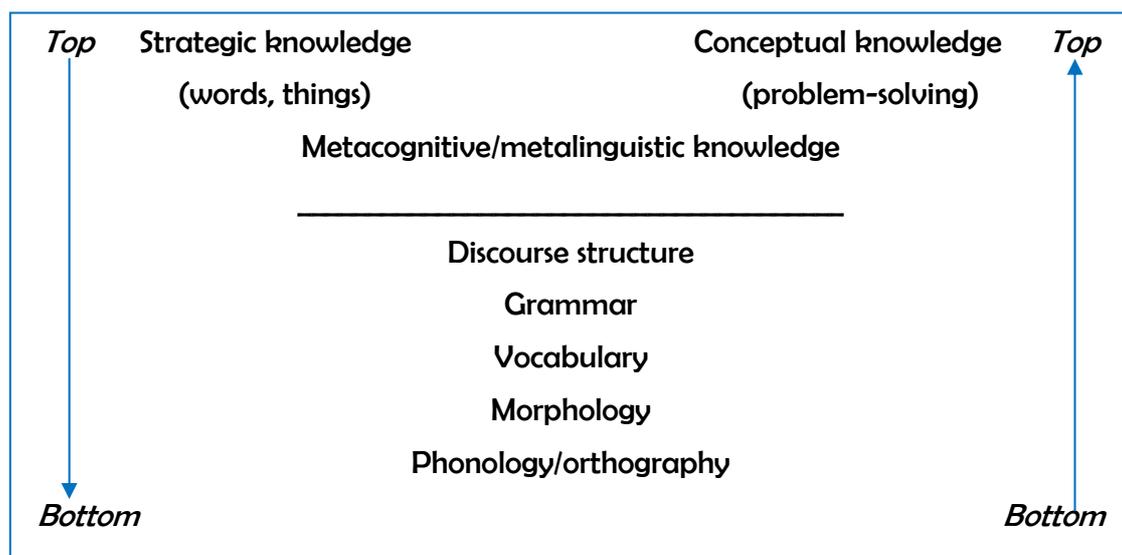
Figure 3.1: Bottom-up and top-down aspects of reading (adapted from Marschark, 2003: S42)

Several authors have argued that children with hearing loss experience such severe delays in reading achievement because they have problems with both top–down and bottom–up processes (King & Quigley, 1985; Marschark & Harris, 1996; Webster, 1986). The reason for this may lie in the adolescents with hearing loss' inability to retrieve word meanings, leading to wrong and inaccurate interpretations. Many of the reading problems that readers encounter are related to five components of reading namely phonological and phonemic awareness, word decoding and phonics, fluency, vocabulary, and comprehension, and weakness in a combination of any of the components can occur. It can also be due to secondary complications such as problems with attention, memory or the learning of a language e.g. English as a second language.

Marschark (2003:43) found in his research that adolescents with hearing loss understand captioned TV and videos better than connected text, and suggested that this "reduced form – high content" format can be utilised in the literacy process. If a child with hearing loss has a relatively good semantic knowledge, he/she can use it to compensate in some way for the comparatively poor phonological coding skills usually observed in children with hearing loss. Reading is reliant on both semantic knowledge and phonological coding, and the child typically experiences problems with regard to one or both of these aspects. As words convey activated knowledge, the memory becomes involved. The learning process draws on both current and prior reading experiences (Marschark, 2003:S42). Learning is also influenced by attention span, working memory and semantic memory (Marschark, 2003:S44).

It is well documented that, judging from standardized reading scores, most students with severe to profound hearing loss who graduate from high school do not read as well as their normally hearing counterparts. Poor reading levels signify illiteracy (Schein, 2000:32). Even more interesting is the fact that these results have not changed much since standardized tests first came into use. Two general patterns have been observed. Firstly, the average 18 to 19 year old student with a severe to profound hearing loss reads no better than the average nine to ten year old normal hearing student, and secondly, there seems to be an annual growth rate of less than half a grade per year, with a levelling off or plateau effect occurring at the third- or fourth-

grade level for most students with a hearing loss (Paul, 1998:90). This is ascribed to language problems (receptive) that the child with hearing loss experiences.

The majority of adolescents with hearing loss find it hard to master all aspects of reading, as reading depends on receptive processes. Harris and Moreno (2006:190) found in their research that early exposure to both sign and oral language is an important contributor or factor that leads the child with hearing loss to achieve academically. Research indicates that the average adolescent with hearing loss graduates from high school with reading comprehension at approximately the fourth grade level (Traxler, 2000:337-348). It must be noted, however, that this depends on the degree of hearing loss. It is interesting to note that research has indicated that for children with hearing loss, reading achievement was predicted by three factors: the degree of hearing loss, skill in speech reading, and productive vocabulary, since it is easier to read a word that is already in one's vocabulary (Kyle & Harris, 2006: 284).

Speech reading is a more current term than lipreading that encompasses lip movements, facial expressions and gestures — all of which augment acoustic information to aid receptive communication (Advanced Bionics, 2009-27-08-27). Speech reading plays a role in single-word reading ability whereas productive vocabulary plays a role in sentence comprehension ability. Speech reading forms the input on which a adolescent with hearing loss' phonological code is based. Speech reading is therefore based upon the articulatory gestures and motor movement of the lips.

It is clear that reading can help the child with a hearing loss to expand his/her behavioural patterns in such a manner that it would empower him/her to adapt to loss of hearing, to excel and to solve problems It is also important to establish the impact of hearing loss on writing.

3.5.4.2   Impact of hearing loss on writing

Writing is one of the most complex and difficult tasks for students to master. At a basic level, a person who writes must be able to produce words and sentences that are readable (Antia, Reed & Kreimeyer, 2005:244). According to Marschark (1997:145),

the "output" domain of reading mirrors the "input" domain of writing. Language problems are reflected in the written language of the child/adolescent with hearing loss. They rarely use synonyms, antonyms, metaphors, or cohesive forma of substitutions or ellipsis (Tye-Murray, 2004:643).

Marschark (2003:43) has found in his research that adolescents with hearing loss display disordered and poorly structured sentences in their writing, as they lack the ability to coherently organize language. Adolescents with hearing loss also find it difficult to cluster familiar words according to meaning in recall. This means they lack the ability to adopt semantically-based retrieval strategies. They find it difficult to form concepts of relationships between words, phrases and ideas. Adolescents with hearing loss do not recognize relational information, or are unable to make use of category information in the same way as their hearing peers. This category information is important, as different/various categories are automatically active in memory during the processes of reading, recall and problem-solving.

In order to be able to write, the adolescent with hearing loss needs to possess good language skills. A writer has to have knowledge of vocabulary and syntactical structure and at a higher level must be able to select topics, plan, and be able to organise ideas and make decisions on how to provide information (Antia *et al.*, 2005: 244-255).

According to Schirmer (1994:140), all people possess sufficient cognitive skills to become proficient readers and writers, but although adolescents with hearing loss may become literate, it must be kept in mind that their their ability to comprehend concepts is different from that of their hearing peers. Antia *et al.* (2005:244-255) have also found the following:

- Adolescents with hearing loss make numerous errors at sentence level.
- Their writing may be uninteresting, uninformative and is also not coherent.
- Lexical cohesions consisted mainly of word repetition.
- Their writing skills improved with age.
- Their compositions were less frequently conceptually linked than those of hearing peers.

- Adolescents with hearing loss using auditory/oral communication scored higher than those who used signing.
- Variables such as gender, socio-economic status, grade, degree of hearing loss, and interpreter use all affected the adolescents with hearing loss' ability to write. The interpreters reduced the adolescents with hearing loss' access to instructional content as they learned to rely on signing.
- Adolescents with hearing loss rely heavily on teachers to help them to develop their writing skills.

In earlier research, Yoshinga-Itano and Downey (1997: 63-64) found that it is possible to become a proficient reader and writer using different ways of communication. For adolescents with severe to profound hearing loss, however, it may be difficult to master the techniques of writing and reading (Bench, 1992:159; Katz, 2002:760). It is clear that children need to be prepared for reading and writing of a text through e.g. discussion of content that is based on a title, subtitles and illustrations. By means of questions, the adolescent with hearing loss develops the ability to make inferences and connections. What a reader gets out of print also depends on what he/she brings to that task (Truax *et al.*, 2004:314).

3.5.5   Influence of hearing loss on academic achievement

Hearing loss can have a direct effect upon learning and academic achievements, especially when learning depends on reading and mathematical concepts (Effects of hearing loss on development, 2009). This may lead to children with hearing loss having to repeat grades. Furthermore, lack of access to formal and informal education leads to increased frustration for adolescents with hearing loss (Cook & Hawkins, 2006:234). Bracket (1997:355) stated: "Although the primary effect of a hearing loss is an inability to hear some or all of conversational speech, its impact on communication development dramatically alters social and academic skill acquisition". The relationship of hearing and hearing loss to academic performance is therefore important to consider. If an adolescent is placed in a special school, the school caters for his/her needs. A special school uses audiological services in school in order for the teachers to fully understand the consequences of hearing loss.

Hearing loss leads to problems with regard to intellectual and cognitive development and impacts on the way in which the child with hearing loss experiences his/her macro- and micro-environment. The ultimate consequences are limited social and career opportunities (Hugo 1987:1, 5; Katz, 2002: 510; Effects of hearing loss on development, accessed 2007-08-14). According to the National Technical Institute for the Deaf (NTID, 2003 Annual Report) "…*students who are deaf take a longer time to get a degree than hearing students. There are many reasons for this, not the least of which is academic preparedness"* (Stevens, 2004:7)*.*

Some authors have voiced the opinion that these consequences can be prevented by appropriate teaching and learning endeavours. According to Moores (2001:119), "…many deaf children have low academic achievement simply because we have not yet developed sufficient skills to teach them effectively". He also found there was limited time for teacher preparation and a lack of teaching skills.

Adolescents with hearing loss want to be treated the same as hearing people. Having a hearing loss does not necessarily imply intellectual weakness (Norton, 1992). For people who are deaf or hard of hearing and who choose to use spoken communication, feedback mechanisms are limited; therefore, vocal control, volume and articulation may be affected. These secondary effects are purely physical, but are often misinterpreted as intellectual weakness, which they emphatically are not (Teaching strategies for students who are deaf or hard of hearing, accessed 2008-13-29).

The age of onset of the hearing loss, the aetiology, the age of amplification, prior management of the hearing loss, the parental support of the children with hearing loss, the child's intelligence and personality will have an effect on children's academic achievement. The same applies to neurological functions such as attention processing and sensory integrations skills (De Conde Johnson *et al.*, 1997:60).

If the adolescent with hearing loss has severe difficulties with language and communication strategies, it impacts on literacy level and consequently on the access and use of academic information. Spencer *et al. (*2000:256) emphasized the importance of schooling and suggested that adolescents with hearing loss should be assessed on performance of different cognitive tasks rather than considering cognition

as a unitary skill. This would enhance the process of teaching and learning (Spencer *et al.,* 2000: 256). The adolescents with hearing loss cognitive development can be determined by the teachers and adolescents with hearing loss' inherent abilities, while measurement of cognitive development can be influenced by task dimensions such as visual stimuli vs. non-visual stimuli, verbal vs. nonverbal processing and concrete vs. abstract stimuli (Spencer *et al.,* 2000:257).

Although the literature describes different forms of educating children (Spencer *et al.,* 2000: 277-278), it is clear that adolescents with hearing loss have different learning styles and needs from hearing children and, in addition, that each child learns differently and at a different rate. Such differences may be difficult or impossible to accommodate in classroom situations (Spencer *et al.,* 2000:278).

The influence of a hearing loss on a child's academic achievement is also evidenced in a low self-esteem (Katz, 2002: 510; Marschark, 2003: S41-S47). Students with hearing loss often learn to "feign" comprehension because they do not understand the context of the academic material. Therefore, it is necessary to provide extra facilities and communication strategies for the student with hearing loss in order for them to benefit from academic education. Deafness is an invisible disability. It is easy for teachers to "forget about it" and treat the student as not having a disability.

Access to academic information is essential to academic progress. Academic information refers to all written information pertaining to the school curriculum. This involves all the different sources of written information that adolescents with hearing loss need to access and use for academic purposes when acquiring high school qualifications. Not all individuals and/or groupings within a specific structure have the same access to academic information. Research shows that people with a hearing loss are often limited in their utilisation of academic information both in quantity and quality (Kerschner & Chaplain, 2001:98; 104; Morris & Blatt, 1986:314; Kuder, 1997:144; 150). Mokhtar and Majid (2006:36) pointed out that although some schools may have been outfitted with current information and/or communication technologies and infrastructures, it does not necessarily mean that adolescents with hearing loss will be competent to use these amenities effectively.

It appears that adolescents with hearing loss, especially those in special schools, experience limitations in literacy and information literacy skills. This refers to the ability to recognise when information is needed and have the ability to locate, evaluate, access and use effectively the needed information for his/her own purposes. This has an impact on the ability to achieve academically.

3.5.6 Influence of hearing loss on the emotional and social adolescents with hearing loss

The language and communication characteristics of children with hearing loss may affect their social and emotional development (Elkayam & English, 2003:485-499). Many adolescents with hearing loss are aware of the fact that they have certain limitations and limited career possibilities. They are aware of the reality and that they are not really part of the hearing community (Welch, 1993:1984; Hugo, 1987:7). This leads to the children feeling unhappy and isolated as they find it difficult to communicate with others.

One has to bear in mind that the process of socialising is a learned process for the adolescent with hearing loss (Higgins & Nash, 1987:59). Poor social relationships have a negative impact on cognitive development (Nowell & Marshak, 1994:53). Members of society also have a poor knowledge of adolescents with hearing loss, their needs and their communication needs (Bench, 1992:207). Adolescents with hearing loss are very dependent on the other persons with whom they socialize.

Children with hearing loss feel isolated - those with mild to or moderate hearing losses even more so than those children with severe to profound hearing loss (De Conde Johnson *et al.*, 1997:232). Zapata (1994:124) noted that people with hearing loss experience problems regarding joining in social and political activities, and that this prevents them from adapting or playing a meaningful role in society. Nowell and Marshak (1994:83) noted that people with hearing loss find it difficult to gain confidence in life. The impact of hearing loss is that the person with hearing loss may suffer from depression due to isolation (is unable to hear properly what is being said) and finds his/her hearing loss difficult to accept (Wikipedia, hearing loss, accessed 2007-07-10).

If a child with hearing loss is able to access and use academic information, it will help the adolescent with hearing loss to overcome the influence and consequences of hearing loss on his/her emotional and social development. Literature research indicated that the adolescent with hearing loss battles to survive in this world. They have "...a *daily struggle to overcome the threat to selfhood that deafness imposes and their exclusion from full participation in inclusive education life"* (Welch, 1993:96).

Hearing loss in childhood will affect a child's academic and social abilities as well as his/her self-concept. The child with hearing loss may find it extremely difficult to overcome his/her low self-esteem even as he/she matures (Moeller, 2007:734). The child with hearing loss has problems with his/her own identity, interaction with peers, and school experiences. Social perceptions and experiences are influenced by lack of peer acceptance (Moeller, 2007:734). The child with hearing loss has feelings of insecurity, isolation and poor self-confidence (Moeller, 2007:735).

This has also an influence on his/her academic performance because the child with hearing loss does not believe in his/her own ability to achieve academically (Moeller, 2007:735). Such a child may experience feelings of sadness, anxiety and loneliness. The opposite is also true. If a child with hearing loss can experience peer acceptance, it can lead to successful social development, as well as emotional and cognitive growth (Moeller, 2007:735). Friendship relationships also play a vital role in academic achievement as it leads to effective task performance (Moeller, 2007:735).

De Conde Johnson *et al.*, (1997:232) found in their research that children with severe to profound hearing loss felt isolated, had no friends and were unhappy in school and if they had no other friends who also have a hearing loss, they felt more isolated. They also found, however, that social problems were more prevalent in children with mild to or moderate hearing losses than those children with severe to profound hearing loss.

Socioemotional development plays a significant role in the lives of adolescents with hearing loss and is a critical foundation for life success (Spencer *et al.,* 2000:169). Competencies that are generally accepted as defining healthy socioemotional development are also essential for individuals to realize their academic and vocational potential (Spencer, *et al.,* 2000:169-170). Greenberg and Kusche (1993, in Spencer *et*

al., 2000:170) include the following characteristics as central to the development of socio emotional competence:

- Good receptive and expressive communication skills;
- the capacity to think independently;
- a capacity for self-direction and self-control;
- understanding the feelings, motivations, and needs of self and others;
- flexibility in adapting to the needs of a particular situation;
- emotional stability to tolerate frustration;
- development of the capability to endure or tolerate frequent ambivalence in feelings, cognitions, and internal structures and therefore addressing inner conflicts, needs and desires that he/she encounters;
- understanding and appreciating his/her own culture and values and those of others; and
- using skilled behaviours to maintain healthy relations with others and to achieve socially approved goals.

The above-mentioned characteristics will determine a child's socioemotional competence. It is the joint responsibilities of parents and professionals such as teachers and counsellors to assist adolescents with hearing loss to successfully master these competencies. Parents and professionals need to serve as role models for adolescents with hearing loss. This is not an easy task. In fact, it requires much caring, thoughtfulness, training, effort, and collaboration between teachers of special schools and professionals across the child's development (Spencer *et al.,* 2000:171).

Social interaction also plays a vital role in the development of a child with hearing loss. Parental and peer relationships are essential to social development (Spencer *et al.,* 2000:281). Spencer *et al.* (2000:282) remarked that children's language experiences have to be linked with social interaction because as children grow older, linguistic abilities become more and more important with regard to social and emotional development. This link to social interaction will become more apparent in their academic years.

Socialization is a process that involves diverse social agents, promotes psychological as well as social development, and develop adolescents with hearing loss who can be integrated into society as respected participants (Spencer *et al.,* 2000:191). The family is the first step in the socialization process, as the family provides stability and education (Katz, 2002:758 & 761). The next step in the socialization process where emotional, cognitive and educational development takes place is the school. The school helps adolescents with hearing loss become economically self-sufficient, and helps to teach them the roles, rules and norms and expectations of society (Spencer *et al.,* 2000:191). The three main components that play an important role in the process of socialization are (a) *formal* and *information communication*, (b) *peer interaction* and (c) the *informal curriculum* and *extracurricular activities* (Spencer *et al.,* 2000:192).

Peer interaction, which plays a significant role in the socialization process of adolescents with hearing loss, can vary from formal interaction, such as structured group work in class, to informal interaction in a setting such as general conversation (Spencer *et al.,* 2000:193). The significance of peer interaction lies in the fact that children with hearing loss often rely on one another or on hearing peers for help in accessing, using, and understanding academic material.

A further reason why the extracurricular activities and peer relationships are so important is that they play a role in helping the child with hearing loss to develop social skills, which are useful in turn and it help them in the school as they learn to rely on one another (Spencer *et al.,* 2000:194). Apart from learning in the classroom setting, the child with hearing loss can learn from his/her friends by means of social interaction and by participating in extracurricular activities. All these factors will enable adolescents with hearing loss to participate in society and to become a member of a group in work situations. They learn to develop their self-esteem and feel part of a larger social group (Spencer *et al.,* 2000:195). They learn to develop skills for working purposes, and through social interactions they learn the difference between assertive behaviour and aggressive behaviour and learn to collaborate with others (Spencer *et al.,* 2000:195).

Research has shown that adolescents with hearing loss tend to be immature; they rely on a set daily routine; have a negative self-image; have limited attention span; are naïve; rely on other people; are sometimes irresponsible, passive and tend to accept

things as they come (Hull, 1998:39). Adolescents with hearing loss may need role models from whom they can learn how to react in certain situations. The result, however, is those adolescents with hearing loss learn to become excessively dependent on other people. Adolescents with hearing loss are aware of their hearing loss and their limitations, and they know there are limited career options available or open to them. They are aware of the reality of the hearing world and know they do not form part of the hearing society (Hugo, 1987:7; Welch, 1993:198). By acquiring knowledge by means of accessing and using academic information, the adolescent with hearing loss will acquire more self-confidence and the ability to achieve academically.

3.6 EDUCATIONAL PLACEMENT

The changes in world initiatives with regard to inclusive education have influenced the situation in South Africa (Naicker, 1999:12). This happened when the shift occurred from the so-called medical model towards an ecological and systems theory (Hay, 2003:135). With the democratic dispensation in South Africa since 1994, the country has been in a process of transformation including social, political and educational transformation aimed at an inclusive society for all (Hay, Smit & Paulsen, 2001:123).

All pupils, including those with hearing loss, should have the right to quality education and reading opportunities, regardless of being in the elementary or high school. Parents should also have the right to insist on proper instruction to improve their children's academic proficiency including reading skills (Williams, accessed 2004-10-13). In order to achieve this, every pupil's needs and abilities should be taken into account. It is important that adolescents with hearing loss have to learn to read, whether for specific purposes such as school assignments or for enjoyment. These skills are learnt in an educational environment.

Alpiner and McCarthy (1993:156) stressed that psycho-educational assessment for adolescents with hearing loss is necessary in order to determine the type of services needed for these children and to make the correct decisions regarding school placement and in order to establish which educational and rehabilitative objectives have to be reached. The correct school placement ensures that the areas of nonverbal and verbal cognitive functioning or learning abilities, the skills of reading and writing,

mathematic and other content academic areas, information processing performance and psychosocial characteristics are developed (Alpiner & McCarthy, 1993:157).

Different school-related variables play a role in the lives of adolescents with hearing loss (Alpiner & McCarthy, 1993:147). One such variable is the option of school placement (whether in special school or inclusive education) that does not necessarily relate to the educational needs of a learner. The more severe the hearing loss of a child, the more attention the placement should receive. Special schools may be more successful in providing maximum language stimulation through all sensory systems with the minimum ambiguity – this will provide more information to the child with hearing loss and make the hearing process easier and more complete (Katz, 2002:761).

A variety of residential schools, special schools and community schools are typically considered for placement purposes. Woolsey *et al.* (2004: 269) confirmed that adolescents with hearing loss are more restricted with regard to school placement, and that they have to be evaluated more accurately in order to determine in which school they ought to be placed.

The adolescent with hearing loss needs to be placed in the best school according to his needs. For instance, poor acoustics or poor listening skills can have a negative influence on his/her academic achievement. An adequate intervention process is required (Alpiner & McCarthy, 1993:178). A factor that also influences the academic achievement of a child with hearing loss is the distance between the adolescent with hearing loss and teacher regardless of amplification (Katz, 2002:550-552). The more severe the hearing loss, the bigger impact distance hearing will have on the child with hearing loss in the classroom (Alpiner & McCarthy, 1993:180).

In a classroom setting, the child with hearing loss may often not hear what is being said, and consequently his/her attention may wander from the teacher and from what is being taught. Children with no hearing loss may hear all the information presented in the classroom, but the adolescents with hearing loss may not hear enough in order to benefit from it especially in inclusive education (Alpiner & McCarthy, 1993:180). It is clear that a child with hearing loss needs to expend more effort to listen to information in the classroom.

Appropriate hearing management such as effective hearing aids and the use of an FM system may help the child to hear better in the classroom setting (Alpiner & McCarthy, 1993:181; Katz, 2002: 547 & 768), but the importance of hearing is not limited to scholastic activities. A child with hearing loss cannot hear if conversation is very soft, therefore some social conversations are lost to the child with hearing loss (Alpiner & McCarthy, 1993:181). Different degrees of hearing loss have a significant effect on understanding of language and speech as well as on the psychosocial being of a person with hearing loss. This is an additional factor that may determine whether a child with hearing loss should be placed in a special school or inclusive education (Alpiner & McCarthy, 1993:194-194; De Conde Johnson *et al.,* 1997:340-341).

Support services in the educational setting such as speech services, language therapy, counselling and help with additional disabilities such as learning disabilities are significant considerations for school placement (Katz, 2002:546 & 550). The placement of a child with hearing loss is dependent on the audiologist's evaluation, the case history provided by the parent, the medical evaluation by the physician, and the appropriateness of the special education referral (De Conde Johnson *et al.*, 1997:152). These different evaluation criteria can help to determine the adolescent with hearing loss's academic achievement in school, because it can give the necessary background to know where to place the child in order for him/her to benefit the most. For example, research has shown that children with hearing loss have a lower self-esteem, feel isolated and lonely when placed in the inclusive education (Musselman, Mootilal & MacKay, 1996:52).

The implications of hearing loss in an active learning environment must not be underestimated (Alpiner & McCarthy, 1993:177). Active learning leads to lifelong learning, providing adolescents with hearing loss to become information literate. Active learning implies that adolescents with hearing loss will learn and understand the different processes and systems of learning for acquiring current and retrospective information. They will also learn to be able to evaluate the effectiveness and reliability of various information channels and sources in order to satisfy their different needs.

In the past, the perception existed that adolescents with hearing loss could not become information literate. People with hearing loss were deemed to be constantly aware of

their battle to survive, and various factors were seen to "…*remind deaf individuals both of their daily struggle to overcome the threat to selfhood that deafness imposes and their exclusion from full participation in inclusive education life*" (Welch, 1993:96).

From research it became evident that educational history, that is, the history with which a child comes to school, plays a role in auditory learning. This history can include factors such as earlier educational methods, skills, and family factors because this involves the attitudes of parents and support and also life factors such as access to services and environmental issues (Katz, 2002:761). These factors all help to prepare the child with hearing loss for the social and academic challenges of school and education (Alpiner & McCarthy, 1993:147).

3.6.1   Inclusive education

Some children with hearing loss are placed in inclusive education, which means that children are educated with their 'typical' peers (Katz, 2002: 759). In inclusive education, children with disabilities are considered to be equal members of the regular classroom at school, curriculum adaptations are made, and support services are delivered to children with disabilities. This is done so that the education and training system can provide for all children to foster the development of all learners in the school environment and enable them to participate actively in the education process. This is necessary in order to develop learners with disabilities' potential and to participate as equal members of society (South African Education White Paper no. 6, 2001:5).

The support services that are provided in the regular classroom are also available to the adolescent with hearing loss (Katz, 2002:759). Inclusive education classrooms are seen as auditory-verbal environments because the instructional information is presented orally through the speech of the teacher with the underlying assumption that the pupils can clearly hear and attend to the teacher's voice (Alpiner & McCarthy, 1993:176). Adolescents with hearing loss may experience problems due to the overall noise level in class.

The South African Educational System is described as an Outcomes Based System. The aim of Outcomes Based Education is to facilitate the achievement of specific

outcomes by learners. Steps are followed in each subject or activity, information is supplied on what to do, and the learners are helped to plan, to execute the learning process and to master the contents and processes. Teachers receive training based on outcomes-based principles. There were, however, several gaps in the Curriculum 2005 syllabus, due to lack of training and available academic information in most of the schools (Bloch, accessed 2009-08-27).

Outcomes Based Education implies that all learners, regardless of hearing loss or other impairment, have to learn to communicate effectively, solve problems, organise themselves and to work effectively with others, to process information, to make use of science and technology and to understand the relationship that exists between society and environment (Potgieter, 1992:76, 82).

Outcomes Based Education has implications for the adolescent with hearing loss, because their level and degree of hearing loss often goes hand in hand with a feeling of insecurity, or a lack of confidence. Outcomes Based Education has the aim to teach all learners to be more confident and to know that they can also possess qualities to make a positive contribution in any given situation (Principles of Outcomes Based Education, accessed 2009-08-27 & The NQF and Curriculum 2005, A SAQA Position Paper, accessed 2007-08-27). Curriculum 2005 is based on evaluation criteria that have to be applied by school teachers on work that school children perform. These evaluation criteria are based on the learners' ability to demonstrate such outcomes, based on knowledge, skills, attitudes and values. Teachers use a control list of ten learning programme development steps to evaluate the learners' progress. These steps include oral presentations, practical activities, reports, and written assignments. Other evaluation criteria are elements such as the local impact of the environment, learning content, learning activities, programme theme or subject, learning context, facilitation and preparation evaluation.

Joubert (1999:8) stated earlier that the Department of Education aimed to make the educational facilities more accessible in order to meet the needs of all children with special needs. It was anticipated that a flexible policy would be followed regarding the age of children with impairments. The Department of Education initiated Curriculum 2005 as a long-term process that included the following aims:

- to extend the capacity, revise the policy, and augment the power of school regulatory bodies;
- to provide more accessibility for children with impairments in the inclusive educational system and
- to reach as many people as possible (Joubert, 1999:8).

Luterman (1986:67) accentuates that if a child with hearing loss is able to master vocabulary, he/she may be able to adapt in inclusive education. He also states that language problems lead to reading problems and this can result in the adolescent with hearing loss taking longer to complete an educational career or training compared to the hearing child.

3.6.2 Special schools

The special school is a *resource* centre, the institution where specially trained teachers, assistants, remedial teachers, speech, language therapists/audiologists, physiologists, social workers, hostel parents, all those involved with the adolescent with hearing loss can provide educational training within this team approach. The special school is an institution that provides education to learners in need of a high level of intensive support, as well as guidance to teachers and parents of adolescents with hearing loss (Special schools as resource centres, 2002:1). The special school teachers and media teachers perform specialised roles and functions and provide services regarding learners who experience barriers to learning and development.

According to the South African Education White Paper no. 6 (2001:17), the inclusive educational system was about "supporting all learners, educators and the system as a whole…with the emphasis on the development of good teaching strategies that will be of benefit to all learners". This implies that teachers need to be trained in the educational management of the child with hearing loss. In one of the South African newspapers, Beeld (May, 2007:13), an article was published maintaining that excessively large numbers of learners in classes and teachers that had no training were two of the reasons why learners with special needs could not be accommodated in inclusive education.

Special education has the aim of developing a number of effective practices for improving the educational outcomes of students with disabilities. This is necessary to make a difference in the education and lives of the learner with disabilities (Cook & Schirmer, 2003:20).

Cook and Schirmer (2003:20) describe the beliefs and practices which should form the basis of special education. These are:

- Providing individualized instruction;
- Planning carefully sequenced series of tasks;
- Putting emphasis on stimulation and awakening of the child's senses;
- Helping with the arrangement of the child's environment;
- Giving immediate reward for correct performance;
- Giving tutoring in functional skills, and
- Establishing the belief that every child should be educated to the greatest extent possible.

If an academic curriculum is to be followed, whether in special schools or in regular education, the development of academic literacy must be one of the non-negotiable underlying goals of the school programme.

3.7 INFLUENCE OF HEARING LOSS ON THE DEVELOPMENT OF ACADEMIC LITERACY

Research findings on the access and use of academic information by adolescents with hearing loss indicated that although most people have the prerequisite mental capabilities, specific academic and other skills still have to be learned (Vygotski in Nowell & Marschak, 1994:16). One of the learned processes is the ability to listen, which is a natural process for a child possessing normal hearing.

The importance of hearing loss in the communicative and educational process tends to be underestimated because hearing loss is "invisible". The effects of hearing loss are

often associated with other problems than the hearing loss itself, for instance "slow learning" or "attention problems" (Alpiner & McCarthy, 1993:178).

3.7.1 Access and use of academic information

Adolescents with hearing loss are expected to understand and use a variety of text types such as textbooks, material from the Internet, resource books, newsmagazines, etc. They are also expected to demonstrate the same proficiency on achievement tests as shown by their hearing classma   es. Unfortunately, most deaf students historically plateau at the third- or fourth-grade level in reading and writing achievement (Nielsen & Luetke-Stahlman, 2002:11). It has been found that phonological awareness and language proficiency are essential if children are to be able to efficiently decipher words and to understand all text without continual assistance from teachers (Nielsen & Luhtke-Stahlman, 2002:12). One of the problems with regard to accessing and using academic information lies in the lack of phonological awareness, as it contributes to the low level of reading achievement of adolescents with hearing loss (Nielsen & Luetke-Stahlman, 2002:12).

The education process of the adolescent with hearing loss must therefore be adapted in such a manner as to enable him/her to pursue a career in later life. In order to be information literate and have access to information, an adolescent with hearing loss has to learn to read. It is clear from the research that a person is not born as a reader, but that language forms the basis that leads to the learning process (Sampson, 1991:311).

Schirmer (1994:113) indicated that the reading process originates from the language basis of the child. It is an interaction occurring between the reader and the text. Reading leads to the extension of behaviour patterns and skills and empowers the adolescent with hearing loss to overcome his/her hearing loss and to solve problems, even though each adolescent with hearing loss progresses at his/her own pace. The literacy process involves all printed forms, whether in books or magazines or other sources, and all genres, whether prose, poems, or expository text; it occurs wherever the reader comes into contact with other literary opinions (Sampson, 1991:14). Whenever the person with hearing loss encounters a complete message, he/she will

understand the written format to the extent that the reading material corresponds with his/her language and cognitive abilities.

Children who have a hearing loss find it difficult to access spoken content without intermediary support (Bain, Basson, Faisman & Kanesvsk, 2005:592). Paul and Quigley (1994:153) indicate that interactive methods are important such as "text-based, reader-based and context-based (or task-based) methods that influence the adolescent with hearing loss regarding his/her ability to access and use academic information". These abilities imply the use of vocabulary (word knowledge); grammar (phonology, morphology and syntaxes) of the language; and orthographies (such as signs, etc) (Gray & McCutchen, 2006:325-327; Katz, 2002:517). The body of research indicates compelling evidence promoting the teaching of phonological coding (Beck, 2006:4). Phonological awareness means that the reader has the ability to think about and manipulate different speech sounds segments of a language and to represent the individual speech sounds through the application of symbols such as letters (Katz, 2002:517).

Another factor that influences adolescents with hearing loss is their lack of general knowledge and awareness of what is going on in the world. The type of academic information that teachers apply and provide to adolescents with hearing loss must reflect all the information that they would need in later life for successful integration in the hearing world (Lloyd *et al.,* 1997:181).

Although the role of support services and individuals can not be underestimated, adolescents with hearing loss face various barriers that prevent them from becoming information literate and developing academic literacy. Another important matter is the issue of access to facilities and materials (Alpiner & McCarthy, 1993:147). Adolescents with hearing loss need support services according to their needs and these may include services such as sign language interpretation, speech-to-text technology, note taking, tutoring and academic assistance. This assistance can be to answer questions, clarify concepts and procedures and to give background on course content (Stevens, 2004:11). Adolescents with hearing loss, like other students with disabilities, need to develop their self-esteem and self-concept to enhance their ability to achieve academically (Murray, 2000: 6).

3.7.2 Barriers adolescents with hearing loss experience to developing academic literacy

The major barriers to learning associated to hearing loss are related to language and communication, which profoundly impacts most aspects of the educational process. Adolescents with hearing loss seldom bring to their educational experience the same language background or experiences or skills as children who can hear (Kansas Department of Education, 2009:3-6). Lang (2002:267) described a significant body of information regarding the barriers that adolescents with hearing loss face in gaining access to information. **Figure 3.2** displays the characteristics of the child with hearing loss that can lead to poor academic achievement. Much less is known, however, regarding possible ways to overcome or remove these barriers.
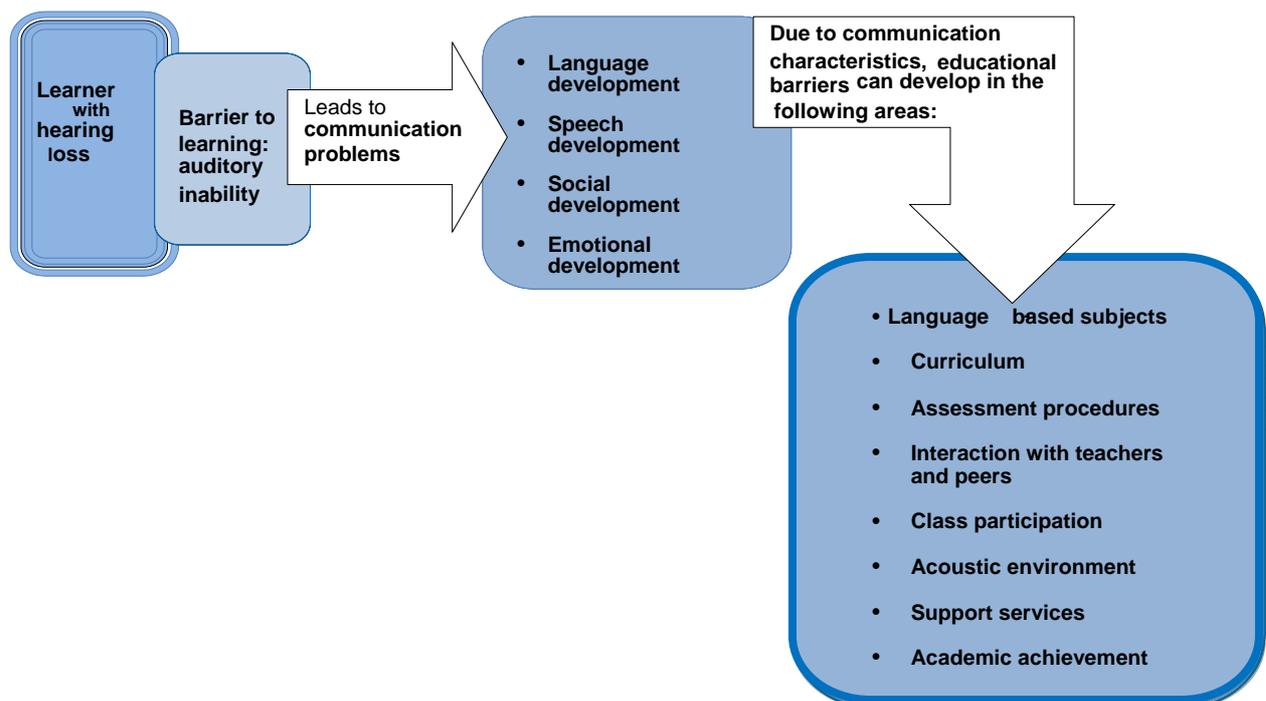
Figure 3.2: Characteristics of a child with hearing loss that can lead to poor academic achievement.

Figure 3.2 indicates that if a child with hearing loss experiences a barrier to learning due to auditory inability, it will lead to communication problems that can manifest in delays in language, speech, social, and emotional development. These delays will cause educational barriers that may prevent the child with hearing loss from achieving academically in language-based subjects as well as general curriculum subjects. The

child with hearing loss may also find assessment procedures challenging and find it difficult to participate in class. The acoustic environment may not be suitable due to his/ her hearing loss. Interaction with teachers and peers can be an additional challenge. Other barriers that may lead to poor academic achievement are poor support services.

Before the First World War, the schools for the deaf provided career opportunities regarding baking, clothing industry, carpentry, and shoemaking (Nieuwenhuis, 1980:33). There were opinions that training should not only provide opportunities in these fields, but should also make provision for higher education opportunities in all fields (Nieuwenhuis, 1980:33). Even in Britain no opportunities existed for the deaf regarding college or university education. Training was only provided in big cities (Nieuwenhuis, 1980:33).

At present, options for education and training are wide open to all children with hearing loss; however, deficient information literacy may prevent children with hearing loss from availing themselves of many of these opportunities. Eriks-Brophy, Durieux-Smith, Andrée, Fitzpatrick, Duquette and Wittingham (2006) identified the following barriers, which prevent adolescents with hearing loss from becoming information literate:

- The degree of hearing loss and fitting the child with inappropriate amplification may present a barrier to the acquisition of spoken language and could lead to reduced academic performance (Eriks-Brophy *et al.,* 2006:55).
- If the educational approach is not effective, it can present a barrier because only effective teaching methods enable the adolescent with hearing loss to develop information literacy skills (Eriks-Brophy *et al.,* 2006:57).
- Ignorance of teachers concerning the problems and background of adolescents with hearing loss, especially with regard to communication development and academic performance (Eriks-Brophy, *et al.,* 2006:66).
- Negative attitudes of teachers, especially if they do not communicate effectively with parents of adolescents with hearing loss (Eriks-Brophy *et al.,* 2006:66).
- Underestimating the potential of adolescents with hearing loss with regard to learning and/or social behaviour (Eriks-Brophy *et al.,* 2006:67).

- Unwillingness of teachers to apply assistive technology and use adapted techniques and/or strategies to make information more accessible to adolescents with hearing loss (Eriks-Brophy, *et al.,* 2006:67).

- Uninvolvement of parents and/or lack of communication with school and/or teachers can prevent an adolescent with hearing loss from achieving academically and becoming information literate (Eriks-Brophy *et al.,* 2006:70).

- Poor communication from the parents' side with regard to their child with hearing loss's needs to teachers of the school which their child is attending (Eriks-Brophy *et al.,* 2006:71).

- If the home language is not the same as the school language, the child will have to learn an additional language which is often a problem for a child with a hearing loss (Eriks-Brophy *et al.,* 2006:72).

- More and more parents have to work away from home. This means that they may not be available to help the child with schoolwork and/or assignments (Eriks-Brophy *et al.,* 2006:73).

- The attitudes of peers may influence the child with hearing loss, especially if the child is very sensitive. Attitudes of peers may hold back the child with hearing loss in the classroom setting and on a social level (Eriks-Brophy *et al.,* 2006:73).

- Adolescents with hearing loss may feel isolated and lonely and this can also be a barrier that prevents them from participating in the classroom (Eriks-Brophy *et al.,* 2006:75).

- Poor speech intelligibility, communication abilities, auditory skills, reading abilities and organizational skills can all influence the adolescent's ability to become information literate (Eriks-Brophy *et al.,* 2006:76).

- Adolescents with hearing loss may experience perceived lack of independence and poor academic and learning skills. These perceptions may prevent them from achieving academically in school (Eriks-Brophy *et al.,* 2006:77).

- Adolescents with hearing loss may also display poor aptitude for solving problems and for learning new skills (Eriks-Brophy *et al.,* 2006: 77).

- Shyness and lack of assertiveness can also be a barrier because it can prevent the child with hearing loss from participating in all school and social activities (Eriks-Brophy *et al.,* 2006:78).

It is clear that learners' prior learning and experiences may pose a barrier to information literacy (Sayed & DeJager, 1997:8). If adolescents with hearing loss do not have a good learning background, it may prevent them from becoming fully information literate. Adolescents with hearing loss will benefit from education when information literacy skills have been acquired and the information literacy instruction is used in collaboration with educational technology. In order to integrate information literacy within the school curriculum, the following aims need to be reached:

- Student-centred and collaborative learning methods have to be applied;
- the media centre teacher needs to collaborate with the teaching staff of the school;
- the adolescents with hearing loss need access to online information literacy and courses and
- the information literary instruction has to take place in the context of the content-based courses of the school curriculum, assignments or projects that the pupils undertake (Mokhtar & Majid, 2006: 36).

Previous knowledge and experiences are the starting points for learning about new things. Adolescents with hearing loss should be motivated to keep on mastering new knowledge and absorb academic information. In recent years, the use of computers and information technology has profoundly affected all people's lives and work. The internet has become an important vehicle for information dissemination across the world (Agboola & Lee, 2000:286). Research has shown that the difficulties with regard to computer and information technologies experienced by adolescents with hearing loss include not only lack of education, but also other barriers such as the high cost of computers (Agboola & Lee, 2000:288). Limited electronic access due to limited availability of computers, financial costs and inappropriate training can prevent adolescents with hearing loss from becoming fully information literate.

Poor collaboration between media and special education teachers and lack of time can also play a role in delaying the process of becoming information literate for adolescents with hearing loss (Lang, 2002:268). Adolescents with hearing loss often do not have enough time to spend in the media centre, according to Bishop and Larimer (1999:15-

20) and Eissenberg and Berkowitz (1998, in Spitzer *et al.,* 1998:73). Teachers and media teachers need to collaborate with one another to ensure that adolescents with hearing loss can become information literate.

Some of the barriers that the adolescent with hearing loss experiences are the result of dilemmas that media teachers face, such as:

- Media teachers only see the adolescent with hearing loss for a limited period of time in the media centre;
- Some of the media teachers have to teach additional special education subjects as well;
- The media teachers find the number of adolescents with hearing loss in the group too big; and
- The media teacher often has to modify teaching methods for the adolescents with hearing loss according to their different modes of communication (Lorenzen, 2001).

One of the major barriers in becoming information literate, according to Brelje (1999:418) and Welch (1993:197), is the "continuing attitude…that deaf individuals are not capable of successfully completing a college or university education", and another is the lack of educational opportunities on an elementary and secondary school level. It is therefore important that there should be equal training opportunities for adolescents with hearing loss and for their hearing peers. All children with hearing loss need to know how to work with computers, how to access and how to use audio-visual materials and equipment (Nowell & Marshak, 1994:83).

There are other factors preventing adolescents with hearing loss from becoming fully information literate. Their performance and motivation with regard to becoming information literate are affected by the extent to which they manage to master academic material. Adolescents with hearing loss have to learn to read while simultaneously learning other skills such as accessing information, analysing, and problem solving (Lloyd *et al.*, 1997:177). Adolescents with hearing loss have to learn to use, to access, and to apply academic information in order to play an active role in

mastering academic information and to construct knowledge while interacting with a perceived world (Lloyd *et al.,* 1997:241).

3.8   INFORMATION LITERACY SKILLS OF ADOLESCENTS WITH HEARING LOSS

Hough and Horne conducted a study in South Africa (Rademeyer, in Beeld, 2005:15), the results of which indicated that the standards of language and numeric skills of pupils were "not high enough". This finding was based on a comparison with normal hearing pupils. In the educational system, new information is expected to add to the child's existing knowledge in different subjects, to expand or to change his/her perceptions, depending on the circumstances. Information opens the door for the adolescent with hearing loss to be able to function better in society.

Acquiring information literacy and skills will help the adolescent with hearing loss to take his/her rightful place in society in order to improve his/her quality of life, enabling him/her to play a more meaningful role in society on economical and social levels (SALIS, MSSW & UNESCO Workshop Proceedings and Workshop Report, 2006:13).

3.8.1   Advantages of information literacy and information literacy skills for adolescents with hearing loss

If adolescents with hearing loss are able to acquire information literacy skills, it will enable them to access and use academic information. It will help them to perform better in their work situation. It will also help them to learn more about the community and interpersonal relationships in which they function, and to be more positive, take part in the transformation process, take initiative, participate in projects and to develop their culture awareness (SALIS, MSSW & UNESCO Workshop Proceedings and Workshop Report, 2006: 6-10).

As the adolescent with hearing loss gets older, academic information plays an even more significant role in his/her life and therefore such a person needs information literacy skills in order to develop his/her ability to access and use academic information.

Information literacy is a continuum that develops from the process of literacy (being able to read) to information literacy that is reached through application of an information literacy programme (Owusu-Ansah, 2003:220).

If adolescents with hearing loss are able to learn how to access and use academic information successfully, it will enable them to live independently, to lead a life based on self-exploration and knowledge. It can be a lifelong tool encouraging the building of self-esteem and confidence and the feeling of independence (Murray, 2000a: 8). Such students will be able to display emotional intelligence, a positive attitude, respect and positive behavioural traits towards themselves and others. As was discussed previously, acquiring information literacy skills is a complicated process for the individual with a hearing loss as it includes or involves communication skills.

Availability and utilization of academic information in schools can add to the existing knowledge base of any child at any school, whether the child has a hearing loss or not. It can expand the perception of academic information or even change it, leading to better quality of life for the adolescent with hearing loss and allowing independent study and lifelong learning. It will enable the adolescent with hearing loss to acquire tertiary education, to be employed, to make decisions as well as to participate effectively in groups, and to pursue and generate information in the same way as his/her hearing peers (Morris & Blatt, 1986:314; Paul & Quigley, 1994:93-94; Boon, 1992a: 232; Behrens, 1992:82; Roetz, 1991:16).

Information also opens the door for the adolescent with hearing loss to be able to function better in society. When the hearing child enters school, he/she already has a language base whereas the child with hearing loss has to learn to read and write a language that he/she still has to master. This shows how important the process of literacy is that precedes the information literacy process (Nowell & Marshak, 1994:25). Poor skills of writing and reading have a big influence on the level of adolescents with hearing loss's ability to achieve information literacy. Although it is difficult to measure the level of reading ability of the adolescent with hearing loss, he/she should be made aware of all kinds of experiences than can enrich his/her life (Moores, 1996:171 in Woolsey *et al.,* 2004; Paul & Quigley, 1994:10). In our present society, education has moved forward to include information literacy as a key factor to benefit all children in

school in the future; it can only be achieved, however, if there is collaboration between the media teacher, school teachers, support staff and administrators (SALIS, MSSW & UNESCO Workshop Proceedings and Workshop Report, 2006:64).

According to Van der Walt (1992:39), there are six questions that need to be answered in order to determine the level of information literacy in adolescents with hearing loss:

- Can the adolescent with hearing loss formulate his/her needs in such a manner that it can be effectively met?
- Is he/she able to locate the necessary information?
- Is he/she able to evaluate the information in order to determine if it is the correct information that is needed?
- Can he/she organise the information in a specific form in order to work with it?
- Is he/she able to process the information cognitively in order to interpret it meaningfully?
- After understanding the information, is he/she able to communicate the information to someone else?

For the adolescent with hearing loss, the ability to access and use academic information can be achieved through training (Nowell & Marshak, 1994:16). The reason for this is because this will be the first time that the adolescent with hearing loss is confronted with a full message. This is especially true in the case where the adolescent with hearing loss becomes acquainted with different types of academic information and the skills and abilities to access and use it.

Through resource-based learning and acquisition of information literacy skills, adolescents with hearing loss will assume more responsibility for locating the materials from which to learn, thereby developing lifelong learning skills, because students will learn from the same sources that they will use in their daily lives such as books, newspapers, databases, documents, and others (ALA 1989). In order to facilitate the acquisition of information literacy skills, schools have to integrate information sources and skills across the curriculum in all subject areas beginning in the earliest grades possible.

The Department of Education needs to collaborate with the school principals of special schools in order to provide outcomes for all pupils in the areas of critical thinking, problem-solving and information skills. This involves integrating media centre instruction and encouraging collaboration between teachers and media teachers (Rader 1995:13). This may have implications for the school budget.

By accessing and using academic information effectively through information literacy skills, adolescents with hearing loss in special schools will not only be able to find materials for their assignments and projects, but also to research opportunities for higher education and jobs, and to discover resources related to their interests and hobbies. It will also help them to find information regarding their medical care and later for parenting information, good buys, maintenance tips, bus and train schedules in a quick and efficient manner because they will be able to know what and where to locate the information that they need (*What should parents know about Information Literacy*, accessed 2005-08-12).

If adolescents with hearing loss are able to acquire information literacy skills, they will experience the advantages of information literacy and of being an information literate person.

3.8.2   The development of information literacy programmes

Information literacy programmes are integral to the education process which seeks to prepare people for the demands of the information age by developing the appropriate knowledge, attitudes, and skills (Breivik, in Boon, 1992:4; Marais, 1992:75) (see also **2.6.4**). Breivik (in Boon, 1992: 40) refers to an "integrated set of skills and knowledge" that can enable a person to live fully. Information literacy has also been described as relating to developing lifelong learning skills essential for living and working in knowledge-based environments, characterised by continuous information explosion and change (UTS, 2008:730). If information literacy programmes are integrated successfully in school, it can create opportunities for adolescents with hearing loss to become self-directed and independent learners because they will have learnt how to use a variety of information sources to expand their knowledge. It will also help them to learn to think critically (Bundy, 2004:6).

Implementing information literacy programmes by means of a school library media programme will help children in school to develop thinking skills in all curricular areas. It requires, however, that information literacy skills be integrated and information technologies be applied to provide access to information resources that are vital and critical to student learning (Spitzer *et al.,* 1998: 37).

A library media centre must provide intellectual and physical access to materials in all possible formats, as well as providing instruction in order to improve competence and to stimulate children in school's interest in reading, viewing and using and applying information and ideas. A media centre should work with other educators in order to design and develop strategies to meet the needs of the children attending their school (Spitzer *et al.,* 1998: 38). The role of a media teacher cannot be underestimated as such a teacher has to provide the necessary resources to encourage the learning process, help the child with hearing loss to acquire the necessary information literacy skills, and collaborate with other teachers.

The library media programme is therefore essential to learning and teaching and information literacy skills are integral to the content and objectives of the schools curriculum (AASL & AECT, 1998:58 in Spitzer *et al.,* 1998:42). In order to succeed in higher education, adolescents with hearing loss need to understand basic media centre procedures, and learn to work independently to access and use academic information, which includes knowledge on how to use bibliographic sources (Norton, 1992:1).

Adolescents with hearing loss in special schools must therefore be aware of the fact that information comes in different mediums. They have to be able to learn how to access and use information because as they grow older they will need information for other purposes whether for personal, functional, social, general, training, political, business, entrepreneurship, environment, demographic, agriculture, legal, statistics, voting or citizenship information (Boon, 1992:232; Luckner *et al.,* 2005:444). Adolescents with hearing loss will not be able utilise this information if they have not learned how to access and use academic information at school or to apply information literacy skills.

Collaboration between teachers and media teachers implies shared goals and a shared vision, and advocates a climate of trust and respect (Muronago & Harada, 1999:9-14). The result of this collaboration is only visible after many years of effort (Callison, 1999:38-40). It could take up to five years (Haycock, 1999) to see changes due to the collaboration that involves the sharing of the pupils' strengths, weaknesses, attitudes and interests and the content to be taught, to which the media teacher adds the understanding of information resources, the training of information literacy skills and methods to integrate them (Doiron & Davies, 1998:20).

Schoolteachers view the role of media teachers more positively in the long run, and tend to work together with the media teacher, especially with regard to the teaching materials used in the classroom. The school media programme must be recognized as part of the curriculum. It also depends upon the principal of the school how much time the children with hearing loss are allowed to spend at the media centre. The principal should also recognise the value of processing and use of information and the need for integration of academic material with classroom content instruction. Cooperation with teachers and team planning are necessary for successful integration of information literacy and school media programmes (Spitzer *et al.,* 1998:43).

Through a school media programme, children can learn to become independent learners or students but this will only occur if enough time is spent in a media library and if children receive adequate information and literacy skills training (Spitzer *et al.,* 1998:41). Teachers face a challenge in motivating adolescents with hearing loss to learn information literacy skills. They have to be prepared to teach children to be critical thinkers and to carry their skills into all areas of their lives in order to be independent. This requires the children to be more self-directed in the learning process and prepares them for problem situations that may occur in other areas of life (Breivik and Gee, 1989:25).

In "Educating Students to Think: The Role of the School Media centre Media Program" (Mancall *et al.*, 1986:18-27), the role of the school media centre was accentuated. The school media teacher's objective is to apply a media programme in order help pupils develop thinking skills, taking into account the existing research on how children process ideas and information, and to assist with the development of an information

skills programme in all curriculum areas of the special school. In other words, a school media teacher applies an information literacy programme. It was found that pupils' scores increased as soon as media teachers spent more time collaborating with and provided training to teachers, giving input into curricula and managing information technology for schools (Russell, 2005).

Academic information is a prerequisite to teaching and learning. It is the core of education, task performance and scholastic achievement. Academic information will enable adolescents with hearing loss to stay abreast of new developments (Boon, 1990:2) and to understand the world in which they live. There is a need for well-trained teachers, effective teaching methods, applicable academic information, and knowledge of the needs of children in special schools, especially adolescents with hearing loss (Sanders, 1982:18).

From the above discussion, it is clear that a school media centre programme can make an important contribution to the education of adolescents with hearing loss (Murray, 2001: 1). For the school to have a successful information literacy programme, it is necessary that the Department of Education supports the Special School, its vision of information literacy, the establishing of a media centre and training of special education teachers and media teachers. The situation in the South African context is discussed in section 3.9.

3.9   THE SOUTH AFRICAN CONTEXT AND TEACHER TRAINING

Policy development in South Africa has received much attention and it reflects South Africa's commitment to address the diversity of the learner population in order to provide a continuum of support within a democratic South Africa. International guidelines were applied for a framework for policy development in South Africa (Lomofsky & Lazarus, 2001:307).

Several government initiatives[1] with regard to education such as the following have been put in place:

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[1] The government policies included in this section do not include a complete list of all policies, but only those relevant to the specific discussion and selected with the specific research question in mind

- The White Paper on Education and Training in a Democratic South Africa (Department of Education, 1995)
- The South African Schools Act (Department of Education, 1996)
- The White Paper on an Integrated National Disability Strategy (Ministery in the Office of the Deputy President, 1997)
- The National Commission on Special Educational Needs and Training and the National Committee on Education Support Services (Department of Education, 1997)
- White Paper & Building an Inclusive Education and Training System (Department of Education, 2001)

The South African government recognises the importance of early intervention for children in the preventative approach proposed in the White Paper for the Transformation of the Health System in South Africa (Department of Health, 1997). This prevention also includes preventing secondary complications, such as developmental delays in language for infants and children with hearing loss. The White Paper on an Integrated National Disability Strategy (1997) furthermore calls for "early identification of impairments and appropriate interventions" within the primary healthcare system, while it also announces "free access to assistive devices and rehabilitation services… to all children under the age of six". It is clear that South African governmental policy guidelines favour the philosophy of screening for hearing loss in infants – it is only the implementation of such policy that is left wanting.

Professor Kader Asmal, MP, Minister of Education at the time, delivered a speech at the launch of "Education White Paper 6 on Special Needs Education: building an inclusive education and training system in South Africa" in Pretoria on 26 July 2001 (Asmal, 2001, accessed 2005-09-12). Referring to the White Paper, the minister stated that special schools would be strengthened to fit in with the quality of education as part of the inclusive education (Education White Paper, 2001 6:3). It was recommended that education and training in South Africa should promote education for all children "…to participate actively in the education process so that they could develop and extend their potential and participate as equal members of society" (Education White Paper 6, 2001:5).

According to the recommendations of the White Paper there should be sufficient quantity and quality of academic information for pupils in the education system. It was found, however, that there was a serious problem in the rural areas where all the schools did not have access to academic information, due to logistic and financial reasons. This was a serious problem and meant that not all children had equal access to academic information. If media libraries were better funded, it will lead to adolescents obtaining higher academic achievement; more media staff can be appointed and more information sources can be added or acquired (Spitzer *et al.,* 1998:74).

South Africa's diversity of languages and cultures also presents a challenge to the adolescent with hearing loss with regard to the provision of translators, specialised training whether at school or tertiary level, and suitable work opportunities. This presents a serious problem because there are simply not enough translators available for all different languages in South and Southern Africa. This fact was highlighted by Mr N. Mbumba, Minister of Education of Namibia at 12 March 2007 when he remarked: "The lack of professionally educated interpreters from the tertiary institutions which is a major concern to the Ministry of Education since having educated qualified interpreters contributes immensely to communicating with, teaching of and learning by deaf learners".

In the past, organisations such as the United Nations Educational, Scientific and Cultural Organization (UNESCO) painted a gloomy picture of training and mentioned that only a minority of 58 countries provided sufficient teacher training regarding disability issues (Special Needs Education, 1994:26). The data of the World Federation of the Deaf (WFD) Survey in the Developing World in 1989 to 1990 also indicated that there was limited access to educational programmes for deaf people in Asia and educational opportunities leading to diminishing role for participating in society, lack in making informed decisions and showing a lack of equalisation of opportunities (Special Needs Education, 1993:86). The current situation may not be far different.

Harrison (1991:84) was of the opinion that the teaching methods of the eighties were insufficient to handle the problems that adolescents with hearing loss encountered. Woolsey *et al.,* (2004: 22, 269-273) and Pagliaro (1998a: 373-379) also found in their

more recent research that there were insufficient teaching skills and that teachers showed a lack of content area background with regard to pupils with hearing loss. These incompetencies have an influence on reading, speech and literacy development with a resultant impact on information literacy. In 1997 Deputy President Thabo Mbeki mentioned before his inauguration that people with impairments will play a more significant role in the South African community and he advocated that there would be no discrimination and lack of training (Van der Spuy, 1997:13). In these papers, it was stated that training and education are basic human rights. Every person, child, adolescent and adult person must be able to benefit from the education opportunities that aim to fulfil their basic learning needs (Department of Education, 1994:24).

3.10 SUMMARY AND CONCLUSION OF CHAPTER 3

Chapter 3 described the influence of hearing loss on the acquisition of information literacy by the adolescent with hearing loss. Attention was given to the onset and identification of hearing loss and the intervention methods that can be implemented in the case of adolescents with hearing loss. The different role players in the life of adolescents with hearing loss were discussed.

Thereafter the site of lesion within the auditory system was discussed with its implications for the child with hearing loss. The consequences of a congenital hearing loss were discussed in detail, with particular attention to the influence of hearing loss on the auditory processing and perception. The researcher came to the conclusion that congenital hearing loss definitely impacts on the development of the adolescent with hearing loss. Available research was studied to determine the impact of hearing loss on intellectual, cognitive, receptive and expressive language development. From this research it can be concluded that adolescents with hearing loss experience a delay in these aspects. The researcher also gave attention to the influence of hearing loss on verbal and non-verbal communication, the influence on literacy, reading, and reading comprehension, as well as on the writing ability of the adolescent with hearing loss.

Attention was given to the educational placement of the adolescent with hearing loss and the issue of inclusive education versus special school was discussed. For the purpose of the study and to answer the research question, special emphasis was

placed on the influence of hearing loss on the development of academic literacy. This involved the discussion of access and use of academic information and the different barriers that adolescents with hearing loss experience that can influence their academic achievement.

The information skills of adolescents with hearing loss were described, as well as the advantages and the development of information literacy programmes. Attention was also given to the influence of hearing loss on the emotional and social development of adolescents with hearing loss.

The chapter ended with a discussion of the South African context, including teacher training and its impact on the adolescent with hearing loss. Finally a summary was provided together with specific conclusions.

By reviewing the literature, the researcher discussed the theoretical underpinnings necessary to conduct the study of adolescents with hearing loss in the current South African setting. This chapter aimed to address the question: *To what extent is the adolescent with hearing loss in special schools able to access and use relevant information for academic purposes?*

CHAPTER 4

METHODOLOGY

"…scientific human inquiry might be the greatest gift that Western consciousness has given the world."
Reason, 1994:9.

4.1   INTRODUCTION

From the theoretical background discussed in **Chapters 2** and **3** and according to the bulk of the existing literature, it is clear that adolescents in special schools are regarded as lacking the ability to access and use academic information. Against this background, the current study was planned and executed in order to investigate the nature of this situation. **Chapter 4** presents the research aims of the study, the research design, a description of the participants, and a full description of the procedures used to collect, record, and analyse the necessary data.

The aims, objectives, and the results of the *pilot study* will be described as part of the procedures. Ethical considerations, data collection procedures of both **Phases I** and **II** of the study, the recording procedures, data analysis, and results will also be discussed. After the analysis of the results of the pilot study, the questionnaires were adapted for the main study. **Chapter 4** concludes with a summary and conclusion.

Research provides a framework for accountable practice. A scientific approach is needed to obtain optimal results. Clarification of terms and concepts is essential and has to be tied to the empirical investigation. Researchers may make use of existing definitions formulated by other researchers or form their own definitions in order to clarify the concepts to be used in a study. After data collection and analysis, alternative explanations have to be investigated, and research-based knowledge has to be applied (De Vos, 1998:6). The current study was designed to determine if adolescents with hearing loss in special schools have the ability to access and use

academic information. For the purpose of this study, this refers to utilizing reference sources such as encyclopaedias and dictionaries in the media centre (Lor, 1990:173).

4.2   RESEARCH AIMS

The main goal of the research was to determine whether adolescents with hearing loss in special schools have the ability to access and use relevant academic information. In order to achieve the main goal, four sub-goals were formulated as indicated in **Figure 4.1.**
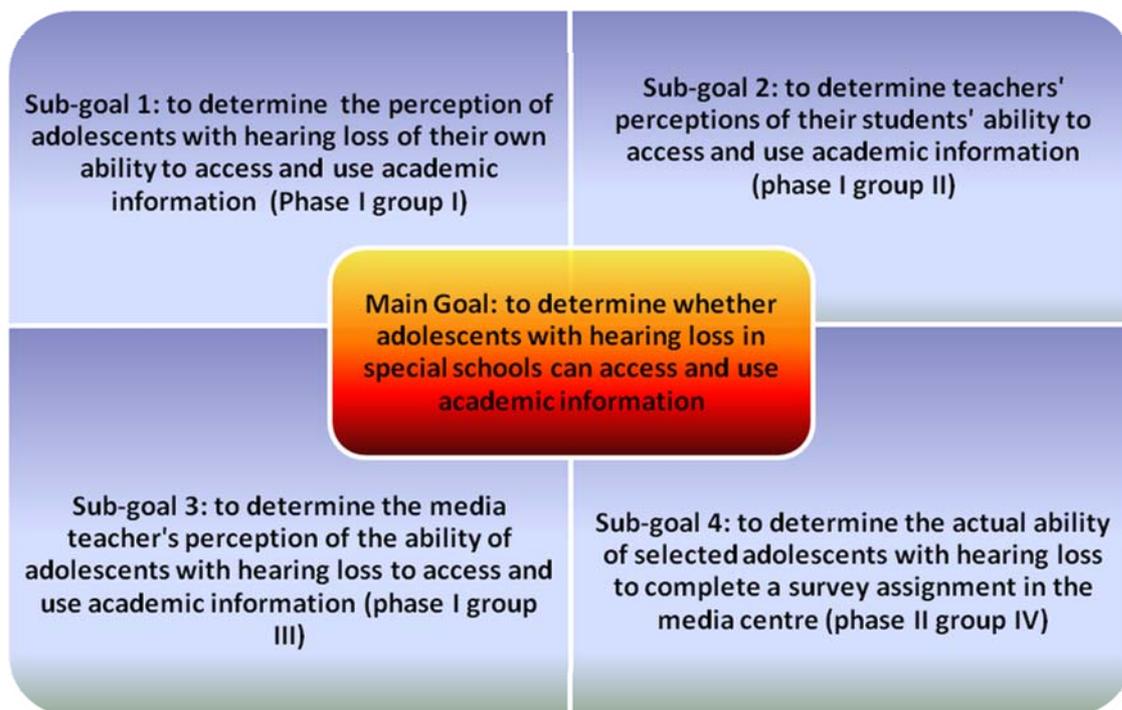
Figure 4.1:   Main goal and sub-goals of the study

Figure 4.1 illustrates how the four sub-goals originated from and contributed to achieving the main goal, namely, to determine the ability of adolescents with hearing loss in special schools to access and use academic information. In order to be able to answer the research question, the researcher needed to select an appropriate research design.

The research design (section **4.3**) is determined by the nature of the specific research, whether basic or applied. The current research was conducted in two phases**.** In **Chapter 2**, section **2.3.6,** the so-called big six (most significant) "information skills" were discussed: a person's ability to define his/her information needs, to know where to find relevant information, how to evaluate, access, and interpret information, and how to communicate it effectively and with insight (Van der Walt, 1992:29; Boekhorst, 1999:57-68). Two of these skills were addressed in this study, namely, the ability of adolescents with hearing loss to *access and to use* academic information, as well as their ability to *evaluate and apply* academic material in the media centre for a particular assignment.

The empirical study consisted of a **pilot study** and a **main study.** The main study was executed in two phases. After the researcher conducted the *pilot study*, adaptations were made to the questionnaires to be used in **Phase I** and the survey assignment of **Phase II.** During **Phase I,** three different groups of participants were used (**Groups I** to **III**) and questionnaires were used to collect data. **Phase II** comprised the survey assignment, completed by **Group IV** in the media centre. The study concluded with the analysis of the data and the interpretation of the results. Each phase used different groups of participants, had a different goal, employed a different design and used different data collection methods**.** The research was planned to proceed according to the following steps (**Figure 4.2**):
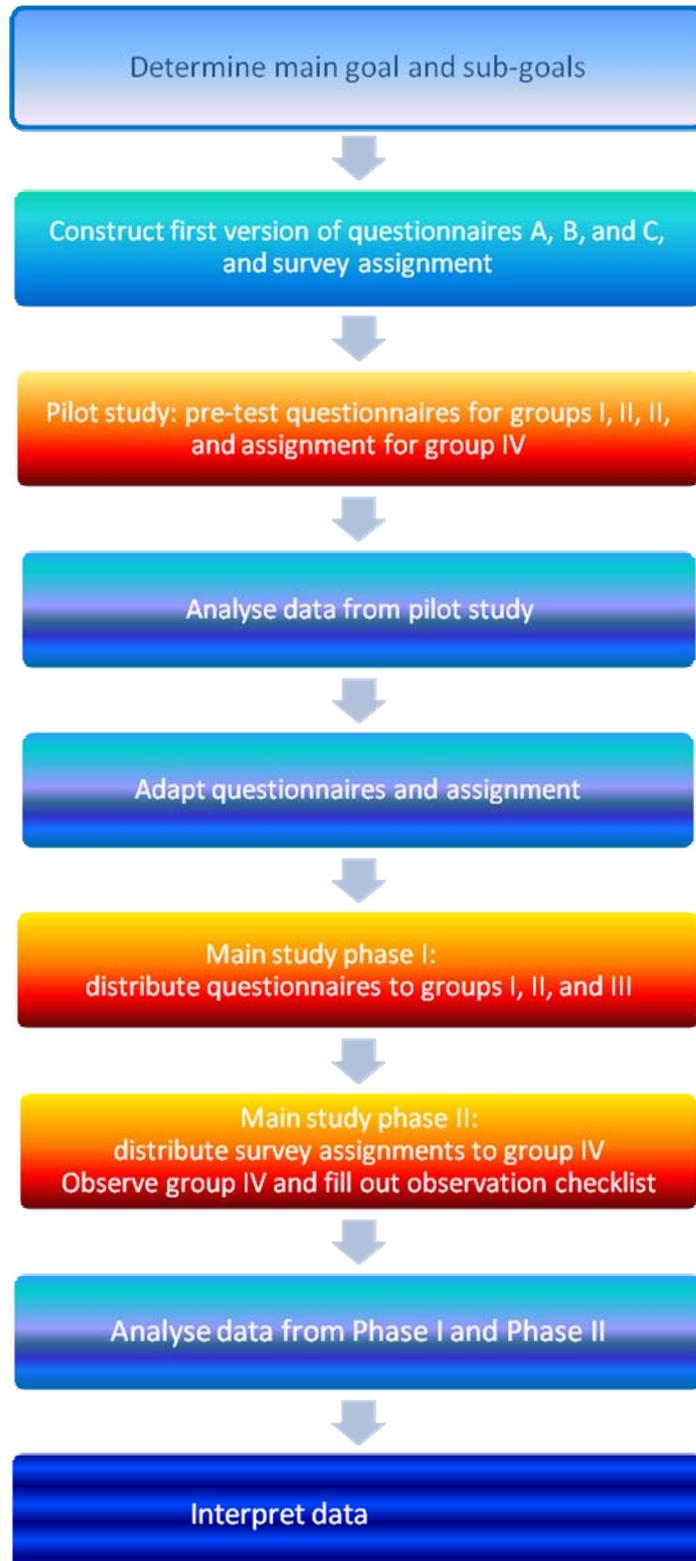
Figure 4.2: Steps in research procedure.

Table 4.1 provides an overview of the goals and planning of the *pilot study* as well as the *main study* (De Vos, 2002:122).

Table 4.1 Indicates the steps in the research procedure. It indicates how the main goal and sub-goals were to be achieved, beginning with the construction of the questionnaires and the survey. Before the execution of the main study, a pilot study has to be executed in order to pre-test the questionnaire for the different groups, in this case for groups I, II, III and the assignment for group IV.

The analysis of data from the pilot study leads to adaptation of the questionnaires and assignment. The main study of Phase I can subsequently be executed and the questionnaires can be distributed to groups I, II and III. Questionnaires will be distributed by the researcher personally, and participants will complete the questionnaires without delay in the presence of the researcher. This takes place at a time and date agreed upon by the researcher and the head of the school involved in each case. In this way the researcher aims to ensure that the data is valid in that it reflects only the opinion of the relevant participants.

The next process comprises the distribution of the survey assignment to group IV of the main study in Phase II where group IV is to be observed in the media centre. The researcher will also fill out the observation checklist.

After these procedures, the data from Phase I and Phase II will be analysed and the data ill be interpreted.

Table 4.1:   Goals of the pilot study and the main study (De Vos, 2002: 122 & Babbie, 2004:248).

	PILOT STUDY (post-test design - De Vos, 2002:122)			
GOAL	To pre-test questionnaire 1 that was used in the main study and to make adaptations to the questionnaire if necessary	To pre-test questionnaire 2 that was used in the main study and to make adaptations to the questionnaire if necessary	To pre-test questionnaire 3 that was used in the main study and to make adaptations to the questionnaire if necessary.	To pre-test the survey assignment that was used in the main study and to make adaptations to the questionnaire if necessary.
PARTICIPANTS	Four adolescents with hearing loss from three different special schools in three provinces were selected (these participants were excluded from **Group I** of the main study).	Two teachers were randomly selected from two separate special schools from three provinces (these two participants were excluded from **Group II** of the main study).	One media teacher from one special school from one province participated in the pilot study (this participant was excluded from **Group III** of the main study).	Two randomly selected adolescents from two different special schools from two provinces (these two participants were excluded from **Group IV** of the main study).
DATA COLLECTION METHOD	Four adolescents with hearing loss from three different special schools in three provinces had to complete a questionnaire (these participants were excluded from **Group I** of the main study).	The two teachers had to complete a questionnaire (these participants were excluded from **Group II** of the main study).	The media teacher had to complete a questionnaire (this participant was excluded from **Group III** of the main study).	Two methods were applied: 1. Assignment (**Phase II)** completed by randomly selected adolescents from **Group I** at two different special schools. 2. Observation form completed by researcher during observation of the adolescents with hearing loss in the media centre.

MAIN STUDY: DETERMINING THE ABILITY OF ADOLESCENTS WITH HEARING LOSS TO ACCESS AND USE ACADEMIC INFORMATION IN SPECIAL SCHOOLS IN THE MAIN STUDY (descriptive survey) (Leedy and Ormrod, 2005:179)				
	PHASE I			**PHASE II**
GOAL	**Questionnaire 1** 1. To determine the perceptions of *adolescents with hearing loss* of their ability to access and use academic information. 2. To determine whether adolescents with hearing loss are aware of the importance of their ability to access and use academic information.	**Questionnaire 2** 1. To determine the perceptions of school *teachers* of the ability of adolescents with hearing loss to access and use academic information. 2. To determine whether teachers are aware of the importance of accessing and using academic information.	**Questionnaire 3** 1. To determine the perceptions of the *media teachers* of the ability of adolescents with hearing loss to access and use academic information. 2. To determine whether media teachers are aware of the importance of accessing and using academic information.	**Survey assignment** To determine the quality and quantity of the academic information used by adolescents with hearing loss in the media centre at special schools.
PARTICIPANTS	326 adolescents with hearing loss (**Group I**) from three different special schools in three provinces. These participants were excluded from the pilot study.	19 teachers (**Group II)** from special schools in three provinces. These participants were excluded from the pilot study.	Six media teachers from one special school (**Group III)** in one province participated in the main study. These teachers were excluded from the pilot study.	48 adolescents with hearing loss (**Group IV)** from three different special schools in three provinces. These participants were excluded from the pilot study.
DATA COLLECTION MATERIAL	A questionnaire completed by **Group I** of the main study was used for the collection of data in the main study	A questionnaire completed by **Group II** of the main study was used for the collection of data in the main study	A questionnaire completed by **Group III** of the main study was used for the collection of data in the main study	**C**ompleted by 48 selected adolescents from **Group I** at two different special schools.

MAIN STUDY: DETERMINING THE ABILITY OF ADOLESCENTS WITH HEARING LOSS TO ACCESS AND USE ACADEMIC INFORMATION IN SPECIAL SCHOOLS IN THE MAIN STUDY (descriptive survey) (Leedy and Ormrod, 2005:179)				
	PHASE I			**PHASE II**
ANALYSIS OF RESULTS	The results were analysed qualitatively and quantitatively as will be described in **Chapter 5**.	The results were analysed qualitatively and quantitatively as will be described in **Chapter 5**.	The results were analysed qualitatively and quantitatively as will be described in **Chapter 5**.	The researcher observed the adolescents with hearing loss in the media centre (**Group IV** from **Phase II**) and completed an observation form based on the observation. The results were analysed quantitatively and qualitatively.

4.3   RESEARCH DESIGN

A research design can be described as "a blueprint or detailed plan for how a research study has to be conducted" (Mouton, 2001:55).   According to Thyer (1993:94), research design refers to the process of "…operating variables so they can be measured selecting a sample of interest to study; collecting data to be used as a basis for testing hypotheses, and analysing the results.**"** Leedy and Ormrod (2005:85) define research design as "the overall structure for the procedures that the researcher follows, the data that the researcher collects, and the data analysis that the researcher conducts." The research design, therefore, includes specifications for procedures of data collection, as well as analysis and interpretation of observation or information.   This implies that guidelines are provided for realising the research through the implementation of the selected design (Leedy & Ormrod, 2005:88; Mouton, 2001:108).

Research can be either *basic* or *applied* (Mouton, 2001:136). *Basic* or pure research searches for *empirical observations* in order to refine a formulated theory. It does not attempt to solve the immediate problems of the discipline but focuses on extending the knowledge base of the discipline (De Vos, 1998:8).   Research decisions are placed within the wider context of a philosophical or meta-science paradigm. Quality checks are performed on a regular basis to attain reliable and valid results. The wide framework will give substance to the researcher's' basic assumptions about the nature of humanity, reality, knowledge and knowledge accumulation, and the place of actions and values in research.

This research study, however, is an *applied study* as it aimed to solve problems in practice. Theories were applied in various ways in the research, following the traditional approach or grounded theory throughout. *Conceptual* frameworks in research are usually *applied* in the following way (Lor, 1990:96-97):

- Facts that are relevant to a specific research problem are investigated and applicable variables are discussed;

- a framework is supplied where theoretical constructs can be formulated within certain theoretical frameworks;

- a general summary of that which is known within the research area is supplied;

- facts that have not yet been observed are predicted and

- an indication of questions relevant for further research is given.

The research design for the current study therefore focused on the end product (Lor, 1990:220) that stemmed from the research problem or question, increasing the validity of the research findings, because it focused on the logic of the research done through systematic and objective gathering of information from a representative sample (Mouton, 2001:56). This research was concerned with addressing questions aimed at determining the nature of a phenomenon (Mouton, 2001:56), which in this case was the ability of adolescents with hearing loss to access and use academic information in special schools. It was done by means of submitting questionnaires and a survey assignment to participants from special schools. Participants included adolescents with hearing loss, teachers, and media teachers.

The research design of the current study was a **descriptive design** devised to describe the current condition of the situation in two ways. A *quantitative research method* was implemented for systematic and objective gathering of information from a *representative* sample through submitting questionnaires, whereas the survey assignment employed *qualitative* methods to investigate characteristics of a group of adolescents with hearing loss with regard to their ability to access and use academic information in the media centre as described in **Table 4.1.** Leedy and Ormrod (2005:94- 96; 106) described *qualitative research* as the process of observing, describing, explaining, interpreting, and presenting a phenomenon in an organised way in order to contribute to the development of a theory. The *qualitative* as well as *quantitative* approaches employed in the research design are described in the following sections.

4.3.1 Qualitative research

For the purpose of this study, the application of a quantitative approach meant that findings were interpreted in terms of their general applicability to a part of the population of adolescents with hearing loss in special schools in South Africa. The purpose was to obtain representative data (De Vos, 2002:271) by submitting questionnaires to adolescents with hearing loss in special schools in South Africa. Certain criteria of quantitative approach had to be met in this study such as *reliability* and *validity* (Leedy & Ormrod, 2005:29; 99-100). *Validity* is the extent to which a type of measurement actually measures what it presumes to measure (Mouton & Marais, 1996). The criterion of *validity* is usually difficult to measure due to constructs being abstract, in the sense that they cannot be directly observed or isolated. Validity is therefore established through a process of accumulating evidence. Scientific measurement cannot exist without validity (Leedy & Ormrod, 2005:28 7 & 100), as it is incumbent upon the researcher to ensure that the instrument measures what it is supposed to measure as accurately as possible (Leedy & Ormrod, 2005:28-29). Various types of *validity* have been described namely *content, face, criterion* and *construct* validity (De Vos, 2001:83-85, 98; Leedy & Ormrod, 2005:92).

- The content validity describes the extent to which the instrument is really measuring the particular characteristic and whether it provides an adequate sample or items representing the concept. In this study, the researcher used the assignment as a valid instrument to measure the various abilities of the participants with hearing loss with regard to academic achievement.
- The face validity refers to the concept of "what it appears to measure". If this type of validity is not considered, the researcher may encounter resistance from the respondents that can affect the results adversely. It is often useful to ensure the cooperation of the participants. For the purpose of this study, by means of submitting a questionnaire and assignment, the researcher attempted to ensure that the participants would give their cooperation. As pointed out in the explanation following **Table 4.1**, the

method of distribution and the completion of the questionnaires also contributed to face validity.

- The criterion validity involves more than one measurement and compares scores on an instrument with external criteria known to, or believed to, measure the concept, trait or behaviour being studied.

Reliability as a criterion is used by social scientists. They describe the term as the accuracy and precision of the selected instrument in a research project, referring to its dependability (Durrheim & Wassernaar, 1999:63), stability, consistency, predictability, reproducibility, repeatability, and generalisation (De Vos, 2001:85; Leedy & Ormrod, 2005:92). This criterion was met by the researcher by means of formulating the items in the questionnaire as clearly and concisely as possible in order to exclude any possible ambiguities that could occur. The criterion of reliability was therefore concerned with the accuracy and consistency of measurements by use of a pilot study (Leedy & Ormrod, 2005:110). It also implied that the information did not vary because of characteristics of the indicator, instrument, or measurement device itself.

The criterion of reliability is necessary to ensure validity, and is more achievable than validity. Reliability can be determined by means of providing concise, clear and simple instructions; keeping the length of the questionnaire within reasonable limits; and by ensuring that questions are user-friendly and can be answered as effortlessly as possible (Leedy & Ormrod, 2005:93 &190-192). The researcher attempted to ensure reliability by first conducting a pilot test in order to ensure reliability. After the pilot test was conducted the main study was executed and the researcher found that the criterion of reliability was met.

A *qualitative* approach was therefore applied and had specific criteria that had to be met.

A qualitative approach requires that the criteria of *credibility*, *transferability*, *dependability*, *conformability (*Babbie & Mouton, 2002:278) and *reliability* be met. These criteria were applied for the *survey assignment* and are described separately.

4.3.1.1 Credibility

Credibility refers to the authentic representation of human phenomena (De Vos, 2002:351; Babbie & Mouton, 2002:277). Credibility may be obtained by the execution of a thorough literature review, such as was done in the current study. Other aspects refer to the carefully constructed discussion of the aims and objectives of the study, and the combination of two or more data collection instruments (e.g. questionnaire survey and survey assignment for this study). The *credibility* of a research design (Leedy and Ormrod, 2005: 93) refers to the extent to which certain outcomes are met and were achieved through accurate phrasing of questions in order to elicit the specific information from the participants in the special school. The researcher, being deaf herself, also had to reflect on her own perceptions and experiences in order to be unbiased so that the findings could not be influenced.

4.3.1.2 Transferability

The criterion of *transferability* refers to contexts outside of the study situation, i.e. applicability (De Vos, 2002:352; Babbie & Mouton, 2002:277) This criterion was also described earlier by Leedy & Ormrod (2005:100). In the case of this study, it was relevant with regard to the media survey assignment involving a small purposefully selected sample of adolescents. In order to reach the criterion of *transferability*, this study involved detailed descriptions of the participants, data collection instruments, procedures and variables in order to allow *transferability* to other contexts.

4.3.1.3 Dependability

Dependability refers to the exact methods of data collection, recording, and combination of research methods, analysis, and interpretation of results in order to provide information on the *repeatability* of the research (De Vos, 2002:352). The criterion of *dependability* was at issue when the researcher attempted to account for the changing situation or conditions in a phenomenon by tracking it to identifiable sources (De Vos, 2002:352). The outcomes of the questionnaire survey were verified with findings in the literature. The terminology that was used had a great

influence on the *dependability* of responses obtained from participants (Leedy & Ormrod, 2005:55). For example, it was clear from the pilot study that the term *academic information* as opposed to the term *information* should be used in questions where participants had to indicate their perceptions regarding various aspects of academic information. This was done in the main study in order to clarify the term and to ensure uniformity and dependability.

Through ensuring the confidentiality of the participants' responses by not letting the participants write their names, the *dependability* of the responses was increased. The participants could freely state their true opinions and views about the topics of discussion. Great care was taken in translation of the questionnaires from English to Afrikaans so as not to change the meaning of content in any way. In some schools, however, interpreters were present, and where participants used sign language, an interpreter assisted and verified that the translations were accurate (Katz, 2002:758-759). An interpreter can play a vital role in the life of an adolescent with hearing loss in the classroom setting, translating words into signing or vice versa, as they are proficient in sign language, cued speech and the oral approach (Katz, 2002:759). This is an important factor in the current research because it influenced the dependability of the responses, and the criterion of reliability was not met as the interpreters could have influenced the responses of the participants.

Discussing questions that were of particular interest and relevance to the participants also increased the criterion of *dependability* (De Vos, 2001:351). This was done after the pilot study was conducted at the specific schools by discussing some items of the questionnaire with the participants. Although the criterion of complete reliability, validity and trustworthiness can never be completely achieved, the application of the above-mentioned criteria contributed to ensure quality measures in this study.

4.3.1.4   Conformability

Conformability refers to the need to determine whether the findings of the study could be verified or confirmed by someone else and whether the researcher's

biases, motivations, interests or perspectives could have influenced the interpretations (De Vos, 2002:352; Leedy & Ormrod, 2005:100). The researcher attempted to take an unbiased stand during data recording and when drawing conclusions from the data. In applying a qualitative approach, the criterion of reliability was also applicable as in the case of a quantitative approach (section 4.3.1).

A qualitative research approach is often chosen over a *quantitative* approach (although not exclusively) because of its adaptive nature in dealing with multiple realities (Leedy & Ormrod, 2005:94; De Vos, 2002:271). Both these approaches were employed in this study to gather information, form interpretations, analyse data, and to reach specific conclusions (Mouton & Marais, 1996). During analysis of the data from the questionnaires, the researcher coded the participants' responses so as to avoid the possibility of inter-coder discrepancy, which could affect the reliability of results (Leedy & Ormrod, 2005:94).

4.4   PARTICIPANTS

The participants in **Phase I** of the study involved **Group I** (adolescents with hearing loss); **Group II** (teachers of adolescents with hearing loss) and **Group III** (media teachers of adolescents with hearing loss). **Phase II** involved **Group IV** (adolescents with hearing loss who completed an assignment in the media centre). All the participants in the different phases of the study are described separately.

4.4.1   Phase I

Group I consisted of adolescents with hearing loss who were in special high schools that provided for children with hearing loss. **Group II** and **Group III** consisted of teachers at the selected special high schools. The participants came from three provinces in South Africa, namely Gauteng, KwaZulu Natal and the Western Cape. These three schools were selected because the researchers knew that these three provinces provided education for adolescents with hearing loss and had specialised teachers.

4.4.2 Phase II

The participants in **Group IV** consisted of adolescents in special high schools selected from the same provinces as in **Phase I.** These special high schools also provided education for adolescents with hearing loss.

4.4.3 Selection criteria for the inclusion of special schools and participants of phase I, II and III

The researcher selected participants for the study from the population of individuals possessing certain characteristics and about which she wished to make decisions (De Vos, 2001:190; Leedy & Ormrod, 2005:210). With regard to special schools, the researcher contacted the Department of Special Education to obtain a list of relevant specific schools. The Department of Special Education provided the researcher with a list of all the special schools in South Africa. The criteria for inclusion of special schools and participants for Phase I and II for the different groups are the following.

4.4.3.1 Special schools

Table 4.2 illustrates the number of participants in each grade of the different schools in the three provinces that were used for the **main study** in **Phase I**.

Table 4.2: Number of adolescents with hearing loss in the selected provinces participating in the study

PROVINCE	SCHOOL	GRADE 7	GRADE 8	GRADE 9	GRADE 10	GRADE 11	GRADE 12	TOTAL
Gauteng	School No. 1	12	14	8	3	3	5	45
	School No. 2	10	10	3	4	4	3	34
	School No. 3	9	10	9	4	6	6	44
	School No. 4	-	25	32	36	10	-	103
KwaZulu-	School	4	6	5	11	4	3	33

PROVINCE	SCHOOL	GRADE 7	GRADE 8	GRADE 9	GRADE 10	GRADE 11	GRADE 12	TOTAL
Natal	No. 5 School No. 6							
		3	6	7	4	8	3	31
Western Cape	School No. 7	6	5	5	7	6	7	36
TOTAL	7	44	76	69	69	41	27	326

Table 4.2 indicates the number of schools in the selected provinces and the number of adolescents with hearing loss in the different grades participating in the study. The different criteria that were applied include the criteria of hearing loss, age, geographical area, language, and participation as indicated in **Table 4.3**, which appears later. It must be noted that Phase I only consisted of Groups I to III whereas Phase II consisted of Group IV (randomly selected group of adolescents with hearing loss from Group I). The researcher excluded the participants in the pilot study from the main study.

The selection criteria for inclusion of special schools are the following:

- The special schools included in the study had to be institutions that specifically provide education for adolescents with hearing loss in South Africa.
- The special schools had to provide education for adolescents in high school from grade 7 to grade 12.
- The special schools had to provide education for adolescents with hearing loss in Afrikaans, English and sign language.
- Due to geographical distances the special schools that were included were in three provinces only, namely Gauteng, Western Cape and KwaZulu-Natal because these provinces provided for education for adolescents with hearing loss. The researcher could not visit more schools and had to take time and cost factors into consideration (see Figure 4.3), as there was not enough time to travel to visit more schools and accommodation was expensive.
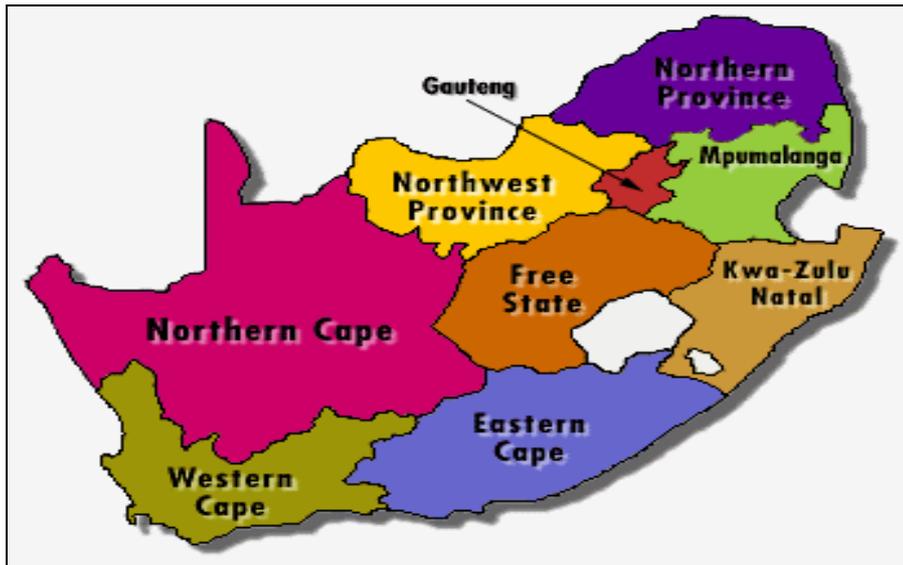
Figure 4.3: Geographical distribution of provinces in South Africa (NMLC Land Development Objective, 1997).

- Schools had to have displayed a willingness to participate voluntarily in research endeavours, as evidenced during previous visits of the researcher.
- The special schools had to employ special teachers that are specifically trained to educate adolescents with hearing loss.
- The headmasters and teachers at the schools that were selected had to express their goodwill towards both their adolescents with hearing loss and the current study, in order to guarantee their full participation.

The participants in **Phases I** and **II** of the study were selected from the special schools mentioned above and consisted of adolescent participants with hearing loss (**Group I**); teachers (**Group II**); media teachers (**Group III**) and a selected group of adolescents (**Group IV**).

4.4.3.2   Phase I: Group I: Adolescents with hearing loss in special schools

Participants in **Group I**, namely adolescents with hearing loss in special schools, had to comply with the following selection criteria in order to participate in the study.

- They had to have an irreversible sensorineural hearing loss, as the purpose of the research was to study the behaviour of adolescents with hearing loss. A temporary hearing loss would not have the same effect on abilities and behaviour as a permanent hearing loss.

- They had to be in Grades 7 to 12 or be age 14 and older to participate in the study. The access and use of academic information becomes a critical issue at this academic level.

- They had to live in the selected geographical areas because the researcher visited these provinces and because these special schools provide education for adolescents with hearing loss.

- They had to attend a special school in South Africa providing education for adolescents with hearing loss regardless of assistive devices being used (Katz, 2002:628) such as a hearing aid or cochlear implant, and using different modes of communication (Katz, 2002:759). Special schools are better equipped than regular schools to work with adolescents with hearing loss.

- They had to be able to read and understand Afrikaans or English, because the Questionnaires were presented in these two languages (See Appendices D to G). For the purpose of this study, the adolescent participants' language base had to be already adequately formed for them to understand the nature of the questions regarding their ability to access and use academic information (Hull, 1998:7).

- They had to be willing to take part in the study in order to ensure a good response rate and reliable results from the questionnaires. Table 4.3 indicates the general selection criteria of participants of Group I of Phase I and also those of Phase II.

4.4.3.3   Phase I: Group II: Teachers at special schools

The selection of two teachers per school was regarded as providing a sufficient number of participants, because according to Leedy and Ormrod (2001:273), a smaller number of participants are required if the participants have a level of involvement with the topic. Furthermore, a smaller group allows the researcher to

exercise more control over the active involvement of each participant. Findings from the pilot study also indicated that this number of teachers was sufficient for participation as is illustrated in **Table 4.11.**

Specialized teachers are well equipped to teach adolescents with hearing loss because they have been specifically trained in this area. The general selection criteria that applied to teachers at special schools are the following.

- Teachers had to be employed by special schools and engaged in educating adolescents with hearing loss.
- They had to have specialised training because their knowledge of adolescents with hearing loss with regard to their background as well as their type and degree of hearing loss was a prerequisite in order to deliver adequate education, training and services for the adolescent with hearing loss.
- Teachers preferably had to see their pupils with hearing loss work on a daily basis in order to get to know them thoroughly and to be aware of their educational needs.
- Teachers had to have experience in collaborating with other teachers and the media centre with regard to planning and executing education programmes in order for the adolescents with hearing loss to benefit from all possible educational opportunities. Where special schools did not have a media teacher, the school teacher or teachers had to work in the media centre when needed and had to have knowledge of all the information sources and how to make them accessible to the adolescents with hearing loss.

The general selection criteria for media teachers (**Group III**) are very similar to that of teachers at special schools, but additional selection criteria were applied.

4.4.3.4   Phase I: Group III: Media teachers at special schools

The media teachers had to answer to the same criteria as the teachers at special schools as set out above. Media teachers also offer specialised education to

adolescents with hearing loss in special schools. The following additional criteria were set to select media teachers at special schools:

- Media teachers had to be employed and work in the media centre at one of the special schools in order to be available for adolescents with hearing loss who needed to access and use academic information.
- The media teachers had to be specifically trained to work in the media centre, and to have knowledge of the different media sources and techniques how to access and use academic sources for academic and personal needs.

The last group of participants (**Group IV)** in this study were selected adolescents with hearing loss who had to complete a survey assignment in the media centre.

4.4.3.5 Phase II: Group IV: Selected adolescents with hearing loss who completed a survey assignment in the media

The adolescents with hearing loss who completed a survey assignment in the media centre were selected from the participants of **Group I.** This sub-group therefore complied with the same general criteria as **Group I**:

- They also had to have an irreversible sensorineural hearing loss, as the purpose of the research was to study the behaviour of adolescents with hearing loss.
- They had to be in Grades 7 to 12 or be age 14 and older to participate in the study.
- They had to live in the selected geographical areas because the researcher visited these provinces and because these special schools provide education for adolescents with hearing loss.
- They had to attend a special school in South Africa providing education for adolescents with hearing loss regardless of assistive devices being used (Katz, 2002:628) such as a hearing aid or cochlear implant, and using different modes of communication (Katz, 2002:759). Special schools are

better equipped than regular schools to work with adolescents with hearing loss.

- They had to be able to read and understand Afrikaans or English, because the Questionnaires were presented in these two languages.   These adolescents were randomly selected and excluded from Group I.

Table 4.3 summarizes the main points of the selection criteria for the inclusion of special schools and the various groups of participants for Phases I and II.

Table 4.3: **General selection criteria for participants in Phase I and Phase II**

GROUP	STATUS	AGE	GEOGRAPHICAL AREA	LANGUAGE	PARTICIPATION
Group I: Adolescents with hearing loss	The adolescents had to have a sensorineural hearing loss as this formed the basis of the research question. They also had to under-stand Afrikaans or English as the questionnaire was presented in either of these two languages.	The participants had to be in Grade 7 to12 or be of the age 14 and older as this group was selected to be the focus group of the study.	The special schools had to be in Gauteng, Western Cape and KwaZulu-Natal.	Afrikaans and/or English, because the researcher presented the questionnaire to the participants in either of these two languages.	Participation was voluntary and the subjects had to complete a letter of consent in order to participate in the study (Leedy & Ormrod, 2005:101) (See **Appendix D).**
Group II: Teachers of adolescents with hearing loss	Teachers that were appointed to teach one or more subjects to adolescents with hearing loss and had to have a sound knowledge of such subjects to educate them in all areas of academic information.	Age was not relevant but at least three years of experience at the special school was required as they needed the experience to work with adolescents with hearing loss.	Special schools in South Africa, except in Northern Cape were included as the researcher was able to visit these schools.	The language was not considered to be a criterion because it was assumed that the teachers could speak English and the questionnaire was presented to them in English.	The teachers had to participate voluntarily and had to complete a letter of consent in order to participate in the study (See **Appendix E**).

GROUP	STATUS	AGE	GEOGRAPHICAL AREA	LANGUAGE	PARTICIPATION
Group III: Media teachers at special schools who work with adolescents with hearing loss	Media teachers appointed to teach at a special school see the subjects with hearing loss at least once a week and had to have knowledge of the subjects with hearing loss.	Age was not relevant but at least three years of experience at the special school was required, as they needed the experience to work with adolescents with hearing loss.	Special schools in South Africa, except in Northern Cape were included as the researcher was able to visit these schools. The teachers were specially trained in the field of adolescents with hearing loss.	The language was not considered to be a criterion because it was assumed that the teachers could speak English and the questionnaire was presented to them in English	Participation had to be voluntary and the media teachers had to complete a letter of consent in order to participate (See **Appendix F).**
Group IV Four randomly selected adolescents from one special school	Adolescents had to have a hearing loss and had to be able to understand Afrikaans or English as the questionnaire was presented in either Afrikaans or English.			Afrikaans, English, or sign language was a criterion as the subjects with hearing loss could speak any of these languages.	Selected participants had to be omitted from the pilot study

4.4.4 Variables considered in selection of special schools and participants

Certain *variables* were considered in the participant selection of the four groups of the study of Phase I and Phase II, namely Group I which consisted of adolescents with hearing loss; Group II, the teachers; Group III, the media teachers; and Group IV, the selected group of adolescents with hearing loss that completed an assignment in the media centre.

A *variable* is a characteristic of the participants, or a condition to which they have been exposed, and that is not the same for all participants (De Vos, 2002:33; Leedy & Ormrod, 2005:254). *Variables* can influence meaningful interpretation of the results or findings and therefore have to be included in the discussion. It is also a symbol to which numerals or values can be assigned. The categories of a variable are its attributes or characteristics (De Vos, 2002:33) and the dependent variables are the specific, measurable indicators that allow the researcher to evaluate any changes or differences that were noted in the study. Dependent variables can therefore be equated to outcomes in a quasi-experimental design (De Vos, 2002:154-155; 39). In descriptive research, variables can have explanatory value.

People with hearing loss can be considered to be a heterogeneous group (Katz, 2002: 759) as was discussed in **Chapter 3,** section **3.7.8.** They are a diverse group with little in common except that they have a decrease in their hearing ability and sensitivity that may occur in one or both ears. There will consequently be potential variables within the population of people with hearing loss. Some of these variables were determined in the biographical section of the questionnaire and played a role in the manipulation of the data.

- *Age a*nd experience of adolescents with hearing loss were considered to be variables as it could help to determine their need for instruction at certain ages with regard to their ability to access and use academic information. The older the adolescents with hearing loss are, and the more background and experience they have, the better they will be able to

access and use academic information. Hull (1998:39) supported this view.

- *The mode of communication* is also an important variable as it greatly influences progress and scholastic performance at school in the case of adolescents with hearing loss. The mode of communication also influences the learning ability of the adolescent with hearing loss. For the purpose of this study, the different modes of communication that applied were oral language or signing, wearing a hearing aid, having a cochlear implant, and making use of finger spelling and/or speech reading. The *auditory-oral* mode of communication is based on the presumption that the acquisition of spoken language is a realistic goal for children with hearing loss. This approach teaches the child to maximize the use of residual hearing in combination with speech reading. These children will not make use of manual communication namely signing (Katz, 2002: 759-761). If children with hearing loss use manual communication, their skills of reading and writing typically tend to be underdeveloped (Hearing loss disorders, accessed 2009-08-30) because phonological awareness is unlikely to develop.

Variables that could not be controlled were variables such as age, level of education, literacy levels, communication modes, level of reading and writing skills, and motivation. It will be necessary to bear this fact in mind when considering the description of participants in Phases I and II of the study.

4.4.5   Description of subjects of phase I and phase II

As was stated before in the study, the subjects came from three provinces in South Africa, namely Gauteng, KwaZulu-Natal and the Western Cape because the researcher knew that the special schools in these provinces provided education for adolescents with hearing loss. There were 326 participants in **Group I,** 19 participants in **Group II,** six participants in **Group III,** and forty-eight participants in **Group IV**. **Group I** were adolescents with hearing loss; **Group II** the special teachers from special schools from the three provinces; and **Group III** the media

teachers, also from the three provinces. **Group IV** was the selected group of participants from **Group I** from one of the three provinces, in this case, Gauteng. All the participants in Group IV were participants with hearing loss from School G1. The schools from each province as well as the number of participants that were included for the study can be seen in **Table 4.4**.

Table 4.4:   Participants (Phases I and II) from the Three Provinces

		GAUTENG	P	KWAZULU-NATAL	P	WESTERN CAPE	P	Total P
PHASE I: ADOLESCENTS WITH HEARING LOSS (Group I)		1. School G1 2. School G2 3. School G3 4. School G4	10 45 103 46	1. School KZN1 2. School KZN2 3. School KZN3	33 31 22	School WC1	36	
Total			204		86		36	326
PHASE I; TEACHERS (Group II)		1. School G1 2. School G2 3. School G3 4. School G4	3 3 2 3	1. School KZN2 2. School KZN2 3. School KZN1	2 2 2	School WC1	2	
Total			12		6		2	19
PHASE I: MEDIA TEACHERS (Group III)		1. School G1 2. School G2	1 1	1. School KZN1 2. School KZN2 3. School KZN3	1 1 1	School WC1	1	
Total			2		3		1	6
PHASE II (Group IV)		School G1	48					
Total			48					48

Key: P = Number of participants

From **Table 4.4** it can be seen that the total number of participants in Groups I and II (participants with hearing loss and teachers) are sufficient to be regarded as representative of the population, while the smaller number of participants in Group III (media teachers) reflect a relatively small total population.

It is now relevant to discuss the biographical and background information of the subjects of **Group I** as these variables may have an impact on the results of the study. The relevant factors include the gender and age of the participants, their *language*, the province where the school is situated, whether the participants with hearing loss are boarders or day scholars, how many years they have been in school, what their mode of communication is, and whether they use assistive devices.

4.4.5.1   Gender and age of participants in Group I

The questionnaires were handed out to 326 respondents, of which 52.5% (*n*=171) were boys and 47.6% (*n*=155) were girls. **Table 4.5** gives an indication of how many adolescents with hearing loss were in the different age groups.

Table 4.5:   Age of adolescents with hearing loss

11 to 14 years old	15 to 20 years	21 and older	Age not clearly Indicated	Total
9% (*n*=30)	70% (*n*=228)	8% (*n*=27)	13% (*n*=41)	100% (*n*=326)

It is generally expected that an adolescent is between the ages of 11 and 15 years. It is important to note that the participants with hearing loss in the selected special schools were older than the expected age of 11 to18 years, as can be seen in **Table 4.5.** There is a high percentage of adolescents with hearing loss between the ages of 15 and 20 years old. Research has shown that adolescents with hearing loss are delayed with regard to academic achievement (Position Statement: Principles and Guidelines for Early Hearing Detection and Intervention Programs, 2007:900-901,908, 910), but Morris and Blatt (1986:321-322) reported a lack of research regarding the relationship between cognitive development and academic achievement in adolescents with hearing loss, the reason being that cognitive tests are very difficult to apply to adolescents with hearing loss. Charlesworth, Charleslesworth, Raban and Rickards (2006:29-51) have indicated that adolescents with hearing loss have difficulty with all areas of academic achievement, especially with reading and mathematical concepts and that they

display lower reading levels than their hearing peers. From the results obtained from the study it became clear that hearing loss affects the participant with hearing loss' ability to learn language and to achieve academically. This view was also supported by De Conde Johnson, *et al.*, (1997:230).

4.4.5.2 Language used by participants

Of the 326 respondents, 89% (*n=*227) indicated that they were adept at using sign language, while 66% (n=152) reported that they were conversant with English and 58%, (*n=*104) with Afrikaans. Only 10% (*n=*27) of the participants indicated they used sign language poorly, 34% (*n=*78) spoke English poorly and 42% (*n= 75)* indicated they found Afrikaans difficult. Research also indicates that the participant with a hearing loss often find a second language difficult to master (Nowell & Marshak, 1994:30, 42; Braden, 1994:32).

4.4.5.3 Provinces where the specials schools are located

The researcher went to three provinces in South Africa and handed out 326 questionnaires to respondents with hearing loss in special schools as shown in **Figure 4.4**.
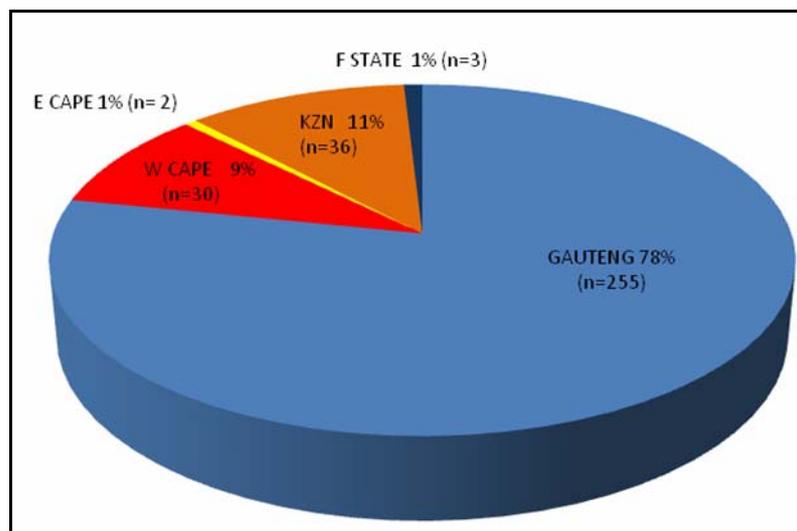
Figure 4.4: Provinces where questionnaires were distributed

From **Figure 4.4** it can be seen that the majority of respondents to the 326 questionnaires that the researcher handed out to adolescents with hearing loss,

came from Gauteng Province (78%, *n* =255), followed by KwaZulu Natal (11%, *n* =36), Western Cape (9%, *n* =30), Free State (1%, *n* =3) and Eastern Cape (1%, *n* =2). The reason for the higher percentage of respondents from Gauteng was that the researcher visited more schools in Gauteng than in the other provinces. Despite the random sampling, the results were therefore more representative of the adolescents with hearing loss in Gauteng Province, as is discussed in Chapter 4, due to logistic reasons (Kothari, 2005:60). .

4.4.5.4   Boarders or day scholars

Participant data shows that 44.4% (*n* =143) of the adolescent participants were boarders at the special schools while 55.6% (*n* =179) were day scholars. This statistic can be important for teachers to know, because the boarders might need more assistance with regard to assignments or school work. Participants in the current study indicated that they did not have much help at the boarding school. This view is supported by the document "Special schools as resource centres" (2002:1). It seems obvious that these adolescents with hearing loss would need more assistance from teachers at school. This can be addressed by spending more time with adolescents with hearing loss, giving them more curriculum based homework and assignments and time to spend at the media centres, and encouraging teamwork amongst adolescents with hearing loss or group work.

4.4.5.5   Years spent in school

The researcher added a question in the biographical section of the questionnaire to determine how long the subjects have been in school. From the results it became clear that adolescents with hearing loss typically spend longer than five years in secondary school, as can be seen in **Table 4.6.** This result is important as it reflects on the academic underachievement of adolescents with hearing loss in special schools. The expected number of years that an adolescent spends in school is usually five years and an adolescent usually leaves school at the age of sixteen. This view is supported by Powers (2003:60).

Table 4.6:   Years spent in School

Number of years spent in school	Percentage of participants
3-5 years	19% (*n* =55)
6-10 years	32% (*n* =104)
10+ Years	26% (n=79)
Response unclear (indeterminate)	27% (n=88
Total	100% (*n*=326)

From **Table 4.6** it can be concluded that 26% (n=79) of the participants in the study spent longer than the expected five years in school. The results also revealed that 54% (*n* =169) of the subjects had a severe degree of hearing loss. This degree of hearing loss can influence the ability of an adolescent with hearing loss to achieve academically, and this is reflected in the extended period of school attendance (Moores, 2001:119 Powers, 2003:61; Charlesworth, Charleslesworth, Raban & Rickards, 2006:29-51; Katz, 2002: 510; Marschark, 2003: S41-S47).

The results also indicated that 46% (*n* =144) of the adolescents with hearing loss had a moderate degree of hearing loss, but even a moderate loss can influence level of academic achievement in the measure that it affects the ability to receive and aquire language.

4.4.5.6   Mode of communication when talking to other people

Adolescents with hearing loss use different modes of communication when talking to other people such as oral (spoken) language, sign language, speech reading and a combination of speech reading and sign language.   In the questionnaires the researcher included questions to determine which modes of communication the adolescents used most often. The results are displayed in **Figure 4.5.**

Figure 4.5. Some participants responded affirmatively to more than one option.

MODE OF COMMUNICATION	NUMBER OF RESPONSES
spoken	*66*
sign language	*158*
speech reading	*54*
speech reading+ signing	*137*
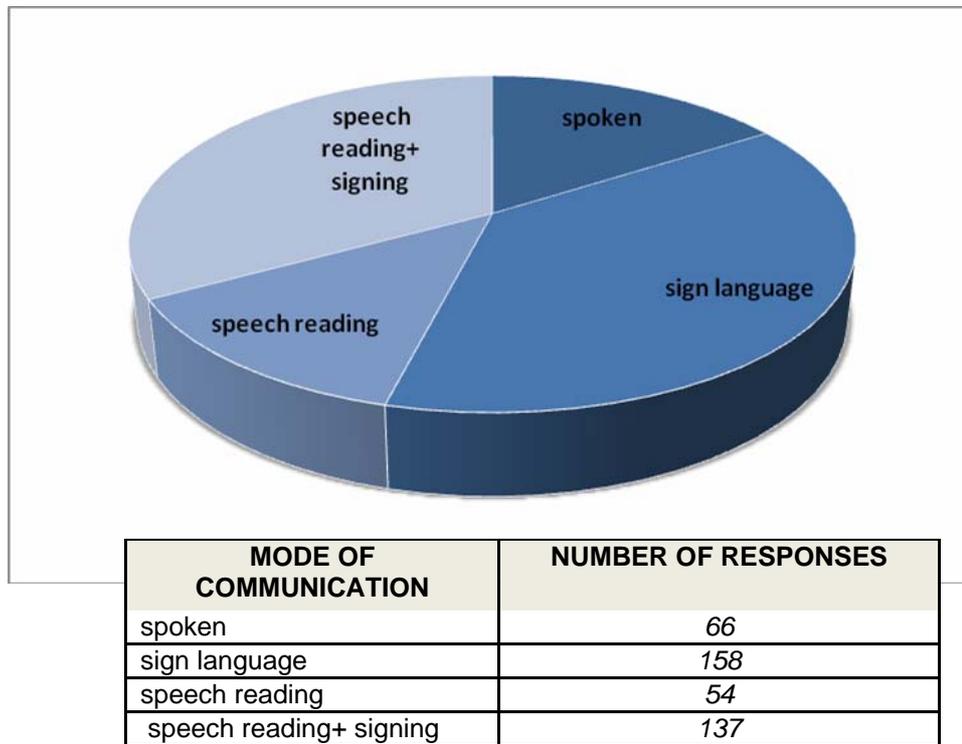
Figure 4.5: Mode of communication of participants with hearing loss

From the results displayed in **Figure 4.6** it is clear that sign language (158) and spoken language (66) were the two modes of communication that were used most in the special schools included in this study. Only 54 of the respondents responded positively with regard to speech reading, while a relatively larger number (137) of the respondents confirmed that they used both speech reading and sign language when speaking to other people. Adolescents with hearing loss as indicated by research such of Katz (2002:759) also often use a combination of speech, signing or cued speech in order to have information relayed to them as correctly as possible.

4.4.5.7 Mode of communication of people communicating with participants with hearing loss

The researcher also asked questions to determine the perception of the subjects with hearing loss concerning which modes of communication other people usually

use when talking to them. The results are displayed in **Table 4.7.** In this question the participants were allowed to select more than one option and therefore the results do not add up to 100%.

Table 4.7:   Mode of communication when talking to adolescents with hearing loss

MODE OF COMMUNICATION ADOPTED BY COMMUNICATION PARTNERS	NUMBER AND PERCENTAGE OF RESPONSES	PERCENTAGE OF PARTICIPANTS WHO PERCEIVED THEIR PARTNERS TO USE THIS MODE
Speaks orally	*n*=70 (18%)	22%
Uses sign language	*n*=131 (34%)	40%
Uses speech reading	*n*=82 (21%)	25%
Uses both speech reading and sign language	*n*=107 (27%)	33%

From **Table 4.7** the conclusion can be drawn that sign language (40%, *n* = 131) was used most of the time, followed by speech reading and sign language (33%, n = 107), then speech reading only (25%, *n* = 82) whereas spoken language was used only 22% (*n* = 70). From these results, it was therefore clear that the subjects with hearing loss' perception were that sign language was used most of the time when other people spoke to them. This view was supported by Katz (2002:759 & Bench, 1992:9). Spoken language is expressive language whereas the typical receptive component is auditory (listening to spoken language). Speech reading is a receptive mode only, but can be used instead of listening to spoken language.   The participants who responded affirmatively to speech reading only would presumably be those who paid no attention to auditory input, that is, they did not attempt to listen to spoken language, but only interpreted the visual clue. From the results displayed in **Table 4.7**, it is clear that more detailed enquiry is warranted to determine who these communication partners were, what their hearing status was, and whether the specific context of the communication made any difference. From both **Table 4.7** and **Figure 4.5** it became clear that sign language was the predominant mode of communication, followed by speech reading and sign language, then the oral method and last of all, speech reading. Signing as main communication mode may influence

an adolescent's with hearing loss ability to master reading and writing skills. Spencer *et al.* (2000:281) noted that sign language generally "…does not have widely accepted written forms", and this has the implication that adolescents with hearing loss cannot acquire literacy skills in their first language to transfer to the written form of a second (spoken) language. It is well documented that written language is difficult for hearing impaired children in special education settings to master, partly because the syntax of sign language differs from the syntax of written (and spoken) language (Geers & Moog, 1989:69; Nelson, 1998:10).

4.4.5.8   Assistive devices

The question relating to assistive devices was not answered by all the participants. The term "hearing aids" appears to have been interpreted as referring to all types of assistive devices, including both traditional hearing aids and cochlear implants. On the questionnaire handed out to the participants with hearing loss, 48% (*n*=114) of the adolescents with hearing loss indicated that they wore hearing aids permanently, while 52% (*n*=122) indicated they wore hearing aids sometimes. Only 7% (*n*=21) of the adolescents with hearing loss indicated that they had a cochlear implant. This information is valuable, as assistive devices can help adolescents with hearing loss in the process of communication, in learning to learn, in developing literacy skills and to process information (Katz, 2002:547, 628, 768; Foster, 1993:245; Hugo, 1987:86).

4.5   MATERIAL AND DATA COLLECTION INSTRUMENTS OF PHASES I AND II

The material and data collection instruments of Phases I and II consisted of questionnaires and a survey assignment. This was necessary in order to answer the research question, namely: *do adolescents with hearing loss have the ability to access and use academic information in the special school?*

4.5.1   Introduction

The *questionnaires* and *survey assignment* together with an *observation form* (Leedy

& Ormrod, 2005) were the material and data collection instruments that were used for **Phase I** and **Phase II** of the study. The questionnaires aimed:

- To determine the perception of adolescents of their own ability to access and use academic information; and
- To determine the perception of regular and media teachers with regard to the ability of adolescents with hearing loss to access and use academic information.

An observation form was utilised by the researcher in order to observe the participants of the study completing a survey assignment in the media centre.

The above-mentioned data collection instruments were designed in order to answer the research question.

4.5.2 Format and design of data collection instruments for phases I and II

Questionnaires and observation forms are among the principle methods of collecting data in survey research in order to answer research questions. A research questionnaire can be defined as "a set of questions on a form which is completed by the respondent in respect of a research project" (New Dictionary of Social Work, 1995:51; Leedy & Ormrod, 2005:3). It is important that the format and design of data collection instruments be designed according to certain principles in such a manner that the criteria of reliability and validity can be ensured.

4.5.2.1 Principles of the format and design of the data collection instruments

The *observation form* was designed in such a manner that the researcher could adequately observe the participants in the media centre. Before the researcher utilised the data collection instruments for the main study, a thorough literature

research was conducted with regard to research methodology. A set of guidelines were established and followed.

a)   Aim and justification for the use of a questionnaire

The researcher aimed to obtain an accurate and broad overview of a representative sample of a large population, namely adolescents with hearing loss in special schools and did this by means of submitting a questionnaire to participants at selected special schools.   Questionnaires are widely used in survey research (Mouton, 2001:152; Leedy & Ormrod, 2005:184-185).

b)   Length

Regarding the length of questionnaires, Oppenheim (1966:35) remarked "…concerning the length, much would seem to depend on personal involvement: the more interested people are in the subject of the questionnaire, the more they are likely to fill in and return even quite lengthy questionnaires". Leedy and Ormrod (2001:156) are of the opinion that a questionnaire should be brief, including only the necessary questions to collect the relevant information, but also long enough to include all the essential questions in order to ensure that a situation does not later occur where information might be missing. It is generally agreed, however, that respondents must communicate as much information as possible in the shortest possible time span.

c)   Instructions

- In order for participants to complete the pilot study and main study questionnaires, the instructions had to be clearly stated in written form (Babbie, 1992:157; Leedy & Ormrod, 2005:190). For the purpose of this study, at the beginning of all the questionnaires, the respondents were asked to complete the questionnaire in all honesty. Clear, precise instructions were provided on the questionnaires, requesting the respondents to mark the appropriate box with a cross. A clear

explanation of the type of expected answer was supplied, forming part of the formulation of each question.

d)   Language

A questionnaire has to be in a language that the participants in the study can understand. For this study, the data collection instruments were presented in both Afrikaans and English depending on the language medium of the selected school. The researcher asked the participants in which language they preferred to complete the questionnaires and survey assignment (Leedy, 2001: 37-42; Mouton, 2001:102).

e)   Formulation of questions

The formulation of questions is important in order to reach the main and sub-goal of the study. Questions in the questionnaire aim to understand and determine every detail of the whole process of the study undertaken by the researcher (Leedy & Ormrod, 2005:54).

- Questions were constructed according to certain principles and the questions were tested beforehand by means of the pilot study. The researcher found that the questions were appropriate for the purpose of the study (Leedy & Ormrod, 2005:110).
- The sentences were specific, brief, short and clear;
- the respondents understood the vocabulary, style and sentence order;
- the question and response alternatives were clear and did not reflect the bias of the researcher;
- the questions were unambiguous and precise;
- negative questions were avoided;
- leading questions that force a specific response were omitted;
- every question was relevant to the purpose of the questionnaire;
- only one thought or item was reflected per question;
- abstract questions were avoided and

- questions were presented in general, non-threatening terms and more sensitive, personal questions followed later in the sequence of questions.

f)   Types of questions

Questions in a questionnaire can be either *open* or *closed* questions (De Vos, 2001:160; Neuman, 2000:260). In the current study, the questionnaires consisted of both types. *Open* questions are questions in which response categories are not specified and where the participant can freely give his/her own response. *Closed* questions are those in which the respondents select one of the specific response choices provided by the researcher. The advantage of the latter type of question is that responses can be easily coded. O*pen q*uestions were included in the teacher and media teacher questionnaires as well as the assignment, and consisted of a blank space that had to be completed by the respondent. The rest of the questions were closed questions where the respondents could select an appropriate answer from a list. The designs of the different questionnaires, the survey assignment and the observation form are described separately.

4.5.2.2   Design of Questionnaires 1 to 3, survey assignment, and observation form

The design of the questionnaires, survey assignment, and observation form required careful consideration in order to ensure optimal data collection.

4.5.2.3   Phase I: Design of Questionnaires 1, 2 and 3 (Appendix D to F)

Phase I consisted of three questionnaires, namely one for the adolescents with hearing loss (see **Appendix D**), one for the teachers in the special school (see **Appendix E**) and one for the media centre teachers (see **Appendix F**). All the questionnaires had the same number of questions and the same format. The questionnaires were divided into three subcategories. The categorizing of the questionnaires provided structure to the observation process and simplified the data

analysis.   Questionnaire 1 was presented in both Afrikaans and English and consisted of four categories namely:

- Category 1:   Demographic section
- Category 2:   Biographic section
- Category 3:   Academic information section
- Category 4:   Media centre section

This questionnaire, described in **Table 4.8,** was used to establish the perception of the adolescents with hearing loss of their own ability to access and use academic information**.**

Table 4.8:   Description of Questionnaire 1

DIVISION OF QUESTIONS	NATURE OF CATEGORY	REASON FOR INCLUSION	FORMAT OF QUESTIONS
Category 1:	Demographic information	To obtain demographic information and to determine whether the participant complied with the selection criteria.	A closed-ended question was used to determine the location of the participant's school. The participant had to tick off the province where his/her school was located.
Category 2: Questions: 1-10	Biographical and background section:	Provided background of the participants in this study.	*Closed-ended* questions were used to obtain relevant information of the participants. *Open-ended* questions were asked and the respondents had to give a written answer, while a *close-ended* question only requested that an answer be selected. The questions were easy and non-threatening in order to

DIVISION OF QUESTIONS	NATURE OF CATEGORY	REASON FOR INCLUSION	FORMAT OF QUESTIONS
			let the respondents feel free to complete the rest of the questionnaire (De Vos, 2001:160-161).
Category 3: Questions 11-18	Academic information section	To determine when academic information was accessed; how, how often, where; what the purpose of the information was; understanding; degree of difficulty; assistance; and the locality of the information.	The format for these questions consisted of one *open-ended question* (question 18) and the remainder of the questions were closed-ended questions.
Category 4: Questions 19-20	Media Centre section	To determine whether the participants - visited the media centre, - used computers and audio-visual methods.	The questions were *closed-ended*

Questionnaire 1 consisted of 20 questions. Using this questionnaire the researcher attempted to answer questions pertaining to the adolescents' background as well as their perception with regard to their ability to access and use academic information. This was done by asking questions that elicited the following information.

- Where their school is;
- What their gender is;
- Their age;
- Their mode of communication with other people as well as how other people talk to them;
- Whether they are at boarding school or day scholars;
- How long they have been at this school;
- Their degree of hearing loss;
- Whether they wear any assistive devices or have a cochlear implant;

- Which type of academic information they use;
- How often, and at what time they access and use academic information;
- The exact location where they access and use academic information;
- The level of perceived difficulty of the various types of academic information;
- Who the various people were that helped them to find academic information and to understand it;
- The purpose of using and accessing academic information;
- If the adolescents with hearing loss went to the media centre and if they used computers.

These questions can be seen in **Questionnaire 1** in **Appendix D**. All the questions were closed-ended and the participants only had to tick off the relevant boxes in response to the questions that were posed to them.

Questionnaires 2 and **3** that applied to the teachers and media teachers were submitted in English only, as it was assumed that they could understand English well and because the reporting language of the research study was English. **Questionnaires 2** and **3** are described in **Table 4.9** and consisted of five categories, namely:

- Category 1:   Demographic section
- Category 2:   Biographical and background section
- Category 3:   Academic information section
- Category 4: Teachers' perceptions of factors influencing the ability of adolescents with hearing loss to access and use academic information
- Category 5: Teachers' perceptions with regard to available academic information in their respective schools and perception of the adolescents' ability to access and use academic information.

Questionnaires 2 and **3** consisted of 18 questions each. These questions addressed the same issues as those in **Questionnaire 1,** except that now the researcher wanted to determine the teachers' and media teachers' perception of the ability of adolescents with hearing loss to access and use academic information.

The open-ended questions that were posed to the teachers investigated which factors they considered to influence the adolescent's use of academic information, if there were opportunities to use academic information, and whether there was a correlation between available information and the curriculum. The teachers could give their opinion on each aspect (De Vos, 2001:160). The questionnaires for the teachers and media teachers were designed in the same manner and had the same questions, as can be seen in **Appendices E** and **F**.

Questionnaire 3 aimed to determine the media teacher's perception of the ability of adolescents with hearing loss to access and use academic information. The questions aimed to determine:

- if academic information was available;
- the amount or quantity of academic information, in other words, if there was enough available academic information for the adolescents with hearing loss to access and use (from this question it could be deduced if there was a lack of enough available or lack of academic material)
- the purpose of visiting the media centre;
- whether assistance was available if needed and asked for;
- which academic information sources were used frequently; and
- if the adolescents with hearing loss could work independently.

The questionnaires also attempted to investigate which strategies were used in the process of trying to locate the relevant academic information.

It must be noted that generally *questionnaire surveys* can have some *disadvantages* such as cases of sampling error, high refusal rates, respondent effects (the lack of someone present to clarify questions posed by respondents) (Mouton, 2001:153), and lack of depth (respondents might not understand the questions) (De Vos, 2001:153-154). The pilot study addressed these aspects (section **4.6.2**). **Table 4.9** explains the different sections of questions that were used in the questionnaires, as well as the reason for including the questions and the format that was applied in each case.

Table 4.9:   Description of Questionnaires 2 and 3

DIVISION OF QUESTIONS	NATURE OF CATEGORY	REASON FOR INCLUSION	FORMAT OF QUESTIONS
Category 1:	Demographic information	To determine the location of the teacher's school	*Closed-ended* question to determine the location of the teacher's school. The teacher had to tick off the province where his/her school was located
Category 2: *Questions 1 to 4*	Biographical and background section	Provides background of the teachers at the special schools	*Closed-ended* questions were used to determine the background such as the teacher's qualification and experience of working with adolescents with hearing loss, collaborating with the media centre and determining if the existence of a media centre was important.
Category 3: Questions 1-10	Academic information section	To determine the teacher's perception of the ability of adolescents with hearing loss to access and use academic information and to arrive at a close approximate indication of the true situation.	Question 1 to 8(a); 9 & 10 were closed-ended. Teachers ticked the relevant boxes. Question 8(b) was open-ended as it aimed to determine the teacher's perception of the reason why some adolescents found academic information difficult to use.
		Use of information; sources and purposes of information; regularity of use;	

DIVISION OF QUESTIONS	NATURE OF CATEGORY	REASON FOR INCLUSION	FORMAT OF QUESTIONS
		computer use to access information and audio visual materials; the degree of difficulty encountered by adolescent with hearing loss regarding specific sources of academic information and assistance given to adolescent with hearing loss.	
Category 4: Question 11	Teachers' perception of factors influencing the ability of adolescent with hearing loss to access and use academic information	Teacher's perception with regards to which factors relevant to this study existed that might have influenced the adolescents' use of academic information, as well as the importance of these factors. The teacher is in daily contact with the adolescent and knows how, why and when the adolescent uses academic information, and if applicable, the teacher also knows about the necessity and/or lack of academic information in the resource centres.	The questions were closed-ended. The teachers had to tick the relevant boxes.

DIVISION OF QUESTIONS	NATURE OF CATEGORY	REASON FOR INCLUSION	FORMAT OF QUESTIONS
Category 5: Questions 12-14	Teachers' perceptions regarding available academic information in their respective schools and perception of the adolescents' access and use of academic information	How the *available academic information* correlated with the *curriculum* as prescribed by the Department of Education, and how *many opportunities* existed for the adolescents to access academic information. Without sufficient academic information, the curriculum cannot fulfil its purpose. Through this item, the lack or sufficiency of information was determined in the resource centres.	Questions 12 (a); 13 (a) were *closed-ended*. The teachers had to tick the relevant boxes. Questions 12(b) and 13(b) were *open-ended* questions in order to allow teachers to give a written account of their opinions with regard to availability of academic information in their schools and their view with regard to the quality and quantity of academic information that was available in the media centre.

A survey assignment was designed for **Phase II** and was given to adolescents in the media centre to complete.

4.5.2.4   Phase II: Design of media survey assignment

The researcher gave an assignment (included as **Questionnaire 4** in **Appendix G1** (Afrikaans) **and G2** (English) to a selected group of adolescent participants from **Phase I** in order to evaluate the quantity of academic material available (i.e. whether enough material was at hand) and quality of use of academic information. It aimed to evaluate, by means of a practical task or assignment, their ability to access and use academic information in the media centre.   The task was given to the adolescents with hearing loss in order to determine if they were aware of the different academic sources in the media centre and to determine if they knew how to

search, locate and apply the relevant academic matter, and if they needed assistance in locating and using such information. The survey assignment also attempted to find out if the adolescents with hearing loss could work independently, whether there was sufficient time to complete the assignment, whether they were computer literate, and if they knew how to access the media centre computer and the Internet sources. **Table 4.10** illustrates the task assignment to be completed by the selected adolescents with hearing loss, its sections and questions, the reason for inclusion of each item, as well as the format of the assignment. The survey assignment also had *open-ended* as well as *closed-ended* questions. The questionnaire utilised in the assignment fulfilled the sub-aims of the study and is described in **Table 4.10.**

Table 4.10: Description of the media survey assignment for adolescents with hearing loss

SECTION	TASK AND PROCESS	REASON FOR TASK ASSIGNMENT
Section 1: (a-c)	The participant was asked to decide on a topic and to write it down, and asked which method he/she usually followed in order to find information on his/her subject.	It was necessary to determine which subject the participant selected and to determine which process he/she followed to find information on the chosen subject.
Section 2 (a-e)	The participant had to go to the card catalogue to find relevant information on his/her chosen topic.	The use of the card catalogue gave an indication that the participant knew how to read and knew that the information was indicated on cards in the catalogue system. It determined the quantity and quality of participants' use of academic information. The questions were *open-*

SECTION	TASK AND PROCESS	REASON FOR TASK ASSIGNMENT
		ended because participants had to indicate whether they understood the contents. The teacher did not take into account if the participant made *spelling or grammar/structure* mistakes.
Section 2 (f-l)	This section aimed to determine if the participant knew how to go to the correct shelf.	Going to the shelf indicated whether the participant knew *where* to find the information - whether it was indicated on the shelf according to author, title and subject.
Section 3 (a-b)	This section aimed to determine if the participant knew where to go and look for encyclopaedias in the media centre	To see if the participant knew where the reference section was, where to find the encyclopaedias, and how to look for his/her specific information.
Section 4 (a-b)	This section aimed to determine if the participant knew where to go and look for dictionaries in the media centre	To see if the participant knew where the reference section was, where to find the dictionaries, and how to look for his/her specific information.
Section 5 (a-f)	This section wanted to determine if the participant knew where the library computer was.	It indicated whether the participant understood the questions, knew where and how to access the library computer. This involved the searching process according to author; title

SECTION	TASK AND PROCESS	REASON FOR TASK ASSIGNMENT
		and/or subject.
Section 6 (a-j)	This section aimed to determine if the participant could perform certain tasks on the library computer, especially with regard to accessing and using the Internet.	It indicated the participant's grasp of how to utilise a computer, the Internet, the different methods of looking for information, filling in the subject box, typing in a web address, and accessing more than one article at a time.

Table 4.10 portrays the process that the adolescents with hearing loss followed in the media centre after having received the assignment that they had to complete. While the adolescents with hearing loss completed the survey assignment, the researcher completed an observation form while observing each participant.

Observation form of researcher

The researcher used an observation form (**Appendix H**) to note the process that the participants followed in the media centre to see if they were able to complete the assignment.

An observation form is designed in such a manner that it guides the researcher in the process of collecting, analysing, and interpreting observations. It was relevant to the research problem and necessary in order to draw conclusions. The observation form also indicated whether questions posed to the participants were reliable and sustainable. The observation form (**Appendix H**) consisted of the following questions:

- What process do the adolescents with hearing loss follow when looking for academic information?
- Do the adolescents with hearing loss write down any information

- when going to the shelf?

- when going to the card catalogue?

- when going to the library computer?

- Do the adolescents with hearing loss take the book to the table?

- At the table, do adolescents with hearing loss glance through the book?

- Do adolescents with hearing loss make any notes after looking through the book?

- What processes do the adolescents with hearing loss follow at the computer?

- Do they make any notes on a piece of paper?

- What do they write down?

- Do they know how to go online?

- Do they know how to access the Internet?

- Do they open the Internet button on the computer?

- Do they type in an Internet address?

- Do they select a search engine?

- After having found the article, do adolescents with hearing loss know how to open the relevant document?

- Do adolescents with hearing loss read the document?

The observation form was a useful tool for observing users of a media centre, enabling the observer to note their behaviour regarding accessing and using of media centre materials and services.

4.6 PROCEDURES OF PHASE I AND PHASE II

The researcher conducted the study in an ethical manner, upholding and defending the principles of the social science approach. These ethical considerations are described as supported by De Vos (2002:62-75).

4.6.1 Ethical considerations

Ethical considerations are a set of moral values and principles that are widely accepted by scientists conducting research. It provides guidelines on correct

conduct regarding the social science approach to respondents and other participants. For the purpose of this study, the ethical considerations involved the following:

- Ensuring confidentiality of the participants (De Vos, 2002: 67; Leedy & Ormrod, 2005:102). The participants were not asked to fill in their names and/or surnames on the questionnaires, and the names of schools were not indicated in the results.
- No harm was done to participants, emotionally or physically. The researcher also attempted to ensure the physical safety of respondents (De Vos, 2002:64; Leedy & Ormrod, 2005:101-102). During the pilot study, it was clear that no harm was done to the participants.
- No deceptions occurred. There was no deliberate misrepresentation of facts, or of the purpose of study, to the respondents. The questions in the questionnaires were presented in a clear, precise and unambiguously manner (De Vos, 2002:64; Leedy & Ormrod, 2005:102) as could be seen in the pilot study.
- Violation of privacy was avoided. The participants were ensured in a letter (**Appendix A**) that no person other than the researcher and supervisors will observe the findings or answers of specific respondents (De Vos, 2002:67; Leedy & Ormrod, 2005:102).
- Letters requesting consent were sent to participating selected schools (**Appendix M**).
- The findings will be released and made available to the reading public in written form as a scientific research report (De Vos, 2002:71). This was also explained in the letter of informed consent (**Appendix M**). Results will be published in a thesis and at least two articles will be published in an academic journal.
- All the data will also be archived for at least 15 years.

After ethical clearance was obtained from the Research Committee of the Faculty of Humanities at the University of Pretoria (**Appendix I**), the researcher conducted a pilot study.

4.6.2   Pilot study

The pilot study formed an integral part of the research process because it aimed to confirm the "exact formulation of the research problems and a tentative planning of the modus operandi and the range of investigation" (De Vos, 2002:210). According to De Vos (2002:211), the Dictionary of Social Work defines a pilot study as "…the process whereby the research design for a prospective survey is tested". The value of the pilot study was that it enabled the researcher to make the necessary adaptations to the data gathering instruments in order to execute the main study in a more reliable manner. The pilot study was conducted with a selected group of the participants of the study, namely the adolescents with hearing loss in special schools, the teachers and media teachers of **Phase I** and **Phase II**. The procedures for data collection and recording were described after the results of the pilot study. The pilot study for this study aimed to ensure that

- the questionnaires contained all the information that was necessary for the completion of the main study;
- the participants were able to understand and complete all the sections of the questionnaires presented in the main study; and
- the questionnaires and survey assignment were evaluated to ease the process of administration of the questions, as it would indicate the deficiencies of the questionnaires and survey assignment in order for the researcher to make the necessary adaptations for the main study.

4.6.2.1   Aim, objectives, and procedure of the pilot study

The aim of the pilot study was to pre-test the data collection instruments that were used in the main study, in order to obtain accurate and reliable data. All social research requires careful planning. The pilot test was used by the researcher to ensure that the method of collecting data would be time, cost, and goal effective. In order to carry out scientific research on a particular problem, the researcher should have comprehensive knowledge about it (De Vos, 2001:178; Leedy & Ormrod,

2005:110). The researcher aimed to determine if the protocol was valid and sufficient to answer the research question and the aim of the study. A pilot study would increase the reliability and validity of the main study that had to be undertaken (De Vos, 2002:166). It aimed to ensure that all the information was included that is necessary to complete the study, and that the respondents would be able to understand and complete all the sections of the questionnaires. The pilot study also aimed to evaluate the ease of administration and duration of the investigation (De Vos, 2001:178).

The pilot study afforded the researcher valuable insight in various ways (De Vos, 2002:11; Leedy & Ormrod, 2005:110):

- It broadened the researcher's perspective;
- It prepared the researcher for data collection to conduct the used in the main study (De Vos, 2002:211);
- It gave the researcher an indication of the kind of response that might help to answer the research question (Leedy & Ormrod, 2005:192-193);
- It helped the researcher to foresee some problems that might occur during the main investigation;
- It helped the researcher to evaluate the questions (De Vos, 2002:211). It aided the researcher in making adaptations to the data collection instruments, i.e. the questionnaires and survey assignment (**Appendix D-G**), to be used in the main study.

The pilot study was found to be a valuable tool for identifying aspects of the data collection instruments needing refinement for the main study. It was concluded that the methodology applied was the most suitable and that the researcher could continue with the main study and to gather data to proceed. **Table 4.11** illustrates the aims and objectives of the pilot study and the procedure that were followed in order to reach these aims and objectives.

Table 4.11: Aims, objectives, and procedures of the pilot study (De Vos 2002:11; Leedy & Ormrod, 2005:110; 192; Neuman, 2000:253-272; Babbie & Mouton, 2002:233-249)

AIMS AND OBJECTIVES OF THE PILOT STUDY	PROCEDURES FOLLOWED DURING THE PILOT STUDY
1. To ensure all the necessary information was included to answer the research question	1. The researcher viewed the questionnaires on completion to determine whether any questions had been omitted. After the respondents completed the questionnaires, the researcher discussed the questionnaires with the respondents in order to establish the reasons why certain questions were omitted.
2. To evaluate the clarity and level of understanding of the terminology used in the questionnaires	2. The researcher handed out the questionnaires to be completed to Pilot Groups I to III. After completion of the questionnaires, the respondents were asked if they understood the terminology that was used in the questionnaires.
3. To determine the appropriateness and relevancy of the choice of words	3. The researcher discussed the questionnaires on completion in order to determine if they were satisfied with the choice of words that were used.
4. To determine whether questions were too invasive or of a sensitive nature	4. After the respondents completed the questionnaires, the researcher asked them if they considered some questions to be too invasive or too sensitive in nature.
5. To test the unambiguousness of the individual questions in the questionnaire	5. After the questionnaires had been completed, the researcher asked the respondents if the questions were clear or if they were confusing.
6.To determine the appropriateness and relevance of the content of questions	6. On completion of the questionnaires, the researcher asked the respondents to state whether they found the content of the questions appropriate and relevant.
7. To test the level of understanding of the instructions in the questionnaire	7. On completion of the questionnaires, the researcher asked the respondents if they found the questions to be too difficult to understand.
8. To test the ease and convenience of coding of the instructions in the questionnaire	8. The researcher checked if the coding correlated with all the possible answers after the respondents had handed in the questionnaires.
9. To determine the duration of completion of the questionnaires and survey assignment	9. The participants completed the questionnaires while the researcher noted the time the respondents took to complete the questionnaires. On completion the subjects had to indicate if the allocated time was sufficient.
10. To evaluate the strategies proposed for data analysis	10. The researcher took notes of the discussion with the subjects and made notes in order ton analyse the questions and to answer the main and sub-goals of the study.

AIMS AND OBJECTIVES OF THE PILOT STUDY	PROCEDURES FOLLOWED DURING THE PILOT STUDY
11. To test the method and observation of the assignment	11. The researcher checked if the method and interpretation/analysis of the questionnaires correlated with the main and sub-goals of the study. The researcher also aimed to determine if the meaning and implications of research results within the study were clear and if it could be compared to the demands and expectations of theory, which served the additional purpose of verification.

From **Table 4.11** it is clear that the aims, objectives, and procedures of the pilot study were such that the researcher was able to make the necessary adjustments to the main study. There were four participants with hearing loss in Group I who completed **Questionnaire 1**; two teachers of Group II that completed **Questionnaire 2** and one media teacher of Group III who completed **Questionnaire 3** and four of **Group IV** who completed a **survey assignment.** The researcher analysed the results of the pilot study, and subsequently made the necessary adaptations to the instruments to be used in the main study.

4.6.2.2 Results of the pilot study and ensuing adaptations

The pilot study was conducted with regard to both Phase I and Phase II. Due to practical reasons, it was impossible to include a total sample frame of adolescents with hearing loss in all the selected special schools. A sample of the population of the adolescents in the secondary special schools was selected, namely **t**wo adolescents with hearing loss from School G1 and two from School G2. Two teachers and two media teachers from special schools were also selected for the pilot study. These selected participants used for the pilot study were excluded from the main study. The first set of results to be discussed is that of Group I of Phase I, which consisted of participants with hearing loss in special schools. After the questionnaire had been completed, the researcher had a discussion with the participants and recorded their comments regarding the instructions on the questionnaires, the phrasing of sentences, terminology used, content, and time that was allowed for completion of the questionnaire. This was done in order to make the necessary adaptations for the main study. The researcher noted certain problems that were encountered when completing the questionnaire.

4.6.2.3 Results and adaptations: Group I

The results from Group I are described in **Table 4.12**. The table indicates which instructions were not clear, and also the adaptations that were implemented.

Table 4.12: Aims, objectives, and procedures of the pilot study (De Vos 2002:11; Leedy & Ormrod, 2005:110; 192; Neuman, 2000:253-272; Babbie & Mouton, 2002:233-249)

AIMS AND OBJECTIVES OF THE PILOT STUDY	PROCEDURES FOLLOWED DURING THE PILOT STUDY
1. To ensure all the necessary information was included to answer that research question.	1. The researcher viewed the questionnaires on completion to determine whether any questions had been omitted. After the respondents completed the questionnaires, the researcher discussed the questionnaires with the respondents in order to establish the reasons why certain questions were omitted.
2. To evaluate the clarity and level of understanding of the terminology used in the questionnaires.	2. The researcher handed out the questionnaires to be completed to Pilot Groups I to III. On completion of the questionnaires, the respondents were asked if they understood the terminology that was used in the questionnaires.
3. To determine the appropriateness and relevancy of the choice of words.	3. The researcher discussed the questionnaires on completion in order to determine if they were satisfied with the choice of words that were used.
4. To determine whether questions were too invasive or of a sensitive nature.	4. After the respondents completed the questionnaires, the researcher asked them if they considered some questions to be too invasive or too sensitive in nature.
5. To test the unambiguousness of the individual questions in the questionnaire.	5. After the questionnaires had been completed, the researcher asked the respondents if the questions were clear or if they were confusing.
6.To determine the appropriateness and relevance of the content of questions.	6. On completion of the questionnaires, the researcher asked the respondents to state whether they found the content of the questions appropriate and relevant.
7. To test the level of understanding of the instructions in the questionnaire.	7. On completion of the questionnaires, the researcher asked the respondents if they found the questions to be too difficult to understand.
8. To test the ease and convenience of coding of the instructions in the questionnaire.	8. The researcher checked if the coding correlated with all the possible answers after the respondents had handed in the questionnaires.

AIMS AND OBJECTIVES OF THE PILOT STUDY	PROCEDURES FOLLOWED DURING THE PILOT STUDY
9. To determine the duration of completion of the questionnaires and survey assignment.	9. The participants completed the questionnaires while the researcher noted the time the respondents took to complete the questionnaires. On completion the subjects had to indicate if the allocated time was sufficient.
10. To evaluate the strategies proposed for data analysis.	10. The researcher took notes of the discussion with the subjects and made notes in order to analyse the questions and to answer the main and sub-goals of the study.
11. To test the method and observation of the assignment.	11. The researcher checked if the method and interpretation/analysis of the questionnaires correlated with the main and sub-goals of the study. The researcher also aimed to determine if the meaning and implications of research results within the study were clear and if it could be compared to the demands and expectations of theory, which served the additional purpose of verification.

From **Table 4.12** it can be seen that the pilot study enabled the researcher to make the necessary adaptations to ensure that the participants in the main study could answer the questionnaire appropriately. It was also clear that the coding of responses was completed without difficulty. The respondents completed the questionnaire and the researcher noted the time the respondents took to complete the questionnaire. The respondents were asked if they considered the time to complete the questionnaire too long or whether the time was reasonable. It was established that it took approximately one hour to complete the questionnaire in the case of the adolescent with hearing loss whose communication mode is oral. In the case of the adolescent with hearing loss who uses sign language, it took one and a half hour to complete the questionnaire.

Strategies employed for data analysis seemed appropriate. The strategy for testing the method and observation of the assignment proved to be too long for the researcher to complete. According to Leedy and Ormrod (2002:289), the sampling method, measurement instruments, and data collection procedures of a pilot study should be described with great precision. The next results to be discussed are that of Group II and Group III of Phase I of the pilot study.

4.6.2.4 Results of the pilot study and ensuing adaptations

As in the case of Questionnaire 1 (Group I), the pilot study involved two participant teachers from two schools for Questionnaire 2. One media teacher participated in the pilot study for Questionnaire 3. After the questionnaires had been completed, the researcher made the necessary adaptations to the questionnaires before implementing them in the main study. **Table 4.13** describes the questionnaire items that were queried, followed by the comments or suggestions made by the teachers and media teacher and the adaptations made by the researcher.

Table 4.13: Results of pilot study, comments/suggestions and adaptations regarding Questionnaires B and C.

Results of Group II and Group III (Questionnaires B and C)	Comments/suggestions made by teachers and media teacher	Adaptations of the questionnaire items
All the questions referring to school information were changed, that is, questions 11 to18 and question 20.	It was considered that the terminology might confuse the participants with hearing loss.	The researcher changed "school information" to "academic information". This was done in order to ensure that the participants would know it referred to school information.
The type of information referred to as *films, slides*	The teachers found these items were not necessary as these information types were no longer being used in the curriculum.	The researcher changed the words to *educational videos* in order to prevent confusion of type of information sources.

As can be deduced from **Table 4.13**, the researcher had discussions with the teachers at the special schools with regard to their perceptions of the content of the questionnaire that was used, the terminology, the clarity, time allocated, and possible questions that were omitted. This was necessary in order to make adaptations for the main study. From the results it became clear that the participants found the level and understanding of the terminology used in the questionnaire to be clear. The participants did not find the questions to be of an invasive or sensitive nature. The participants considered the level of understanding comprehensive and sufficient. All the participants considered the content of questions to be appropriate and relevant. It was established that it took approximately 20 minutes for these participants to complete the questionnaire.

4.6.2.5   Results and adaptations: survey assignment

Two adolescents with hearing loss were selected from School G1 and two from School G2 to complete the survey assignment in the media centre. Before the commencement of the survey assignment, the participants were informed of the aim and purpose of the questionnaire. Their results are described in **Table 4.14**.

Table 4.14:   Results and adaptations of Group IV of the pilot study of Phase II

RESULTS OF GROUP IV OF PHASE II OF THE PILOT STUDY	ADAPTATIONS
In the case of the participants with hearing loss who used an oral mode of communication, the terminology was found to be clear and concise.	In the case of participants with hearing loss who used sign language and did not understood the questions, it had to be explained by the teacher or by an interpreter if there was one present (Katz, 2002:759).
The participants with hearing loss with oral mode of communication found the words appropriate and relevant, but not the adolescent with hearing loss who used sign language. They did not understand the discussion afterwards with the researcher.	The researcher had to simplify the questions in order for the participants to understand the questions better as in the case of Questionnaire 1 in Phase I
The participants did not have sufficient tasks to complete in the media centre to be able to answer the research aim.	The researcher changed the format and the content of the questions to categories and sub-sections. This was done in order to ensure that the participants could understand the questionnaire better and that most of the academic sources could be accessed and used.
It was established that it took approximately 1 hour to complete the	In the case of the participants with hearing loss who used sign language, it

RESULTS OF GROUP IV OF PHASE II OF THE PILOT STUDY	ADAPTATIONS
questionnaire in the case of the participants with hearing loss whose communication mode is oral	took one and a half hour to complete the questionnaire survey.

In **Table 4.14** adaptations in the same table described the survey assignment of **Phase II** that was concerned with the *process* of how academic information is described. The *researcher observed the adolescent with hearing loss* in the media centre by providing a survey assignment, which had to be completed by four selected adolescents with hearing loss in a special school. A selected group of adolescents (**Group IV** of **Phase II**) completed a survey assignment from which the researcher could also note the deficiencies that could be corrected in order for the main study to be more accurate and reliable. These findings were very important as the researcher obtained valuable information regarding the design of the survey assignment that lacked in reaching the objectives of the study.

In the case of the participant with hearing loss who used oral communication skills, the duration of the survey assignment took 30 minutes each but in the case of adolescent with hearing loss using sign language the survey assignment took up to an hour, or even longer. On completion of the survey assignment, the researcher took notes of the participant's behaviour and following of procedures. This was done by means of an observation form with tick-boxes (See **Appendix H**). On completion of the survey assignment, the participants were thanked for their co-operation, time and contribution towards the research project. The coding of responses was completed without difficulty by the researcher. Strategies employed for analysis of data seemed appropriate.

The *data collection procedures* for **Phases I** and **II** are described in the following section.

4.7   DATA COLLECTION PROCEDURES FOR PHASE I AND PHASE II

Certain steps had to be taken before the researcher could commence with data collection for **Phase I** and **Phase II** of the main study.

4.7.1   Preparation for the study

The preparatory procedures comprise activities relating to application forms; the research proposal; consulting the Department of Special Education; phone calls and faxes; and sending out letters of consent and a cover letter (Neuman, 2000:269). The course of action, aims, and content of these procedures are described below.

Two institutions received *application forms* requesting permission to conduct this study (Levitz, 1991:199). The first application form was sent to the Research and Ethics Committee of Humanities of the University of Pretoria, applying to do a post-graduate study at the University. The letter from the Committee granting permission appears in (**Appendix J**). The researcher also had to submit a research proposal to the University of Pretoria. The second application form (**Appendix K**) was sent to the Office of the Senior Manager for the Strategic Policy Development of the Gauteng Department of Special Education requesting permission to conduct a study at selected specials schools. The researcher had to explain the purpose and value of the study. After permission was granted, the researcher visited the Department of Special Education in Pretoria to obtain the particulars of special schools for the study.

4.7.1.1   Consulting the Department of Special Education

The researcher went to the Department of Special Education in Pretoria and requested an interview with Dr Naicker, Director of Special Education, and asked him for a list of special schools that provided education for adolescents with hearing loss. Dr Naicker supplied the researcher with a list of all the special schools (**Appendix P**). From this list, the researcher contacted possible schools by making *phone calls* and sending *faxes*.

4.7.1.2 Phone calls and faxes

After obtaining the list of special schools from Dr Naicker, the Director of Special Education in Gauteng, the researcher made phone calls to several schools in all the Provinces, explaining the purpose and aim of the study and asking permission to send faxes regarding the study. The researcher informed the schools that the Gauteng Department of Special Education had been contacted. An application form was sent to the headmasters of the special schools who indicated that they were willing to participate in the study. A copy of the fax can be seen in **Appendix L**. The fax requested the following information: Name of school, the number of adolescents with hearing loss in each grade from Grade 7 to Grade 12; whether the adolescent with hearing loss used an assistive device or a cochlear implant; and what the mode of communication was. The fax also asked if the school had a *media centre.* Determining the number of possible participants in each grade was important in order for the researcher to have enough questionnaires and survey assignments when visiting the special schools. After the faxes were returned, the researcher decided which schools to include in the study and sent out *letters of informed consent* (**Appendix M**) to the selected schools. The researcher selected only certain special schools that were logistically practical to visit. The special schools that were not selected for the study were contacted by phone and thanked for replying, and it was explained that, due to logistical reasons, they could not be included in the study.

Schools that indicated they were interested in participating in the study but failed to return the fax with the requested information with regard to number of adolescents with hearing loss in every grade, were again contacted by phone and fax after a period of three months. They were reminded to complete and return the fax with their necessary information, to ensure a higher return rate (Leedy & Ormrod, 2005:192-193).

4.7.1.3 Consent form and letters of informed consent

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- The researcher sent letters of informed consent (Appendices A-C & M-N) that contained a detailed outline of the project indicating the researcher's

actions and explaining the purpose of the research and the questionnaire; the procedures that would be followed; and the possible advantages of the study. These letters indicated the researcher's competence to undertake the study (De Vos, 2002:65; Leedy & Ormrod, 2005:102). Letters of consent were sent to principals of the selected schools, the teachers and media teachers, the parents and the adolescents with hearing loss at the special schools.

- The letters of informed consent ensured the schools, the teachers and media teachers, the parents, and the adolescent participants that their personal particulars as well as any given information would remain confidential. These letters were signed by all who were willing to participate in this study. It was assumed that they acknowledged the purpose and procedure of the project that would be undertaken by the researcher (De Vos, 2002:65; Leedy & Ormrod, 2005:101). Respondents were also given the option and right to terminate their participation in the study at any time should they wish to do so (De Vos, 2002:65; Leedy & Ormrod, 2005:102). The following documents were submitted:

- An informed consent form (**Appendix M**) was sent to the principals of the participating schools. The purpose of the study was explained and permission was requested for adolescents from Grade 7 to 12 to participate in the study in the questionnaires and survey assignment. The letter asked the principal if he/she could inform the teachers of the intended study. The researcher also asked if the school principal could supply an interpreter if deemed necessary in the case of subjects with hearing loss who used signing as a mode of communication (De Vos, 2001:25; Katz, 2002:759). The letter also gave an indication regarding the time that the participants would need to complete the questionnaire, namely 30 minutes to an hour, especially in the case of the assignment to be completed in the media centre. However, longer time was suggested for subjects with hearing loss using sign language and who required interpreters to assist them in understanding the questions posed to them.

- Informed consent forms (Appendices B and C) were sent to the teachers and media teachers at participating schools requesting their consent to

complete the questionnaire and permission to conduct the survey assignment.

- An informed consent form (**Appendix N**) was sent to a group of parents of the adolescent participants. Only one school asked for this letter of consent to be sent to the parents of participating adolescents with hearing loss, because the principals of the other schools made the decision on behalf of the parents that the adolescents with hearing loss were allowed to participate in the study.

- An informed consent form (**Appendix A**) was sent to the adolescents with hearing loss requesting his/her voluntary participation in the study. The researcher requested the participants to complete the questionnaire in all honesty and informed them that if they wanted to withdraw from the study, they could do so at any time.

- A cover letter (**Appendix O**) accompanied the letters of informed consent sent to the principals of the selected special schools.

4.7.1.4   Cover letter (Appendix O)

A cover letter was attached to the letter of informed consent. This was done to acquaint the principal of the selected school with the researcher. The letter of consent was to inform the principal of the aim, purpose, and motivation of the study. This was done in order to encourage participation and cooperation (Baker, 1988:172).

4.7.2   Procedure for gathering of data for Phases I and II

The researcher followed different procedures for gathering data for Phases I and II.

4.7.2.1   Procedure for gathering data from Group I of Phase I

Group I of Phase I consisted of adolescents with hearing loss. The participants were seated at tables in the media centre. The researcher handed out the questionnaires to them. The researcher asked the participants if they had pens to use for

completing the questionnaires. The researcher told the participants that they were to follow the instructions on the questionnaire and to complete the questionnaire. They were also told that they could take their time to complete the questionnaire. The participants were encouraged to work on their own and after the participants had completed the questionnaires, the questionnaires were handed in. This ensured a 100% return rate (De Vos, 2001:154-156).

4.7.2.2   Procedure for gathering data from Group II of Phase I

Group II of Phase I consisted of teachers at special schools. The researcher handed out the questionnaires to the teachers, who had assembled in a designated classroom. They were requested to follow the instructions on the questionnaires and to take their time to complete the questionnaires. The questionnaires were handed in after they had been completed. This ensured a 100% return rate (De Vos, 2001:154-156).

4.7.2.3   Procedure for gathering data from Group III of Phase I

Group III of Phase I comprised of the media teachers from all the schools. As each participant was visited individually, this group consisted of only one participant in each setting. The participant was requested to follow the instructions on the questionnaires and to take his/her time to complete the questionnaire and to hand it in after completing it in order to ensure a 100% return rate (De Vos, 2001:154-156). Each participant completed the questionnaire in the media centre and had sufficient time to complete the questionnaire**.**

4.7.2.4   Procedure for gathering data from Group IV of Phase II

Group IV of Phase II comprised selected adolescents from Group I of Phase I who completed an assignment in the media centre.   The researcher handed out the survey assignment to the participants. The participants had to tick the answers and/or write down some answers in open spaces on the questionnaire (**Appendix G).**

The researcher noted whether participants were able to fill in the answers in writing and by making tick marks in the relevant boxes. The researcher used an observation/evaluation form (**Appendix H**) for recording her observations. Applying a survey assignment was very important as it related to the research question being investigated, namely *"…do adolescents with hearing loss have the ability to access and use academic information in the special school?"*

The researcher confirmed the number of participants from the selected schools per fax and noted that 326 participants completed the questionnaires. A return rate of 100% was therefore achieved and the researcher came to the conclusion that the participants represented three provinces that have schools for adolescents with hearing loss in South Africa. The data recording procedures of **Phase I** and **Phase II** are now discussed separately.

4.8   DATA RECORDING PROCEDURES

The data recording procedures for Questionnaires 1 to 3 of Phase I differed from the data recording procedures for the survey assignment of Phase II. These procedures are described separately.

4.8.1   Phase I: Questionnaires 1 to 3

On **Questionnaires 1** to **3**, a column was provided where the participants' responses could be coded. This was done in order to avoid the possibility of inter-coder discrepancy. By doing this, the dependability of results was increased (Leedy & Ormrod, 2005:158). A data-transfer typist of the University of Pretoria typed the raw coding onto spreadsheets. Computer software was applied to analyse these data. The researcher verified that the data-transfer typist transferred the raw data correctly by means of random examination of the data.

The researcher used a form in order to organise the answers of the open-ended questions. This was done in order to facilitate later analysis and to divide the

responses into main categories of content (**Appendices B** to **D**). The data recording procedure for the survey assignment is described in the following section.

4.8.2   Phase II: Survey assignment

The researcher recorded the data into main categories of content on a form, as can be seen in **Appendix H**. This was done in order to determine the processes that the participants followed to access and use academic information in the media centre. The next data recording instrument that the researcher applied was an observation form.

4.8.3   Observation form of researcher (Appendix H)

The researcher compiled an observation form by making notes while observing the participants while they completed the survey assignment in the media centre. There is no generally accepted definition. Participant observation involves direct involvement where the researcher is involved in the participant process; in this case, however, the researcher had to stay in the background (Leedy & Ormrod, 2005:146 & 179) in order not to influence the participants in any way (De Vos, 2001:153). The process of observation therefore refers to the data-collecting method or post-test design used most often by researchers working according to the qualitative approach (De Vos, 2001:90).

The observation form was a successful data recording procedure of documentation in order to determine whether the adolescents with hearing loss completed the questionnaire and to take notes of the procedures that they followed. It was, however, difficult to determine beforehand how long such an observation period would take (De Vos, 2001:281; Leedy & Ormrod, 2005:179), especially for adolescents with hearing loss who used sign language and/or an interpreter in order to understand the questions posed to them (Katz, 2002:759). The observation form (**Appendix H**) was in the form of a checklist completed by the researcher to document the observation process (De Vos, 2001:285). The following questions were asked during the process of observation: "who?" "what?", "where?", "how?" and

"which procedures?". Physical observation methods aimed to determine the following:

- When going to the shelf, did the participants look for the book according to the author/title and/or subject? When the participants with hearing loss found the book, they were expected to evaluate their own methods of accessing and using information use for their specific assignment.

- When the participants with hearing loss went to the *catalogue*, the researcher observed whether they looked at the card relating to the author; title, and/or subject card and whether they wrote down the information and classification number. The participants were observed in order to determine whether they had succeeded in finding the relevant information and were able to go their table to complete the questionnaire.

- The researcher noted if, in using the *library computer*, the participants with hearing loss were able to look for the author, title, subject, and/or classification number, and whether they marked it off on a tick-box. Once again, as in the case of going to the catalogue, the researcher observed if the participants were successful.

- The researcher also noted whether the participant asked the *media teacher* for assistance. The media teacher (by pre-arrangement with the researcher) told the participants that no assistance could be provided and that they had to work independently.

- If the participants with hearing loss used the computer to look for an article on the Internet, this process was also observed by the researcher in order to determine the level of skill (i.e., whether they knew how to use a computer correctly and were able to use the various Internet search engines).

The observation form can be seen in **Appendix H.** The data obtained during the different phases of the study were analysed as follows:

4.9 DATA ANALYSIS

The researcher applied different methods of data analysis for the information that was gathered from Phase I and Phase II. Processing was done at the University of Pretoria. The different data analysis methods are described below. Analysis of data was performed in *Excel* for Windows XP.

4.9.1 Data analysis for Questionnaires 1 to 2

In order to determine percentages and frequencies of responses, analysis of the questionnaire included quantitative analysis especially where detailed responses occurred. Descriptive statistical procedures were applied to describe and summarise the data obtained from the questionnaire survey to determine the collection of scores obtained (Leedy & Ormrod, 2005:252). In this way, large amounts of data could be reduced and conclusions were drawn from this. The researcher summarised the responses to open-ended questions into main ideas, in order to categorise the information into more manageable units (De Vos, 2002:179).

4.9.2 Data analysis for the survey assignment of Phase II

The researcher applied quantitative analysis where percentages and frequencies of responses had to be determined, especially where detailed responses occurred. The use of descriptive statistics physically reduces large amounts of data and facilitates the drawing of conclusions. The data was analysed using SAS (Sas Procedures Guide, Version 9, 1999). Chi-square tests were used to test for relations between certain variables. The chi-square test was used with a 5% level of significance. The procedures of the study, the data collection methods, recording methods and analysis of the data led the researcher to certain conclusions.

4.10 SUMMARY AND CONCLUSION OF CHAPTER 4

To the best knowledge of the current researcher, no research regarding access and use of information by adolescents in special schools has been published to date.

Therefore, research on this topic is of utmost importance and can provide valuable information to schools, teachers, educators and information specialists. The research was also done in order to develop an information educational system for use within the planned inclusive educational system in South Africa that is based upon sound scientific findings.

The empirical research was described in this chapter. Attention was given to the justification for doing this research project and descriptions followed regarding the research aims and different approaches that were investigated. The researcher described the participants of Phase I and Phase II with their respective selection criteria and gave attention to the variables that were considered in the criteria selection. The description of participants in Phases I and II (Group I, II and III) followed.

The researcher discussed the material and data collection instruments, the format and design, the principles of the different questionnaires that were utilised as well as the assignment that was completed and the concomitant observation form completed by the researcher.

Before the procedures of Phases I and II were undertaken, the ethical considerations were taken into consideration and the pilot study was undertaken. The data collection procedures consisted of procedures before conducting the study and the procedures for gathering the data for Phases I and II. Thereafter the data recording procedures and data analysis followed. The chapter concludes with a brief summary.

CHAPTER 5

RESULTS AND DISCUSSION

5.1 INTRODUCTION

Due to the increasing volume of academic information in schools, there is an urgent need to determine the ability of adolescents with hearing loss to use and access academic information. Research in this field can contribute to a better understanding of their abilities and also the limitations in their ability to access and use academic information.

In order to answer the research question, "*To what extent are adolescents with hearing loss in special schools able to access and use relevant information for academic purposes?"*, a predominantly quantitative research method was applied that was descriptive and contextual in nature (Leedy & Ormrod, 2001: 179-185). Findings consisted of results obtained from questionnaires and an assignment survey that participants had to complete in the media centre.

The purpose of the data analysis was to understand the various elements of the data through an inspection of the relationships between concepts, constructs, or variables, and to see if there were any patterns or trends that could be identified or isolated or to establish themes in the data (Mouton, 2001:108). The interpretation of data involved the synthesis of the data into larger coherent wholes, by formulating hypotheses or theories that account for observed patterns and trends in the data, and to indicate whether the findings were supported or falsified by the new interpretation (Mouton, 2001:109).

Data analysis also took into account explanations or interpretations of the data and showed what levels of support the data provided for the preferred interpretation. It took into account that data analysis could show typical errors such as capturing errors, post-coding errors, too many missing values, and omission of data validation procedures (Mouton, 2001:109-110).

The findings of this study will assist in the suggestions for a media user education programme within the school system. This user education programme will address the needs of adolescents with hearing loss in special schools. The presentation of results will include the origin of the results, graphic representation of the results in the form of figures or tables, as well as the discussion and interpretation of the results.

A discussion and interpretation of the participants' responses obtained by means of the questionnaire and assignment are provided at the end of each sub-goal. The results of the respective groups of participants are discussed separately.

The goal of this chapter is therefore twofold: Firstly, to use statistical tools such as data organization and analysis techniques to provide information about the data collected for each of the research aims. Statistics are an objective means of interpreting a collection of observations and can consist of various statistical techniques in order to describe the characteristics of data, test relationships between sets of data and test the differences among sets of data (Thomas, Nelson & Silverman, 2005:97).

The second goal of the chapter is to interpret and discover the meaning of the data so that conclusions can be drawn with regard to implications of the challenges posed to the adolescent with hearing loss with regard to his/her own ability to access and use academic information.

The interpretation of the results will lead to an answer to the research question and allow the researcher to draw specific conclusions. The researcher will compare the results and inferences with results of other authors as suggested by De Vos (2001:115). By doing this, the researcher will attempt to serve the purpose of verification of the research and its results.

Figure 5.1 illustrates the outline of the presentation of the results.
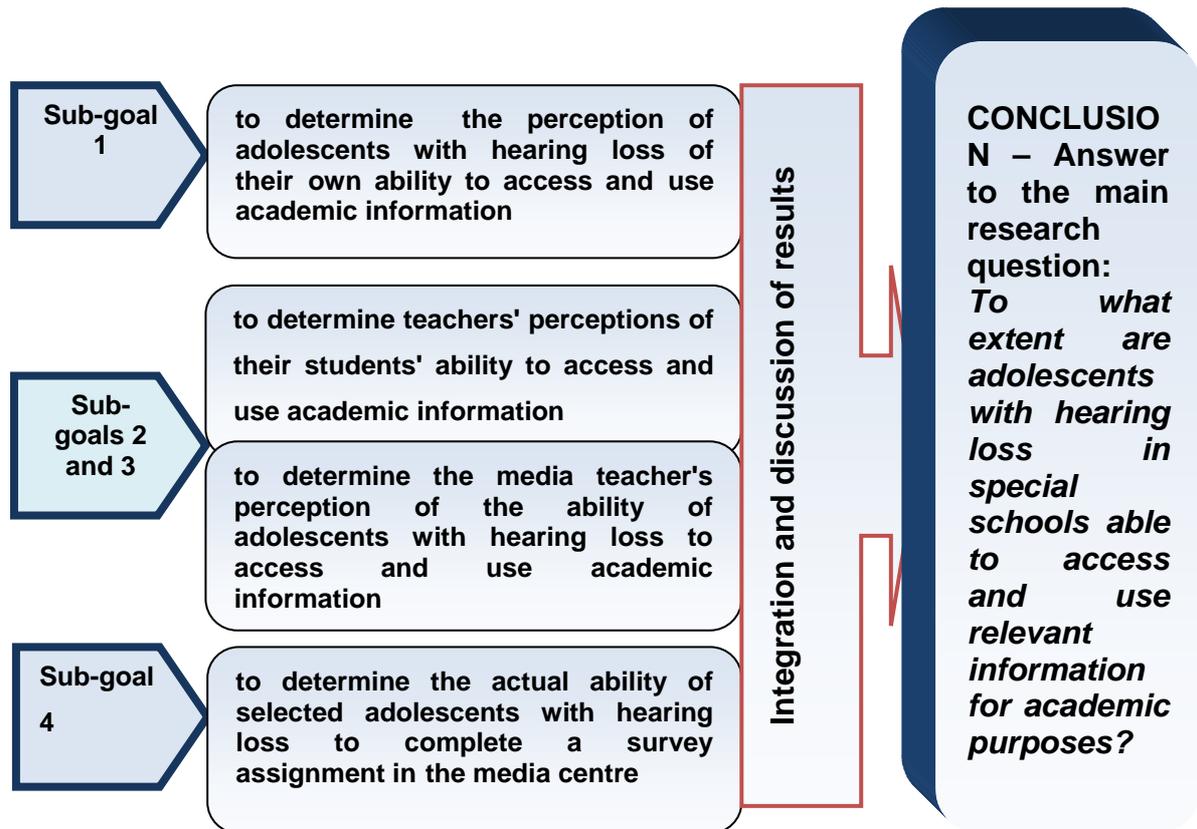
Figure 5.1:   Outline of the analysis and interpretation of the data

In addition to the graphic representation in **Figure 5.1**, the following should also be considered when perusing this chapter:

- During the presentation of the results, all decimals were rounded off to the nearest integer.
- The participants were allowed to choose more than one option and therefore the results will sometimes add up to more than 100%.
- Although the main aim of the study was to determine the ability of adolescents to access and use academic information in special schools, additional information was also obtained from open-ended questions where participants had to give their own opinions. For instance, during the questionnaire survey, the participants in Group II of Phase I were requested to give their opinion as to why the adolescents found academic information difficult to access and use,

and to indicate which factors influenced their abilities to access and use different sources of academic information.

- The results were also illuminated by the perceptions reported by other participants. For example, teachers and media teachers gave their opinions regarding whether there was sufficient academic information available on the various participants taught in the special schools, as well as the possible reasons if information was insufficient.

- Other themes that also augmented one of the sub-goals were related to the quantity and quality of the available academic material. The results of the questionnaire that served to clarify this will be discussed in detail.

The aim of this chapter is therefore to describe the results of the study with regard to the ability of adolescents in special schools to access and use academic information. The results will be presented according to the sub-goals and will include the origin of the results, the graphic representation of the results in the form of figures or tables, as well as a discussion and interpretation of the results.

5.2   RESULTS AND DISCUSSION OF SUB-GOAL 1

Sub-goal 1 of the study was to determine the perception of the adolescents with hearing loss of their own ability to access and use academic information (Phase 1, group I). An interpretation and discussion of the general trend of the aim is included in this section.

The first 10 questions of the questionnaires were related to biographical and background information that was discussed in Chapter 4 of the Methodology section. The subsequent ten questions (Questions 11 to 20) were included in order to achieve Sub-goal 1. These questions were analyzed, discussed, and interpreted.

5.2.1 Participants' perception of their own ability to find academic information

In order to determine the participants' perception of how often they were able to find academic information, Question 11 was included in the questionnaire. The terms *always, sometimes, never* and *not applicable* were provided as response options. The results are displayed in **Table 5.1**.

Table 5.1: Participants' perception of their own ability to find academic information (n=326)

TYPES OF ACADEMIC INFORMATION	ALWAYS FINDS THE INFORMA-TION		SOMETIMES FINDS THE INFORMA-TION		NEVER FINDS THE INFORMA-TION		NOT APPLICABLE or NO RESPONSE	
	n	%	*n*	%	*n*	%	*n*	%
Books	160	49	152	47	10	3	4	1
Magazines	111	34	161	49	36	11	18	6
School books	239	73	64	20	7	2	16	5
OBE material[2]	49	15	95	29	82	25	100	31
Comics	67	21	130	40	68	21	61	19
Newspapers	135	41	158	48	21	6	12	4
Advertisements	83	25	158	48	42	13	43	13
Encyclopedias	46	14	123	38	94	29	63	19
Dictionaries	136	42	137	42	26	8	27	8
Educational videos	102	31	144	44	52	16	28	9

Note: n refers to number of participants who selected this particular option.

The % is the percentage of the total n of participants (326) who selected an option.

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[2] *OBE* in this context refers to curriculum- based outcomes, *OBE material* refers to hand-outs, posters, assignment materials, applying topics into display materials, newspaper articles, brochures in order to reach specific outcomes (Spady, lecture at University of Pretoria, 2005).

Table 5.1 illustrates clearly that there is one source of academic information, namely school books, where a large percentage (73%) of the participants *always* found the required academic information. There is no other source for which more than 50% of the participants indicated consistent success. More than 40% of the participants could always find information in books (49%), dictionaries (42%), and newspapers (41%).

The participants reported that they could *sometimes* find information in magazines (49%), newspapers (48%), advertisements (48%), educational videos (44%), and dictionaries (42%). If the data concerning *"always finds the information"* and *"sometimes finds the information"* were to be combined, it appears that most of the participants with hearing loss perceived themselves to experience success when finding information in school books, to a lesser extent in other books, dictionaries, and newspapers, and with some measure of success in magazines, advertisements, and educational videos.

It is clear that the participants experience difficulty in finding information in encyclopaedias (29% indicated *never,* 38% indicated *sometimes)* and in OBE material (although only 25% indicated *never,* 31% of the participants obviously never had occasion to use this source). Overall, the picture is one of adolescents with hearing loss who do not perceive themselves as manifestly successful in finding academic information.

There can be different reasons why the adolescents with hearing loss experience difficulty in finding the academic material, as will be discussed later in other sections as well. The reasons can be lack of motivation, their unrelated interests and different backgrounds, and their ability to work with information in all forms, which includes being able to access and use it effectively (Louw, 1991:13). Research on this topic needs to determine why certain sources pose more challenges than others for adolescents with hearing loss. Although related research reports have appeared in the literature, no specific research has been conducted in South Africa since the implementation of the outcomes based curriculum for all grades.

5.2.2 Frequency of access and use of academic information by participants

In order to achieve Sub-goal 1, it was necessary to determine how often the adolescents with hearing loss accessed and used academic information from different academic sources. Question 12 was therefore included in the questionnaire. The results obtained in the questionnaire were compared to other findings from the literature. The results are displayed in **Table 5.2.**

Table 5.2: **Participants' perception of frequency of access and use of academic information (n=326)**

TYPES OF ACADEMIC INFORMATION	DAILY		WEEKLY		NEVER		NOT APPLICABLE or NO RESPONSE	
	n	%	*n*	%	*n*	%	*n*	%
Books	*165*	51	*85*	26	*14*	4	*62*	19
Magazines	*95*	29	*145*	44	*21*	7	*65*	20
School books	*189*	58	*76*	23	*9*	3	*52*	16
OBE material	*49*	15	*58*	18	*78*	24	*141*	43
Comics	*72*	22	*81*	25	*64*	20	*109*	33
Newspapers	*133*	41	*110*	34	*24*	7	*59*	18
Advertisements	*85*	26	*100*	31	*42*	13	*99*	30
Encyclopedias	*58*	18	*72*	22	*76*	23	*120*	37
Dictionaries	*118*	36	*108*	33	*30*	9	*70*	22
Educational videos	*96*	30	*82*	25	*39*	12	*109*	33

Note: n refers to number of participants who selected this particular option.

The % is the percentage of the total n of participants (326) who selected an option.

The majority of the participants (58%) accessed school books daily, while 51% used other books and 41% used newspapers daily. Magazines were accessed at least once a week by 44% of the participants. The reason for this may be

that these materials contain more visual support and are therefore easier to comprehend, or they may be more available to participants in school and outside the school. Participants may simply have more access to these types of academic materials. There were no significant percentages of participants who accessed other forms of information on a weekly or daily basis.

In the case of OBE material, 24% of the participants reported that they never access OBE material, while 43% did not respond or indicated *not applicable* – a total of 67% out of 326 adolescents with hearing loss who apparently did not have occasion to look for academic information in this source. This may be a reason for concern, as the South African Education system is based on the OBE system, and calls for further research. Only 15% (*n*=49) of the participants accessed the OBE material daily, and 18% used it weekly. It is possible that they do not have access to the relevant material or that they do not understand either the material or the assignments. This is clearly an area where a research update is required.

5.2.3   Time of access and use of academic information

It was important to include Question 13 in the questionnaire in order to determine the perception of the participants with hearing loss regarding time of access and use of academic information. Results are summarized in **Table 5.3.**

Table 5.3:   Participants' perception of time of access and use of academic information (n=326)

TIME OF ACCESS AND USE OF ACADEMIC INFORMATION	DURING SCHOOL TIME		DURING BREAK		AFTER SCHOOL		NOT APPLICABLE or NO RESPONSE	
	n	%	*n*	%	*n*	%	*n*	%
Books	167	51	18	5	100	31	41	13
Magazines	53	16	61	19	163	50	49	15
School books	228	70	18	6	30	9	50	15

	DURING SCHOOL TIME		DURING BREAK		AFTER SCHOOL		NOT APPLICABLE or NO RESPONSE	
OBE material	75	23	50	15	77	24	124	38
Comics	52	16	69	21	128	39	77	24
Newspapers	68	21	73	22	134	41	51	16
Advertisements	45	14	75	23	134	41	72	22
Encyclopedias	88	27	51	16	102	31	85	26
Dictionaries	184	56	24	7	64	20	54	17
Educational videos	91	28	37	11	127	39	71	22

Note: n refers to number of participants who selected this particular option.

The % is the percentage of the total n of participants (326) who selected an option.

From **Table 5.3** it can be concluded that the majority of the participants accessed and used the different types of academic information *during* and *after school* and not during break. Participants indicated that *during school* they mainly use school books (70%, n=228), books (51%, n=167), and dictionaries (56%, n=184). The majority of participants indicated that they accessed and used magazines (50%, *n*=163) *after school.*

From these results it is clear that most types of academic information are available at school, in accordance with the school curriculum. As far as time of access of OBE material is concerned, only 23% (n=75) indicated that they used it *during school* and 15% (n=50) *during break.* Twenty-four percent (*n*=77) indicated that they access and use OBE material after school. This might imply that these participants are looking for assistance from the teachers, their parents, family or friends to help them after school. The largest percentage (38%, *n*=124) of participants did not stipulate any specific time for accessing or using OBE material. Future research can establish whether participants are supplied with these materials and therefore they do not need to go and find

them, or whether any particular problem is associated with accessing and using OBE materials.

5.2.4 Location where participants accessed and used academic material

Question 14 was included to determine the participants' perception of where they accessed and used academic information. This relates to the media centre at school, the class, a friend's house, and the book shop or town library. The results are displayed in **Table 5.4**. In this question, the participants indicated more than one answer, and therefore the answers could not add up to 100%, but certain deductions could be made from the percentages as they provide an easy-to-interpret indication of proportion.

Table 5.4:   Location where participants accessed and used academic material

TYPE OF ACADEMIC MATERIAL	AT HOME		IN CLASS		AT THE MEDIA CENTRE		AT A FRIEND'S HOUSE		IN BOOK-SHOPS		AT TOWN LIBRARY	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Books	60	18	92	28	28	9	6	2	8	2	26	8
Magazines	116	36	29	9	26	8	21	6	29	9	14	4
School books	25	8	202	62	12	4	5	2	6	2	12	4
OBE programmes	21	6	82	25	27	8	19	6	11	3	26	8
Comics	82	25	37	11	25	8	47	14	17	5	15	5
Newspapers	119	37	27	8	39	12	1	0.3	26	8	13	4
Advertisements	90	28	39	12	37	11	25	8	27	8	18	6
Encyclopaedias	46	14	44	13	53	16	17	5	12	4	40	12
Dictionaries	61	19	107	33	14	4	14	4	8	2	19	6
Educ. videos	65	20	70	21	51	16	27	8	16	5	14	4
Average	69	**21**	73	**22**	31	**10**	18	**5**	16	**5**	20	**6**

Note: n refers to number of participants who selected this particular option.

   The % is the percentage of the total n of participants (326) who selected an option.

The results obtained from **Question 14** indicated that the different types of academic information were mostly accessed and used in class, at home, and in the media centre at special schools and town libraries. For the purpose of the study it was relevant to note that the location where the academic information was mainly accessed and used was mainly in *class* such as school books (66%, n=202), followed by books 30% (n=93), OBE material 38%, (n=82), dictionaries 35%, (n=107); educational videos 24% (n=70) and lastly encyclopedias 18% (n=44). From these results it can be concluded that the academic material was mostly accessed and used at school due to its availability and the curriculum that prescribes certain academic material for the participants at school.

From these results, it became clear that the classroom was the main location where the participants accessed and used academic information, as on average 22% (n=73*) of* participants accessed all the different types of information in the classroom. The home setting, however, was not far behind, with on average 21% (n=69) of participants accessing and using information in the home setting. Very few participants utilized any other setting to access or use academic information. In other words, although at first glance it may seem a cause for concern that the classroom and the home (most probably during homework) are for all practical purposes the only two settings where academic information is accessed and used, these participants may, in fact, be adhering to sound educational practice.

It would be of significance, though, to determine whether the participants with hearing loss ever visited the media centres of their schools. **Question 19** aimed to determine if the participants with hearing loss went to the media centre. **Figure 5.2** gives an indication if the participants with hearing loss went to the media centre to access and use academic information.
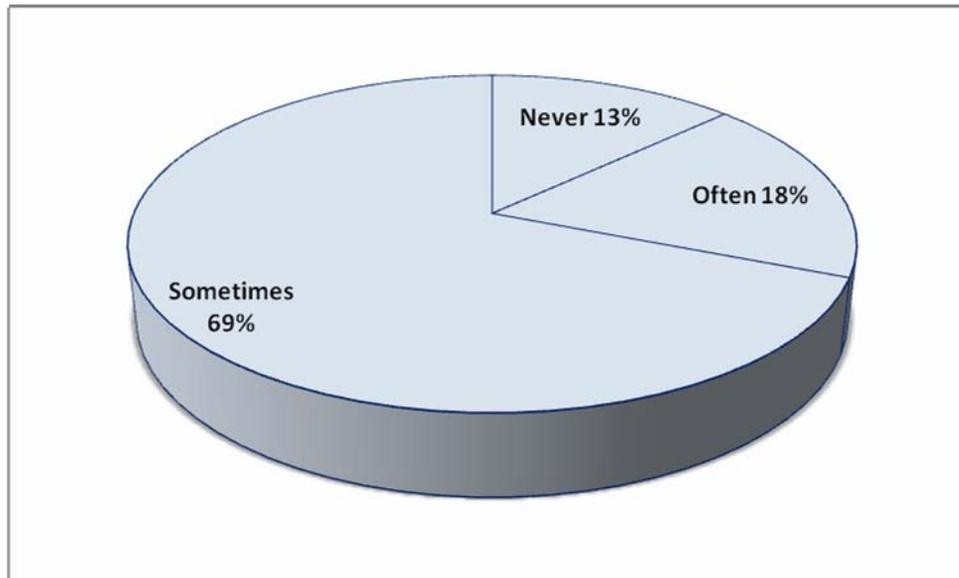
Figure 5.2: **Participants visiting the media centre**

A total of 252 participants responded to this question. **Figure 5.2** indicates that 18% (n=44) of these participants with hearing loss often went to the media centre, while 69% (n=175) indicated they only used the media centre sometimes when necessary, and 13% (n=33) indicated they never went to the media centre. These findings can be of value to the teachers, as they give an indication whether the participants use the media centre. From this result one can see clearly that the majority of the participants (87%, n=219) do go to the media centre, which is an important and positive finding.

It is important because academic information expands a learner's range of knowledge. Different material resources can be found in the media centre at school, including school books, non-fiction, magazines, newspapers, encyclopaedias, dictionaries, outcomes-based material, and educational videos. At some schools there were also computers in the media centre with Internet that the adolescent with hearing loss could access and use. This is very important as we live in a technological world and information needs to be available in all possible forms to participants at school. Behrens (2000:11) discussed the fact that information literacy should also include computer literacy. A school media centre is therefore vital for adolescents with hearing loss to become information literate and a school media centre should have a literacy programme suitably designed for its participants with special needs.

Boon (1992:40) discussed in depth the value and importance of a school media centre in the development of information literacy skills and stated that an information literacy programme should be designed according to pupils' needs.

5.2.5   The purpose for accessing and using academic information

Question 15 was included in order to determine for what purposes the participants accessed and used academic information. The responses of the participants on the questions are summarised and displayed in **Table 5.5**. Participants could select more than one option as response.

Table 5.5:   Purpose for which academic information was accessed and used (n=326)

TYPE OF ACADEMIC MATERIAL	PURPOSE							
	ASSIGNMENT		HOBBY		CAREER		OWN KNOWLEDGE	
	n	%	*n*	%	*n*	%	*n*	%
Books	108	36	50	17	44	15	35	12
Magazines	62	21	88	30	45	15	53	18
School books	112	38	27	9	71	24	34	12
OBE material	60	29	32	15	52	25	37	18
Comics	41	15	104	39	30	11	61	23
Newspapers	72	25	60	21	49	17	61	21
Advertisements	76	28	66	24	51	19	49	18
Encyclopaedias	70	29	41	17	54	22	50	20
Dictionaries	97	34	28	10	44	15	77	27
Educational videos	60	22	83	31	48	18	48	18

Note: n refers to number of participants who selected this particular option.
The % is the percentage of the total n of participants (326) who selected an option.

From **Table 5.5** the conclusion can be drawn that school books (38%, *n*=112), OBE material (29%, *n*=60), encyclopaedias (29%, *n*=70), and dictionaries (34%,

n=97) were mainly used for *assignments*. From these results it can be deduced, however, that not all of the participants were able to apply information literacy skills to access and use academic information. Only 29% of the participants indicated that they accessed and used OBE material for assignment purposes. The reason for this may be that participants find it difficult to read due to their language problems, poor vocabulary, and limited knowledge of grammatical rules. Beck (2006:3-4) discussed in detail the literacy problems of readers with hearing loss and highlighted the fact that they may find it difficult to decode words and make sense of language in printed form. Participants with hearing loss may also find it difficult to solve problems with regard to the OBE material, as OBE material focuses on the learner's ability to link the new information with previously acquired information. This implies the participants' ability to apply attention skills, and working memory as well as long-term memory (Marschark, 2003:S44 [Supplement]).

These results corroborate the findings of the previous questions, namely that academic material was mainly accessed and used for assignment purposes, in other words for academic purposes. Assignments are content-based and are very important in school as they are linked to the curriculum and therefore it is important to note that the above-mentioned types of academic resources were utilized for assignment purposes. Jacobson and Mark (2002:256-279) also discussed the value of content-based assignments. When teachers give assignments to their pupils to complete, it is important that pupils should know which type of academic sources to use in order to assemble the appropriate content. Both internal and external motivation can play a role in accessing and using these types of academic information.

For their *own knowledge*, the participants accessed and used dictionaries (27%, *n*=77); encyclopedias 20% (*n*=50); educational videos (18% *n*=48), OBE material (18%, *n*=49), (18%, *n*=53), and school books (12%, *n*=34). The responses of the participants indicated that for each source type less than a third of the participants were inclined to use that specific kind of academic material and to add it to their existing knowledge base. This can possibly be

attributed to their level of language development, lack of vocabulary, and literacy and language problems due to their degree of hearing loss. This viewpoint is shared by Paul and Quigley (1994:94) as well as Welch (1993:195).

With regard to accessing and using academic information for *hobbies*, the participants indicated comics (39% *n*=104); educational videos (31%, *n*=83); magazines (30%, *n*=88); and advertisements (24%, *n*=66) to be the most popular. These source types were also used to a greater extent for hobbies than for other purposes. The reason for this is that the participants find it easier to understand graphic visual information as they have a delay in language proficiency and they may find it easier to understand images. It seems unlikely that participants would select sources requiring strenuous effort when pursuing their hobbies. It is important to note, however, that for each source type mentioned above only a third of the participants indicated that they accessed and used this specific type of academic information for the purpose of hobbies.

With regard to *career purposes*, no source type was used by more than 25% of the participants. OBE material was the most-used source (25%, *n*=52), followed by school books (24%, *n*=71); encyclopaedias (22%, *n*=54) and dictionaries 15% (*n*=44). From these results, it is clear that some participants were able to apply this academic material in order to obtain information that can help them in their career choices. Dictionaries may have been utilised to obtain definitions or explanations of difficult or unfamiliar terms encountered in other literature relating to career matters. By utilizing academic information sources, an adolescent with hearing loss will be able to function better in society, be a functional citizen and make informed decisions, including career decisions (Gregory *et al.,* 1995:258; Mokhtar & Majid, 2006:42).

As stated in the Education White Paper (2001), every person has a right to information, whether for economical, political, social, or career purposes, own knowledge, or personal development. From these results, it can be concluded that the minority of the participants with hearing loss (at most just over one third for any specific source type) realise the value of academic information for

general knowledge, career, and interest in specific participants. This view is corroborated by Boon (1990:2) who also stated that new information is necessary for a person to stay abreast of new developments and to cope in the ever-increasing information society. Adolescents with hearing loss need more opportunities with regard to training, participation, and career possibilities in order to compete on par with their hearing peers.

Marschark (2003:185) indicated that there is a great need for development of curriculum models for deaf adolescents and young adults to help them to develop and cope in the world. It is crucial, in addition, to involve the child's family for promoting social-emotional competence. He also states that teachers need adequate training skills and experience to work with adolescents with hearing loss. It seems, then, that teachers and families need to collaborate in order to develop the realisation in youngsters with a hearing loss that information literacy can be of critical value in various domains.

Children with hearing loss can become socially and emotionally competent if given the same opportunities as hearing children to develop self-awareness, independent thinking, and good problem-solving skills over the course of their development. The parents and professionals can play a powerful role promoting social competence, and they need to continually evaluate and revise what is best for the child (Marschark, 2003:186).

Differences in the environments and experiences of children with hearing loss and hearing children might lead to different approaches to learning, to knowledge organized in different ways, and to different levels of skills in various domains. Ignoring this possibility not only denies the reality of growing up with a hearing problem in a largely hearing world but jeopardizes academic and future vocational opportunities for children with a hearing problem (Marschark, 2003:464).

Spitzer *et al.* (1998:23) found that children with hearing loss prefer pictorial images as opposed to text with abstract concepts, as they experience problems

in understanding these concepts (Hugo, 1987:8). Comics, educational videos, magazines and advertisements do not contain as many abstract concepts as other printed materials such as books, OBE material, dictionaries, encyclopaedias, etc. Although it is not obvious from these results, it is possible that these participants with hearing loss also prefer material with more visual information. Marschark (2003: S47 [Supplement]) discussed the value of visual information for the person with a hearing loss. Wurst (2005:58) also found in his research that participants with hearing loss want to rely more on visual learning.

5.2.6 Role players who assisted participants to find and understand academic information

In order to achieve **Sub-goal 1** with regard to adolescents' perception of their ability to access and use academic information, it was necessary to determine who helped them to access and use and understand the information. This refers to the role players assisting the participants. The researcher simplified the questions so that the participants could understand the questions. Therefore in **Question 16** the term "find" was used to imply access and use, and in **Question 17** the term "understand" was utilised. This was necessary to ensure that the participants found the questions easy to understand. The responses obtained from these two questions are presented in two sections. **Table 5.6** describes the perception of the participants with regard to who helps them to *find* academic information and **Table 5.7** describes who helps them to *understand* academic information. In both cases the participants were not limited to selecting only one option for their response.

Table 5.6: Role players who assisted participants in finding academic material

Type of resource	Role player and percentage of participants(n=326) assisted					
	Teacher	Parent	Media teacher	Friend	Family	Nobody
School books	**77% (n=252)**	14% (n=47)	8 % (n=27)	8% (n=26)	7% (n=24)	6% (n=18)
Books	**61% (n=199)**	23% (n=76)	10% (n=32)	17% (n=57)	13% (n=41)	12% (n=38)
Dictionaries	**44% (n= 144)**	19% (n=62)	10% (n=33)	16% (n=53)	9% (n=29)	22% (n=72)
OBE material	**30% (n=99)**	12% (n=40)	13% (n=44)	12% (n=40)	7% (n=23)	17% (n=55)
Educational videos	**36% (n=117)**	15% (n=50)	16% (n=51)	12% (n=40)	15% (n=48)	18% (n=59)
Encyclopaedias	**31% (n=101)**	17% (n=56)	10% (n=31)	10% (n=33)	10% (n=31)	16% (n=53)
Advertisements	**26% (n=85)**	20% (n=66)	9%(n=28)	17% (n=56)	14% (n=46)	22% (n=73)
Newspapers	21% (n=70)	**29% (n=94)**	10% (n=31)	22% (n=73)	18% (n=58)	24% (n=78)
Comics	17% (n=55)	15% (n=50)	6% (n=21)	**28% (n=90)**	12% (n=38)	22% (n=73)
Magazines	14% (n=47)	24% (n=79)	10% (n=33)	**28% (n=92)**	13% (n=44)	23% (n=75)

Note:

Bold: Role player who assisted the largest percentage of participants with a particular source

Type of source where a particular role player played the largest role

For the purpose of the study, the researcher was interested in the results with regard to who the role players were that helped the participants to find and understand academic materials such as school books, dictionaries, OBE material, educational videos, and encyclopaedias. The reason for this is that the researcher wanted to determine if the participants were able to find and understand material on their own. **Table 5.6** displays interesting results. It is clear that the teachers were responsible for assisting the participants to find the academic material in the most cases. The important types of academic information sources where the teachers helped the participants to find academic information were school books (77%, n=252) followed by dictionaries (44%, n=144); OBE material (30%, n=99); educational videos (36%, n=117); and encyclopaedias (31%, n=101

According to **Table 5.6** *teachers* played the most important role in assisting the adolescent with hearing loss to *find* academic information. Teachers have the necessary knowledge and training to work with participants with hearing loss and are the facilitators to guide and educate them to access and use academic information.

This correlates with the findings of Murray (2001:5) who states that the teacher provides the best environment where the adolescent can come into contact with printed material. The teacher provides a positive learning environment and can encourage the adolescent with hearing loss to access and use academic information. This finding is also supported by Truax *et al.* (2004: 309) and Fuhler *et al.* (2006: 646).

The second most important role players who helped the participants to find academic information were the *parents.* The parents were mainly responsible for helping their children to find academic information in newspapers (29%, *n=*94), but they also played a notable role with reference to magazines (24%, *n=79),* advertisements (20%, *n=66),* and books (23%, *n=76).* The reason for this may be that parents usually buy magazines, newspapers and general fiction books for the participants. If parents help their children in finding and understanding academic material or information sources it can help to improve the relationship between the parents and their children as this kind of help provides emotional support and

security. Katz (2002: 761 & 764) described the role of parents in the life of a child with hearing loss. Parents are in the position to supply the necessary activities at home, and can help to create a positive environment in order to help their children, to develop their academic potential at home, and assist them with school work or assignments.   These views are supported by Truax *et al.* (2004:321) who discussed the role that parents play in the lives of children with hearing loss.

The third most important role player who assisted the participants with hearing loss in finding academic information is the *media teacher*. From the results, it was seen that the media teachers helped the participants to find information in OBE material (13%, 44), educational videos (16%, *n=*51), dictionaries (10%,*n=33),* advertisements (9%, *n=*28), and magazines (10%, *n=* 33). From the results it can be seen that the media teacher only helped 10% (*n=*31*)* of the participants to find information in encyclopaedias. The reason for this is that the participants relied mainly on the teachers in class to help them. The media teacher is in the position to help the learner to access and use academic material, to provide the necessary material, and to provide the opportunities to learn the necessary information literacy skills, but from the results, it became clear that less than 20% of the participants indicated that they relied on the media teacher to help them to find academic material in any source. Callison (1999:38-40) and Murray (2001:1 & 2000b:7) indicated in their research that the media teacher can play a vital role in the life of the learner with a hearing loss.

It is important to note that the teacher and media teacher can play an important role in the education of participants with hearing loss with regard to programming, curriculum planning, training, and supplying academic information. This viewpoint is shared by Mayer *et al.* (2002:485) who discussed the role of educational staff in the life of the learner with hearing loss at school.

From **Table 5.5** it was also interesting to note that *friends* played a role in assisting the participants with hearing loss in helping to find information in sources such as comics (28%, *n=*90), magazines (28%, *n=*92), and newspapers (22%, *n=*73). This can possibly be attributed to the fact that these material were available at friends' houses and that the participants shared these interests. Only a few participants

indicated that their friends helped them to find academic information. This was related to friends helping one another with regard to dictionaries (16%, *n*=53), OBE material (12%, *n*=40), educational videos (12%, *n*=40), encyclopaedias (10%, *n*=33) and school books (8%, *n*=26). The reason for this can be that these sources may not be available in friends' houses and that participants rely on other role players to help them find these types of academic material. The importance of the influence of friends and other role players in task performance should not be underestimated.

From the results, it was also clear that the *family* played a smaller role in helping the participants find academic material; nonetheless, they play an important role in the life of the adolescent with hearing loss, as they can assist in helping the adolescent to develop his/her information literacy skills. They may help to ensure access to improved or better communication and information literacy skills and enable them to cope better in life. According to Stevens (2004:4), Neyhuss and Austin (1878), and Katz (2002:761& 764), the family gives emotional support, provides opportunities for visiting libraries, accesses reading materials and helps children with assignments. Katz (2002:761) has also pointed out that the family help participants to cope better in school and in the social environment. From **Table 5.6** other interesting observations were also made with regard to finding academic information.

Media teachers did not assist many participants in obtaining information from dictionaries (10%, n=33) and encyclopaedias (10%, n=31) in the media centre and it may be necessary to investigate this phenomenon with further research. This is an important finding as the results indicated that the participants were not able to work independently in the media centre nor could they find academic material. The participants may have relied on the media teachers to assist them. Their difficulties can be related to the degree of difficulty of the text material, or lie in the fact that they do not know how and where to search, or that they are unable to link requested topic information with the correct academic material when looking for information.

From these results it is clear that participants relied on assistance from teachers, media teachers, parents, family, and friends in finding academic material. They were not able to find this academic information on their own and they were *not able* to work independently. It is important to take note of the findings of Murray (2000 b:8) who indicated that if a student can work independently, he/she will display emotional intelligence, have a positive attitude, and be able to acquire information literacy skills that will benefit him/her in his/her academic career. Adolescents with hearing loss who can not work independently will not have good self-esteem and will not be able to lead a life based on self-exploration and knowledge. Lang (2002:269) confirmed that participants with hearing loss were not able to work independently. As the teachers, family, and media teachers seem to help the participants in finding academic material, it can be concluded that participants are not able to solve problems, make informed decisions and are not able to use the different academic sources. The American Library Association (ALA) Presidential Committee on Information Literacy stated in the 1989 Report (2009) that if people are not able to access, evaluate and use information effectively, it means that they have not acquired information literacy skills.

On the other hand, it was interesting to note that with regard to visual material, it was clear that *friends* and *parents* were mainly involved in helping the participants to find and access sources containing more visual material such as magazines, comics and advertisements. This can be related to friends and parents buying these visual materials and also that participants found these sources easier to access, use, and understand, and it could be that friends and parents shared their common interests in comics and magazines.

Spitzer *et al.* (1998:23) described visual literacy as the ability to "…understand and use images, including the ability to think, learn, and express oneself in terms of images." Information is not only transmitted through the printed word, but also through other communication methods such as the visual media, computer networks, and basic literacies.

Further research is necessary to determine why adolescents with hearing loss are not able to work independently after finding academic information. The role of

teachers and media teachers in assisting the participants with regard to finding, accessing and using academic material must also be described and defined in detail because of the findings that the majority of the participants were not able to work independently.

It is important to establish who helps the participant with hearing loss to understand academic information. **Table 5.7** displays the role players who helped the participants to understand academic information.

Table 5.7:   Role players who assisted participants **to understand academic material**

Type of resource	Role players and percentage of participants assisted					
	Teacher	Parent	Media teacher	Family	Friend	Nobody
School books	**69% (n=224)**	15% (n=48)	6% (n=20)	4% (n=14)	7% (n=23)	3% (n=9)
Books	**55% (n=178)**	22% (n=73)	7% (n=24)	9% (n=29)	14% (n=45)	10% (n=31)
Educational videos	**34% (n=112)**	13% (n=41)	13% (n=44)	11% (n=35)	10% (n=32)	13%(n=41)
Dictionaries	**45% (n=148)**	19% (n=62)	10% (n=33)	5% (n=16)	11% (n=37)	12% (n=40)
OBE material	**29% (n=93)**	14% (n=45)	9% (n=29)	6% (n=19)	7% (n=22)	15% (n=49)
Encyclopedias	**31% (n=100)**	16% (n=53)	12% (n=40)	8% (n=25)	6% (n=20)	14% (n=45)
Advertisements	**9% (n=84)**	19% (n=63)	9% (n=28)	9% (n=28)	16% (n=52)	14% (n=47)
Newspapers	9% (n=84)	**29% (n=93)**	7% (n=23)	15% (n=50)	18% (n=59)	14% (n=46)
Comics	18% (n=58)	14% (n=45)	6% (n=19)	9% (n=29)	**23% (n=74)**	20% (n=65)
Magazines	19% (n=63)	**24% (n=78)**	7% (n=23)	9% (n=29)	23% (n=75)	17% (n=57)

Note:

Bold: Role players who assisted the largest percentage of participants with a particular source

[grey cell]   Type of source where a particular role player played the largest role

From **Table 5.7** it can be seen that the *teachers* played a vital role also in helping the participants to understand academic material (schools books 69%, n=252; dictionaries 45%, n=148; OBE material 29%, n=93; educational videos 34%, n=112; and encyclopaedias 31%, n=100). From these results it became clear, as in the case of **Table 5.6**, that participants were not able to work independently and therefore presumably were not able to understand academic material.

Teaching methods, the educational system, and the degree of difficulty of the academic material all play a role in helping the adolescent to understand the academic material (Nowell & Marshak, 1994: 19-23). Mokhtar and Majid (2006:36) have indicated in their research that although some schools may have relevant academic material, information technologies, and structures, that circumstance does not necessarily mean that participants are competent to effectively use the tools available to them or that they will understand the information. Information literacy skills are necessary in order to understand academic material.

The second most significant role players who assisted the participants in understanding the academic material were the *parents.* This could be related to the fact that parents help to facilitate their child's language development from birth (Schirmer, 1994:19; Hull, 1998:121). The language development of children must be seen in the light of their environment and especially the learning environment of their early childhood years. Language development has an influence on the child with hearing loss's ability to understand information. Parents are active role players in their child's development.

Other results came to the fore from **Table 5.7**. A substantial percentage of the participants indicated that nobody helped them to understand any of the academic material such as for example OBE material, although 29% (n=93) of the participants indicated that teachers helped them to understand this kind of academic material. The apparent lack of assistance could be attributed to insufficient material or it could mean that participants do not understand what OBE material is. This is important for further research to investigate.

From the questionnaires it became evident that the teachers were perceived to be the main role players who helped the participants to find and understand academic information. It was interesting to see if the teachers played the same role in helping the participants to find information as in helping them to understand academic information. The results were obtained from Question 16 (to find) and 17 (to understand). **Table 5.8** displays the results of the participants' perception of the teacher's role in assisting them to find versus to understand the various types of academic material.

Table 5.8: **Results of the** participants' **perception of the teacher's role in assisting them to find versus to understand academic information**

TYPE OF ACADEMIC INFORMATION	N AND % OF PARTICIPANTS WHO REPORTED THAT TEACHERS HELP THEM TO FIND INFORMATION		N AND % OF PARTICIPANTS WHO REPORTED THAT TEACHERS HELP THEM TO UNDERSTAND INFORMATION	
	n	%	*n*	%
Schoolbooks	252	77	224	69
Books	191	59	178	55
Dictionaries	99	30	112	34
OBE material	99	30	148	45
Educational videos	117	36	93	29
Encyclopaedias	101	31	100	11
Advertisements	85	26	84	26
Newspapers	70	21	84	26
Comics	50	15	58	18
Magazines	47	14	63	19
AVERAGE	101	31	104	32

Note: n refers to number of participants who selected this particular option.

The % is the percentage of the total n of participants (326) who selected an option.

Table 5.8 indicates there was a difference between the participants' perception of their ability to *find* and *understand,* with the teacher's help*,* the different types of academic information such as schoolbooks, books, dictionaries, and encyclopaedias. Thirty percent of the participants indicated the teacher helped them to find information in dictionaries, and 34% (*n= 112*) of the participants indicated the teacher helped them to understand this information. They indicated this by ticking it off in the questionnaire. Also with regard to OBE material, 30% (*n*=99) of participants indicated that, with the teacher's help, they were able to find the material whereas 45% (*n*=148) indicated they received help from the teacher to understand OBE material.

From these results it can be noted that a substantial percentage of participants relied on teachers to both help them to find and understand academic material, and to locate academic material in the library. They were not able to perform these tasks by themselves or work independently.

The researcher also wanted to determine the relationship between the frequency of access (how often the participants used the different types of academic material) and how difficult the participants found the different types of academic material to access.

5.2.7   Perception of participants with relation to frequency of access and use of academic material

In order to determine the perception of participants with relation to frequency of access and use of academic material, **Questions 11** and **18** were included in the questionnaire. From the results obtained from **Question 11**, the researcher was able to draw certain conclusions as can be seen from **Table 5.9**. The researcher aimed to determine how regularly the participants managed to find academic information.

Table 5.9: Perception of participants with regard to frequency of access and use of academic material (Question 11)

TYPES OF ACADEMIC INFORMATION	Frequency of access				Frequency of finding the required information		
	Daily	*Weekly*	*Total access*	*Never*	*Always*	*Some-times*	*Never*
Books	51	26	77	4	49	47	3
Magazines	29	44	73	7	34	49	11
School books	58	23	81	3	73	20	2
OBE material	15	18	33	24	15	29	25
Comics	22	25	47	20	20	40	21
Newspapers	41	34	75	7	41	48	6
Advertisements	26	31	57	13	25	48	13
Encyclopedias	18	22	40	23	14	38	29
Dictionaries	36	33	69	9	42	42	8
Educational videos	30	25	55	12	31	44	16
average	33	28	57	12	34	41	13

Note: The % is the percentage of the total n of participants (326) who selected an option

For ease of comparison, **Table 5.9** displays only the percentages of participants who selected an option. The columns indicating *daily access* and *always finds the required information* are shaded in the same colour and the columns indicating *never accessed* and *never found the required information* are similarly shaded in the same colour to aid comparison. It is interesting to note the high degree of similarity that appears in each set of columns. It seems possible that the participants who accessed sources daily also experienced little trouble in finding the information they were seeking, while the participants who never accessed sources also never found the information they required. This needs further research, however, before any valid conclusions can be drawn.

From **Table 5.6** and **Table 5.7** it can be concluded that the participants relied on assistance from teachers and/or media teachers to help them to access, use, and understand this academic material. The difficulties that these participants experienced can also possibly be attributed to the difficulty of language or the literacy level of the participants, and to the fact that the participants may find abstract concepts difficult to understand.

These results clearly indicate the need for further research. The literature points out those participants should be placed at the centre of the curriculum and be encouraged to use a variety of information sources, as instruction is usually offered in context with content-based courses and assignments and experiences. Information literacy skills support curriculum based inquiry that forms part of the learning process of participants' daily lives and is part of their everyday experiences (Dickenson, 2006:23-27; Snavely & Cooper, 1997:53-63). This is also why participants should be encouraged to use academic material on a more frequent basis.

Participants' reluctance to access and use academic information on a regular basis can also be related to difficulty of academic material and therefore it is important to discuss the results of the perception of participants with regard to difficulty of academic information.

5.2.8 Perception of participants with regard to difficulty of academic information

When investigating the participants' ability to access and use academic information, it is also relevant to note which academic information participants found difficult to understand. This was addressed in **Question 18.** In **Table 5.10** the participants' perception of the difficulty of the academic material is rated from most difficult to easiest.

Table 5.10: Participants' (n=326) perception of difficulty of academic information

TYPES OF ACADEMIC INFORMATION	PARTICIPANTS FIND THE INFORMATION VERY DIFFICULT		PARTICIPANTS SOMETIMES FIND THE INFORMATION DIFFICULT		PARTICIPANTS NEVER FIND THE INFORMATION DIFFICULT	
	n	*%*	*n*	*%*	*n*	*%*
Books	60	18	161	49	93	29
Magazines	48	15	135	41	124	38
School books	61	19	163	50	88	27
OBE material	97	30	98	30	52	16
Comics	44	13	89	27	158	48
Newspapers	73	22	146	45	95	29
Advertisements	58	18	109	33	127	39
Encyclopedias	115	35	124	38	44	13
Dictionaries	64	20	144	44	104	32
Educational videos	63	19	107	33	122	37
AVERAGE	68	21	128	39	101	31

Note: n refers to number of participants who selected this particular option.

The % is the percentage of the total n of participants (326) who selected an option.

In the **first category**, the *very difficult* category, the largest number of participants (35%, *n*=115) indicated that encyclopedias were very difficult, followed by the number (30%, *n*=97) who found OBE material difficult. This can be attributed to the fact that participants have a language deficiency and that their literacy level is low, therefore they find abstract information difficult to understand. With regard to the other types of academic information, between 15% and 22% of the participants indicated that they considered newspapers, educational videos, dictionaries, advertisements, school books, books, and magazines *difficult*.

From these results it appears that some participants found most of the academic information difficult. This could be related to participants' low level of language proficiency due to their hearing loss. As language has an impact on literacy level (Cook & Hawkins, 2006:234), the reading skills and reading comprehension of the adolescents with hearing loss will be influenced.

In the **second** category, 49% (n=163) of participants indicated that they found school books *less difficult* (only *sometimes difficult*) to understand. Although only 27% (n=89) of the participants sometimes found comics difficult, between 30% and 50% of the participants sometimes had difficulty understanding material in books, (49%, n= 161), newspapers (45%, n=146), dictionaries (44%, n=144), encyclopedias (38%, n=124), magazines (41%, n=136), OBE material (30% , n=98), educational videos (33%, n=107) and advertisements (33%, n=107).

Taken together, these two categories reveal that 60% of the participants experience difficulty, to a greater or lesser degree, in understanding information from the designated sources. This finding could be of serious concern to educators, but it can only be judged in perspective if the same type of survey were conducted among adolescents without hearing loss, and the two sets of data compared.

In the last category, where the participants had to indicate which academic information they found the *easiest* to understand (i.e. they *never* found it difficult), the following sequence of information can be noted. The type of information that most of the participants rated as being easy to understand, was comics (48%, n=158), followed by advertisements (39%, n=127), magazines (38%, n=124), and educational videos (37%, n=122). These types of information contain more visual clues and pictures and are therefore easier to understand. Wurst (2005:58) and Spitzer *et al.* (1998: 23) discussed the value of visual literacy. Chapdelaine, Gouaillier, Beaulieu, and Gangnon (accessed 2008-05-10) discussed the value of educational videos and pointed out that children with hearing loss found educational videos easy to understand as they could relate to the pictures and could understand the content more easily.

Between 13% (*n*= 44) and 32% (*n*= 104) of the participants found dictionaries, books, newspapers, and school books easy to understand. The reason for this can be that these types of academic material are generally in accordance with the curriculum and available in school.

One reason why 60% of the participants might it find difficult to access and use most of the academic material is that participants may not be competent to effectively use the academic materials due to poor information literacy skills. If they had good information literacy skills, they would be able to access all types of academic materials; apply all learning methods; use the media centre effectively; and be able to use the computer (Mokhtar & Majid, 2006:36).

Participants with hearing loss differ from hearing peers with regard to their ability to utilize different kinds of information and in their strategies of problem-solving in tasks. Marschark (2003:S46-47 [Supplement]) found that participants with hearing loss used different strategies, as participants with hearing loss have different needs. He also highlighted the need for effective teaching methods in order to improve their academic or educational potential.

Question 2 of the background information determined the age of the participants completing the questionnaire. The researcher wanted to determine if age played a role in the participants' ability to understand academic information. The Chi-square test χ^2 for independence (SAS Procedures Guide, Version 9, 1999) was used on a 5% level of significance and for each of the individual types of academic information (books, magazines, school books, OBE material, comics, newspapers, advertisements, encyclopedias, dictionaries and educational videos). The same results were found for all of the methods of information and indicated that there existed no statistical evidence of a relationship between age and difficulty (**Question 2** and **Question 18).**

It appears, then, that there is no improvement in their ability with increase in age. In the case of normal hearing participants there is an improvement as they grow

older. These results contradict the literature search that the researcher applied in order to determine if age played a definite role in understanding academic information. The older the adolescent with hearing loss, the better he/she should be able to access and use academic information. Perfetti and Sandak (2005:45) found that older children made fewer mistakes and fewer spelling errors on regular words on a larger proportion of phonological sentence construction. They found that older children had more access to phonology and therefore made fewer spelling mistakes and were able to understand written information easier. This ability could lead to a higher degree of reading proficiency, and such participants had therefore a higher chance of academic success.

5.2.9 Participants' perception of their access to computers and the Internet

Question 20 attempted to determine if the participants of the study had access to and the ability to access and use computers. **Figure 5.3** indicates where the participants with hearing loss go to access and use a computer and where they usually access the Internet. In this instance the participants could once again select more than one option and therefore the figures do not total 100%.

Internet access				Computer access and use		
	n	% of participants (*n*=326)			n	% of participants (*n*=326)
At home	205	63%		School	262	80%
At school	157	48%		Home	172	53%
				Friend's house	180	55%
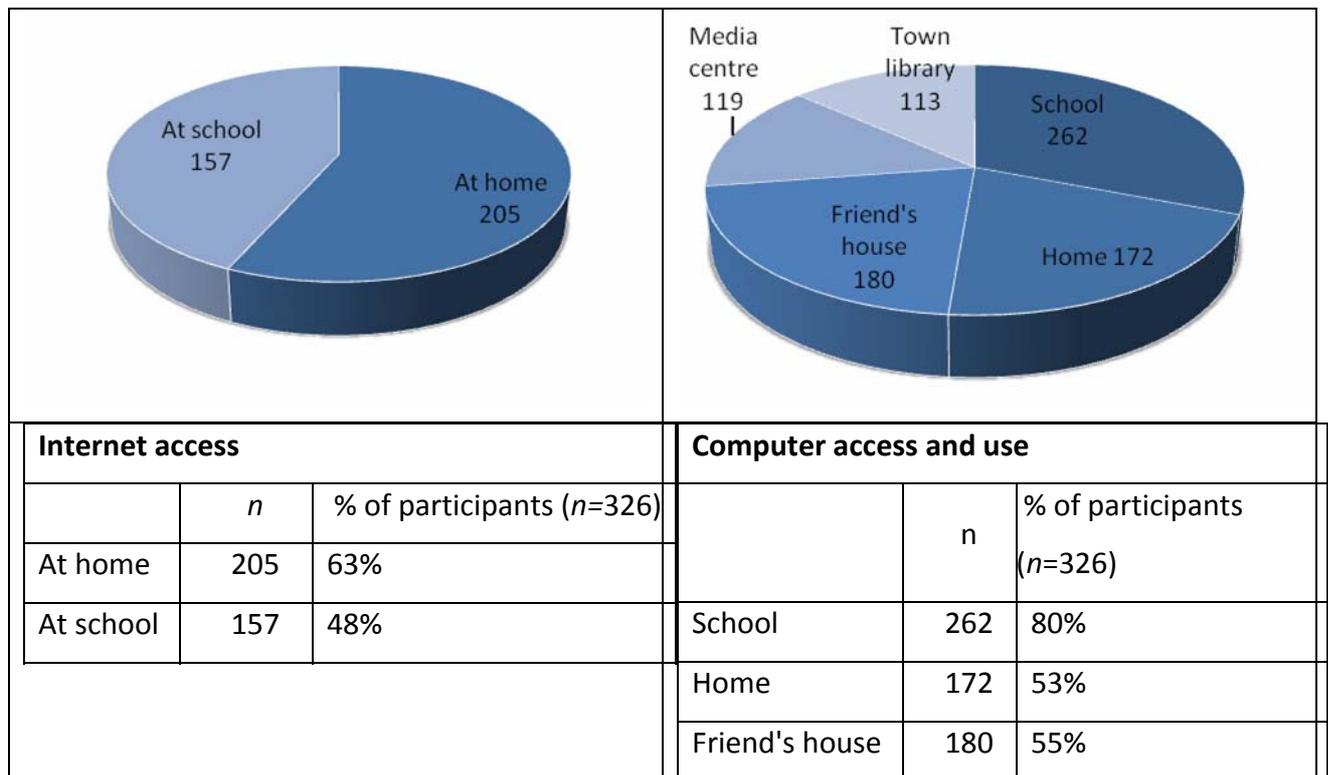
	Media centre	119	37%
	Town library	113	35%

Figure 5.3:   Location of access to computer and internet

From the results of **Figure 5.3,** it can be concluded that the majority of participants used computers at school (80%, n=262, as well as 37% or n=119 in the media centre) and fewer at home (53%, n=172) and other places e.g. a friend's house (55%, n=180), and the town library (35%, n= 113). Internet access, on the other hand, was at home (63%, n=205) rather than in school (48%, n=157).

Although there may be an overlap of participants in the various categories, it appears that there is no lack of access to computers and the internet for these participants. If the adolescent with hearing loss can learn to access and use academic information in printed form, books, newspapers and journals and computer-based resources such as software, CD-ROMs, Internet and electronic mail, he/she may be able to develop information literacy skills (American Library Association (ALA) Presidential Committee on Information Literacy, accessed 2009-06-22), thus enhancing such a person's chances of learning to live independently and lead a quality life.

Using the computer and internet and mastering electronic technology will have many advantages beyond academic prowess for a person with hearing loss. Electronic skills will help for shopping, banking and gaining employment, as evidenced by Murray (2000:9). Technology can help the adolescent with hearing loss to achieve academically as well as in classroom behaviour, leading to increased motivation and positive self-concept.

Further research is needed in order to determine how adolescents with hearing loss could be encouraged to use the media centre and computers. If participants do not visit the media centre to access and use computers or the Internet, it could be due to unavailability of computers at the selected schools as well as the participants' incompetence or reluctance to use computers or the Internet, as will be discussed in the results of **Sub-goal 3**.

5.2.10 Summary of Sub-Goal 1

Sub-goal 1 aimed to determine the perception of adolescents with hearing loss of their own ability to access and use academic information. From the results obtained from Questionnaire 1, it became clear that the overall picture is one of adolescents with hearing loss who do not perceive themselves as manifestly successful in finding academic information. It is also relevant to note that OBE material is not understood by most adolescents with hearing loss and it is an area where a research update is required. The results indicated that the majority of adolescents with hearing loss mainly relied on teachers and media teachers to help them to find and understand academic material. It is also important to note that parents play an important role in helping their children to access and use academic information as they play in important part in their child's life.

From the results it was clear that adolescents with hearing loss mainly accessed and used academic material at school and in the media centre. These results are important and indicate that more research is needed to determine how more assistance can be given to participants and to encourage them to use the media centre to a greater extent for accessing and using academic information. With regard to the purpose for which the adolescents with hearing loss used academic information, the participants indicated that they access and use academic information mainly for assignment purposes. This can be attributed to the fact that assignments are curriculum based, in other words, the participants had to access and use academic material for specific participants taught at schools.

The participants indicated that they found a large portion of the academic information difficult to understand. Their difficulties may be attributed to their hearing loss, and consequently their lack of language and literacy and information literacy skills. It is important to note that computers were used at school where they were available but it is clear that more research is needed to determine how participants can be encouraged to expand their use of electronic media.

5.3 RESULTS AND DISCUSSION OF SUB-GOAL 2

Sub-goal 2 of the study was to determine the perceptions of 19 teachers with regard to the ability of participants with hearing loss to use and access academic information. The researcher asked 10 questions (Questions 1 to 10) (**Appendix D**), both open-ended and close-ended, in order to determine the teachers' perceptions.

5.3.1 Results, discussion and interpretation of close-ended questions

The same questions that were posed to the participants (see Sub-goal 1) were used in order to determine the teachers' perceptions. **Question 1** (**Questionnaire 2**) aimed to find out what the perceptions of the teachers were with regard to how often the participants accessed and used academic information from different academic sources. The responses are displayed in **Table 5.11**. In their responses the teachers could indicate that the participants always/frequently accessed a certain source, or sometimes, or never. Some teachers also selected to note that these sources were probably not available to participants. In some cases this option was selected *in addition to* another option, so that the total number of responses for each type of source did not always add up to 19 (100%).

Table 5.11: Teachers' perception of frequency of access and use of academic information by the participants (n=19)

TYPES OF ACADEMIC INFORMATION	FREQUENCY OF ACCESS AND USE BY PARTICIPANTS						SOURCE PROBABLY NOT AVAILABLE	
	FREQUENTLY		SOMETIMES		NEVER			
	n	%	*n*	%	*n*	%	*n*	%
Books	2	11	17	89	0	0	0	0
Magazines	17	89	2	11	0	0	0	0
School books	6	32	13	68	0	0	0	0
OBE material	8	42	9	47	1	5	1	5

TYPES OF ACADEMIC INFORMATION	FREQUENCY OF ACCESS AND USE BY PARTICIPANTS						SOURCE PROBABLY NOT AVAILABLE	
	FREQUENTLY		SOMETIMES		NEVER			
	n	%	*n*	%	*n*	%	*n*	%
Comics	11	58	3	16	4	21	1	5
Newspapers	3	16	16	84	0	0	0	0
Advertisements	9	47	9	47	1	5	0	0
Encyclopedias	4	21	10	53	5	26	0	0
Dictionaries	7	37	12	63	0	0	0	0
Internet	0	0	13	68	3	16	3	16
Educational videos	16	84	3	16	0	0	0	0
AVERAGE	8	42	10	53	1	5	1	5

Note: n refers to number of teachers who selected this particular option.

The % is the percentage of the total n of teachers (19) who selected an option.

On average, the majority of teachers (53%, *n*=10) responded that the participants mainly *sometimes* accessed and used academic sources. For eight of the 11 sources, teachers (on average 40%, n=8) responded that they thought that the participants *always* accessed and used academic sources. Teachers were perhaps not sure whether the participants used some of the information sources on a regular basis. Few teachers (on average *n*= 1) were of the opinion that the participants never accessed and used academic information. In some instances the teachers also perceived that a certain type of academic information was not available at all for the participants to access and use.

From the above-mentioned results it can be concluded that it was the perception of most of the teachers that participants frequently/always accessed and used magazines (89% or n=17 of teachers), comics (58% or n=11 of teachers), and educational videos (84% or n=16 of teachers), while the majority of the teachers (*n*= 10) were of the opinion that the participants only sometimes or never accessed and used academic sources. The teachers appear to perceive that the adolescents prefer to access and use visual information with a high graphic

content. Graphic information is easier to understand, it does not contain complex sentence structures or abstract ideas and it is popular amongst young people to read and easier to interpret. Spitzer *et al.* (1998: 23, 26) and Owusu-Ansah (2003:221) described the value of visual literacy and confirmed that printed and visual information relate directly to information literacy as they overlap and interpenetrate one another.

Question 2 of Questionnaire 2 aimed to determine what the teachers' perception was with regard to *how often* participants accessed and used academic information. This question was added in order to determine if teachers had the perception that they should try to increase participants' ability to access and use academic information. **Table 5.12** displays the perception of the teachers.

Table 5.12: Teachers' perception of the participants' frequency of access and use of academic information (n=19)

TYPES OF ACADEMIC INFORMATION	DAILY		WEEKLY		MONTHLY		NEVER		Total
	n	%	*n*	%	*n*	%	*n*	%	n
Books	10	53	6	32	2	11	1	5	19
Magazines	5	26	12	63	2	11	0	0	19
School books	17	89	2	11	0	0	0	0	19
OBE material	12	63	4	21	1	5	2	11	19
Comics	3	16	9	47	3	16	4	21	19
Newspapers	8	42	9	47	2	11	0	0	19
Advertisements	5	26	9	47	3	16	2	11	19
Encyclopedias	3	16	3	16	7	38	6	27	19
Dictionaries	10	53	7	38	1	5	1	5	19
Educational videos	5	26	4	21	7	38	3	16	19
Average	8	42	6	32	3	16	2	11	19

Note: n refers to number of teachers who selected this particular option.

       The % is the percentage of the total n of teachers (19) who selected an option.

More than 50% of the teachers indicated that books, school books, OBE material, and dictionaries (i.e. academic materials) were accessed and used at least *once a*

day. As far as comics, newspapers, and advertisements are concerned, almost half of the teachers (47%, n=9) had the perception that participants accessed and used these *once a week*. Only a few teachers (n=0 to 7, or under 40%) indicated that material was accessed and used only *once a month*. Of the 19 teachers, on average 11% (n=2) perceived that participants do not use academic information at all. Thirteen teachers (68%, n=13) indicated additionally that the Internet was never accessed or used, but it may be because it was not available in their school or that the participants did not know how to use the Internet. Behrens (2000:11) pointed out that the media centre ought to make provision for information on the Internet or be able to access information from other libraries on the Internet.

Question 3 was included in the questionnaire in order to determine the teachers' perception as to when the participants accessed and used academic information at school - during break, after school, or in their own free time. This was necessary in order to give teachers information regarding when to assist participants with academic information. The perception of the teachers regarding when participants accessed and used academic information is summarized in **Table 5.13.**

Table 5.13: Teachers' perception of participants' **time of access and use of academic information (n=19)**

TIME OF ACCESS AND USE OF ACADEMIC INFORMATION	DURING BREAK		AFTER SCHOOL		IN THEIR OWN TIME		TOTAL	
	n	%	*n*	%	*n*	%	*n*	%
Books	1	5	8	42	10	53	19	100
Magazines	3	16	5	26	11	58	19	100
School books	4	21	7	37	8	42	19	100
OBE material	8	42	6	32	5	26	19	100
Comics	4	21	5	26	10	53	19	100
Newspapers	3	16	3	16	13	68	19	100
Advertisements	4	21	3	16	12	63	19	100
Encyclopedias	4	21	3	16	12	63	19	100
Dictionaries	3	16	3	16	13	68	19	100

TIME OF ACCESS AND USE OF ACADEMIC INFORMATION	DURING BREAK		AFTER SCHOOL		IN THEIR OWN TIME		TOTAL	
	n	%	*n*	%	*n*	%	*n*	%
Internet	0	0	4	21	15	79	19	100
Educational videos	10	53	5	26	4	21	19	100
Average	4	21	5	26	10	53		

Note: n refers to number of teachers who selected this particular option.

The % is the percentage of the total n of teachers (19) who selected an option.

In this question with regard to when participants accessed and used academic information, various results came to the foreground. For eight of the 11 sources, more than 50% of the teachers' perception was that the participants mainly used and accessed academic information *in their own time*. The reason for this could be that participants usually found more time to access and use academic information after school. One of the reasons could be that they rely on role players such as their parents and/or friends to help them to access, use, and understand academic information. The teachers' perception was also that participants mainly use and access Internet *after school* (21%, n=4) or *in their own time* (79%, n=15)*,* the reason being that the school does not provide for computer or Internet access.

It must be noted that 42% (n=8) of the teachers' perception with regard to OBE material was that participants do sometimes use OBE material during break. In the next section (**Question 4)**, the results will display whether OBE material was accessed and used during school time.

Some of the teachers (25%, n=5) indicated that participants access and use academic information *after school*, which would imply that they rely on assistance other than school teachers and media teachers to help them with the different types of academic information.

On average 21% (n=4) of the teachers had the perception that participants use and access academic information *during break*. The exception appears to be

educational videos. There were 10 teachers (53%) who were of the opinion that the participants accessed videos during break.

The above-mentioned results are important as it can give the teachers food for thought as to whether participants should be encouraged to access and use academic information more during school rather than during break, after school, and in their own time. These results also give an indication of whether the teachers perceive that participants rely more on assistance from other than from teachers and media teachers.

Question 4 was included in the questionnaire to specifically determine what the teachers' perception was with regard to *locations* where the participants accessed and used academic information, whether it was *at home, in class, in the media centre, at a friend's house, in the book shop,* and *at home and in the town library.* The teachers selected multiple options in their responses. **Table 5.14** displays the results.

Table 5.14: Teachers' perception of which academic information the participants **accessed at specific locations**

TYPE OF ACADEMIC MATERIAL	AT HOME		IN CLASS		AT THE MEDIA CENTRE		AT A FRIEND'S HOUSE		IN BOOK-SHOPS		HOME LIBRARY		AT TOWN LIBRARY	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Books	6	32	15	79	9	47	0		0		0	0	2	11
Magazines	9	47	10	53	9	47	11	58	11	58	0	0	0	0
School books	3	16	18	95	1	5	0	0	0	0	0	0	0	0
OBE material	2	11	13	68	5	26	0	0	0	0	0	0	0	0
Comics	11	58	6	32	6	32	1	5	0	0	0	0	0	0
Newspapers	6	32	8	42	12	63	0	0	0	0	0	0	0	0
Advertisements	11	58	8	42	6	32	0	0	0	0	0	0	1	5
Encyclopaedias	3	16	7	37	10	53	0	0	0	0	0	0	1	5
Dictionaries	7	37	16	84	7	37	0	0	0	0	0	0	0	0
Internet	11	58	3	16	2	11	1	5	0	0	0	0	0	0
Educ. videos	3	16	5	26	13	68	0	0	0	0	0	0	0	0

TYPE OF ACADEMIC MATERIAL	AT HOME		IN CLASS		AT THE MEDIA CENTRE		AT A FRIEND'S HOUSE		IN BOOK-SHOPS		HOME LIBRARY		AT TOWN LIBRARY	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Average	6	32	10	53	7	37	1	5	1	5	0	0	1	5

Note: n refers to number of teachers who selected this particular option.

The % is the percentage of the total n of teachers (19) who selected an option.

Very few of the teachers perceived a home or town library to be the place where the participants sourced any of their academic material. With the exception of magazines, bookshops and a friend's house were not perceived to be much-utilised locations either.

A perception shared by the majority of the teachers (79% to 95%) was that the classroom was the main location where the participants accessed and used school books, dictionaries, and other books.   There was also agreement, although to a somewhat lesser extent (53% to 68% of teachers), on the following:

- Magazines were accessed in class, at a friend's home, and in bookshops.
- OBE materials were accessed almost exclusively in class.
- Newspapers, encyclopaedias, and educational videos were mainly accessed in the media centre.
- Comics, advertisements, and the internet were mainly accessed at home.

When the perception of the teachers is compared to the perception of the participants (**Table 5.4**), it is obvious that *on average* a higher percentage of teachers (53%, see **Table 5.14**) than participants (22%, see **Table 5.4**) are convinced that most sources are accessed and used in the classroom. On average, 37% of teachers (see **Table 5.14**) perceive that participants find information in the media centre, while on average 10% of the participants (see **Table 5.4**) reported that they find materials in the media centre. On the other hand, while the participants on average reported that the second most important place where they find materials is at home (21%, see **Table 5.4**), home is regarded by teachers as the third most important location, after the media centre

which is second (see **Table 5.14**). From these results it can be concluded that the teachers did not have sufficient knowledge about where the participants obtained and accessed academic information.

The teachers may have felt that most of the academic sources are usually accessed and used in class because it is part of the curriculum and teaching methods. With regard to media centre, they may perceive that the participants do go to the media centre to access and use some of the academic information because this is what they expect from participants. Nassimbeni and May (2006:12-21) and also Bundy (2004:4-6) found that if learners can learn to work independently in the media centre and know how to recognize information, it will help them to become information literate and to become independent participants.

Question 5 aimed to establish the perception of the teachers with regard to the purpose for accessing and using academic information. The results are summarized in **Table 5.15.** In this question the teachers gave more than one answer. The reason is because they felt that the participants accessed and used academic information for more than one purpose.

Table 5.15: Teachers' perception of the purpose for accessing and using academic information (n=19)

TYPE OF ACADEMIC MATERIAL	PURPOSE							
	ASSIGNMENT		HOBBY		CAREER		OWN KNOWLEDGE	
	n	%	n	%	n	%	n	%
Books	16	84	2	11	4	21	5	26
Magazines	11	58	3	16	2	11	12	64
School books	15	79	0	0	5	26	3	16
OBE material	14	74	0	0	5	26	2	11
Comics	5	26	5	26	1	5	9	47
Newspapers	14	74	3	16	0	0	12	64
Advertisements	8	42	2	11	2	11	10	53
Encyclopaedias	14	74	0	0	0	0	3	16

TYPE OF ACADEMIC MATERIAL	PURPOSE							
	ASSIGNMENT		HOBBY		CAREER		OWN KNOWLEDGE	
	n	%	n	%	n	%	n	%
Dictionaries	15	79	0	0	1	5	7	37
Internet	7	37	3	16	0	0	8	42
Educational videos	15	79	0	0	4	21	2	11
Average	12	64	2	11	2	11	7	37

From the results obtained from **Question 5**, it became clear that the perception of the teachers (on average 64%, n=12) was that the participants used and accessed the different academic sources mostly for *assignment* purposes. Significantly, though, there was no single source that was considered by all of the teachers to be used for assignments. Some teachers' (37%, n=7) perception was that there were participants who accessed and used academic information to improve their own *knowledge*. According to Murray (2000b:8), if children or learners are able to develop their skills to learn how to access and use academic information successfully, it will lead them to live independently and lead a life based on self-exploration and knowledge. Katz (2002:250-252; 510; 550-552 & 768) stated that children with hearing loss do not have enquiring minds and have poor motivation to perform academically.

As for *career* purposes, on average only 11% (n=2) teachers held the opinion that academic information was applied for this purpose. There were on average 11% (n=2) teachers who had the perception that participants access and use academic information to give them more information for their *hobby purposes.* If the teachers based their perceptions on accurate observations, these figures relate to reports in the literature that stimulation, role players such as parents, peer group, and the educational system, as well as the development of language are all factors that contribute to the ability to access and use academic information for different purposes (Uys, Hugo & Louw, 1994:2; Nowell & Marshak, 1994: 19-23).

Question 6 aimed to determine the perception of the teachers as to who helps the participants to find academic information. This was necessary in order to enable teachers to reflect on where more assistance could be given to the participants. In this question, the teachers gave more than one answer and therefore the total cannot add up to 100%. **Table 5.16** displays the results.

Table 5.16:   Teachers' perception of who assisted participants **in finding academic material**

TYPE OF ACADEMIC MATERIAL	Perceived main role player					
	Teachers	**Parents**	**Friends**	**Family**	**Media Teacher**	**Pupils themselves**
Books	**100% (n=19)**	47% (n=9)	16% (n=3)	26% (n=5)	58% n=11)	0% (n=0)
Magazines	**95% (n=18)**	26% (n=5)	16% (n=3)	16% (n=3)	53% (n=10)	5% (n=1)
School books	**95% (n=18)**	26% (n=5)	5% (n=1)	5% (n=1)	21% (n=4)	0% (n=0)
OBE material	**74% (n=14)**	0% (n=0)	11% (n=2)	0% (n=0)	21% (n=4)	5% (n=1)
Comics	**42% (n=8)**	26% (n=5)	32% n=6)	16% (n=3)	21% (n=4)	21% (n=4)
Newspapers	**79% (n=15)**	21% (n=4)	26% (n=5)	16% (n=3)	42% (n=8)	11% (n=2)
Advertisements	**68% (n=13)**	26% (n=5)	26% (n=5)	16% (n=3)	32% (n=6)	16% (n=3)
Encyclopaedias	**68% (n=13)**	0% (n=0)	0% (n=0)	0% (n=0)	42% (n=8)	0% (n=0)
Dictionaries	**84% (n=16)**	11% (n=2)	11% (n=2)	5% (n=1)	32% n=6)	11% (n=2)
Internet	16% (n=3)	11% (n=2)	11% (n=2)	**21% (n=4)**	16% (n=3)	0% (n=0)
Educational videos	**63% (n=12)**	0% (n=0)	5% (n=1)	5% (n=1)	**63% (n=12)**	0% (n=0)
AVERAGE	**71% (n=14)**	16% (n=3)	16% (n=3)	11% (n=2)	36% (n=7)	6% (n=1)

Note: **Bold:** Role player who was perceived by the largest percentage of teachers to assist participants with a particular source

Table 5.16 shows clearly that the perception of the teachers was that the main role players who helped the participants to find academic material (10 out of 11 types of academic resources) were the *teachers.* Teachers work with academic information in class and therefore they perceived that participants accessed and used academic information in their class, as they make provision for academic material according to curriculum guidelines. Teachers are role players that can improve a child's knowledge base, experience and imagination (Truax, 1992:403) as well as improving a child's literacy process (Truax, 1992:404). This specific group of teachers also have knowledge of adolescents with hearing loss and were specifically trained to be able to provide education. Mayer, Akamatsu and Stewart, (2002: 485) discussed the role of teachers and media teachers in the life of adolescents with hearing loss. From these results it appears that teachers are mainly responsible for the educational outcomes of the learner in special schools. This finding was also supported by Katz (2002:759).

Some of the teachers (36%, n=7) held the opinion that the next group that helped the participants to find academic information were *media teachers.* Teachers possibly perceived that adolescents with hearing loss go to the media centre to access and use academic information, due to its availability and because they know that the media teachers can give them assistance with regard in accessing academic material.

Some of the teachers (average 16%, n=3), had the perception that *parents* helped the participants to find information in some types of academic resources. Only a few teachers (16%, n=3) held the opinion that *friends* also helped the participants to find academic information. Some of the teachers (11%, n=2) held the opinion that the *family* helped the participants to find academic information, more specifically in books and on the internet. *Family* refers to brothers and sisters, or family members other than parents. Family members can help to motivate participants to access and use academic material. Katz (2002:761) found in his research that supportive role players are vital in the life of the child with hearing loss to develop their information literacy skills, as well as other life skills in order to cope better in life.

Only on average 6% of the teachers (n=1) was of the opinion that the participants were able to help themselves with regard to finding academic material or could work independently. This is an important result for, if this perception is accurate, it indicates

that the participants lack the skills to find relevant academic information or work independently and it implies that they do not possess the necessary skills in order to find, access, and use academic information on their own.

For the purpose of the study, it was also important to find out if participants were able to find OBE material as it forms an important part of the school curriculum. From the results, it is clear that the perception of the teachers (71%, n=14) was that participants relied on teachers to help them. The second group of role players who helped the children, according to teachers' perception (36%, n=7), were the media teachers. It is important to note that only one teacher (5%, n=1) held the opinion that some participants could find OBE material by themselves. This could be attributed to the fact that teachers perceive that participants do not understand or know what OBE material is, or how to access and use it. These results are important for further research because OBE material forms an important part of the school curriculum and it is necessary to establish why participants find it difficult, and how they can be encouraged and taught how to access and use academic material such as OBE material. Teachers and media teachers are the ideal role players to help participants in finding the appropriate academic information because they have the necessary skills and resources to make it available to participants in schools.

Other important conclusions that could be derived from **Table 5.16** were that only two teachers (11%, n=2) maintained that some participants were able to use dictionaries. This could be related to the level of difficulty of the academic material, or that the participants do not know how to use a dictionary. In order to access and use academic material, it is often necessary for participants to be able to use dictionaries. Foster (1993:245), Hugo (1987:86) and Moores (1996:171; 286) have discussed the relationship between reading and writing and the process of understanding. Participants with hearing loss need role players who are able and willing to assist them in using and understanding academic material, such as dictionaries, encyclopaedias etc.

Even if schools have academic resources it does not necessarily mean that participants are competent enough to effectively use the tools made accessible to them in order to find the relevant academic material. Mokhtar and Majid (2006:36) discussed

the acquisition of information literacy skills and emphasised that these skills will enable participants to be able to find and benefit from academic information. From the results displayed above, the fact that the participants rely so much on role players in helping them to find academic material, implies that role players not only influence the life of the child with hearing loss, but they help to educate the child with hearing loss. Katz, (2002: 758, 761 & 764) has highlighted the fact that role players can help to provide additional reading material and opportunities for participants to visit other libraries in order to assist the child to find relevant information to help for example with his assignment or projects.

With regard to assistance from the parents' side, more and more parents have to work, which means that they may not be available to help the child with schoolwork and/or assignments. This can have an influence on their children's' ability to find the relevant academic material if participants do not receive adequate support at school. This view is supported by Eriks-Brophy *et al.* (2006:73).

It was not only necessary to determine who helped the participants to find academic material but also who helped them to understand academic material. In **Question 7** the teachers gave more than one answer in order to determine who the different role players were who helped the participants to understand academic material. The results are displayed in **Table 5.17**.

Table 5.17: Teachers' perception of role players who assisted participants to understand academic material

Type of academic material	Teachers' perception of who assisted the participants to understand academic information					
	Teacher	Parent	Friend	Family	Media teacher	Nobody
Books	100%(n=19)	37%(n=7)	16%(n=3)	26%(n=5)	42%(n=8)	0%(n=0)
Magazines	89% (n=17)	37%(n=7)	16%(n=3)	16%(n=3)	37%(n=7)	0%(n=0)
School books	100%(n=19)	21% (n=4)	5% (n=1)	5% (n=1)	16% (n=3)	0% (n=0)
OBE material	84% (n=16)	11% (n=2)	11% (n=2)	0% (n=0)	16% (n=3)	11% (n=2)
Comics	53% (n=10)	21% (n=4)	21% (n=4)	16% (n=3)	11% (n=2)	16% (n=3)

Type of academic material	Teachers' perception of who assisted the participants to understand academic information					
	Teacher	Parent	Friend	Family	Media teacher	Nobody
Newspapers	**74% (n=14)**	32% (n=6)	16% (n=3)	16% (n=3)	21% (n=4)	5% (n=1
Advertisements	**68% (n=13)**	26% (n=5)	16% (n=3)	16% (n=3)	11% (n=2)	11% (n=2)
Encyclopaedias	**58% (n=11)**	21% (n=4)	5% (n=1)	0% (n=0)	21% (n=4)	0% (n=0)
Dictionaries	**95% (n=18**	26% (n=5)	5% (n=1	5% (n=1	16% (n=3)	0% (n=0)
Internet	16% (n=3)	**32% (n=6)**	16% (n=3)	21% (n=4)	21% (n=4)	11% (n=2)
Educational videos	**74% (n=14)**	0% (n=0)	0% (n=0)	5% (n=1)	47% (n=9)	0% (n=0)

Note: **Bold -** Role player who assisted the largest percentage of participants with a particular source

The researcher included **Question 7** in order to determine if there was a relationship between the teachers' perception of participants' ability to *understand* and participants' ability to *find* academic information **(Question 6)**. Teachers might reflect on the results from these questions and decide how and if academic information has to be adapted or modified and whether there ought to be more collaboration between the teachers and media teachers. Collaboration between teachers and media teachers can help participants to achieve academically (AASL, 2000:40).

From the results obtained from **Question 7,** it became clear that the teachers were of the perception that *teachers* themselves helped the participants to understand academic information in 10 out of 11 sources of information. The reason for this is that the teachers are aware of being the facilitators who educate the participants with regard to school work and assignments. Teachers and media teachers are important role players in the lives of participants with hearing loss with regard to their education and knowledge (Mayer, Akamatsu & Stewart, 2002:485). Teachers are also aware of the role of academic information that is prescribed by the curriculum. Rader (1995:13) and Sanders (1982:18) stress that especially in special schools, there is a need for well-trained teachers as well as applicable academic information, and that teachers need to have knowledge of participants with hearing loss. Teachers can help

participants to understand academic information as they have knowledge of academic sources.

Some of the teachers (up to 47%, n=9) also held the opinion that *media teachers* helped the participants to understand academic information. The reason for this response is that the participants visited the media centre in the past and requested their assistance. It is the responsibility of the media teacher to promote literacy training for learners and to help them to understand academic information (Truax, 1992:403).

Some of the teachers (up to 37%, n=9) were of the opinion that *parents* also help the participants to understand academic information, while somewhat fewer teachers (up to 21%, n=4) had the perception that *friends* sometimes assisted the participants in understanding the academic information.

With regard to Sub-goal 2, to determine the teachers' perception of participants' ability to access and use academic information, it was important to determine their perception with regard to participants' ability to understand academic information by themselves. From the results, only maximally 16% (n=3) teachers held the perception that participants had the ability to understand academic information without help from anybody. The reason for this may be the teachers' observations that the participants experienced academic information difficult to understand and that they had difficulty in accessing and using it.

For participants to understand academic information requires the processes of learning, problem-solving and literacy. These skills also involve the coordinated functioning of attention, working memory, and long-term (or semantic) memory so that previous knowledge is applied to new situations and new information is acquired. From the above-mentioned results it is clear that the teachers were of the opinion that participants do not have these skills, and therefore are not able to understand academic information sufficiently. Marschark (2003: S44 [Supplement]) is in agreement with the opinion of teachers. The reason for participants' not being able to understand academic information may also be that they have not acquired the necessary reading skills. Lack of reading ability affects one's ability to understand

academic information. Marschark (2003:S47 [Supplement]) stressed that participants with hearing loss' language skills that are not developed to an age-appropriate level are reflected in their reading and writing skills and have an impact on academic achievement.

The process of understanding depends on a foundation of language and cognition levels that in turn are linked to becoming literate, a process that consists of knowledge, comprehension, application, analysis, synthesis and evaluation regarding a person's ability to access, use and understand academic information (Smith, 2006:764-773). This can also be one of the reasons why teachers' perception was that they help the participants to understand academic information, as the teachers have to teach the above-mentioned skills and abilities.

Apart from determining who helped the participants to understand academic information it was also necessary to determine the teachers' perception with regard to *how difficult* the participants found academic information to access and use. **Table 5.18** displays the results.

Table 5.18: Teachers' perception of how difficult it was for the participants to access different types of academic information

Type of academic material	Teachers' perception of how difficult it was for the participants to access different types of sources		
	Information was very difficult to access	Information was less difficult to access	Information very easy to access
Books	74% (n=14)	21% (n=4)	5% (n=1)
Magazines	16% (n=3)	16% (n=3)	68% (n=13)
School books	89% (n=17)	11% (n=2)	0% (n=0)
OBE material	63% (n=12)	26% (n=5)	11% (n=2)
Comics	21% (n=4)	26% (n=5)	53% (n=10)
Newspapers	11% (n=2)	42% (n=8)	47% (n=9)
Advertisements	11% (n=2)	42% (n=8)	47% (n=9)
Encyclopedias	95% (n=18)	5% (n=1)	0% (n=0)

Type of academic material	Teachers' perception of how difficult it was for the participants to access different types of sources		
	Information was very difficult to access	Information was less difficult to access	Information very easy to access
Dictionaries	68% (n=13)	21% (n=4)	11% (n=2)
Internet	79% (n=15)	16% (n=3)	5% (n=1)
Educational videos	37% (n=7)	37% (n=7)	26% (n=5)
Average	53% (n=10)	26% (n=5)	26% (n=5)

Table 5.18 displays the following results. Teachers (on average 53%, n=10) held the perception that the participants found some of the sources of information *very difficult* to access and use. More than 50% of the teachers considered 6 out of the 11 types of sources *very difficult* for the participants. This can be related to the fact that participants' language skills are deficient, they have problems with vocabulary, are not able to work with abstract concepts, and they have literacy problems that have an impact on how difficult they find academic information to use (De Conde Johnson, *et al.*, 1997:232; Kyle & Harris, 2006:273-274). The teachers (95%, n=18) indicated that encyclopaedias were difficult to use, and 89% of the teachers (n=17) indicated that school books were also difficult to use. Sixty-eight percent of the teachers (n=13) also indicated that dictionaries were difficult to access. All of these are typical academic sources that are regularly used in school context. With regard to OBE material, 63% (n=12) of the teachers were of the opinion that participants find it very difficult to understand. This can be due to language delay, poor vocabulary, and/or not being able to apply the material to assignments and correlate it with the curriculum. The participants also rely on assistance from teachers and media teachers with regard to OBE material.

In order to understand or comprehend difficult text, participants need to have an in-depth and extensive knowledge of words and have had previous and multiple exposure to these words in appropriate reading context. The assumption can be made, as Musselman (2000:9-31) and Paul and Gustafson (1991:52-62 did, that the participants did not comprehend what they read. These authors stated that a person

needs to have a totality of knowledge in order to understand difficult written information.

Some teachers (on average 26%, n=5) indicated that some participants found the various types of resources *less difficult.* Some teachers (also on average 26%, n=5) were of the opinion that participants found some of the academic information *easy to use*. This mainly relates to visual information. As was indicated in previous results, the teachers' perception was that material containing visual graphic information was easy for participants to understand, for example comics (53%, n=10), newspapers (47%, n=9), magazines (68%, n=13) and advertisements (47%, n=9). This correlates with the previous discussion and interpretation of **Question 7** that these participants found visual information containing pictures easier to understand and more interesting. Where visual information has both graphics and written text, it is easier for the participants to link the content of the material with the text. Spitzer *et al.* (1998: 23) described what visual literacy means and said that visual literacy enables the reader to think in terms of images, as well as to apply images in the thinking and learning process.

Although it was already established that participants go to the media centre to find academic information, the researcher wanted to specifically determine whether the teachers held the opinion that the participants do visit the media centre and therefore **Question 9** was included. The results could also indicate the need for teachers to establish methods to determine routines and/or assignments to encourage the participants to use the media centre. The results are displayed in **Figure 5.4**.
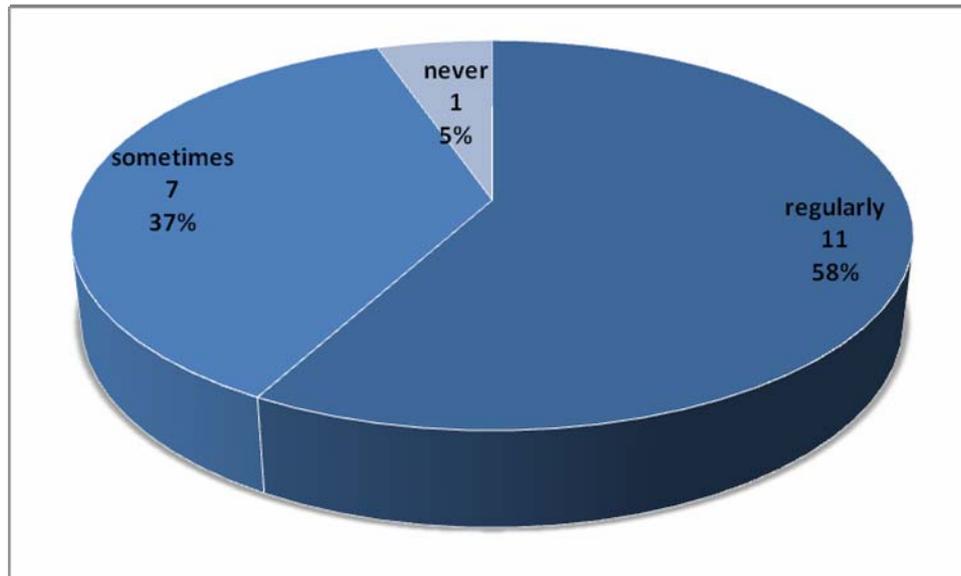
Figure 5.4: The perception of the teachers of participants visiting the media centre

From the results obtained from **Question 9**, the majority of the teachers (58%, n=11) teachers were of the opinion that the participants regularly go to the media centre to use and access academic information. Thirty-seven percent of the teachers (n=7) indicated that the participants sometimes visited the media centre and only one teacher (5%) responded that some participants never visit the media centre. Nassimbeni and May (2006: 12-21) and Bundy (2004:4-6) stressed the value of media literacy and pointed out that if learners do visit the media centre, use media services, and develop their media literacy skills, it will help them to become independent learners. The expansion of knowledge may result if the adolescent is able to access and use academic information in the library.

The media centre uses bibliographic control methods, such as a catalogue that lists all the information sources found in the media centre, and if the media teacher can teach the participants how to use these systems and teach the participants information literacy skills to access and use academic material, it would benefit the participants academically as they will learn to retrieve information (Behrens, 2000:11). The media teacher is also the person who understands all the various types of academic material and methods and how to integrate it with the curriculum (Doiron & Davies, 1998:20). Boon (1992:40) has also stressed the value of school media centres in the development of learner to become information literate. Gross and Kientz (1999:21-25)

found there is a gap between education and media centres. This is the reason why the researcher wanted to determine the perception of the teachers regarding whether the participants utilize media centres or not.

Research has shown that there is a difference between these adolescents with hearing loss and their hearing peers with regard to how they access and use different types of information. They also use different strategies with regard to problem-solving (Marschark, 2003 S46 [Supplement]).

5.3.2 Results, discussion and interpretation of open-ended questions

The researcher added open-ended questions to give the teachers and media teachers the opportunity to express their own viewpoints on the participants' use and access of academic information. The researcher also correlated their perception to findings reported in existing literature.

The teachers were of the opinion that learners with hearing loss find academic information difficult to use due to their *language deprivation.* Several other authors also found that there were multifaceted problems that the adolescent with hearing loss experiences in developing literacy and language that influence their attitude to their ability to access and use academic information. Other significant factors were their perception with regard to academic information and their willingness to apply such information (Slyh, accessed 1999-04-17).

Language has an impact on the literacy level of adolescents with hearing loss, influencing both their reading skills and reading comprehension. The adolescent with hearing loss, who has a language delay due to hearing loss, experiences lack of access to formal education and is often frustrated with having a hearing loss (Cook & Hawkins, 2006:234).

Deficient language skills will lead to reading skills also being deficient. This will result in poor academic achievement because literacy is dependent on good communication and literacy skills. Learners with hearing loss have *language* and *communication* problems that lead to delay in all academic areas, as evidenced by Luckner *et al.*

(2005:443). Language and communication problems are displayed in participants' access and use of academic information from sources such as dictionaries. The teachers and media teachers indicated that to teach the participants to use them is a slow process. Participants find it difficult to visualise the words, to read, find, and use the words. The teachers and media teachers indicated that participants with hearing loss find it difficult to distinguish between concrete concepts and abstract concepts (Hugo, 1987:8). This has an impact on the participants' ability to understand the printed word.

Teachers and media teachers also indicated that the participants have poor ability to express themselves in writing as well. Reading and literacy play a significant role in the assimilation of new concepts and in cognitive development. The power of the written word should not be underestimated, as cognition is linked to language and writing skills. Literacy is often measured in a person's ability to read, write and to understand reading material although it is a complex issue. This conclusion is supported by Mark and Tett (2007:26-27).

Teachers and media teachers indicated that participants preferred to use *sign language* as they find spoken languages difficult to use. This was also reported by Katz (2002: 759) who pointed out that participants with hearing loss who use *sign language* find it difficult to speak, hear and write English, as a spoken language can be considered as their second language. Most participants with hearing loss use sign language and one other language, such as for example English. Children with hearing loss find it difficult to master more than one language modality namely hearing combined with sign language and/or lipreading or fingerspelling. These views are supported by Katz (2002: 759), Nowell (1994:30, 42), and Braden (1994:32).

The teachers also indicated that the participants needed *interpreters* to help them to understand academic information that was given to them by teachers. Interpreters can influence the participants' ability to work independently, as the participants come to rely on the interpreter (Katz, 2002:759). This can have an impact on the participants' ability to become information literate and research has shown that a large portion of the Deaf population that has difficulty in speech and sign language will have problems to acquire literacy skills (Steinberg, 1982:45-51; Watson, 1999:25-37). It is

also true that if children with hearing loss have good language and literacy skills, they will find it easier to understand academic material and be able to access and use it.

From the results, it became clear that the participants found the different academic information sources difficult to *find and understand* most of the time. For the purpose of the study, it must be stressed that the researcher included all types of information in order to determine what information sources the children in the special school could possibly use. It is for this reason that a variety of material such as comics, magazines, educational videos, and OBE material were included. One of the reasons why the participants found academic information difficult could be participants' poor *vocabulary knowledge* as evidenced by Katz (2002:250-252; 550-552; 688 & 760). The child will need amplification in order to improve the input of the speech signal; otherwise about 50% of the speech signal will be missed with a 50 dB loss. This will lead to a defective syntax, limited vocabulary, imperfect speech and an atonal voice quality. These factors will have an impact on the child's ability with regard to information literacy and therefore his/her ability to access and use academic information. The reason for this is that the child's reference base from which he/she can draw conclusions is limited.

A child with hearing loss's *vocabulary* develops more slowly than that of a child with normal hearing and he/she can learn concrete words more easily than abstract ones (De Conde Johnson *et al.*, 1997:232). There is also a gap between the vocabulary of children with normal hearing and those with hearing loss that widens as they get older. If children with hearing loss do not receive intervention, they will not be able to catch up with children with normal hearing and they will have difficulty to understand multiple meaning of words (De Conde Johnson *et al.*, 1997:232).

From the responses to open-ended questions it can be deduced that teachers and media teachers were of the opinion that the participants' intellectual skills presented a barrier in accessing and using academic information. The reason is that *intellectual skills* require certain processes such as stimulus recognition, response generation, procedure following, terminology use, discriminations, concept formations, rule formulation, and problem solving. From the results it became clear that the

participants experienced problems applying these intellectual skills, therefore they were not able to benefit from accessing and using academic information.

Intellectual skills are all necessary to facilitate learning at all levels (Gagne, accessed 2008-013-10). This view was also supported by De Conde Johnson *et al.* (1997:232), who accentuated that the above-mentioned factors have an impact on learners' ability to use and access academic information. Without intellectual skills, a child with hearing loss would find it difficult to access and use academic information as these skills are needed to facilitate the understanding of material.

As stated previously, the teachers also accentuated that the adolescents with hearing loss preferred pictures and *visual graphic* aids, as was also found by Spitzer *et al.* (1998: 23) and Wurst (2005:58). These researchers emphasized the value of pictures, and stated that sound accompanied by visual aids was easier for the adolescent to understand. The teachers and media teachers indicated that in the case of educational videos, the participants with hearing loss needed captioning as well, otherwise they experienced difficulty in understanding the video content, as evidenced by Chapdelaine *et al. (*accessed 2008-05-10).

Captioning TV and videotapes facilitates the acquisition of literacy amongst learners with hearing loss and can increase the information obtained (Marschark, 2003: S43 [Supplement]). This implies that the participants rely heavily on visual content with captioning and are not able to work independently with written content only. When there are visual pictures with captioning, the participant with hearing loss will find it easier to understand than the written word only.

The majority (74%, *n=14)* of the teachers held the viewpoint that the participants did not have *enquiring minds* and had *poor motivation* to perform academically. They also felt that the participants had *poor self-esteem* and a *lack of independence*. This correlates with the participants' own perception of themselves as inferior and incapable of achieving academically. These views were supported by several other researchers (Katz, 2002:250-252; 510; 550-552 & 768; Eriks-Brophy *et al.,* 2006:7; Musselman, Mootilal & MacKay, 1996:52) who studied and described the effect of

hearing loss on the child with hearing loss, and the impact of hearing all aspects of life including their self-esteem.

The teachers and media teachers indicated in the open-ended questions that participants tended to depend on other people as they were not able to work independently, were immature, and had a negative self-image. A child with hearing loss may experience a feeling of negativity as well as a sense of disappointment and failure, which can reflect in the child's ability to access and use academic information (Hull, 1998:39). The teachers and media teachers indicated other reasons as well for the participants' inability to access to use and access academic information, such as the *degree and type of hearing loss* and *hearing aid use*. The more severe the degree of hearing loss, the more impact it has on the adolescent with hearing loss's ability to access and use academic information. This is due to their language deprivation that has an influence on literacy, reading and writing skills (Eriks-Brophy *et al.,* 2006:55).

The teachers and media teachers also emphasized that assistive devices, cochlear implants, and intervention methods such as class placement and teaching methods can help the participants to achieve academically and help to improve the participants' ability to access and use academic information. These observations were also reported by Katz (2002: 550-552; 754 & 688) and Cook and Hawkins (2006: 235-236). It must be noted, however, that the teachers indicated in the open-ended questions that *reading skills* can play a role in using and accessing academic information. The poorer the reading skills, the poorer the child will be able to use information (Alpiner & McCarthy, 1993:179).

Both the teachers and media teachers indicated that *lack of motivation* played a role preventing the participants from accessing and using academic information optimally. Engel-Eldar and Rosenhouse (2000:460) indicated other factors such as environmental factors, mental-cognitive factors, psychological-sensory factors, and neuron-developmental factors that played a role in helping children become more motivated. If these factors are deficient, they could delay a child's academic progress in school.

Other interesting factors also came to the fore in the responses to open-ended questions, such as that the teachers indicated that participants have a problem with *content comprehension* and therefore were unable to work independently. These viewpoints were shared by Sayed and De Jager (1997: 7) and Norton (1992:1) who emphasized that comprehension plays an important part in understanding academic information. The teachers indicated that participants had lower reading comprehension skills than normal hearing peers. It is a fact that the average child with hearing loss graduates from high school with reading comprehension at a lower level than his hearing peers (Woolsey *et al.*, 2004:264; Siegel, 2001:38 and Traxler, 2000:337-348). These findings call for schools to integrate higher standards into the curriculum. If participants with hearing loss can learn to read more often, it is possible that their reading ability will improve, as several researchers have found (Wurst, Jones & Luckner, 2005: 57; Gray & McCutchen, 2006:325). Apart from decoding text, a reader has to be able to analyse text, integrate information and sources, and comprehend text (Cooper, 1993:10). Through reading, the participants will be able to develop their phonological awareness skills, and that in turn will help them to improve their ability to access and use academic information (Gray & McCutchen, 2006:330).

In their responses to the open-ended questions, the teachers and media teachers indicated that *availability* of academic material, lack of *funding, teaching methods, collaboration between teachers and media teachers* and *curriculum* play a role in the participants' ability to access and use academic information. If the curriculum does not support academic information it creates a problem. Rader (1995:13) supports these views. If there were more funds available for equipping the media library with more and better academic information materials, it could lead to learners obtaining higher academic achievement, more media staff can be appointed and more information sources can be added or acquired (Spitzer *et al.,* 1998:74; Truax, 1992:404). Rademeyer (Beeld, 2009:9) reported that Prof Servaas, an Economist who was a Speaker at a Seminar at the HSRC on "Poor educational quality in South Africa: Issues of equity and efficiency", indicated the value of resources that will better impact on education, as well as languages and the availability of libraries.

The teachers and media teachers also indicated in the open-ended questions that working in a *group* also affected the participants and that they found it to be very

difficult. They found it very difficult due to their hearing loss, and because one-to one communication is easier for them to comprehend. The more participants with hearing loss participate in classroom and group situations, the more familiar they will become with the process and the more academically successful they will be (Lang, 2002:273). This refers to the processes of active learning, interactive learning, classroom discussion etc. The more involved a child in class is, the better such a learner's chance is of learning the course material. Learning to work in a group leads to feelings of self-worth, success and a positive learning environment (Murray, 2000:7).

The teachers pointed out that there was a need for *computer and Internet resources* to access information. It is a fact that information literacy involves media literacy, information literacy programmes, and computer literacy and thought skills (Behrens, 1990:353). An information literate student is a person who is able to organize a research strategy and then identify, locate, access, and evaluate the relevant information from all information sources. It is necessary that children or learners with hearing loss acquire literacy skills in order to succeed in the technological world of today (Weikle & Hadadian, 2004:1; Luckner *et al.* 2005:443).

With regard to *quantity* and *quality* of academic information, teachers and media teachers commented that books were not always available. Academic information sources that were available were mostly suitable for learners with normal hearing, as they were more on the level of learners with normal hearing with regard to literacy and information literacy skill levels.

With regard to the quantity of the academic information to support the curriculum the teachers responded and said there were not enough *funds* available and that they do not receive adequate financial support or academic materials from the Department of Education. They stressed that the Department of Education needed to collaborate with the school principals of the special schools in order to provide outcomes for all pupils in the areas of critical thinking, problem-solving, and information skills, by supplying adequate academic information sources (Rader, 1995:13).

The teachers said the *curriculum* is often changed by the Department without consulting the teachers. This leads to confusion and it makes it difficult for the

participants with hearing loss. The teachers felt the curriculum needed to be more simplified, and the content and terminology be made more understandable to learners with special needs in order to maintain the same standard as in the case of learners with normal hearing (Mokhtar, & Majid (2006: 36).

The teachers and media teachers indicated in the open-ended questions that the *OBE outcomes* were very vague, difficult to understand and implement and the participants found it very difficult. They also indicated that the participants did not find it easy to work with OBE academic material and had to rely on teachers to help them to find, use, and apply OBE material.

The teachers were of the opinion that the participants were not supported enough by their parents and families because the parents and families did not help the participants with their school work or buy them magazines or books. Parents' emotional support, marriage stability and the relationship between the parents, siblings, and age difference between parents and children have an impact on participants as it gives them emotional support and security. Katz (2002: 761 & 764) discussed the value of different role players in the life of childrenarticipants with hearing loss and indicated that the child with hearing loss is dependent on parents and family to support him/her in life.

As to whether participants had enough *opportunities* to access and use academic information at a media centre, both the teachers and media teachers felt there were enough opportunities but not enough facilities due to a lack of funding from the Department of Education. The participants were also not acquainted with, nor did they have the necessary knowledge to work on a computer or with the Internet.

The teachers' perception on the *quantity* and *quality* of available academic material can be summarized as follows. *Quantity* of academic material refers to how much variety of academic information was available to participants and *quality* of academic material refers to whether the academic material was suitable and applicable for participants with hearing loss. The results showed that participants with hearing loss preferred visual and/or pictorial academic information. Visual representation of information such as pictures, graphs, diagrams is easier for the participants to

understand as they find it difficult to interpret abstract concepts. They also preferred the teachers to use sign language to explain and demonstrate academic information to them (Katz, 2002: 759). Teachers expressed concern and said there was not enough academic material to support the curriculum due to financial constraint, limited budgets and lack of knowledge with regard to what academic material would be suitable for participants with hearing loss.

In the open-ended questions it became clear that while the hearing person learns *abstract* processes through natural language and communication, it is difficult for the child with hearing loss to master abstract concepts (Marschark, 2003: S47 [Supplement]; De Conde Johnson *et al.*, 1997:232). If the adolescent with hearing loss's level of language skills and information literacy skills are improved, he/she will be able to understand the abstract concepts that they have to master (Hugo, 1987:10). Children with hearing loss need practice in understanding abstract concepts and support from role players during reading tasks (Marschark, 2003: S47 [Supplement]). This clarifies the reason why the teachers indicated a need for more books (quantity) to be available to participants, books that are easier to comprehend, and more *captioning with videos*. They commented that academic material was expensive and not always compatible with the curriculum or kept in line with the curriculum.

The teachers also stated that participants with hearing loss depend on a role player to help them to access and use and understand the material, very often on interpreters who use sign language, cued speech and verbal communication, to repeat the teachers' instructions to the participants and to help the learners with academic material (Katz, 2002:759).

The teachers said due to a lack of media teachers the subject teachers had to work in the media centre at times despite the fact that they had no media training at all. Teachers and media teachers admitted there was a need for well-trained teachers who are familiar with the teaching methods and academic information knowledge of participants in special schools, especially participants with hearing loss (as evidenced by Sanders, 1982:18). It is important that academic material should fit in with the curriculum and teaching methods (Rader, 1995:13).

It is clear that the teachers were of the opinion that there were many contributing factors that prevented the participants from accessing and using academic information sufficiently and therefore the participants could not achieve academically. **Sub-goal 3** will investigate the results from the media teachers with regard to the ability of the participants to access and use academic information.

5.4   RESULTS AND DISCUSSION OF SUB-GOAL 3

The purpose of **Sub-goal 3** of the study was to determine the perception of the media teachers with regard to the child with hearing loss's ability to use and access academic information. The media teachers were allowed to indicate more than one option. The results obtained from the questionnaires were very similar to those of the teachers as presented in **Section 5.3.** In order to achieve the sub-goal, the results are summarized, and followed by a discussion and interpretation.

5.4.1 Media teachers' perception of how often participants accessed and used academic information

Table 5.19 displays the media teachers' perception of how often the participants accessed and used academic information and the terms *always, sometimes, never* and *not available* were used.

Table 5.19: Media teachers' perception of how often participants accessed and used academic information (n=6)

TYPE OF ACADEMIC MATERIAL	MEDIA TEACHERS' PERCEPTION OF HOW OFTEN PARTICIPANTS ACCESSED AND USED ACADEMIC INFORMATION							
	ALWAYS		SOMETIMES		NEVER		NOT AVAILABLE	
	n	%	*n*	%	*n*	%	*n*	%
Books	3	50	3	50	3	50	0	0
Magazines	2	33	3	50	1	17	0	0
School books	3	50	3	50	3	50	0	0
OBE material	1	17	4	66	1	17	0	0
Comics	0	0	4	66	2	33	0	0
Newspapers	2	33	4	66	0	0	0	0
Advertisements	2	33	3	50	1	17	0	0
Encyclopaedias	1	17	4	66	1	17	0	0
Dictionaries	1	17	5	83	1	17	0	0
Internet	0	0	2	33	2	33	2	33
Educational videos	0	0	4	66	1	17	1	17

Note: n refers to number of participants who selected this particular option.

The % is the percentage of the total n of participants (6) who selected an option.

From the results displayed in **Table 5.19,** only three media teachers (50%*)* perceived that books and schoolbooks were *always* accessed and used frequently. Two media teachers (33%) perceived that magazines and newspapers were also frequently accessed and used. Five media teachers (83%) held the opinion that dictionaries were sometimes accessed and used. The reason for this perception could be related to these academic sources being made accessible for participants because they were considered a vital part of the curriculum.

Three media teachers (50%) held the opinion that participants *sometimes* accessed and used books, magazines, schoolbooks and advertisements. Two media teachers (33%) indicated that the Internet was *sometimes* accessed and used. The reason for the teachers' perception with regard to participants only using and accessing these academic sources occasionally can be the degree of difficulty of the material and

because the participants depend on teachers and media teachers and other role players to help them to access and use academic information. Half of the media teachers had the perception that participants *never* accessed and used books and schoolbooks – presumably this perception holds true for the media centre only.

Two teachers (33%) indicated that the Internet was not available and one teacher (17%) indicated that educational videos were not available for the participants to access and use. This could be related to restricted finances.

5.4.2 Media teachers' perception with regard to the frequency of access and use of academic information

The media teachers' perceptions regarding frequency of access and use of academic information are summarized in **Table 5.20**. These results were considered important because the information obtained could assist media teachers in reflecting whether more motivation and assistance should be given to participants.

Table 5.20: Media teachers' perception with regard to the frequency of access and use of academic information by the participants

Type of academic material	Media teachers' perception with regard to the frequency of access and use of academic information by the participants							
	'once a day'		'once a week'		'once a month'		'never'	
	n	%	n	%	n	%	n	%
Books	2	33	3	50	1	17	0	0
Magazines	2	33	4	66	0	0	0	0
School books	4	66	1	17	1	17	0	0
OBE material	1	17	2	33	3	50	0	0
Comics	1	17	1	17	3	50	1	17
Newspapers	2	33	3	50	1	17	0	0
Advertisements	2	33	3	50	1	17	0	0
Encyclopaedias	1	17	4	66	1	17	0	0
Dictionaries	1	17	5	83	0	0	0	0
Internet	0	0	1	17	1	17	4	66

Educational videos	0	0	4	66	1	17	1	17
Average	2	33	3	50	1	17	0	0

Note: n refers to number of participants who selected this particular option.

The % is the percentage of the total n of participants (6) who selected an option.

From **Table 5.20** the following deductions can be made. The media teachers had varied answers with regard to how often participants accessed and used academic information. From the results 50% of the teachers (n=3) held the opinion that on average the participants accessed and used academic information *once a week.* There was stronger agreement regarding magazines, encyclopedias, and educational videos. Once again, the reason for this is that these sources are important in the context of the curriculum and usually made available to the participants.

On average only 17% (n=1) responded that participants accessed and used academic information once a month and in the last category few teachers responded at all. So from this table it can be concluded that most of the media teachers were of the opinion that participants accessed and used academic information at least once per week.

Participants should be motivated to access and use academic information regularly. This will help them to become more familiar with academic information sources and help to train them in how to use and access sources. It is necessary to motivate participants to access and use academic information in order to achieve academically.

Future research has to investigate whether the participants have enough time to spend in accessing and using academic information. Bishop and Larimer (1999:15-20) have also determined in their research that participants should have enough time to access and use information sources, especially in the media centre.

5.4.3 Media teachers' perception of where participants access and use academic information

It was important to determine where the media teachers thought participants accessed and used academic information when not in class, so that media teachers could reflect on how and when to help participants. In this section, the teachers indicated more

than one option and therefore the results can not add up to 100%. **Table 5.21** displays the media teachers' perceptions.

Table 5.21: Media teachers' perception on where participants access and use academic information when not in class

Type of academic resource	Media teachers' perception of when participants access and use academic information when not in class									
	'during break'		'after school'		'in media centre'		'in town library'		'in own time''	
	n	%	n	%	n	%	0	%	n	%
Books	2	33	3	50	4	67	0	0	0	0
Magazines	2	33	4	67	3	50	0	0	0	0
School books	1	17	2	33	3	50	0	0	1	17
OBE material	1	17	2	33	3	50	0	0	1	67
Comics	1	17	1	17	2	33	0	0	4	67
Newspapers	2	33	3	50	3	50	0	0	0	0
Advertisements	2	33	3	50	3	50	0	0	0	33
Encyclopaedias	2	33	4	67	0	0	0	0	2	33
Dictionaries	2	33	5	83	4	67	0	0	2	67
Internet	0	0	1	17	0	0	0	0	4	67
Educational videos	0	0	1	17	0	0	0	0	1	17

Note: n refers to number of participants who selected this particular option.

The % is the percentage of the total n of participants (6) who selected an option

Table 5.21 indicates the media teachers' perception of when participants accessed and used academic information when not in school. With regard to their perception of when participants accessed and used academic information, 50% (n=3) or more of the teachers indicated the participants accessed and used 6 out of the 11 types of

academic material *after school* and 50% (n=3) or more of the teachers indicated that participants accessed 7 out of the 11 types of sources in the media centre.

Only a few media teachers perceived that participants access and use information *during break*. Four teachers (67%) said that participants accessed and used comics and Internet in their own time. None of the teachers had the perception that participants go to the town library. The reason for this may be that they surmised the participants were not familiar with the town library or that they received no assistance or any help there.

For the purpose of this study, it was important to determine if the participants go to the *media centre* to access and use academic information. These results indicated that participants do go to the media centre, as the media teachers would know about their visits there. The school media centre is the place where participants can learn how to work with academic information sources and learn to improve their information literacy skills. Nassimbeni and May (2006: 12-2)1 and Bundy (2004:4-6) discussed the value of school media centres and found that this is where participants can learn to become lifelong learners. The media centre is also the place where participants can learn to work independently and learn to use all information sources and techniques to apply the information they have required. These views are supported by Norton (1992:1).

It was interesting to note that the teachers had the perception that participants tend to access and use academic information more after school than during break. Their opinion could be that participants had more time after school and that they might depend on family members or friends to help them to access and use academic information.

5.4.4 Media teachers' perception of specific locations where participants access and use academic information

In order to achieve **Sub-goal 3**, it was necessary to determine media teachers' perception of the specific locations where participants access and use academic information. This was necessary in order to determine whether the school media library was one of the locations where the participants went to access and use

academic information. These results were also relevant in order to determine whether media teachers could be of more assistance to participants with hearing loss to help them to access and use academic information. **Table 5.22** displays the results. Media teachers gave more than one answer and therefore the results cannot add up to 100%.

Table 5.22: Media teachers' perception of the different locations where participants access and use academic information

TYPE OF ACADEMIC MATERIAL	Media teachers' perceptions of where participants access and use academic information											
	AT HOME		IN CLASS		AT THE MEDIA CENTRE		AT A FRIEND'S HOUSE		IN BOOK-SHOPS		AT TOWN LIBRARY	
	n	%	n	%	n	%	n	%	n	%	n	%
Books	0	0	3	50	4	66	0	0	0	0	0	0
Magazines	1	17	3	50	3	50	2	33	2	33	0	0
School books	1	17	3	50	4	66	0	0	0	0	0	0
OBE programmes	1	17	4	66	3	50	1	17	0	0	0	0
Comics	2	33	1	17	1	17	4	66	2	33	0	0
Newspapers	2	33	4	66	3	50	0	0	2	33	0	0
Advertisements	2	33	4	66	3	50	3	50	0	0	0	0
Encyclopaedias	2	33	4	66	3	50	0	0	0	0	0	0
Dictionaries	2	33	4	66	4	66	0	0	0	0	0	0
Internet	1	17	0	0	1	17	2	33	0	0	0	0
Educ. videos	0	0	3	50	2	33	0	0	0	0	0	0
Average	1	**17**	3	**50**	3	**50**	1	**17**	1	**17**	0	**0**

Note: n refers to number of participants who selected this particular option.

The % is the percentage of the total n of participants (6) who selected an option

The media teachers' perception was that the location where participants mainly accessed and used academic information was *in class* and *in the media centre*. The majority of the media teachers (50% or more) held the opinion that the participants access and use books, magazines, school books), OBE programmes, newspapers,

advertisements, encyclopedias, and dictionaries in class and in the media centre. Half of the teachers (50%, n=3) noted that educational videos were also accessed in the classroom.

With regard to visual information, it was some of the media teachers' perception that participants also go to the bookstores in order to access visual information such as magazines (33%, *n*=2); comics (33%, *n*=2) and newspapers (33%, *n*=2). This is because books shops have a lot of visual information available for readers and participants to buy and usually books stores are popular places that participants enjoy to visit and browse through. Four teachers (67%. *n*=4) had the perception that participants go to friends' houses to access and use comics. This was probably because they surmised that comics would be available there.

None of the teachers had the perception that participants go to a town library to access and use any academic information. This could be related to a perception of participants not being aware of information at these libraries or that they are used to access and use academic information mainly at school or in the media centre and because they rely on teachers and media teachers to help them with academic information to access and use.

5.4.5 Media teachers' (n=6) perception of the purpose of accessing and using academic information.

It is important to determine the media teachers' views concerning the purpose why participants access and use academic information. Media teachers gave more than one answer and therefore the results do not add up to 100%. **Table 5.23** displays the results.

Table 5.23: Media teachers' perceptions of the reason why participants access and use academic information.

Type of academic	Media teachers' perception of the reason for accessing and using academic information

	For assignment purposes		For hobby purposes		For career purposes		For own knowledge purposes	
	n	%	n	%	n	%	n	%
Books	5	83	0	0	2	33	4	66
Magazines	4	66	2	33	2	33	5	83
School books	2	33	0	0	1	17	3	50
OBE material	2	33	0	0	1	17	3	50
Comics	1	17	0	0	1	17	4	66
Newspapers	3	50	1	17	2	33	5	83
Advertisements	3	50	1	17	2	33	5	83
Encyclopaedias	4	66	0	0	2	33	0	0
Dictionaries	5	83	0	0	2	33	4	66
Internet	1	17	0	0	0	0	0	0
Educational videos	1	17	0	0	0	0	0	0
Average	3	50	0	0	1	17	3	50

Note: n refers to number of participants who selected this particular option.

The % is the percentage of the total n of participants (6) who selected an option.

Table 5.23 discloses that on average 50% (n=3) of the media teachers had the perception that academic information was used for own knowledge purposes. The majority of the media teachers (83%, *n=*5) were of the opinion that magazines, newspapers and advertisements were used for participants' *own knowledge* purposes. Fifty percent (n=3) of the teachers also indicated that they thought academic material was accessed and used for *assignment purposes.* It is also relevant to note that 0% (n=0) held the opinion that dictionaries were accessed and used for assignment purposes. This calls for further research, as dictionaries are essential tools in explaining words, phrases etc. The reason for participants not accessing and using dictionaries could be that they find them difficult to access or that the participants do not know how to use a dictionary and rely on role players to help them (Kyle & Harris, 2006: 273-288).

With regard to teachers' perception of participants using academic information for *career purposes,* the opinion was expressed by a few of the media teachers (33%, *n=*2) that the following academic material was accessed and used: books, magazines, newspapers, advertisements, encyclopedias and dictionaries. This could be related to information pertaining to careers being found in these sources. Only one teacher (17%) had the perception that schoolbooks, OBE material and comics were useful for career purposes.

5.4.6 Assistance received by participants to access and use information

In providing their perception of who helps the participants to find academic information in order to access and use it, the media teachers gave more than one option and therefore the results do not add up to 100%. **Table 5.24** displays the results of this perception

Table 5.24: Media teachers' perceptions of role players who assisted participants in finding academic material (Teachers, n=6)

Type of resource	Perceived role player											
	Teachers		Parents		Friends		Family		Media teachers		Nobody	
	n	%	n	%	n	%	n	%	n	%	n	%
Books	3	50	1	17	2	33	1	17	4	66	1	17
Magazines	4	66	1	17	2	33	1	17	4	66	0	0
School books	6	100	1	17	1	17	2	33	0	0	0	0
OBE material	6	100	0	0	1	17	1	17	4	66	1	17
Comics	1	17	0	0	1	17	1	17	4	66	1	17
Newspapers	6	100	1	17	2	33	3	50	0	0	0	0
Advertisements	3	50	1	17	2	33	3	50	3	50	0	0
Encyclopedias	3	50	0	0	2	33	4	66	3	50	0	0
Dictionaries	3	50	0	0	2	33	3	50	3	50	1	17
Internet	0	0	4	66	0	0	1	17	0	0	0	0
Educational videos	4	66	0	0	0	0	1	17	3	50	0	0
Average	4	66	1	17	1	17	2	33	3	50	<1	<10

Table 5.24 indicates the following. The media teachers' perception (on average 66%, n=4) was that *teachers* helped the participants to access and use academic information. The reason for this is that teachers work in the class with the different types of academic material and they know what sources the participants need. This was specifically the case (100%, *n*=6) with regard to schoolbooks, OBE materials, and newspapers. As stated in previous discussions, the participants rely on teachers as role players in helping them to access information that they need in class.

The next role-players who helped the participants to access and use academic information, according to the media teachers' perception, were the *media teachers* themselves. Of the six media teachers, on average 50% (*n*=3) indicated that media teachers helped the participants to find the various types of academic information. The reason for this is that media teachers help to develop the participants from the stage where they are able to find the necessary academic information to the ability to work independently and know where the sources can be found. Nassimbeni and May (2006: 12-21) and Bundy (2004:4-6) discussed in their research that if learners can work independently, they will learn to know the value of information as they will be able to find the academic sources. From these results it can therefore be deduced that half of the media teachers (50%, *n*=3) held the perception that participants were not able to work independently on their own in finding academic material. This was significant because participants need to be able to work on their own, especially high school children as they often get assignments to do in school for projects and/or tasks.

Of the individual academic sources, 66% (*n*=4) of the media teachers had the perception that they helped the participants to find books, magazines, and comics. These results indicate that participants even find it difficult to find visual information. This can be attributed to participants' difficulty to find material for their purposes, whether for school, assignment or other own knowledge.

With regard to schoolbooks and OBE, it is important to note that the media teachers' perception was that participants needed assistance with regard to accessing schoolbooks and OBE material. The reason for this is that participants find this type of academic information difficult or seem to have problems in working independently as was discussed in previous sections.

In some cases, it was the media teachers' perception (although this opinion was only expressed for four out of the 11 possibilities) that participants were able to find academic material by themselves. This was applicable to books, comics, and dictionaries. The reason for this might be that these types of academic material are more available in the media centre and easier to locate. The books refer to fiction books that are usually easier to locate. Comics are visually easier to find as they are usually displayed in the media centre at a specific location.

Based on the results in **Table 5.24** it can be concluded that participants with hearing loss need assistance in accessing and using academic material. They rely on role players such as teachers, media teachers and family members.

5.4.7 Media teachers' perception of who helps the participants to understand academic information

The media teachers gave more than one answer and therefore the results do not add up to 100%. The main findings are summarized in **Table 5.25**.

Table 5.25: Media teachers' (n=6) perception of who helps the participant to understand academic information.

Type of resource	Perceived role player who helps participants to understand material											
	Teachers		Parents		Friends		Family		Media teachers		Nobody	
	n	%	n	%	n	%	n	%	n	%	n	%
Books	6	100	1	17	2	33	1	17	4	66	1	17
Magazines	4	66	1	17	2	33	1	17	4	66	0	0
School books	6	100	1	17	1	17	2	33	5	83	0	0
OBE material	6	100	0	0	1	17	2	33	5	83	0	0
Comics	1	17	0	0	1	17	1	17	4	66	1	17
Newspapers	6	100	1	17	2	33	3	50	5	83	1	17
Advertisements	3	50	1	17	2	33	3	50	5	83	0	0
Encyclopaedias	3	50	0	0	2	33	4	66	5	83	0	0
Dictionaries	3	50	0	0	2	33	5	83	4	66	1	17

Type of resource	Perceived role player who helps participants to understand material											
	Teachers		Parents		Friends		Family		Media teachers		Nobody	
	n	%	n	%	n	%	n	%	n	%	n	%
Internet	5	83	4	66	0	0	1	17	0	0	4	66
Educational videos	5	83	0	0	0	0	1	17	5	83	1	17
Average	4	66	1	17	1	17	2	33	4	66	1	17

Note: n refers to number of participants who selected this particular option.

The % is the percentage of the total n of participants (6) who selected an option.

According to the results it seems that the media teachers' perceptions were very similar to those of the teachers. All the media teachers indicated that the *teachers* helped the participants to understand academic information in books, school books, OBE material, and newspapers, while four to five (66% – 83%) of the media teachers were convinced that teachers helped the participants to understand material in magazines and educational videos as well as on the internet. The reason for this is that the same as the perception of teachers in **section 5.4.6**, namely, that those teachers are the facilitators in school; they have knowledge of how to assist participants, and have background of participants with hearing loss. They also have access to the different types of academic material.

As in the case of the other teachers, the media teachers perceived the next significant role players who help the participants to understand academic information to be the *media teachers* themselves. Five (83%) of the media teachers) were of the opinion that they assisted the participants in understanding academic material In school books, OBE materials, newspapers, advertisements, encyclopedias, and educational videos, while four (66%) of the media teachers reported that they helped participants to understand books, magazines, comics, and dictionaries. From these results it appeared that these academic materials were available in the media centre and that the media teachers assisted the participants in understanding them.

With regard to helping the participants to understand the Internet, none of the media teachers reported that they helped the participants to understand the Internet. The reason could be that the Internet was unavailable at their schools or that participants did not ask for help in understanding how to use the Internet.

The third important role players who were perceived to assist the participants in understanding academic information were the family, apart from the parents. Most of the media teachers indicated that family members helped the participants to understand academic information from dictionaries and encyclopedias. It was interesting to note that there appeared to be a perception that participants relied on their family to help them which may indicate that they did not get enough assistance at school.

Of the six teachers, one or two teachers in each case indicated that friends help one another understand all materials except for the Internet and educational videos. The reason can be that they are of the opinion that participants tend to share and discuss interests with each other.

As to whether *nobody* helped the participants to understand academic information, only 17% (*n*=1) of the media teachers indicated that some participants did not need *any help* in understanding the various types of material, with the exception of the internet. From these results it can be concluded that the media teachers regarded these participants as dependent and reliant upon other people for understanding academic material.

5.4.8 Media teachers' perception of how difficult participants found academic information to use

In order to achieve Sub-goal 3, it was necessary to determine the media teachers' perception with regard to whether participants found academic information difficult to use. **Table 5.26** displays the results.

Table 5.26: The media teachers' perception of how difficult participants found academic information to use

Media teachers' perception of difficulty of academic information	The media teachers' perception of how difficult participants found academic information to use					
	Academic information is difficult to use		Academic information is less difficult to use		Academic information is easy to use	
	n	%	n	%	n	%
Books	5	83	1	17	0	0
Magazines	1	17	5	83	0	0
School books	5	83	1	17	0	0
OBE material	6	100	0	0	0	0
Comics	0	0	3	50	3	50
Newspapers	2	33	4	67	0	0
Advertisements	1	17	5	83	0	0
Encyclopaedias	6	100	0	0	0	0
Dictionaries	4	67	2	2	0	0
Internet	4	67	1	1	1	17
Educational videos	2	33	2	2	2	33

Note: n refers to number of participants who selected this particular option.

The % is the percentage of the total n of participants (6) who selected an option.

From **Table 5.26** the following results became clear. It was the majority of media teachers' perception that the participants found most of the academic information (6 of the 11 types) difficult to access and use.

All the media teachers (100%, *n*=6) held the perception that participants found OBE material and encyclopedias *difficult to use*. The teachers indicated that books (83%, n=5) and schoolbooks (83%, n=5) were also difficult for the participants to use. With regard to dictionaries and Internet, 67% (*n*=4) of the media teachers held the opinion that the participants found these sources difficult to use. The reason for teachers' perception with regard to difficulty of use of academic sources may be related to their

experience that participants have problems to use the material, or that they do not know how to use it.

Some media teachers also indicated their perception that academic information was less difficult to use. Five (83%) of the media teachers considered that the participants found magazines and advertisements *less difficult to use,* while 4 (66%) thought that newspapers were less difficult to use*.* This would correlate with the previous sections in the study that participants found visual information easier than written print.

Lastly, 50% (*n*=3) of the media teachers' perception was that comics were *easy to use.* The reason for this may be that participants seem to like comics and find it easier to understand pictures of concepts. Two (33%) of the media teachers thought that educational videos were easy to use. This is probably due to video content and voices used in the video. Chapdelaine *et al*., (2008) indicated that captioning and words will help the child with hearing loss to understand videos.

More research is required in order to explain the perception that participants find academic information difficult to use, and this information can be used to establish ways of improving participants' skills in accessing and using academic information.

5.4.9 Media teachers' perception on whether participants visit the media centre.

For the purpose of this study and with regard to utilizing all academic sources, it was necessary to determine media teachers' perception, presumably based on accurate observation, of whether participants visit the media centre. **Table 5.27** displays the results after which a discussion and interpretation follow.

Table 5.27: Media teachers' perception on whether the participants visit the media centre

Media teachers' response	*n*	%
Regularly	3	50
Sometimes	3	50
Never	0	0

From **Table 5.27** it can be seen it was half of the media teachers' (50%, *n*=3) perception that participants *do go* to the media centre on a regular basis, while the other half of the teachers (50%, *n*=3) responded that participants *sometimes* go to the media centre. None of the teachers responded that participants never go to the media centre. Participants may visit the media centre only sporadically due to the time-factor and lack of motivation. The participants in special schools do not have a media centre class and have to go to the media centre during break or after school. Bishop and Larimer (1999:15-20) accentuated the value of a media centre and stated that lack of time in school is a serious constraint as the media centre is not always open at convenient times. Bishop and Larimer (1999:15-20) pointed out that participants need to have enough time to work in the media centre.

External factors, however, are not the only determining influences. Louw (1991:13) stated that motivation, interest and training influence a persons' capability and willingness to work with information in all forms, and this will influence a learner's inclination to visit the media centre to utilize all academic sources.

This result is important in that the media teachers could provide an indication of how regularly the participants go to the media centre. They will need to suggest methods and ways to encourage participants to go to the media centre to access and use academic information. From this result it is clear that more attention should be given to ways in which to encourage participants to visit the media centre more regularly.

5.4.10 Media teachers' perception on which other factors influenced participants' access and use of academic information

It was important to determine which other factors could influence participants' ability to access and use academic information. Therefore the results of the following section are considered to be important as it could provide valuable information and lead to further research aimed at finding ways to improve the participants' utilization of academic information**. Table 5.28** displays the results.

Table 5.28: Media teachers' (n=6) perception of factors influencing the participants' ability to access and use academic information.

Factors that could influence the participants in accessing and using academic information	Media teachers' perception of the influence of each factor							
	Strong influence		*Sometimes* affects the participants		*No* influence		*Difficult to assess* the influence of factors	
	n	%	n	%	n	%	n	%
Degree of hearing loss	6	100	0	0	0	0	0	0
Communication method	4	66	2	33	0	0	0	0
Hearing aid	1	17	2	33	0	0	0	0
Cochlear implant	1	17	0	0	0	0	3	50
Availability of academic materials	4	66	2	33	0	0	0	0
Lack of funding	5	83	1	17	0	0	0	0
Teaching methods	3	50	2	33	1	17	0	0
Curriculum	4	66	2	33	0	0	0	0
Lack of assistance/volunteers	5	83	1	17	0	0	0	0
Cognitive abilities	5	83	0	0	0	0	1	17
Lack of information litera-cy skills	4	66	1	17	0	0	0	0

Factors that could influence the participants in accessing and using academic information	Media teachers' perception of the influence of each factor							
	Strong influence		*Sometimes* affects the participants		*No* influence		*Difficult to assess* the influence of factors	
	n	%	n	%	n	%	n	%
Lack of ability to work independently	5	83	1	17	0	0	0	0
Participants cannot work in groups	3	50	3	50	0	0	0	0
Lack of motivation	5	83	1	17	0	0	0	0
Information is outdated	2	33	4	66	0	0	0	0
Lack of reading skills	6	100	0	0	0	0	0	0
Lack of content understanding	6	100	0	0	0	0	0	0
Influence of sign language	3	50	2	33	0	0	1	17

As seen from **Table 5.28**, not all of the media teachers responded to all sections of this question that was posed to them. All six of the teachers (100%) had the perception that the degree of hearing loss, lack of reading skills, and lack of content understanding affected the participants. The media teachers may have based this perception on their observation of the participants' inability to achieve academically, due to inadequate literacy skills and information literacy skills. Cognitive abilities, lack of ability to work independently, and lack of motivation were other inherent factors perceived by 83% (n=5) of teachers to impact on the participants' ability to access and use academic information. There were four teachers (66%) who thought that a lack of information literacy skills had a significant impact, while three teachers (50%) noted that an inability to work in groups seemed to have a negative influence. All of these factors are inherent in the participants themselves.

With regard to external school-related factors, the majority (83%, $n=5$) of the media teachers held the perception that a lack of assistance or volunteers to assist the participants in accessing and using academic materials had an influence on the participants' performance. This might be related to the perception that the participants are unable to work independently. Lack of funding was also perceived by five teachers (n=83%) to be an impacting factor. The lack of funding directly affects the implementation of the curriculum, as without funding it is not possible to supply enough academic material. Four (67%) of the media teachers held the opinion that the curriculum itself presented a problem. More than half of the teachers (n4= 66%) considered poor availability of academic materials to be an impacting factor. Lack of materials might also impact on the teachers' ability to present the curriculum effectively. Although half of the media teachers (n3= 50%) expressed the opinion that teaching methods influenced the participants, they did not disclose whether they perceived teaching methods in their specific setting to have a positive or a negative influence. According to Nowell and Marshak (1994: 19-23), teaching methods should be efficient in order to help the a person with hearing loss to develop information literacy skills. In earlier years, Sanders (1982:18) accentuated the need for well-trained teachers as well as effective

teaching methods. Teachers need to have first-hand knowledge of participants in special schools, especially adolescents with hearing loss.

With regard to communication methods, half of the teachers (50%, n=3) had the perception that sign language also played a major role and affected the child' ability to access and use academic information, possibly because it influenced their literacy and information literacy skills. Spencer *et al.* (2000:281) noted that sign language generally "…does not have widely accepted written forms", and that people who use sign language cannot acquire literacy skills in their first language to transfer to the written form of a second spoken language. This has severe implications for the adolescent with hearing loss. Signing as the primary language has the implication that the adolescent with hearing loss relies on certain signs to be able to interpret what is being said. Signing has an influence on the communication skills of the child with hearing loss that has in turn an effect on a person's ability to access and use academic information (Napier, Mckee & Goswell, 2006:10).

5.4.11 Media teachers' perceptions regarding availability of academic information to support the curriculum

With regard to the question whether there was enough available academic information available to support/supplement the curriculum, the media teachers were divided equally. Half of the media teachers (50%, *n*= 3) responded positively (enough information available) whereas the other 50% responded negatively (not enough information available). Some schools may have restricted financial resources and/or the available information might be outdated. Mancall *et al.* (1986:18-27) found that a lack of funds for academic material and insufficient training of media teachers could have an effect on the curriculum in that it could lead to a lack of relevant material in the media centre.

5.4.12 Media teachers' perceptions regarding the time available for participants to access and use academic information during the year

From the results in the questionnaire, as seen in **Figure 5.5** the majority of media teachers held the opinion that participants did have enough time during the year to access and use academic information.
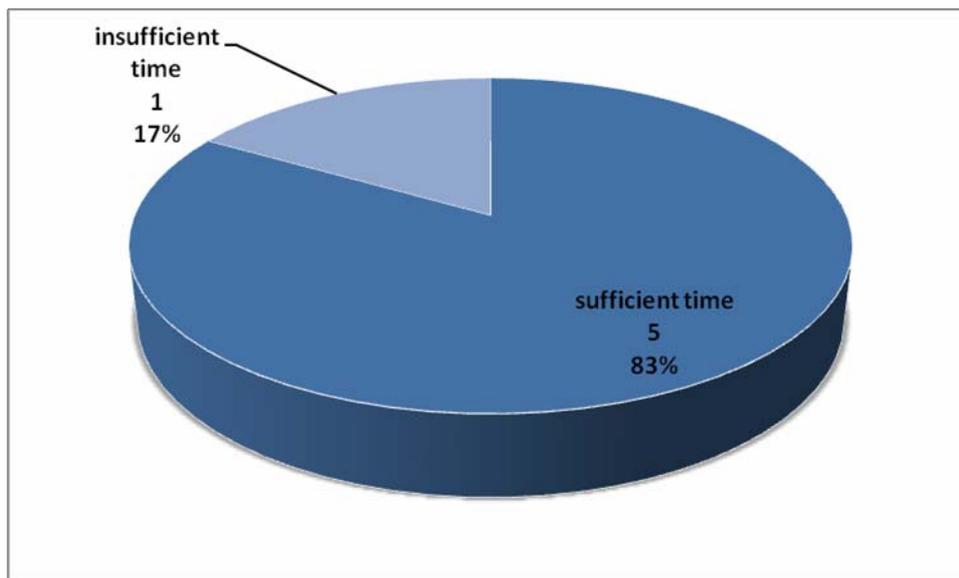
Figure 5.5:   Media teachers' perception if participants had enough time to access and use academic information during the year

Figure 5.5 shows that the majority of the media teachers (83%, *n*=5) held the opinion that participants did have enough time to access and use academic information at the school during the year. There was only one teacher (17%) who was of the opinion that it was not the case. It is possible that some participants might not be aware of existing material or that they did not know how to access and use such information.

5.4.13 Concluding remarks

The media teacher plays a vital role in teaching the participants information literacy skills. The reason for this is because the media teacher understands

which skills are necessary in order to retrieve information, understands the information resources, and knows how to integrate information literacy skills. These views are supported by Callison (1999:38-40), and Doiron and Davies (1998:20). The media teacher needs to collaborate with the classroom teacher, be aware of the participants' strengths and weaknesses, and have knowledge of the curriculum.

From the results it became clear that the media teachers were of the opinion that the participants mainly accessed and used academic information in class and in the media centre, while teachers and media teachers were regarded as the main role players who assist participants with hearing loss to find and understand information.

The majority of media teachers were convinced that the participants found academic material difficult to understand, with 100% consensus regarding OBE materials and encyclopaedias and 83% consensus regarding school books and books in general. This was despite the fact that, according to 83% of the media teachers, participants had sufficient time to access and use academic information. Factors that were considered to influence information literacy for these participants were the degree of hearing loss (according to 100% of the media teachers), cognitive abilities, a lack of ability to work independently, a lack of motivation, and a lack of assistance (83% of media teachers).

Based on the results of 5.4, it is clear that the media teachers had very much the same perceptions as the classroom teachers. Collaboration between teachers and media teachers is necessary in order to help participants develop the ability and skills to access and use academic information. This collaboration, however, may take a few years to attain (Muronago and Harada, 1999:9-14; Callison, 1999:38-40; Rader 1995:13; Haycock, 1999:28). The reason for this is that it takes a long time to develop an understanding of a child with hearing loss because of every child's unique problem and needs, and also because the media teachers need experience to be able to work with participants with hearing loss. If a child with hearing loss can be motivated to work regularly in the media centre,

his/her self-concept can develop, self-confidence can increase, and the child may achieve academically (Murray, 2002:6).

The fourth sub goal of the study aimed to determine selected adolescents' ability to complete the questionnaire survey in the media centre (**Group IV** of **Phase II**) with regard to the *quantity* and *quality* of work.

5.5   RESULTS AND DISCUSSION OF SUB GOAL 4

The fourth sub goal of the study was to determine and describe the *quantity* and *quality* of work rendered by 48 selected adolescents during the execution of an assignment in the media centre.

5.5.1   Introduction

A brief explanation of the terms used in sub goal 4 is required. The *quantity* refers to whether there was enough academic material for the participants to access and use and the *quality* refers to whether the participants were able to find the topics in specific relevant academic sources.   While the participants completed the questionnaire, the researcher observed the participants in the media centre and used descriptive methods to record the results in MS Word (See **Appendix H).**

5.5.2   Results and discussion regarding the assignment completed in the media centre

The researcher observed and noted various aspects of the way in which the participants approached and executed the assignment in the media centre.

5.5.2.1   The choice of the topic

The participants in the media centre were asked to select any topic related to their own interest. There was no list of topics that they could choose from. They could

select any topic of their own choice. **Table 5.29** indicates the topics that the participants chose.

Table 5.29: **Topics that the participants chose in the media centre while completing the assignment**

Topic	Number and percentage of participants who selected the topic	
	n	**%**
Stars	10	21
South Africa	8	17
Aeroplanes	7	15
Butterflies	5	10
Oceans	4	8
Bees	3	6
Lions	3	6
Snakes	3	6
Parrots	2	4
Homes	1	2
Leopard	1	2
Bushmen	1	2
TOTAL	48	100

From **Table 5.29** it becomes clear that a variety of topics were chosen by the participants when completing the assignment. These results give an indication of which participants the participants were interested in. The majority of the participants (21%, n=10) were interested in stars, followed by South Africa (17%, n=8).

5.5.2.2 **Methods the participants used in the media centre to find information regarding their topic**

For the purpose of the study to answer **Sub-goal 4**, it was important to note which methods the participants followed when searching for information. **Table 5.30**

displays the methods the participants followed or preferred when searching for information to execute their assignment. The participants typically used more than one option, and therefore the results can not add up to 100%.

Table 5.30: Methods the participants followed when searching for information on their assignment topic

Method	Participants who used the method	
	n	**%**
Participants went to the shelf to look for information	44	91
Participants asked the media teacher for assistance	25	52
The participants asked their friends to help them to find the relevant information	23	48
Participants went to the card catalogue	21	44
The participants used the computer catalogue to look for information	7	15

From **Table 5.30** it is clear that the majority of the participants (91%, *n*=44) went to the media shelves to look for information regarding their chosen topic, whereas 44% (*n*=21) of the participants went to the card catalogue in the media centre to see where the information can be located on the shelf. Some of the participants (52%, *n*=25) asked the media teacher to help them to find information, while some of the participants (48%, *n*=23) asked their friends to help them. Only 15% (*n*=7) of the participants used the computer catalogue to look for information on their participants.

These results were important to the researcher because it gave an indication whether the participants were able to work independently or if he/she had to rely on the media teacher or other persons for assistance. It must be stated again that the majority of the schools did not have computers for the participants to work on

and therefore the results indicated that only a few of the participants used the computer to look for information on their topic.

From the results it can be concluded that the participants used different methods when looking for information on a topic. The majority of the participants (56%, n=27) apparently did not know how to use the card catalogue and that may be the reason why they had to rely on the media teacher (52%, n=25) for assistance. From these results it became clear that the participants mainly relied on role players such as teachers or friends to help them with the assignment, in other words, they found it difficult to work independently.   One may deduce that the media teacher usually has to instruct the majority of participants (52%, n=25) how to access and find academic information and so help them to acquire information literacy skills. Fuhler *et al., (*2006:647) discussed in his research that if the media teacher is dedicated in instructing and helping the child with hearing loss in the media centre, it can assist or help the child to access and use the different academic sources as well as help to develop a child's ability to apply information literacy skills.   Ultimately, however, the goal is for participants to work independently without assistance from teachers or media teachers.

After the participants had chosen their participants and decided how they were going to find information on their topic, it was important to note if they were able to succeed in finding information in the academic sources in the media centre. The researcher observed the participants with regard to three aspects, namely:

- Whether the participants were able to find information on their chosen topic in the non-electronic resources provided by the media centre and were able to understand the tasks as set out in the questionnaire. This relates to the participants using the *card catalogue* and going to the *shelves* to find the relevant information in different academic sources.
- The researcher wanted to determine whether the participants were able to find information by accessing and using a *computer* in the media centre.

- The researcher was also interested in determining whether any of the participants were able to access and use the *Internet in* the media centre.

Table 5.31 describes the participants' ability to use the card catalogue to find information on their topic.   A discussion and interpretation follows.

Table 5.31:   The ability of the participants (n=48) to use the card catalogue

Task to perform while using the card catalogue	Participants successful		Participants unsuccessful		Participants not following the process	
	n	%	n	%	n	%
1. Find information on his/ her topic in the card catalogue	10	21	34	71	4	8
2. Find the card with the author's name	10	21	30	63	8	16
3. Write down the name of the author	4	8	39	81	5	10
4. Write down the Dewey Decimal Classification number of the book	34	71	9	19	5	10
5. Be aware of the fact that the number system on the card is the Dewey Decimal classification	18	37	21	44	9	19

From these results it was clear that there were only 21% (*n*=10) of the participants who knew how to utilise the catalogue drawer to find information on the topics.

The majority of the participants (71%, n=34) were not successful in their attempt and could not find any information. Of the 48 participants, 8% (n=4) did not go to the catalogue drawer at all. The reason for this could be that the participants did not know what the catalogue is, or how it works. From other previous results it was clear that teachers and media teachers had to help the majority of the participants in the media centre to find academic information.

The majority of the participants (63%, n=30) were not able to find the name of the author that appeared on the catalogue card. Of the 48 participants, 81% (n=39) were not able to write down the name of the author although 19% (n=9) of the participants could write down the number of the book as well. This correlates with previous results that participants rely on role players to help them to find academic material.

In most libraries, the books are stored or filed on shelves according to a numbered system, the Decimal Classification System. This system classifies all books according to participants, categories and/or regions. In all the media centres that the researcher visited, the Dewey Decimal Classification was applied in the media library. The number was indicated on the side of each book and the books were placed on the shelf according to the catalogue card and/or the reference on the computer.

On the catalogue card in the drawer, the *bibliographic details* such as the name of the book, the author, the topic, the Dewey Decimal Classification number (the place where the book will stand on the shelf), the place of publication, and the publisher's name and date of publication are usually provided.

It was clear that the participants did not understand the Dewey Decimal Classification that was indicated on the catalogue card. Only 18 participants (38%) indicated they knew what the Dewey Decimal Classification was although it was not clear for the researcher whether the participants were able to relate or connect the number that was found on the card according to the Dewey Decimal Classification. If participants possess information literacy skills, they are able to

locate, access, and apply information, as evidenced by SALIS, MSSW and UNESCO Workshop Proceedings and Workshop Report (2006:64).

It was also apparent that the participants were not aware of bibliographic details. Behrens (2000:11) pointed out that a media centre is successful when it displays all the bibliographic details and if a learner is able to apply his/her information literacy skills in accessing and using academic information.

After finding the necessary details on the card, the participants were asked in the assignment survey to go to the shelves to find the relevant book on their topic and to write down the bibliographic details. **Table 5.32** displays the results.

Table 5.32: Ability of the participants (n=48) to complete bibliographic details after finding information on the shelves

Tasks to perform/questions to answer after locating information on the shelves	Participants successful		Participants unsuccessful		Participants not taking part in the process	
	n	%	n	%	n	%
1. Find the book and write down the name of the book after locating it on the shelf	46	96	0	0	2	4
2. Write down the date of publication	7	15	37	77	4	8
3. Determine if the book has a table of contents	38	79	7	15	3	6
4. Determine if the book has an index	32	67	11	23	5	10
5. Be aware that the index is arranged alphabetically	21	44	11	23	16	33
6. Indicate the page on which the topic can be found	6	75	5	10	7	15

Tasks to perform/questions to answer after locating information on the shelves	Participants successful		Participants unsuccessful		Participants not taking part in the process	
	n	%	n	%	n	%
7. Write a short paragraph on the topic	21	44	11	23	16	33
8. Put the book back on the shelf	37	77	5	10	6	13
9. Notice and understand that the books are arranged numerically on the shelf	37	77	4	8	7	15
10 Know whether there are encyclopedias in the media centre	37	77	6	13	5	10
11. Indicate the page where the topic is discussed in the encyclopedia	38	79	1	2	9	19
12. Know whether there are dictionaries in the media centre	41	85	4	8	3	6
13. Indicate on which page in the dictionary the topic is described	33	69	6	13	9	19

From the results displayed in **Table 5.32**, the following can be observed. Most of the participants (96%, n=46) were able to write down the name of the book. There were only two participants who were not able to perform the task. The researcher noted that the participants browsed through the shelves until they found what they were looking for. It was not possible for the researcher to determine whether they were sure that they had found the correct book.

As with regard to completing bibliographic details that were asked from them, only 15% (*n*=7) of the participants were able to write down the publication date. This meant that the majority of the participants (77%, n=37) were not able to write down the date of publication or did not know where to look for the date of publication, while four participants did not even attempt to complete this part of the assignment.

The majority of participants (79%, *n*=38) knew that the books had a table of contents, although 67% (*n*=32) of the participants did not know what an index was. Of the 48 participants 44% (*n*=21) did not know that the index was also arranged alphabetically. This was an important finding because this gives an indication of the participants' knowledge of information literacy concepts and ability to be able to search for more information or other relevant search terms within the index.

Most of the participants (75%, *n*=36) were able to find the page on which their topic was. It is important to note, however, that only 44% (*n*=21) of the participants were able to write a short paragraph on their topic after having read it. This finding correlates with the findings that the participants experienced problems with regard to comprehension of reading material, language, and literacy skills.

The majority of participants (77%, *n*=37) knew where to place the books back on the shelf. They appeared to remember where they had found the book. In this regard it must be noted that the researcher did not check if the book was put back correctly according to the numerical system, namely the Dewey Decimal Classification. The researcher only observed that the participants went to put the books back on the shelf. In answer to the question if they knew whether books were arranged numerically on the shelf, the majority of the participants 77% (*n*=37) indicated that they did know. From this the researcher came to the conclusion that the participants were aware of the numerical system, but it was not possible to determine if the participants knew exactly how the numerical system worked, namely the Dewey Decimal Classification that is organised or classified according to categories/sub-categories on the shelves.

For the purpose of the study, it was important to establish whether the participants were aware of academic sources such as encyclopaedias and dictionaries. Of the 48 participants, 77% (n=37) knew there were encyclopaedias and 85% (n=41) knew there were dictionaries.

It was interesting to note that only 44% (n=21) of the participants were able to write a short paragraph on his/her topic. This can be related to the participants' lack of vocabulary, content comprehension, and level of literacy, as was discussed previously in this chapter. Another finding that may relate to this issue is that 23% (n=11) of the participants were not able to use the index to look for information on the topic. This is relevant because an index (or glossary of terms) would give a participant an indication if the book has information that he/she can use. Some of the participants with hearing loss appeared to have a limited knowledge of terminology as well as a lack of knowledge about search strategies.

It is important to note that some participants did not complete all parts of the assignment in the media centre, and this could give the media teacher an indication of processes that should receive attention. Of the 48 participants, 33% (n=16) did not make use of the alphabetic index. This may relate to their poor skills stemming from reading and/or literacy problems. Also, 33% (n=16) of the participants did not write anything about their topic. This could be because they did not find anything, or because they were not able to understand their topic, or they relied on some assistance in the media centre in finding information.

From this observation, the researcher was able to come to the conclusion that a significant number of the participants do not know what bibliographic details mean in the context of a media centre. Bibliographic knowledge is important for a participant in order to access and use academic information, whether for school or personal purposes (Behrens, 2000:11). If a participant knows that knowledge of bibliographic details entails the knowledge of the name of a book, the author's name, the publication date, name of publisher, the index, table of contents, etc., it can help the participant to access and use academic information to his/her advantage (Information literacy, the library at QVCC, accessed 2009-06-17).

It was also important to determine whether the participants knew how to access and use a computer catalogue to locate information on his/her topic as well as to determine whether the participants knew how the Internet works. **Table 5.33** displays the results with regard to the computer catalogue.

Table 5.33: The participants' (n=48) ability to access and use a computer catalogue

Tasks to perform/questions to answer after locating information on the computer catalogue	Participants successful		Participants unsuccessful		Participants not responding/ participating	
	n	%	n	%	n	%
1. Indicate whether they were allowed to use the computer in the media centre	8	17	2	4	38	79
2. Find their topic's details on the computer	8	17	0	0	40	83
3. Write down the name of the book in order to find information on their topic	7	15	1	2	40	83
4. Write down the name of the author of the book in order to find information on their topic	4	8	4	8	40	83
5. Write down the number of the book according to the Dewey Decimal Classification with regard to their topic	6	13	2	4	40	83

Table 5.33 shows that the majority of participants (79%, *n*=38) did not give any indication whether they were able to access or use a computer in the media centre. This can be related to the fact that computers were not available to participants. Only 17% (*n*=8) responded affirmatively that they do use computers in the media centre. This could be because few of the schools had computers in the media centre. Of the 48 participants, the majority (83%, *n*=40) indicated they did not know how to find a book on their topic on the computer catalogue.

With regard to using the computer catalogue, 40 of the participants (83%) did not indicate whether they could complete bibliographic details such as finding their

topic's details on the computer catalogue (83%, n=40); they also did not attempt (83% (n=40) to write down the name of the book as well as the number of the book where the book can be found on the shelf.

The last part of the assignment that the participants had to complete was designed to determine whether they had knowledge of or access to the Internet, and if they knew how to take notes of the bibliographic details of the information from the Internet. This is important because so much information is available on the Internet. **Table 5.34** displays these results.

Table 5.34:   The participants' ability to access and use the Internet on their topic

Questions the researcher had to answer while participants were locating information on the Internet	Participants successful		Participants unsuccessful		Participants not taking part in the process	
	n	%	n	%	n	%
1. Does the participant know what the Internet is?	3	6	8	17	37	77
2. Does the participant know whether there is Internet in the media centre?	2	4	6	13	40	83
3. Is the participant able to write down the number of the book?	6	13	42	88	0	0
4. Does the participant know how to go online?	3	6	5	10	40	83
5. Does the participant know how to find his/her topic on the Internet?	5	10	8	17	35	73
6. Does the participant know what a website is?	0	0	10	21	38	70
7. Is the participant able to write down the name of the website?	0	0	1	2	47	98
8. Is the participant able to write down the name of the title of the	1	2	1	2	46	96

Questions the researcher had to answer while participants were locating information on the Internet	Participants successful		Participants unsuccessful		Participants not taking part in the process	
	n	%	n	%	n	%
article on the Internet?						
9. Is the participant able to see the name of the author of the article?	2	4	5	10	41	85
10. Is the participant able to write down the name of the author?	1	2	0	0	47	98

The results displayed in **Table 5.34** reveal that the majority of the participants (77%, *n*=37) did not know what the Internet was. The reason can be unavailability of the Internet due to lack of funding, and also lack of knowledge how to work with the Internet.

The majority of the participants (83%, *n*=40) did not know if there was Internet at the media centre. A large percentage (83%, n=40) did not go online or try to find information on their topic (73%, *n*=35). Of the 48 participants, nobody gave an indication that they knew what a website was. As with regard to taking bibliographic details, only one participant knew how to write down the name of the article on the Internet and two participants were able to note the name of the article that he/she found or the author of the article. Only five participants (10%) gave an indication that they knew there ought to be a great deal of information on the Internet. From the results it is clear that the majority of the participants (77%, *n*=37) did not access and use the Internet, or were unable to work with the bibliographic details of their topic, therefore could not benefit from the Internet at all.

Sub-goal 4 aimed to determine the abilities of adolescents with hearing loss in special schools with regard to the quantity (how much academic information they found) and the quality (how good was the academic information) of academic information accessed. From the results it became clear that the participants were able to choose their topics in the media centre but that they were not able to

access and use academic information independently, that is, without assistance. They also did not appear to have appropriate knowledge of which bibliographic details (e.g. name of book, author, title, page number) to utilise when looking for information on their topic. The participants were not able to use the computer catalogue or the Internet to obtain more information on their topic.

From the above-mentioned results and observations made by the researcher, it is appropriate to make the suggestion that an information literacy instruction programme is necessary and will only be effective if it is taught in context with the content of the curriculum of the school which the adolescent with hearing loss attends (Mokhtar & Majid, 2006: 36; Smith, 2006:764-773).

The results from Sub-goal 3 showed that the participants were dependent on teachers and media teachers to assist them in accessing and using academic material and to help them with their assignment in the media centre. Participants with hearing loss depend on role players in helping them with regard to academic material. Marschark (2003: S41-S47 [Supplement]) underscores the fact that further research is necessary if the reading skills and academic performance of participants with hearing loss are to be improved. This is necessary in order to know how participants with hearing loss acquire their knowledge and how they organize their memory and activate it during reading (Marschark 2003: S44 [Supplement]).

5.6   SUMMARY AND CONCLUSION OF CHAPTER 5

The results pertaining to the four sub goals gave insight into the main goal namely to determine whether adolescents with hearing loss in special schools have the ability to access and use relevant academic information. Time constraints dictated that the perceptions of various groups be investigated rather than the actual performance of the participants over a period of time. Nevertheless, it can be maintained that on the one hand perceptions are based on experience, and on the other hand they also determine actions to a significant extent, and therefore the results are regarded as meaningful.

Sub-goal 1 aimed to determine the perception of adolescents with hearing loss of their own ability to access and use academic information. From the results of the questionnaire and the conclusions drawn by the researcher it is clear that the participants found it difficult to access and use academic information in all sources except for school books. There is no other source for which more than 50% of the participants indicated consistent success (**Table 5.1**). School books were also the only resource that they reported using to any meaningful extent (**Table 5.2**). The results showed that participants mainly accessed and used academic information during and after school time, but not during break. **Table 5.4** demonstrates that participants feel they use academic information mostly in the class setting, although for non-academic purposes they do access materials at home. There was not much consensus among the participants as to the purpose for which they used information. The main observation was that not all participants were able to access and use academic information for any purpose.

An important finding was that the participants relied on role players to help them to access, use, and understand academic information. The participants clearly experienced that they were not able to work independently; they mostly reported that they relied on teachers and media teachers to help them (**Table 5.6** and **5.7**). on the other hand, a surprisingly low percentage (on average 21%) reported, that they found it very difficult or even difficult (on average 39%) to access academic information (**Table 5.10**). For all the types of information sources, however, there were some participants who reported that they found it very difficult to access and use these specific sources. The apparent incongruity of these findings may indicate that the participants do not interrelate their various perceptions.

Sub-goal 2 aimed to determine teachers' perceptions of their students' ability to access and use academic information. From the results it became clear that the teachers' perception was that participants displayed problems when accessing and using academic information. The teachers indicated (**Table 5.11**) that participants only accessed and used academic information occasionally, mostly in their own time (**Table 5.13**). The teachers held the opinion that academic information was mainly used for assignment purposes. The results indicated

clearly that teachers perceived themselves, and to a lesser extent the media teachers, to be the main role players who assisted the participants to access and use academic information as well as to understand it. The teachers were of the opinion that there were several factors limiting the adolescent with hearing loss in achieving academically as they were not able to access and use the academic information optimally. The teachers gave several reasons such as the degree of hearing loss, lack of motivation, lack of enough quantity of material and insufficient training of teachers.

From the results it became clear that the teachers held the perception that, although certain types of academic information were more difficult to understand than others, the participants mostly found it very difficult to access and understand (**Table 5.18**). In their answers to open-ended questions the teachers indicated that participants have insufficient language skills, low literacy skills, low information literacy skills and poor cognitive skills. It became clear that it was the teachers' perception that sign language influenced the participants as the participants found signing to be easier than the spoken word. Sign language does not have the same syntax rules and morphology as spoken language. According to the teachers, participants find it easier to think in pictures and to assemble understanding from pictures rather than in written form.

Sub-goal 3 was to determine the media teachers' perception with regard to the ability of adolescents with hearing loss to access and use academic information. From the results it became clear that the media teachers' perceptions were similar to that of the teachers, namely that participants found academic information hard to find, apply, and understand (**Table 5.28**), and that they had to be assisted by teachers (**Table 5.26** and **5.27**). From the results it also became clear that media teachers thought participants found English hard to understand, as it is difficult for a child with hearing loss to grasp and understand a second language. Sign language was in most cases considered to be their first language. Media teachers had the perception that factors inherent in the participants themselves, such as the degree of hearing loss, lack of reading skills, cognitive abilities, lack of ability to work independently, and lack of motivation, affected the participants. With

regard to external school-related factors, the majority (83%, *n*=5) of the media teachers held the perception that a lack of assistance or volunteers to assist the participants in accessing and using academic materials had an influence on the participants' performance. Lack of funding, and poor availability of academic materials, were also perceived to be external impacting factors.

Sub-goal 4 was to determine the actual ability of adolescents with hearing loss to complete a survey assignment in the media centre. The researcher found that the participants could not complete the assignment with ease. They found it difficult to find their topics, as well as to write a paragraph on their topic. They could not use the computer or Internet.   They were also not aware of the Dewey Decimal Classification according to which books were arranged on the shelf.   From the results (**Tables 5.32** to **5.34**) it became clear that the participants were not able to utilise basic bibliographic details in order to complete his/her assignment, in other words, they were not able to complete the name of author, name of book, page where they could find information on their topic. The participants found the card catalogue difficult to use, although they managed to find books on the shelves. The participants found the questions in the assignment difficult to answer and were not able to give bibliographic details regarding their topic. It would seem that they rely on teachers and media teachers to guide them in finding academic material and to understand it.

The media teachers remarked that the participants did not access and use computers or the Internet. The performance of the participants observed by the researcher confirmed this view. The apparent lack of knowledge and skills could be due to the fact that the relevant technology was expensive, not always available, and difficult to use.

The various findings discussed in this chapter can only have value if they can be related to educational planning and teaching, or further research that will enable practitioners to make such changes. Based on these results recommendations can be made for all of the mentioned categories.

CHAPTER 6
CONCLUSIONS AND IMPLICATIONS

6.1   INTRODUCTION

Based on the study, it became apparent that research in the field of information science, education, audiology and communication pathology in South Africa must satisfy the unique demands of the population, and be social justifiable as well as relevant to the context (Hugo, 1998:3-9).   This study was concerned with the situation at special schools based in South Africa that provide for adolescents with hearing loss. The current research aims to fulfill these goals by providing a research base for a proposed information literacy programme to be applied in media centres of special schools. The study has practical implications for the adolescents with hearing loss as well as for teachers and media teachers within the South African context. There is also a need in South Africa for research that aims specifically to provide findings applicable to the changing context in the educational system.

This chapter contains the conclusions and recommendations of the study. A critical evaluation of this study is provided and appropriate recommendations are made regarding further research possibilities related to the study. The aim of the final chapter is to discuss the conclusions drawn from the theoretical and empirical research study as described in the previous chapters and to make recommendations that have practical implications for an information literacy programme for a media centre of a special school.

6.2   FINDINGS

The main goal of the study was to determine whether adolescents with hearing loss in special schools could access and use academic information. This was done by formulating four sub-goals and conducting the research in two Phases. Phase I and Phase II aimed to answer the main question: *to what extent are adolescents with hearing loss in special schools able to access and use relevant information for academic purposes?*

In the first phase, the participants consisted of adolescents (Sub-goal 1), the teachers (Sub-goal 2) and media teachers (Sub-goal 3). The second phase participants consisted of adolescents who completed a survey assignment in the media centre (Sub-goal 4).

6.2.1 Conclusions relating to Sub-Goal 1 of the study

Sub-Goal I (Phase I) aimed to determine the perception of adolescents with hearing loss of their own ability to access and use academic information. It can be concluded that the majority of the participants always found academic information difficult to access except when the information was available in schoolbooks. There is no other source for which more than 50% of the participants indicated consistent success. The participants do not appear to perceive themselves as manifestly successful in finding academic information and more research needs to be done to determine why adolescents find it difficult to access and use academic information.
It was also deduced that the participants prefer information to be displayed in a visual format. One may conjecture that this is due to it being simpler to access, more engaging and easier to comprehend, or that it is more available in and outside the school. Adolescents with hearing loss have more access to visual material than to academic materials although the results indicated that most types of academic material were available at the special schools in accordance with the school curriculum.

It was clear from the results from Sub-goal 1 that the majority of the participants did not access or seldom accessed OBE material, possibly because they either did not understand the material, or did not have access to it. There is clearly a need for further research with regard to accessing and using OBE material because it forms an integral part of the South African Education system.

It is also clear that the participants accessed and used the different types of academic material during school, though not during break, and also after school when at home. The participants indicated they only *sometimes* go to the media centre, and this calls for concern and further research to determine the reasons for

lack of use of the media centre. A media centre is a vital resource as it is the ideal location where adolescents with hearing loss can obtain knowledge, acquire information literacy skills, and become information literate.

It appeared that few of the special schools had computers and/or Internet facilities for adolescents with hearing loss to use. This may constitute a major concern as we live in a technological society. This is an issue, however, which can change continually as schools are in the process of upgrading their equipment.

There was not much consensus as to the purpose for which the adolescents with hearing loss used information. Some participants indicated that they access and use academic information mainly for assignment purposes as assignments are curriculum-based, in other words, they need to do it for subjects taught at school. However, the adolescents indicated that they found most of the academic information difficult to understand, probably due to their lack of language, literacy, and information literacy skills and vocabulary knowledge. The different types of academic sources that they had difficulty to access evince that the adolescents with hearing loss appeared to show gaps in their in vocabulary, had problems with content comprehension, and found it difficult to understand abstract concepts especially with regard to accessing and using academic material such as dictionaries and encyclopedias. They also had to rely on assistance from teachers to help them with academic material.

From the results of the questionnaire it is important to note that the adolescents with hearing loss relied not only on teachers, but also on parents and media teachers to help them to access, use and understand academic material. It can be concluded that adolescents with hearing loss were not able to work independently, to use the material on their own, or to understand it. They also preferred visual information. From this study it became clear that the adolescents with hearing loss needed help and encouragement from role players who are able to personally motivate them to improve their quality of life. In some cases these third parties helped to provide access to information through tuition, education in class, captioning, interpretation services, and/or teaching methods.

6.2.2   Conclusions relating to Sub-goal 2 of the study

Sub-goal 2 (Phase I) was based on the perceptions of the teachers with regard to the ability of the adolescents with hearing loss to access and use academic information.   *Open-ended* and *close ended* questions were asked.   Several conclusions were made. The teachers' perception was that adolescents with hearing loss displayed problems when accessing and using academic information.   The overall picture is that adolescents with hearing loss do not perceive themselves to be successful in accessing and using academic information. They also prefer to use visual information with a high graphic content.

The adolescents with hearing loss mainly relied on teachers and media teachers to help them to access, use, and understand academic material. Parents and friends also play an important role in helping them to access the material. The teachers were of the opinion that adolescents with hearing loss used their own time rather than school time to access and use academic material because they relied on their parents and friends to help them.

The teachers offered several reasons for the problems that the adolescents with hearing loss experienced with regard to access and use of academic material, such as degree of hearing loss, lack of motivation, lack of quantity of material, and insufficient training of teachers. More research is needed in order to determine how teachers can motivate or find ways to give more assistance to adolescents with hearing loss with regard to accessing and using academic material and to use the media centre more frequently. It is also clear that more funds are necessary for computers and Internet facilities at schools for adolescents with hearing loss to be able to have more access to academic information.

It was the teachers' perception that adolescents with hearing loss mainly used and accessed academic information for assignment purposes. Further research might be necessary to determine to what extent academic material can be applied for other purposes such as career, hobby, and personal uses as well.

Teachers were of the opinion that adolescents with hearing loss found most academic material difficult to understand due to their hearing loss, which has an impact on their language and communication skills, which in turn impacts on their literacy skills and ultimately on their information literacy skills. Information literacy skills involve the access, use, applying, analysis, and use of information.

The teachers indicated that adolescents with hearing loss found OBE material very difficult to understand due to their language delay, poor vocabulary skills, problem with content comprehension skills, and inability to apply academic material to assignments. The adolescents with hearing loss relied on teachers, media teachers, interpreters, parents, and friends to help them with OBE material. Both the teachers and media teachers indicated that the adolescents with hearing loss generally found it difficult to work independently.

The teachers indicated that adolescents with hearing loss experienced language deprivation skills, low self-esteem, and poor motivation that prevented them from achieving academically. Adolescents with hearing loss preferred signing as mode of communication, they preferred visual material above language material, and needed interpreters to help them to understand academic material. They indicated that adolescents with hearing loss may also benefit from assistive devices in order to hear better and communicate and so be able improve their abilities to access and use academic information.

Responses to the *open-ended* questions revealed that the teachers were concerned about limited funding and budget of the schools that resulted in limited computer and internet facilities, and insufficient training of teachers and media teachers with regard to adolescents with hearing loss with hearing loss and their special needs that affect their abilities to access and use academic information.

6.2.3 Conclusions relating to Sub-goal 3 of the study

The main conclusion based on Sub-goal 3 (Phase I) was that the media teachers were of the same opinion as the teachers, namely that the adolescents with hearing

loss mainly accessed and used academic information in class and in the media centre, for assignment purposes only, and that adolescents with hearing loss found academic information difficult to access and use. The teachers and media teachers were regarded as the main role players who assisted the adolescents with hearing loss to find and understand information.

The media teachers also pointed out that the adolescents with hearing loss not only found academic material difficult to understand but in fact they found English difficult to understand, because many adolescents with hearing loss with a hearing loss find a second spoken language difficult to master.

Media teachers agreed with the other teachers that adolescents with hearing loss with hearing loss prefer signing, and that captioning with text increased their ability to access and use some academic information sources and facilitated the acquisition of literacy.

6.2.4   Conclusions relating to Sub-goal 4 (Phase II) of the study

Phase II involved Sub-goal 4 that aimed to determine the abilities of adolescents with hearing loss in special schools to complete a survey assignment in the media centre. The adolescents with hearing loss could not complete this assignment with ease. They found it difficult to find information on their topics as well as to write a paragraph on the topic.

The adolescents with hearing loss had trouble providing complete details. They could not use the computer or Internet where it was available in the school. They were not aware of the Dewey Decimal Classification according to which books were arranged on the shelf. They were not able to write down any bibliographic details of the books containing information on their topics, in other words, the name of author, name of book, page where they could find information on their topic. From the results it became clear that the adolescents with hearing loss did not know or understand what an index was and therefore could not use it to help them to find information on their topic.

They found the card catalogue difficult to use and had to rely on teachers and media teachers for assistance in finding and using academic material. They were not able to work independently.

These various findings seem to lead to one main conclusion: teachers, media teachers, and adolescents with hearing loss themselves perceive the access and use of academic materials to be beset with difficulties for adolescents with hearing loss in special schools. The particulars of these difficulties need to be taken into consideration if serviceable recommendations are to be put forward.

6.2.5   General conclusion

The study represents a formalization of perspectives that might serve as a guide to develop hypotheses and scientific inquiry, as well as to provide a basis for the planning of intervention strategies. The general conclusion is that the adolescents with hearing loss in the selected special schools cannot access and use academic information. The researcher's recommendation is that the implementation of an information literacy programme can address these problems. The development of an information literacy programme is essential in the special school in order to define structures for support. This is in order to address the needs of adolescents with hearing loss with hearing loss as well as to benefit them. The conclusions of the study are based on the main goal as well as the sub-goals of the study.

6.3   RECOMMENDATIONS

The researcher consulted literature on educational audiology, as well as from information science and librarianship, to formulate a proposed outline for an information literacy programme for use within the special educational system in South Africa. Recommendations are made for special schools as well as for the teachers and media teachers. These recommendations are suggested in order to improve the abilities of the adolescents with hearing loss to access and use academic information in special schools as well as to motivate them to go more frequently to the media centre.

6.3.1 Introduction

Based on the results of the study and conclusions, several recommendations can be made. Special schools need a *vision* to provide an education and training system that would aim to promote education for all adolescents with hearing loss with hearing loss. The special schools should aim to develop the adolescents with hearing loss' ability to access and use academic information regardless of their degree of hearing loss. The schools can aim to motivate and enable all adolescents with hearing loss to participate actively in the education process so that they can develop and extend their potential and participate as equal members of society. In order to reach this goal, the special schools will need to apply certain strategies.

In order to enable adolescents with hearing loss to develop their abilities to access and use academic information, it is important to employ *facilitative strategies* for adolescents with hearing loss to develop their hearing, communication, literacy, and information literacy. Both the South African Constitution (1996) and Education White Paper 6 (Special Needs Education, Building an Inclusive Education and Training System) (2001) are based on principles and values that are related to Human Rights and social justice for all adolescents with hearing loss. Both also advocate participation and social integration, equal access to education and curriculum, and equity and redress. Both stress the value of community responsiveness and the cost-effectiveness of the education system (Peters, 2003:5 & 49).

6.3.2 Role and responsibility of the special school.

Special schools have to plan carefully and aim to stay within their budget after co-coordinating with their local education departments. The curriculum must be studied in detail in order to determine where academic information sources can be applied successfully. Needs of adolescents at special schools should be met and be correlated with the existing curriculum, educators, and media teachers. When information needs are established, appropriate measures should be undertaken to meet those needs. This involves training the school staff in order to promote the ability of the adolescents with hearing loss with hearing loss to access and use

academic information, and also providing more accessible time for adolescents with hearing loss to work in media centres.

Meeting these complex responsibilities requires of school management structures that they encourage staff to be enthusiastic about adolescent and teaching methods that will motivate adolescents with hearing loss to access and use academic information. This, however, calls for competent staff, in order to train adolescents with hearing loss to work independently. There must be cooperation between the teachers and media center regarding topics of interest and curriculum needs. If a school needs interpreters, interpreters should be appointed. This is especially the case where the adolescents with hearing loss with hearing loss mainly rely on sign language and may need help interpreting what it is they require with regard to academic information in the class or media center.

Based on the study it is recommended that special schools apply certain strategies pertaining to:

- transforming the educating system to match the needs of adolescents with hearing loss with special needs;
- developing an integrated support system for adolescents with hearing loss with hearing loss;
- having a holistic approach to institutional development;
- developing a flexible curriculum, based on the needs of the adolescent with hearing loss;
- promoting the acceptance of responsibility by parents with regard to assisting their children with hearing loss;
- providing access to academic information sources and
- supplying training for teachers and media teachers.

Adolescent adolescents with hearing loss with hearing loss' information processing and learning strategies and educational skills differ from individual to individual. The strategies they employ can prevent them from doing well at school. If adolescents with hearing loss with hearing loss are assessed comprehensively, placed in the

appropriate school and classroom, and receive suitable intervention methods and teaching methods, they may be able to learn how to process information and acquire learning strategies.

Information processing involves the different processes of learning, problem-solving, and literacy. It also involves coordinated functioning of attention, working memory, and long-term (or semantic) memory so that previous knowledge is applied to new situations and in this way, new information can be acquired. Adolescents with hearing loss in special schools need information literacy programmes that provide training with regard to information literacy skills as it can help them to develop their ability to access and use academic material. Special schools have a responsibility to supply the necessary intervention methods and programmes in order to help their adolescents with hearing loss to achieve academically.

6.3.3   Role players

Audiologists are key professionals with regard to audiological and education needs. They can give advice concerning school placement and support systems, and can provide background information to teachers and media teachers. The audiologist is the person who identifies the type and degree of hearing loss, select and fit hearing aids and assistive listening devices and suggests the type of intervention methods that can help the child in his educational system to cope better. The audiologist can also identify possible communication difficulties that may occur, and offer several suggestions on how to cope with it.

The teachers are the key professionals working with adolescents with hearing loss with hearing loss and should receive adequate training as well as support from the Department of Education. They should also receive adequate quality and quantity of educational material in order to work with adolescents with hearing loss with hearing loss and teach them effectively. Teachers are the role players who should help the adolescents with hearing loss to acquire better listening and communication skills as well as provide academic information and technology access in order to enhance improved academic performance.

Teachers have insight into the Outcomes Based Curriculum of the school system in South Africa, and are therefore equipped to decide which topics need more supplementary information that must be made available in the media centre. The teachers must collaborate with the media teacher in order to be prepared when the adolescent with hearing loss comes for assistance. Adolescents with hearing loss often need additional academic information for assignments, projects, and to prepare them for oral presentations.

Teachers must also allocate time for adolescents with hearing loss to work in the media center and give assignments, vocabulary lists, and tasks to be completed in the media center. Adolescents with hearing loss can be encouraged to work independently in the media centre and/or work in groups. Teachers can have discussions with adolescents with hearing loss about the value of access and use of academic information. The teachers' assessment of the quality of work done by the adolescent can serve to motivate the adolescent to improve his/her quality of work in the classroom, and determine problem areas.

If teachers are knowledgeable about content material, use visual material, and emphasize the value of information, adolescents with hearing loss with hearing loss will be encouraged to use a variety of information resources. It must be emphasized though that there is no single pedagogical approach that can claim to teach information literacy most effectively.

Teachers promoting information literacy skills need to experiment with various approaches to find one or a combination of methods best suited to the class that they teach. This must be based on the unique styles, needs, and/or preferences of the different adolescents with hearing loss with hearing loss. When teachers are able to identify the needs and abilities of their adolescents with hearing loss, and continuously monitor their students' progress and application of skills, this could lead to various opportunities for adolescents with hearing loss with hearing loss to develop information literacy skills.

It is generally accepted that media teachers have to provide the necessary resources and opportunities for adolescents with hearing loss in the media centre to develop and expand their abilities to access and use academic information as well as their literacy appreciation and reading competence. This requires that a wide range of resources be available for adolescents with hearing loss in special schools.

Teachers and media teachers must aim to motivate the adolescents with hearing loss to participate actively in class and group activities as well as group discussions, and encourage the adolescents with hearing loss to access and use academic materials and to go to the media centre. The more involved the adolescent is, the better the adolescent's chance is of learning to access and use academic material and to become familiar with it. It is also clear, however, that adolescents with hearing loss should make a concerted effort in accessing and using academic information as well as with reading tasks. The adolescents with hearing loss do need a media centre in order to find relevant academic material to access and use for assignment tasks and if they need to read additional material for their subjects.

For a special school to be effective in helping their adolescents with hearing loss develop their abilities in accessing and using academic information it is necessary that the role players assume their responsibilities. This refers to audiologists providing assessment, habilitation, amplification and intervention methods, and teachers providing education, support, assistance, monitoring, and follow-up. It also refers to media teachers supplying the adolescents with hearing loss with educational material and teaching them information literacy skills so that they will know how to access and use academic information in the media centre.

The media teachers specifically are responsible for supplying and making provision for academic material in the media centre, as well as providing information literacy skills programmes to adolescents with hearing loss with hearing loss in order to help them to access and use academic information. The media teacher therefore has to be technologically and media literate.

All role players need to evaluate the adolescents with hearing loss' progress in school and to determine their future needs. The teachers and media teachers can aim to develop the adolescent's self-awareness, career awareness, persistence, self-identity, self-efficacy, perseverance, ability to accommodate him/herself in an integrative environment, and general maturity. If these abilities can be developed, it will help the adolescent to develop his/her abilities to access and use academic information, because he/she will have acquired more self-confidence and the necessary skills to work with the different information sources.

6.3.4   Different types of academic material

The researcher investigated various academic resources. Both the teachers and the media teachers indicated it was their opinion that academic material should be curriculum based. The reason for this is that if academic material sources were curriculum based, it would help to improve the adolescents with hearing loss' academic levels. Curriculum-based information ties information literacy to students' experiences, especially if it is offered in context with the content-based courses and assignments. If adolescents with hearing loss with hearing loss can access and use academic information frequently in accordance with the curriculum, it will provide a learning process for the students' daily lives and life experience.

Based on the conclusions of the study, it is recommended that teachers and media teachers find ways to make adolescents with hearing loss more aware of the different academic materials in special schools. This can be done in different ways. One way is to establish an information literacy programme, and this will be discussed later. Another way to make adolescents with hearing loss more aware of other types of academic information is to involve the adolescents with hearing loss by means of different assignments, so that the adolescents with hearing loss can be encouraged to go to the media centre to find information and to apply their skills in accessing and using academic information.

The teachers and media teachers can implement discussion groups where adolescents with hearing loss participate in a group after accessing and using a

specific type of academic material on a specific topic. The media teacher can also introduce competitions in the media centre whereby the adolescents with hearing loss are encouraged to see who can find relevant information on his/her topic.

The adolescents with hearing loss can be encouraged to compile a newspaper, journal, or pamphlet by accessing and using information from newspapers or other sources. Their products can be displayed in the media centre for the other adolescents with hearing loss to see. The adolescents with hearing loss can also be encouraged to give comments.

Another recommendation is assignments that require the adolescent to access and use specific academic material and to give a speech or lead a discussion about his/her topic. This type of assignment could cause anxiety, however, if adolescents with hearing loss with hearing loss suspect that they will be penalized in some way for inadequate verbal presentation skills. It is important that teachers and media teacher be well trained and knowledgeable about adolescents with hearing loss with hearing loss.

6.3.5   Training of teachers and media teachers

From the study it is recommended that teachers and media teachers receive specific training on how to assist adolescents with hearing loss to work with different academic materials. This would be particularly applicable in the case of OBE material, since the results showed that adolescents with hearing loss themselves indicated that they find OBE material difficult to access and use as well as to understand. The teachers and media teachers also shared the same viewpoint. In the case where a school does not have media teachers, it is necessary that teachers who have to work in the media centre receive training in order to be able to assist the adolescents with hearing loss in the media centre.

Active learning and active participation can enable adolescents with hearing loss to develop their abilities to process information and learn information literacy skills. This can help them to become lifelong adolescents with hearing loss because they will then be able to access and use academic information that will help them to become

independent adolescents with hearing loss. If teachers and media teachers are trained well, they will be able to help their students become life-long adolescents with hearing loss.

It was clear from the results and conclusions that the adolescents with hearing loss with hearing loss had difficulty with abstract concepts and consequently with most of the academic materials. In order to help them to master abstract concepts, they will need practice with these aspects so that they are able to make connections with concepts during reading tasks. It is necessary, however, that adolescents with hearing loss learn to work independently. Teachers and media teachers should no longer be the major sources of information or the role players helping them to access and use academic information. In order to achieve independence, they may need additional support from role players initially, but should be encouraged to gradually try to work independently.

An often-neglected area of training for teaching staff is training in skills for collaborative practice. Cooperation between teachers, media teachers, and other professionals including physicians will benefit the adolescent with hearing loss. Cooperation between the teaching staff and the Department of Education will ensure that the best available academic material is supplied to the special school and/or lead to better funding. Cooperation between the educational staff and parents will also ensure that the best possible intervention methods are followed and that the needs of the adolescents with hearing loss with hearing loss are attended to as best possible.

If the Department of Education provides training and additional courses to teachers and media teachers of adolescents with hearing loss with hearing loss, it will empower them to address the adolescents with hearing loss' needs such as communication, language and literacy development, and academic development. In this regard the adolescent's language and communication modes are important variables. The different teaching strategies to be utilized depend on the type of hearing loss, level or degree of loss, the different communication modes of the adolescents with hearing loss, and whether adolescents with hearing loss have additional handicaps.

6.3.6   Using the media centre

The results appear to suggest that adolescents with hearing loss need to be encouraged to spend more time in the media centre. This can be done by making the media centre more attractive and by making it more accessible, both during school times and after school. Another way of encouraging adolescents with hearing loss is to assign tasks to adolescents with hearing loss in the media centre that will make them aware of academic material. In this way adolescents with hearing loss can learn to work with academic material. Discussion groups can be held in the edia centre which will encourage adolescents with hearing loss to come to the media centre.

If school principals provide appropriate support to these initiatives they can help to promote the existence of a media centre. They can allow the media teacher to serve on the curriculum committee, to attend planned meetings, and to share ideas on how to integrate the media centre into the curriculum ideas as well as on how to improve the abilities of the adolescents with hearing loss with regard to access and use of academic material.

The media centre needs to be open at convenient times during school and after school so that adolescents with hearing loss may have opportunities to access and use relevant academic material. The media centre needs to be manned by staff that is trained to serve and advise the adolescents with hearing loss with hearing loss with regard to the different academic material that is available.

The media teacher or teachers working in the media centre can give training to adolescents with hearing loss in the media centre on how to use the media centre. This can include the following:

- Training in how to use the Dewey Decimal Classification in order to understand where and how to find books, as this system is still used in the special schools where media centers are found.   This will specially

benefit the adolescents with hearing loss in tertiary education when they use and access university/college libraries. Books at universities are usually placed on shelves according to the numerical system of the Dewey Decimal Classification.

- Teaching the adolescents with hearing loss research methods in order to help them to execute their assignment tasks.
- Collaborating with the subject teachers in order to supply relevant academic information to adolescents with hearing loss.
- Providing a positive climate in the media centre in order to promote the awareness of information.
- Networking with other teachers and other special schools will promote the use of academic information and an inter-lending scheme service can benefit the adolescents with hearing loss at different schools on a rotary basis.
- Providing services in the media centre such as reading corners, reading competitions, and exhibitions.
- Involvement of adolescents with hearing loss for certain tasks in the media centre using and working with academic information.
- Providing a visually attractive environment that encourages the adolescent with hearing loss to spend more time in the media center and to access and use academic information.
- Reading classes by volunteers, parents, or teachers, basic literacy classes, and reports on the information that has just been read.
- Supplying a basic guide to accessing and use of various academic sources as a reference guide to adolescents with hearing loss.

6.4 DEVELOPMENT OF AN INFORMATION LITERACY PROGRAMME FOR ADOLESCENTS WITH HEARING LOSS IN THE MEDIA CENTRE

Information literacy programmes develop the skills required to access and use academic information, familiarize adolescents with hearing loss with the different

sources of academic materials, and teach them how to analyze, interpret and apply academic material.

6.4.1 Introduction

The main purpose of the study was to determine the adolescent with hearing loss' ability to access and use academic information. The constitution makes it clear that every adolescent with a hearing loss has a fundamental right to have full access to all educational services. The results of the current study suggest that an information literacy programme could be an apposite augmentative tool for special schools to ensure that their adolescents with hearing loss succeed in accessing the information provided by the educational services.

An information literacy programme is best applied in the media centre of a special school because the centre is the location where academic information can best be found. Information literacy education by means of presenting information literacy programmes is not possible without collaboration between teachers, educators and the community – all need an awareness of the value of information literacy, and all need to collaborate to make possible learning experiences that facilitate information literacy (Bruce, 2003:13).

An information literacy programme can be presented to adolescents with hearing loss with hearing loss in special schools by means of a specific programme that caters for their needs. The purpose of an information literacy programme is to teach adolescents with hearing loss various methods and procedures in order to access and use academic information for assignment tasks, for subject material and hobbies, career information and personal use.

6.4.2 Aims of an information literacy programme

The main aim of an information literacy programme is to encourage the development of lifelong learning abilities, and an appropriate programme will provide academic resources to adolescents with hearing loss while at the same time promoting reading and information literacy skills amongst adolescents with hearing loss with hearing loss. If an information literacy programme is to be successful, it must aim to

supplement the curriculum of the special school. An information literacy programme requires collaboration between the media centre and the teaching staff with regard to resources provision, reading guidance and literature appreciation, information services, curriculum consultation and development (AASL, 2000:40). The media centre plays an important role in the curriculum as it is the resource centre for all academic information sources. An information literacy programme can promote self-esteem and confidence amongst adolescents with hearing loss with hearing loss. The roles of family and peers cannot be underestimated in this regard.

6.4.3   Implementing an information literacy programme

It is mainly the responsibility of the media teacher to implement an information literacy programme. The media teacher is best qualified to provide the appropriate instruction in the evaluation, selection, identification, and use of appropriate information resources that correlate with the curriculum. Media teachers can collaborate with subject teachers in order to determine the best procedure through which adolescents with hearing loss can be encouraged to use academic information in order to obtain new knowledge. The media centre is the ideal location for managing the various academic resources and programmes that the adolescents with hearing loss can access and use for school purposes. The current study indicated that the adolescents with hearing loss used the classroom as their main location for accessing und using academic information, with the media centre as the second most utilized location.

- During the research, there was no indication of any information literacy programme being applied by the media teacher or subject teachers in the media centre. There are several ways to promote an information literacy programme in the media centre. Drama and miming can be used, with adolescents with hearing loss reading from books or magazines and then performing what they read.
- Summarized lessons can be posted on the walls of the centre.
- Students can prepare and deliver presentations on topics of interest or on class assignments.

- Small group reading discussions can be organized.
- Adolescents with hearing loss can read aloud to one another from books in the media centre.
- Storytelling can be a powerful tool, especially when older adolescents with hearing loss tell stories to younger adolescents with hearing loss.
- Authors can be invited to come to talk to adolescents with hearing loss about their books.
- During 'book club days' adolescents with hearing loss can be encouraged to talk about books they have read.

All of these methods can teach adolescents with hearing loss with hearing loss to enjoy books and the process of reading. It can also expand the adolescents with hearing loss' vocabulary as they become increasingly aware of print and literacy concepts.

Other ways to implement an information literacy programme include letting the adolescents with hearing loss participate in the media centre, encouraging them to take part in group activities and discussions in order to familiarize them with the available academic information, and letting them help to organize and find information with a reward if they succeed in finding the relevant information. In this way, the adolescents with hearing loss can assume more responsibilities for locating the material from which to learn such as books, newspapers, databases, dictionaries, encyclopaedias, documents, and others.

From the research it became clear that adolescents with hearing loss found certain academic material, such as dictionaries and encyclopaedias, particularly difficult. In an information literacy programme, the adolescents with hearing loss can be encouraged to look up words or themes in order to teach them how to use the academic source and to familiarize them with both the process and the source. The same is applicable to OBE material where the adolescent has to utilize specific OBE material for an assignment and compile a portfolio or project from the information that he/she has accessed and used.

6.4.4   Principles of information literacy

An information literacy programme has to give all adolescents with hearing loss equal access to all academic information sources in order to help the adolescents with hearing loss acquire knowledge and information literacy skills. This involves the processes of critical thinking, problem-solving, and creative thinking through accessing and using academic information (Behrens, 1992:82). The media centre is therefore an active learning centre to acquire these skills using the available resources.

If adolescents with hearing loss are able to develop information literacy skills, they will be able to participate in an information literate society (Owusu-Ansah, 2003:220-221). This requires that the media centre teacher must collaborate with classroom teachers to work within the curriculum to create resources-based learning experiences.   An information literacy programme must comply with curriculum standards to ensure that the teaching and instruction standards of the school are met.   An information literacy programme that is successfully presented at media centres in schools will help the adolescents with hearing loss to acquire tertiary education, broaden their career opportunities, improve their quality of life and to adapt in a hearing world. An information literacy programme should aim to develop skills to:

- Recognise a need for information;
- Access needed information effectively and efficiently;
- Evaluate information and its sources critically;
- Incorporate selected information into his/her knowledge base;
- Use information effectively to accomplish a specific purpose/task, whether for academic or personal purpose;
- Understand economic, legal, and social issues, and use information ethically and legally; and
- Recognize that lifelong learning is vital in order to participate as a citizen in a society that requires a person to be information literate (de Jager & Nassimbeni, 2003:108).

6.4.5 How to promote information literacy in the media centre

The success of an information literacy programme depends on the extent to which it develops a adolescent's ability to identify the different academic sources in the media centre and to apply them for his/her purposes, whether for assignment purposes, career purposes, or personal interest.

6.4.5.1 Orientation with task in media centre

Media teachers can assist with task orientation by giving adolescents with hearing loss an assignment to execute in the media centre. The adolescents with hearing loss can be asked to define a topic as a preliminary step in the search for information, or to identify key words to search for information on a topic. It is expected from the adolescent to understand that a range of academic information sources (books, newspapers, journals, dictionaries, etc.) needs to be searched in order to find the topic. The assignment survey in the current research study demonstrated that the adolescents with hearing loss found it difficult to execute such an assignment in the media centre.

The media teacher can also compile a media centre newsletter and distribute it amongst adolescents with hearing loss to promote reading or task activities, and also amongst members of staff in order to promote cooperation between media centre and teachers. A well designed newsletter can encourage the adolescent to visit the media centre and to access and use academic information.   The media teacher should be available during such visits to assist adolescents with hearing loss in finding and using the different reference sources.   She/he should teach them research methods, using and accessing the catalogue and/or computer database.
From the responses to their questionnaire it was clear that the adolescents with hearing loss visited the media centre at diverse and unscheduled times. It might be to their advantage if a specific time were scheduled on their timetable to visit the media centre. If adolescents with hearing loss can come to the media centre as part of their daily school routine and during this time the media teacher can give them assignments to execute in the centre, the media teacher will be able to determine

what the adolescent knows/does not know. This will allow the media teacher to focus on the skills that the adolescent has not developed yet and to help the adolescent to achieve information literacy skills. By giving assignments to the adolescent, the media teacher will also be able to determine if the assignments are too difficult, or if adolescents with hearing loss do not have enough time to work in the media centre, or whether they simply do not possess of the necessary skills to access and use academic information. During the survey in the media centre the researcher observed that the adolescents with hearing loss found the assignment too difficult, and adolescents with hearing loss also did not possess of information literacy skills to enable them to access and use academic material. In their responses to the questionnaire the adolescents with hearing loss indicated that they found most of the material difficult to access and use, but they also reported that they only visited the media centre *sometimes*. There may well be a link between these two observations. As noted in a previous chapter, it seems possible that the adolescents with hearing loss who accessed sources daily also experienced little trouble in finding the information they were seeking, while the adolescents with hearing loss who never accessed sources also never found the information they required.

Motivation and gratification are powerful incentives. Media teachers can take pictures of the assignments that adolescents with hearing loss have completed and put them on display for other adolescents with hearing loss and teachers to see. This may encourage other adolescents with hearing loss to also display their work in the media centre and serve to motivate them to utilize the various resources.

6.4.5.2 Interaction with the academic resources

In order to become information literate and to participate in an information literacy programme, the adolescent has to be able to interact with the various academic resources that are available in the media centre. The adolescent has to know that information can be found in various kinds of academic resources, and also which academic information sources are available. This will only be possible if the adolescent is familiar with all the various academic sources.

The adolescent has to know that he/she must be able to choose the appropriate sources for his/her specific need and be able to distinguish between the different sources as well as catalogues and electronic sources if they are available. From the study it was clear that there were few computer and Internet facilities available in the particular special schools, which could have limited the development of information literacy. It would be to the advantage of adolescents with hearing loss if special school investigated avenues to obtain funding for computers for schools.

The adolescent needs to know how to locate and access information from different resources and know how to implement search strategies, in other words, which steps and processes to follow searching for information. From the research it was clear that the adolescents with hearing loss found it difficult to access and use various kinds of academic information. They found visual information easier to access and use than other academic material. Interaction with academic resources implies that a adolescent should possess certain higher order abilities.

6.4.5.3   Higher order abilities

Adolescents with hearing loss have to be able to compare and evaluate information from different sources, organise, use and communicate information in order to be successful in executing for example an assignment. The adolescent has to be able to compile a news report, or compose an essay, or write notes on a topic based on what he/she has read or learnt from the various academic information resources. The adolescent's final goal must therefore be to produce and present new knowledge based upon existing information. From the study it was clear that the adolescents with hearing loss were not able to evaluate and compare information from different sources, or to organise and communicate information.

A critical aspect of an information literacy programme involves the development of higher order and lower order critical thinking abilities. Higher order abilities include abilities such as assessing search results for quality and relevance; evaluating the reliability, validity, authority, and timeliness of retrieved information; and applying new information to the planning and creation of scholarly and other projects and information (Maughan, 2001: 73, 75).

Lower order skills involve the variety of search systems to retrieve information in various formats, locating information within the library, and differentiating between primary and secondary sources. These basic media instruction skills are the skills upon which higher-order skills are built (Maughan, 2001: 83).

6.5   CRITICAL EVALUATION OF THE STUDY

A critical evaluation of the study is necessary to justify the conclusions and gain perspective regarding the implication of the empirical data obtained. The appraisal should reflect both the positive and negative aspects of the study.

The main criticism that may be leveled against the study is the sad fact that in South Africa the majority of schools do not have adequate media centres, while some do not have media centres at all. Where media centres do exist, the schools very often expect from the media teacher to teach school subjects. From the research it also became clear that teachers were concerned because their academic information and audio-visual materials were outdated.

In schools where no media teachers were appointed, the subject teachers had to work in the media centres although they had no training in media centre work. This was often due to lack of finances or the Department not allowing for the appointment of media teachers in special schools. The establishment and maintenance of a media centre is considered to be costly. The study may therefore be labeled "irrelevant in the South African context" – however, it is for the reader to consider whether this is a criticism of the study or a comment upon the context.

A related criticism may be that there seem to be very few computer and Internet facilities at special schools, once again rendering some parts of the discussion above irrelevant. This is a serious matter of concern as in the present-day technological world, most information can be found on the Internet and as adolescents with hearing loss progress and have the opportunity to enter the work force or have tertiary education, and they need to be computer and Internet literate.

From the study it was clear that few schools had computers and Internet and few adolescents with hearing loss knew how to access and use these resources.

From a methodological perspective this study emphasizes the importance of combining two research methods (questionnaires and survey assignment) in order to obtain strong evidence-based data about real life phenomena such as the abilities of adolescents to access and use academic information in special schools.

The significance of this study is that it is the first study of its kind in South Africa to focus on the abilities of adolescents with hearing loss with regards to accessing and using academic information in special schools. This study provides challenges and insight that have to be addressed in order to ensure successful implementation of an information literacy programme in the media centre so as to improve the information literacy skills of adolescents with hearing loss with hearing loss. Based on this study, recommendations for addressing these challenges could be proposed. A significant aspect to be addressed, however, is the possibility that other groups of adolescent adolescents with hearing loss may experience the same difficulties as those encountered by the adolescents in this study. Adolescents with hearing loss from multilingual backgrounds, especially those who have to learn in a second or additional language, may well face the same or similar challenges. Furthermore, the abilities and skills of a large cross-section of South African adolescents need to be investigated to obtain a baseline for determining whether adolescents with hearing loss with hearing loss are in fact disadvantaged with respect to information literacy skills.

This study also indirectly emphasizes the critical role of the teachers and media teachers within the educational system of the special schools. The teachers and media teachers possess unique knowledge and skills regarding the adolescents with hearing loss with hearing loss in their respective schools; they have knowledge about their needs and know how to address these needs. The media teachers have the relevant knowledge about the various academic resources and if they collaborate with subject teachers, they can enhance the ability of the adolescents with hearing loss to achieve academically.

Adolescents with hearing loss can only achieve academically if they can develop their ability to access and use all the various types of academic information. They must develop their skills to analyze, evaluate, and apply information in order to add to their existing knowledge base.

6.6 CONTRIBUTION OF STUDY

The study will be of educational value. It will provide insight on a national and provincial level regarding the use and access of academic information by adolescents with hearing loss in special schools. The study highlights the various types of academic sources that the adolescents with hearing loss with hearing loss at special schools access and use and which sources they find difficult to access and use. The study describes the importance and role of the teachers and media teachers and underlines the importance of the media centre and the training of teachers and media teachers.

The study accentuates the significance of quantity and quality of academic material in the media centre and the provision of computer and Internet facilities. The study advocates the value of an information literacy programme in order to enhance academic achievement. This is necessary in order to provide the adolescent with hearing loss with better opportunities to develop information skills in order to promote self-confidence, awareness of information sources, and motivation for self-development in academic areas.

The topic fills a void in the literature and will be published in a scholarly journal. The Department of Education will benefit from the study as it will give information on the abilities of the adolescent with hearing loss with regard to access and use of academic information in special schools, the quantity and quality of information at special schools, the number of media teachers at schools and their training.

The study will also lead to awareness of the importance of academic information amongst people with hearing loss. Teachers and media teachers at special schools

in particular will benefit from the study as it will provide information to them on the various aspects relating to the lack, needs and benefits of academic information in adolescents with hearing loss.

This study will lead to *further research* regarding the educational and communication issues influencing the use of academic information in special schools. This study will accentuate the *importance of access and use of academic information* for adolescents with a hearing loss regardless of the communication method or assistive device being used. The acquisition and application of academic information are necessary for further education in order to function in an ever-creasing information society. The study can assist in the selection of teaching methods that may improve the use and access of academic information and prepare adolescents with hearing loss for tertiary or post-secondary education.

6.7   RECOMMENDATIONS FOR FURTHER RESEARCH

Based on the results of the empirical study the following recommendations for further research are made:

- Expansion of the current research to other populations and other parts of the country, especially to the rural areas of South Africa where there is a greater need for specific academic material.
- An investigation into the success of an implementation of information literacy programme at media centre or media user programme at special schools.
- Future research should include a 'mapping' list of academic material currently available in the media centres of special schools. This is necessary in order to determine what their needs are, as well as to determine how their media centre can correlate with the curriculum needs of the special school.
- Research is also necessary in order to determine the various methods and procedures with regard to establishing and implementing information literacy skills in the media centre or in the classroom if there is no media centre.

- It will also be beneficial if research could be conducted to determine ways in which the use of a media centre can be promoted.

- Future research with regard to learning and training issues that will have meaning for adolescents with hearing loss' career opportunities and life skills will also be of value. This includes investigating teachers' view of the curriculum and ways to improve or enhance it.

- Basic literacy levels of adolescent with hearing loss need to be established through comprehensive research. The literacy level e.g. standard of reading and writing of adolescents with hearing loss was specifically regarded as a variable in accessing and using academic information because it can influence the adolescent with hearing loss' ability to access and use academic information. Without determining a adolescent's literacy level, it is very difficult and practically impossible to assume that adolescent with hearing loss would be able to master the ability to access and use academic information and acquire information skills. For the purpose of this study, determining the literacy level of adolescents with hearing loss was not done as the study presumed that the selected adolescents with hearing loss could read and write.

6.8 SUMMARY AND CONCLUSION OF CHAPTER 6

The ultimate goal for educators, schools and other education institutions, and or those who support them, is the development of adolescents with hearing loss. Their development is dependent on effective teaching, which, in turn, is dependent on the development of effective curricula and supportive teaching and learning environments (Department of Education, 2003:10). Adolescents with hearing loss are a heterogeneous group. Due to the difference in degree and type of hearing loss, adolescents with hearing loss have different experiences, language backgrounds, and cognitive skills, but it must be stressed that their skills are not necessarily deficient. Adolescents who have a language delay due to hearing loss, experience problems with access to formal as well as informal education and are often frustrated with having a hearing loss.

The academic and social/personal characteristics of adolescents with hearing loss that may prevent them from achieving academically are sometimes exacerbated due to inadequate training of teachers, as well as insufficient quantity and quality of academic material. Adolescents with a hearing loss experience a barrier to learning due to auditory inability that leads to communication problems. Communication problems based on auditory inability involve language, speech, social, and emotional development.

The many problems that adolescents with hearing loss experience, such as in developing literacy and language, influence their attitude to their ability to access and use academic information, their perception with regard to academic information, and their willingness to apply such information.

One needs to be able to access and use academic information for school, personal and career purposes. Learning to access and use academic information opens the door to a better, brighter future, especially for adolescents with hearing loss. If adolescents with hearing loss acquire the necessary literacy and information skills, and the ability to become critical thinkers and problem-solvers, they will have

acquired the means to expand their knowledge base by means of accessing and using various academic information sources. Being information literate will help adolescents with hearing loss in this complex world to cope with all the demands posed on them. Being information literate and able to access and use academic information will enable adolescents with hearing loss to avoid being ignorant, to have knowledge, to be independent, be able to empower themselves and be self-reliant.

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Appendix A:

**Letter of Consent: Pupil
(English)**

APPENDIX A. LETTER OF CONSENT: PUPIL. ENGLISH

ANDERSON STREET 312

BROOKLYN

PRETORIA

March 2002

The Pupil

Participating Special Schools

GAUTENG AND WESTERN CAPE

Information is important for everyday life and well as a means of obtaining, evaluating and using it for a wide range of purposes. There is a need to determine whether pupils, currently attending special schools for children with hearing loss access and use academic information.

The procedure consists of a questionnaire to be completed. The questionnaire will approximately take up half an hour of your time. Your help in participating in this project is of vital importance for the success of this research. I would appreciate your cooperation. There are no risks involved.

You will have the right to withdraw from the study at any time and the results from the study will be kept confidential. The results of the study will be published in professional journals or presented at professional conferences, but the researcher's records will not be revealed.

Your cooperation is greatly appreciated.

……………………………………….. ………………

Researcher's Signature Date

Appendix B:

Letter of Consent: Teachers (English)

APPENDIX B. LETTER OF CONSENT: TEACHERS. ENGLISH

Andersonstreet 312

Brooklyn

Pretoria

0140

The Teachers

Participating Special Schools

GAUTENG AND WESTERN CAPE

Information is important for everyday life and well as a means of obtaining, evaluating and using it for a wide range of purposes. There is a need to determine whether adolescents with hearing loss, currently attending special schools for children with hearing loss access and use relevant academic information. The researcher aims to determine the adolescents' own perception with regard to their own ability to access and use academic information. The second purpose is to determine the perception of teachers and media teacher with regard to the abilities of learners with hearing loss to access and use academic information. The last purpose is to determine the quantity and quality of use of relevant academic information in the media centre while completing an assignment in the media centre.

Your help in participating in this project is of vital importance for the success of this research. I would appreciate your cooperation.

The procedure consists of questionnaires to be completed. The researcher will be present during the assignment. The questionnaires will approximately take up half an hour of your time and there will be four questionnaires. The learners with hearing loss will complete a questionnaire, the teachers and media teachers and a selected group of selected group of adolescents with hearing loss will complete the survey assignment in the media centre.

The benefits of the questionnaire will be the following:

- Teachers will acquire insight into the advantages, lack and problems of access and use of relevant academic information and the problems experienced by adolescents.

- The Department of Gauteng will also receive indication of the importance of use and access of academic information at special schools; provision of necessary materials and funding; the existence of a media centre at a special school and training of media centres teachers.

- The adolescents with hearing loss will realise the importance of use and access to relevant academic information; its existence and their use/lack of accessing academic information.

You will have the right to withdraw from the study at any time and the results from the assessments as well as the replies to the questionnaires will be kept confidential. The results of the study will be published in professional journals or presented at professional conferences, but the researcher's records will not be revealed.

Your cooperation is greatly appreciated.

……………………………………………..   ……………….
Researcher's Signature   Date

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Appendix C:

Letter of Consent: Media Teachers (English)

APPENDIX C. LETTER OF CONSENT: MEDIA TEACHERS. ENGLISH

Andersonstreet 312

Brooklyn

Pretoria

0140

The Media Teachers

Participating Special Schools

GAUTENG AND WESTERN CAPE

Information is important for everyday life and well as a means of obtaining, evaluating and using it for a wide range of purposes. There is a need to determine whether adolescents with hearing loss, currently attending special schools for children with hearing loss access and use relevant academic information. The researcher aims to determine the adolescents' own perception with regard to their own ability to access and use academic information. The second purpose is to determine the perception of teachers and media teacher with regard to the abilities of learners with hearing loss to access and use academic information. The last step is to determine the quantity and quality of use of relevant academic information in the media centre while completing an assignment in the media centre.

Your help in participating in this project is of vital importance for the success of this research. I would appreciate your cooperation.

The procedure consists of questionnaires to be completed. The researcher will be present during the assignment. The questionnaires will approximately take up half an hour of your time and there will be four questionnaires. The learners with hearing loss will complete a questionnaire, the teachers and media teachers and a selected group of selected group of adolescents with hearing loss will complete the survey assignment in the media centre.

The benefits of the questionnaire will be the following:

- Teachers will acquire insight into the advantages, lack and problems of access and use of relevant academic information and the problems experienced by adolescents.

- The Department of Gauteng will also receive indication of the importance of use and access of academic information at special schools; provision of necessary materials and funding; the existence of a media centre at a special school and training of media centres teachers.

- The adolescents with hearing loss will realise the importance of use and access to relevant academic information; its existence and their use/lack of accessing academic information.

You will have the right to withdraw from the study at any time and the results from the assessments as well as the replies to the questionnaires will be kept confidential. The results of the study will be published in professional journals or presented at professional conferences, but the researcher's records will not be revealed.

Your cooperation is greatly appreciated.

……………………………………………..   ……………….
Researcher's Signature   Date

Appendix D1:

Questionnaire 1: Afrikaans

APPENDIX D1: QUESTIONNAIRE 1. AFRIKAANS

VRAELYS EEN: ADOLESSENT MET GEHOORVERLIES

Respondent No.

V1					1-4

INSTRUKSIES

Omdat daar van u verwag word om die vraelys so eerlik as moontlik in te vul, word u anonimiteit verseker en hoef u naam nerens op die vraelys te verskyn nie. U hulp met die voltooiing van die vraelys is van uiterste belang, alhoewel deelname vrywillig en opsioneel is.

Demografiese inligting

(Voltooi die vraelys deur die toepaslike blokkie met 'n x te merk, asb.

Waar is jou skool? In:

Gauteng	
Wes-Kaap	
Oos-Kaap	
Natal	
OVS	

V2		5

1. Is jy:

'n Seun?	
'n Dogter?	

V3		6

2. Hoe oud is jy?

Jaar?	

V4			7-8

3. Praat jy:

TAAL	BAIE GOED	SWAK
Afrikaans		
Engels		
Gebaretaal		
Ander taal		

V5		9
V6		10
V7		11
V8		12

4. Is jy:

'n Koshuiskind?	
'n Dagskolier	

V9		13

5. Hoe lank is jy al in hierdie skool?

Hoeveel jaar?	

V10			14-15

6. Is jy:

Baie doof?	
Bietjie doof (hardhorend?)	

V11		16

7. Hoe praat jy met ander mense?

Oraal (met jou mond)?	
Gebaretaal (met jou hande)?	
Liplees (met jou lippe)?	
Met mond EN met jou hande?	

V12		17
V13		18
V14		19
V15		20

8. Hoe praat ander mense met jou?

Oraal (met die mond)?	
Gebaretaal (met die hande)?	
Liplees (met die lippe)?	
Met mond EN met die hande?	

V16		21
V17		22
V18		23
V19		24

9. Dra jy 'n gehoorapparaat?

Altyd	
Soms	

V20		25

10. Het jy 'n koglêre inplanting?

Ja	
Nee	

V21		26

11. Kry jy skoolinligting uit die volgende bronne?

SOORT	ALTYD	SOMS	NOOIT	NIE BESKIKBAAR NIE
Boeke				
Tydskrifte				
Skoolboeke				
UOG programme				
Strokiesprente				
Koerante				
Advertensies				
Ensiklopedieë				
Woordeboeke				
Opvoedkundige videos				

V22		27
V23		28
V24		29
V25		30
V26		31
V27		32
V28		33
V29		34
V30		35
V31		36

12. Hoe dikwels kry jy skoolinligting uit:

SOORT	1 keer x dag	1 x per week	1x per maand	Nooit	Nie beskikbaar nie			
Boeke						V32		37
Tydskrifte						V33		38
Skoolboeke						V34		39
UOG programme						V35		40
Strokiesprente						V36		41
Koerante						V37		42
Advertensies						V38		43
Ensiklopedieë						V39		44
Woordeboeke						V40		45
Opvoedkundige videos						V41		46

13. Wanneer gebruik jy die volgende inligting:

SOORT	In skool-tyd	Tydens pouse	Na skool
Boeke			
Tydskrifte			
Skoolboeke			
UOG programme			
Strokiesprente			
Koerante			
Advertensies			
Ensiklopedieë			
Woordeboeke			
Opvoedkundige videos			

V42				47-49
V43				50-52
V44				53-55
V45				56-58
V46				59-61
V47				62-64
V48				65-67
V49				68-70
V50				71-73
V51				74-76

14. Kry jy die volgende skoolinligting?

SOORT	BY DIE HUIS	IN DIE KLAS	MEDIA SENTRUM	MAAT SE HUIS	BOEK-WINKELS	DORP SE BIBLIOTEEK
Boeke						
Tydskrifte						
Skoolboeke						
UOG programme						
Strokiesprente						
Koerante						
Advertensies						
Ensiklopedieë						
Woordeboeke						
Opvoedkundige videos						

V52						77-82
V53						83-88
V54						89-94
V55						95-100
V56						101-106
V57						107-112
V58						113-118
V59						119-124
V60						125-130
V61						131-136

15. Gebruik jy skoolinligting:

SOORT	VIR TAKE	VIR STOKPERDJIE	BEROEP (Na skool)	EIE KENNIS
Boeke				
Tydskrifte				
Skoolboeke				
UOG programme				
Strokiesprente				
Koerante				
Advertensies				
Ensiklopedieë				
Woordeboeke				
Opvoedkundige videos				

V62				137-140
V63				141-144
V64				145-148
V65				149-152
V66				153-156
V67				157-160
V68				161-164
V69				165-168
V70				169-172
V71				173-176

16 WIE HELP JOU OM SKOOLINLIGTING TE KRY?

SOORT	ONDER-WYSERS	OUERS	MAATS	FAMILIE	MEDIA-ONDER-WYSER	NIEMAND
Boeke						
Tydskrifte						
Skoolboeke						
UOG programme						
Strokies-prente						
Koerante						
Advertensies						
Ensiklope-dieë						
Woordeboe-ke						
Opvoedkun-dige videos						

V72						177-182
V73						183-188
V74						189-194
V75						195-200
V76						201-206
V77						207-212
V78						213-218
V79						219-224
V80						225-230
V81						231-236

17. WIE HELP JOU OM SKOOLINLIGTING TE VERSTAAN?

SOORT	ONDER-YSERS	OUERS	MAATS	FAMILIE	MEDIA-ONDER-WYSER	NIEMAND
Boeke						
Tydskrifte						
Skoolboeke						
UOG programme						
Strokiesprente						
Koerante						
Advertensies						
Ensiklope-dieë						
Woordeboeke						
Opvoedkundige videos						

V82						237-242
V83						243-248
V84						249-254
V85						255-260
V86						261-266
V87						267-272
V88						273-278
V89						279-284
V90						285-290
V91						291-296

18. HOE MOEILIK IS SKOOLINLIGTING VIR JOU OM TE VERSTAAN?

SOORT	MOEILIK	BIETJIE MOEILIK	MAKLIK
Boeke			
Tydskrifte			
Skoolboeke			
UOG programme			
Strokiesprente			
Koerante			
Advertensies			
Ensiklopedieë			
Woordeboeke			
Opvoedkundige videos			

V92				297-299
V93				300-303
V94				304-306
V95				307-309
V96				310-312
V97				313-315
V98				316-318
V99				319-321
V100				322-324
V101				325-327

19. GAAN JY NA DIE MEDIASENTRUM BY DIE SKOOL?

Dikwels	
Soms	
Nooit	

V102		328

20. WAAR IS DIE REKENAAR WAT JY GEBRUIK OM SKOOLINLIGTING TE KRY?

PLEK	JA	NEE
By die skool?		
By die huis?		
Mediasentrum by die skool?		
Dorp se biblioteek?		
By maat?		
Gebruik jy die Internet by die huis?		
Gebruik jy die Internet by die skool?		
Gebruik jy die Internet by maat se huis?		

V103		329
V104		330
V105		331
V106		332
V107		333
V108		334
V109		335
V110		336

APPENDIX D2

Appendix D2:

Questionnaire 1: English

APPENDIX D2: QUESTIONNAIRE 1. ENGLISH

QUESTIONNAIRE ONE: ADOLESCENT WITH HEARING LOSS

Respondent No.

Q1					1-4

INSTRUCTIONS

Because it is expected from you to complete the questionnaire as honest as possible, anonymity is ensured and your name does not need to appear on no part of the questionnaire. Your help in completing the questionnaire is of utmost importance, although participation is voluntary and optional.

Demographic information

(Complete the questionnaire by marking the appropriate block please

Where is your school? In:

Gauteng	
Western Cape	
Eastern Cape	
Natal	
Orange Free State	

Q2		5

1. **Are you:**

A boy?	
A girl?	

Q3		6

2. **How old are you?**

Year?	

Q4		7-8

3. **Do you speak:**

LANGUAGE	VERY WELL	POOR
Afrikaans		
|English		
Sign language		

Q5		9
Q6		10
Q7		11

Other language				Q8		12

4. Are you:

A boarder?	
A day scholar?	

Q9		13

5. How many years have you been in this school?

How many years?	

Q10			14-15

6. Are you:

Very deaf?	
Slightly deaf (hard of hearing?	

Q11		16

7. How do you talk to other people?

Orally (with your mouth)?	
Sign language (with your hands)?	
Lipreading (with your lips)?	
With your mouth AND your hands?	

Q12		17
Q13		18
Q14		19
Q15		20

8. How do other people talk to you?

Orally (with their mouth)?	
Sign language (with their hands)?	
Lipreading (with their lips)?	
With their mouth AND their hands?	

Q16		21
Q17		22
Q18		23
Q19		24

9. Are you wearing a hearing aid?

Always	
Sometimes	

Q20		25

10. Do you have a cochlear implant?

Yes	
No	

Q21		26

11. Do you find academic information in the following sources:

TYPE	ALWAYS	SOMETIMES	NEVER	NOT AVAILABLE
Books				
Magazines				
School books				
OBE programs				
Comics				
Newspapers				
Advertisements				
Encyclopaedias				
Dictionaries				
Educational videos				

Q22		27
Q23		28
Q24		29
Q25		30
Q26		31
Q27		32
Q28		33
Q29		34
Q30		35
Q31		36

12. How often do you get academic information from:

TYPE	Once per day	Once per week	Once per month	Never	Not available
Books					
Magazines					
School books					
OBE programs					
Comics					
Newspapers					
Advertisements					
Encyclopaedias					
Dictionaries					
Educational videos					

Q32		37
Q33		38
Q34		39
Q35		40
Q36		41
Q37		42
Q38		43
Q39		44
Q40		45
Q41		46

13. When do you use the following information?

SOORT	During school	During break	After school
Books			
Magazines			
School books			
OBE programs			
Comics			
Newspapers			
Advertisements			
Encyclopaedias			
Dictionaries			
Educational videos			

Q42				47-49
Q43				50-52
Q44				53-55
Q45				56-58
Q46				59-61
Q47				62-64
Q48				65-67
Q49				68-70
Q50				71-73
Q51				74-76

14. **Do you find the following academic information?**

TYPE	AT HOME	IN CLASS	AT THE MEDIA CENTRE	AT FRIEND'S HOUSE	IN BOOK-SHOPS	AT THE OWN LIBARY								
Books							Q52							77-82
Magazines							Q53							83-88
School books							Q54							89-94
OBE programs							Q55							95-100
Comics							Q56							101-106
Newspapers							Q57							107-112
Advertisements							Q58							113-118
Encyclopaedias							Q59							119-124
Dictionaries							Q60							125-130
Educational videos							Q61							131-136

15.   DO YOU USE ACADEMIC INFORMATION:

TYPE	FOR ASSIGN-MENTS	AS A HOBBY	FOR CAREER PURPOSES (AFTER SCHOOL)	OWN KNOWLEDGE
Books				
Magazines				
School books				
OBE programs				
Comics				
Newspapers				
Advertisements				
Encyclopaedias				
Dictionaries				
Educational videos				

Q62				137-140
Q63				141-144
Q64				145-148
Q65				149-152
Q66				153-156
Q67				157-160
Q68				161-164
Q69				165-168
Q70				169-172
Q71				173-176

16. WHO HELPS YOU TO FIND ACADEMIC INFORMATION?

TYPE	TEACHERS	PARENTS	FRIENDS	FAMILY	MEDIA TEACHER	NOBODY
Books						
Magazines						
School books						
OBE programs						
Comic						
Newspa-pers						
Advertise-ments						
Encyclo-paedias						
Dictiona-ries						
Educatio-nal videos						

Q72						177-182
Q73						183-188
Q74						189-194
Q75						195-200
Q76						201-206
Q77						207-212
Q78						213-218
Q79						219-224
Q80						225-230
Q81						231-236

17. WHO HELPS YOU TO UNDERSTAND ACADEMIC INFORMATION?

TYPE	TEACHERS	PARENTS	FRIENDS	FAMILY	MEDIA TEACHER	NOBODY
Books						
Magazines						
School books						
OBE programs						
Comic						
Newspa-pers						
Advertise-ments						
Encyclo-paedias						
Dictiona-ries						
Educatio-nal videos						

Q82						237-242
Q83						243-248
Q84						249-254
Q85						255-260
Q86						261-266
Q87						267-272
Q88						273-278
Q89						279-284
Q90						285-290
Q91						291-296

18.   HOW DIFFICULT DO YOU FIND ACADEMIC INFORMATION TO UNDERSTAND?

TYPE	VERY DIFFICULT	LESS DIFFICULT	EASY
Books			
Magazines			
School books			
OBE programs			
Comics			
Newspapers			
Advertisements			
Encyclopaedias			
Dictionaries			
Educational videos			

Q92				297-299
Q93				300-303
Q94				304-306
Q95				307-309
Q96				310-312
Q97				313-315
Q98				316-318
Q99				319-321
Q100				322-324
Q101				325-327

19. DO YOU GO TO THE MEDIA CENTRE AT SCHOOL?

Often	
Sometimes	
Never	

Q102		328

20. **WHERE IS THE COMPUTER LOCATED WHERE YOU FIND SCHOOL INFORMATION:**

PLACE	YES	NO
At school?		
At home?		
At the media centre at school?		
At the town library?		
At friend's house?		
Do you use the Internet at home?		
Do you use the Internet at school?		
Do you use the Internet at your friend's house?		

Q103		329
Q104		330
Q105		331
Q106		332
Q107		333
Q108		334
Q109		335
Q110		336

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Appendix E:

Questionnaire 2: Teachers

APPENDIX E. QUESTIONNAIRE 2. TEACHERS

QUESTIONNAIRE TWO: TEACHER AT SPECIAL SCHOOL

For Office use

Respondent No.

Q1				1-4

INSTRUCTIONS

Because it is expected from you to complete the questionnaire as honest as possible, anonimity is ensured and your name needs to appear on no part of the questionnaire. Your help in completing the questionnaire is of utmost importance, although participation is voluntary and optional.

1.   DO THE ADOLESCENT PUPILS WITH HEARING LOSS OBTAIN ACADEMIC INFORMATION FROM:

TYPE OF IN-FORMATION	ALWAYS	SOME-TIMES	NEVER	NOT AVAILABLE
Books				
Magazines				
School books				
OBE programs				
Comic strips				
Newspapers				
Advertisements				
Encyclopedias				
Dictionaries				
Internet				
Educational videos				

Q2		5
Q3		6
Q4		7
Q5		8
Q6		9
Q7		10
Q8		11
Q9		12
Q10		13
Q11		14
Q12		15

2.   How often do pupils access the following information?

TYPE OF IN-FORMATION	ONCE A DAY	ONCE A WEEK	ONCE A MONTH	NEVER
Books				
Magazines				
School books				
OBE programs				
Comic strips				
Newspapers				
Advertisements				
Encyclopedias				
Dictionaries				
Internet				
Educational videos				

Q13		16
Q14		17
Q15		18
Q16		19
Q17		20
Q18		21
Q19		22
Q20		23
Q21		24
Q22		25
Q23		26

3.   DO PUPILS ACCESS ACADEMIC INFORMATION:

TYPE OF IN-FORMATION	DURING BREAK	AFTER SCHOOL	WHEN IN MEDIA CENTRE	WHEN IN TOWN LIBRARY	OWN TIME
Books					
Magazines					
School books					
OBE programs					
Comic strips					
Newspapers					
Advertisements					
Encyclopedias					
Dictionaries					
Internet					
Educational videos					

Q24					27-31
Q25					32-36
Q26					37-41
Q27					42-46
Q28					47-51
Q29					52-56
Q30					57-61
Q31					62-66
Q32					67-71
Q33					72-76
Q34					77-81

4. DO PUPILS OBTAIN ACADEMIC INFORMATION?

TYPE OF INFORMA-TION	AT HOME	CLASS	MEDIA CENTRE	FRIEND'S HOUSE	BOOK-SHOPS	HOME LIBRA-RY	CITY LIBRA-RY
Books							
Magazines							
School books							
OBE programs							
Comic strips							
Newspapers							
Advertisements							
Encyclopedias							
Dictionaries							
Internet							
Educational videos							

Q35									82-88
Q36									89-95
Q37									96-102
Q38									103-109
Q39									110-116
Q40									117-123
Q41									124-130
Q42									131-137
Q43									138-144
Q44									145-151
Q45									152-158

5.   FOR WHAT PURPOSE DO PUPILS ACCESS ACADEMIC INFORMATION?

TYPE OF INFORMATION	ASSIGNMENT	HOBBY	CAREER	OWN KNOWLEDGE
Books				
Magazines				
School books				
OBE programs				
Comic strips				
Newspapers				
Advertisements				
Encyclopedias				
Dictionaries				
Internet				
Educational videos				

Q46					159-162
Q47					163-166
Q48					167-170
Q49					171-174
Q50					175-178
Q51					179-182
Q52					183-186
Q53					187-190
Q54					191-194
Q55					195-198
Q56					199-202

6.   WHO HELPS THE PUPILS TO ACCESS ACADEMIC INFORMATION?

TYPE OF INFORMA-TION	TEACHER	PARENTS	FRIENDS	FAMILY	MEDIA TEACHER	NOBODY
Books						
Magazines						
School books						
OBE programs						
Comic strips						
Newspapers						
Advertisements						
Encyclopedias						
Dictionaries						
Internet						
Educational videos						

Q57						203-208
Q58						209-214
Q59						215-220
Q60						221-226
Q61						227-232
Q62						233-238
Q63						239-244
Q64						245-250
Q65						251-256
Q66						257-262
Q67						263-268

7. WHO HELPS THE PUPILS TO UNDERSTAND ACADEMIC INFORMATION?

TYPE OF INFORMA-TION	TEACHER	PARENTS	FRIENDS	FAMILY	MEDIA TEACHER	NOBODY
Books						
Magazines						
School books						
OBE programs						
Comic strips						
Newspapers						
Advertisements						
Encyclopedias						
Dictionaries						
Internet						
Educational videos						

Q68					269-274
Q69					275-280
Q70					281-286
Q71					287-292
Q72					293-298
Q73					299-304
Q74					305-310
Q75					311-316
Q76					317-322
Q77					323-328
Q78					329-334

8a. HOW DIFFICULT DO PUPILS FIND ACADEMIC INFORMATION TO USE?

TYPE OF INFORMA-TION	DIFFICULT	LESS DIFFI-CULT	EASY
Books			
Magazines			
School books			
OBE programs			
Comic strips			
Newspapers			
Advertisements			
Encyclopedias			
Dictionaries			
Internet			
Educational videos			

Q79				335-337
Q80				338-340
Q81				341-343
Q82				344-346
Q83				347-349
Q84				350-352
Q85				352-354
Q86				355-357
Q87				358-360
Q88				361-363
Q89				364-366

8b. WHY?

Q90		367-368
Q91		369-370
Q92		371-372

9. DO PUPILS GO TO THE MEDIA CENTRE TO ACCESS INFORMATION?

Yes	
No	
Sometimes	

Q93		373

10. DOES THE PUPIL WORK ON A COMPUTER?

PLACE	YES	NO
At school?		
At home?		
In the media center?		
At the library in town?		
At a friend's house?		
Internet at home?		
Internet at school?		
Internet at friend's house?		

Q94		374
Q95		375
Q96		376
Q97		377
Q98		378
Q99		379
Q100		380
Q101		381

11. IN YOUR OPINION, HOW MUCH DO THE FOLLOWING FACTORS INFLUENCE THE PUPILS' USE OF ACADEMIC INFORMATION? (OWN PERCEPTION)

FACTORS	A LOT	SOMETIMES	NOT AT ALL	DIFFICULT TO ASSESS	DEPENDS ON DEGREE OF HEARING LOSS			
Level of hearing loss						Q102		382
Communication method						Q103		383
Hearing aid						Q104		384
Cochlear implant						Q105		385
Availability of materials						Q106		386
Lack of funding						Q107		387
Teaching methods						Q108		388
Curriculum						Q109		389
Lack of assistance/ Volunteers						Q110		390
Cognitive abilities						Q111		391
Lack of information skills						Q112		392
Lack of ability to work independently						Q113		393

FACTORS *(CONT)*	A LOT	SOMETIMES	NOT AT ALL	DIFFICULT TO ASSESS	DEPENDS ON DEGREE OF HEARING LOSS			
Can't work in group						Q114		395
Lack of motivation						Q115		396
Information is outdated						Q116		397
Lack of reading skills						Q117		398
Lack of content Understanding						Q118		399
Sign language influence on use of academic information						Q119		400
Any other factor (describe)						Q120		401

12a.   ARE THERE ENOUGH ACADEMIC INFORMATION AVAILABLE TO SUPPORT THE EXISTING CURRICULUM?

Yes	
No	
Not applicable	

Q121		402

12b.   IF NO, EXPLAIN YOUR ANSWER

Q122			403-404
Q123			405-406
Q124			407-408

13a.   DO PUPILS HAVE ENOUGH OPPORTUNITIES TO ACCESS ACADEMIC INFORMATION DURING THE YEAR?

Yes	
No	

Q125		409

13b.   IF NO, EXPLAIN YOUR ANSWER

Q126			410-411
Q127			412-413
Q128			414-415

14.   PLEASE GIVE YOUR VIEW REGARDING QUANTITY AND QUALITY OF ACADEMIC INFORMATION AVAILABLE IN THE MEDIA CENTRE

Q129			416-417
Q130			418-419
Q131			420-421
Q132			422-423

Appendix F:

Questionnaire 3: Media Teachers

APPENDIX F. QUESTIONAIRE 2. MEDIA TEACHERS

QUESTIONNAIRE TWO: MEDIA TEACHER AT SPECIAL SCHOOL

For Office use

Respondent No.

Q1					1-4

INSTRUCTIONS

Because it is expected from you to complete the questionnaire as honest as possible, anonimity is ensured and your name needs to appear on no part of the questionnaire. Your help in completing the questionnaire is of utmost importance, although participation is voluntary and optional.

1. **DO THE ADOLESCENT PUPILS WITH HEARING LOSS OBTAIN ACADEMIC INFORMATION FROM:**

TYPE OF IN-FORMATION	ALWAYS	SOME-TIMES	NEVER	NOT AVAILABLE
Books				
Magazines				
School books				
OBE programs				
Comic strips				
Newspapers				
Advertisements				
Encyclopedias				
Dictionaries				
Internet				
Educational videos				

Q2		5
Q3		6
Q4		7
Q5		8
Q6		9
Q7		10
Q8		11
Q9		12
Q10		13
Q11		14
Q12		15

2.   How often do pupils access the following information?

TYPE OF IN-FORMATION	ONCE A DAY	ONCE A WEEK	ONCE A MONTH	NEVER
Books				
Magazines				
School books				
OBE programs				
Comic strips				
Newspapers				
Advertisements				
Encyclopedias				
Dictionaries				
Internet				
Educational videos				

Q13		16
Q14		17
Q15		18
Q16		19
Q17		20
Q18		21
Q19		22
Q20		23
Q21		24
Q22		25
Q23		26

3.   DO PUPILS ACCESS ACADEMIC INFORMATION?

TYPE OF IN-FORMATION	DURING BREAK	AFTER SCHOOL	WHEN IN MEDIA CENTRE	WHEN IN TOWN LIBRARY	OWN TIME
Books					
Magazines					
School books					
OBE programs					
Comic strips					
Newspapers					
Advertisements					
Encyclopedias					
Dictionaries					
Internet					
Educational videos					

Q24					27-31
Q25					32-36
Q26					37-41
Q27					42-46
Q28					47-51
Q29					52-56
Q30					57-61
Q31					62-66
Q32					67-71
Q33					72-76
Q34					77-81

4.   DO PUPILS OBTAIN ACADEMIC INFORMATION?

TYPE OF INFORMA-TION	AT HOME	CLASS	MEDIA CENTRE	FRIEND'S HOUSE	BOOK-SHOPS	HOME LIBRA-RY	CITY LIBRA-RY
Books							
Magazines							
School books							
OBE pro-grams							
Comic strips							
Newspapers							
Advertise-ments							
Encyclope-dias							
Dictionaries							
Internet							
Educational videos							

Q35						82-88
Q36						89-95
Q37						96-102
Q38						103-109
Q39						110-116
Q40						117-123
Q41						124-130
Q42						131-137
Q43						138-144
Q44						145-151
Q45						152-158

5.   FOR WHAT PURPOSE DO PUPILS ACCESS ACADEMIC INFORMATION?

TYPE OF INFORMATION	ASSIGNMENT	HOBBY	CAREER	OWN KNOWLEDGE
Books				
Magazines				
School books				
OBE programs				
Comic strips				
Newspapers				
Advertisements				
Encyclopedias				
Dictionaries				
Internet				
Educational videos				

Q46				159-162
Q47				163-166
Q48				167-170
Q49				171-174
Q50				175-178
Q51				179-182
Q52				183-186
Q53				187-190
Q54				191-194
Q55				195-198
Q56				199-202

6. WHO HELPS THE PUPILS TO ACCESS ACADEMIC INFORMATION?

TYPE OF INFORMA-TION	TEACHER	PARENTS	FRIENDS	FAMILY	MEDIA TEACHER	NOBODY
Books						
Magazines						
School books						
OBE programs						
Comic strips						
Newspapers						
Advertisements						
Encyclopedias						
Dictionaries						
Internet						
Educational videos						

Q57						203-208
Q58						209-214
Q59						215-220
Q60						221-226
Q61						227-232
Q62						233-238
Q63						239-244
Q64						245-250
Q65						251-256
Q66						257-262
Q67						263-268

7. WHO HELPS THE PUPILS TO UNDERSTAND ACADEMIC INFORMATION?

TYPE OF INFORMA-TION	TEACHER	PARENTS	FRIENDS	FAMILY	MEDIA TEACHER	NOBODY
Books						
Magazines						
School books						
OBE programs						
Comic strips						
Newspapers						
Advertisements						
Encyclopedias						
Dictionaries						
Internet						
Educational videos						

Q68						269-274
Q69						275-280
Q70						281-286
Q71						287-292
Q72						293-298
Q73						299-304
Q74						305-310
Q75						311-316
Q76						317-322
Q77						323-328
Q78						329-334

8a. **HOW DIFFICULT DO PUPILS FIND ACADEMIC INFORMATION TO USE?**

TYPE OF INFORMA-TION	DIFFICULT	LESS DIFFI-CULT	EASY
Books			
Magazines			
School books			
OBE programs			
Comic strips			
Newspapers			
Advertisements			
Encyclopedias			
Dictionaries			
Internet			
Educational videos			

Q79				335-337
Q80				338-340
Q81				341-343
Q82				344-346
Q83				347-349
Q84				350-352
Q85				352-354
Q86				355-357
Q87				358-360
Q88				361-363
Q89				364-366

8b. **WHY?**

Q90			367-368
Q91			369-370
Q92			371-372

9. DO PUPILS GO TO THE MEDIA CENTRE TO ACCESS INFORMATION?

Yes	
No	
Sometimes	

Q93		373

10 DOES THE PUPIL WORK ON A COMPUTER?

PLACE	YES	NO
At school?		
At home?		
In the media center?		
At the library in town?		
At a friend's house?		
Internet at home?		
Internet at school?		
Internet at friend's house?		

Q94		374
Q95		375
Q96		376
Q97		377
Q98		378
Q99		379
Q100		380
Q101		381

11. IN YOUR OPINION, HOW MUCH DO THE FOLLOWING FACTORS INFLUENCE THE PUPILS' USE OF ACADEMIC INFORMATION? (OWN PERCEPTION)

FACTORS	A LOT	SOMETIMES	NOT AT ALL	DIFFICULT TO ASSESS	DEPENDS ON DEGREE OF HEARING LOSS			
Level of hearing loss						Q102		382
Communication method						Q103		383
Hearing aid						Q104		384
Cochlear implant						Q105		385
Availability of materials						Q106		386
Lack of funding						Q107		387
Teaching methods						Q108		388
Curriculum						Q109		389
Lack of assistance/ Volunteers						Q110		390
Cognitive abilities						Q111		391
Lack of information skills						Q112		392
Lack of ability to work independently						Q113		393

FACTORS *(CONT)*	A LOT	SOMETIMES	NOT AT ALL	DIFFICULT TO ASSESS	DEPENDS ON DEGREE OF HEARING LOSS
Can't work in group					
Lack of motivation					
Information is outdated					
Lack of reading skills					
Lack of content understanding					
Sign language influence on use of academic information					
Any other factor (describe)					

Q114		394
Q115		395
Q116		396
Q117		397
Q118		398
Q119		399
Q120		400
Q121		401

12a.   ARE THERE ENOUGH ACADEMIC INFORMATION AVAILABLE TO SUPPORT THE EXISTING CURRICULUM?

Yes	
No	
Not applicable	

Q122		402

12b.   IF NO, EXPLAIN YOUR ANSWER

Q123		403-404
Q124		405-406
Q125		407-408

13a.   DO PUPILS HAVE ENOUGH OPPORTUNITIES TO ACCESS ACADEMIC INFORMATION DURING THE YEAR?

Yes	
No	

Q126		409

13b. IF NO, EXPLAIN YOUR ANSWER

Q127			410-411
Q128			412-413
Q129			414-415

14. PLEASE GIVE YOUR VIEW REGARDING QUANTITY AND QUALITY OF ACADEMIC INFORMATION AVAILABLE IN THE MEDIA CENTRE

Q130			416-417
Q131			418-419
Q132			420-421
Q133			422-423

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Appendix G1:

**Questionnaire 4: Learners
(Afrikaans)**

APPENDIX G1: QUESTIONNAIRE LEARNERS. AFRIKAANS.

VRAELYS VIER: KWANTITATIEWE AND KWALITATIEWE GEBRUIK VAN SKOOLINLIGTING

Respondent No.	V1			1-4

INSTRUKSIES

Omdat daar van u verwag word om die vraelys so eerlik as moontlik in te vul, word u anonimiteit verseker en hoef u naam nerens op die vraelys te verskyn nie. U hulp met die voltooiing van die vraelys is van uiterste belang, alhoewel deelname vrywillig en opsioneel is.

OPDRAG

Gaan na die mediasentrum en kyk of jy 'n boek oor 'n onderwerp kry oor EEN soos een van die volgende:

STERRE	OSEANE	BYE
LABRADORHONDE	VLIEGTUIE	SKOENLAPPERS
PAPEGAAIE	SLANGE	LEEUS
BOESMANS	SUID-AFRIKA	HUISE

Moet asseblief nie vir die mediajuffrou vra om jou te help nie. Jy mag die tolk gebruik om jou te help indien jy enige inligting nie verstaan nie.

WATTER ONDERWERP KIES JY?

WATTER METODE VOLG JY GEWOONLIK OM 'N BOEK OOR JOU ONDERWERP TE KRY?

METODE	JA	NEE
Gaan jy na die kaartkatalogus?		
Gaan jy na die rak?		
Gaan vra jy die mediajuffrou?		
Gebruik jy die rekenaarkatalogus?		
Vra jy jou maats om te help?		

A.   GAAN NOU NA DIE KAARTKATALOGUS IN DIE MEDIASENTRUM EN DOEN DIE VOLGENDE:

1.   KYK IN DIE ONDERWERPLAAI OF JY 'N BOEK OOR JOU ONDERWERP KRY. HET JY DIE KAARTJIE GEKRY?

Ja	
Nee	

2.   KYK OF DIE BOEK 'N OUTEUR HET. GAAN KYK IN DIE OUTEURSLAAI OF DAAR 'N KAARTJIE IS VIR DIE OUTEUR. HET JY SO 'N KAARTJIE GEKRY?

Ja	
Nee	

3.   SKRYF DIE OUTEUR SE NAAM NEER

4.   SKRYF DIE NOMMER VAN DIE BOEK NEER SOOS WAT JY DIT OP DIE KAART SIEN WAAR JY DIT OP DIE RAK SIEN

5. **WEET JY WAT MENS DIE NOMMERSISTEEM NOEM SODAT 'N MENS DIE BOEKE MAKLIK OP DIE RAK KAN VIND?**

6. **KEN JY DIE NAAM VAN DIE NOMMERSTELSEL WAARVOLGENS DIE BOEK GEVIND KAN WORD OP DIE RAK?**

7. **GAAN NOU NA DIE RAK EN HAAL DIE BOEK OOR JOU ONDERWERP UIT. WAT IS DIE NAAM VAN DIE BOEK?**

8. **WANNEER IS DIE BOEK GESKRYF? (DATUM VAN UITGAWE)**

9. **HET DIE BOEK 'N INHOUDSOPGAWE?**

10. **HET DIE BOEK 'N INDEKS?**

11.   HOE IS DIE ONDERWERPE IN DIE INDEKS GERANGSKIK?

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12.   OP WATTER BLADSY LEES JY VAN JOU ONDERWERP?

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┌─────────────────────────────────────────────────────┐
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│                                                       │
└─────────────────────────────────────────────────────┘
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13.   SKRYF 'N KORT STUKKIE OOR JOU ONDERWERP WAT JY IN DIE BOEK LEES

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┌─────────────────────────────────────────────────────┐
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14.   WEET JY WAAR OM DIE BOEK TERUG TE SIT OP DIE RAK?

Ja	
Nee	

15.   IS DIE NOMMERS OP DIE RAKKE NUMERIES?

Ja	
Nee	

===

IS DAAR ENSIKLOPEDIEË IN DIE MEDIASENTRUM? *(AS DAAR NIE ENSIKLOPEDIEË IS NIE, LOS HIERDIE UIT ASB)*

Ja	
Nee	

OP WATTER BLADSY KAN JY LEES VAN JOU ONDERWERP?

==

IS DAAR WOORDEBOEKE IN DIE MEDIASENTRUM? *(AS DAAR NIE WOORDEBOEKE IS IN DIE MEDIASENTRUM NIE, LOS HIERDIE UIT ASB)*

Ja	
Nee	

OP WATTER BLADSY WORD JOU ONDERWERP VERDUIDELIK?

==

AS DIE MEDIASENTRUM 'N REKENAARKATALOGUS HET, DOEN DIE VOLGENDE: *(AS DAAR NIE 'N REKENAARKATALOGUS IS NIE, LOS HIERDIE AFDELING ASSEBLIEF)*

1. **MAG JY DIE REKENAARKATALOGUS GEBRUIK IN DIE MEDIASENTRUM?**

Ja	
Nee	

2. **KYK OF JY BY DIE ONDERWERPAFDELING 'N BOEK OOR JOU ONDERWERP KRY? IS DAAR SO 'N BOEK?**

Ja	
Nee	

3. **WAT IS DIE NAAM VAN DIE BOEK?**

---

4. KYK OF JY DIE OUTEUR SE NAAM OP DIE REKENAARKATALOGUS KAN KRY

Ja	
Nee	

5. SIEN JY DIE NOMMER VAN DIE BOEK OP DIE REKENAARKATALOGUS?

Ja	
Nee	

6. SKRYF DIE NOMMER VAN DIE BOEK NEER WAAR JY DIE BOEK OP DIE RAK KAN VIND

===

E. AS DIE MEDIASENTRUM 'N REKENAAR HET WAAR DIE INTERNET IS, DOEN DIE VOLGENDE: *(AS DAAR NIE INTERNET IS IN DIE MEDIASENTRUM NIE, LOS HIERDIE AFDELING ASSEBLIEF)*

1. WEET JY WAT DIE INTERNET IS?

Ja	
Nee	

2. IS DIE INTERNETREKENAAR IN DIE MEDIASENTRUM?

Ja	
Nee	

3. WEET JY HOE OM AANLYN TE GAAN?

Ja	
Nee	

4. KAN MENS INLIGTING OOR JOU ONDERWERP KRY OP DIE INTERNET?

Ja	
Nee	

5. WEET JY WAT 'N WEBTUISTE OF WEBADRES IS?

Ja	
Nee	

6. AS JY WEET WAT 'N WEBADRES IS, SKRYF 'N WEBADRES NEER WAAR JY DINK JY IETS OOR JOU ONDERWERP SAL KAN KRY

7. WAT IS DIE TITEL VAN DIE ARTIKEL OOR JOU ONDERWERP OP DIE INTERNET?

8. KAN JY DIE NAAM VAN DIE OUTEUR SIEN WAT DIE ARTIKEL OOR JOU ONDERWERP GESKRYF HET?

Ja	
Nee	

WAT IS DIE OUTEUR SE NAAM?

9. KAN MENS NOG BAIE INLIGTING OOR JOU ONDERWERP KRY OP DIE INTERNET?

Ja	
Nee	

APPENDIX G2

Appendix G2:

Questionnaire 4: Learners (English)

APPENDIX G2: QUESTIONNAIRE LEARNERS. ENGLISH QUESTIONNAIRE FOUR: QUANTITATIVE AND QUALITATIVE USE OF ACADEMIC INFORMATION

Respondent No.	V1			1-4

INSTRUCTIONS

Because it is expected from you to complete the questionnaire as honest as possible, anonymity is ensured and your name Nods to appear on no part of the questionnaire. Your help in completing the questionnaire is of utmost importance, although participation is voluntary and optional.

ASSIGNMENT

Go to the media centre and look for a book on ONE of the following subjects:

STARS	OCEANS	BEES
LABRADOR DOGS	AEROPLANES	BUTTERFLIES
PARROTS	SNAKES	LIONS
BUSHMEN	SOUTH AFRICA	HOMES

Please do not ask the media teachers for help. You may ask the translator to help you if you do not understand the questions.

WHICH SUBJECT DID YOU CHOOSE?

WHICH METHOD DO YOU USUALLY FOLLOW TO FIND A BOOK ON YOUR SUBJECT?

METHOD	YES	NO
Do you go to the card catalogue?		
Do you go to the shelf?		
Do you ask the media teacher?		
Do you use the computer catalogue?		
Do you ask your friends to help you?		

A.   PLEASE GO TO THE CARD CATALOGUE IN THE MEDIA CENTRE AND DO THE FOLLOWING:

1.   LOOK IN THE AUTHOR DRAWER IF YOU CAN FIND A BOOK ON YOUR SUBJECT. DID YOU FIND THE CARD?

Yes	
No	

2.   LOOK IF THE BOOK HAS AN AUTHOR. GO TO THE AUTHOR DRAWER AND SEE IF THERE IS A CARD FOR THE AUTHOR. DID YOU FIND THE CARD?

Yes	
No	

3.   WRITE THE AUTHOR'S NAME OF YOUR SUBJECT

4.   WRITE THE NUMBER OF THE BOOK AS YOU SEE IT ON THE CARD WHERE YOU CAN FIND THE BOOK ON THE SHELF

5.   DO YOU KNOW WHAT IS THE NAME OF THE NUMBER SYSTEM IN ORDER TO FIND THE BOOK ON THE SHELF?

6.   PLEASE GO TO THE SHELF AND TAKE THE BOOK ON YOUR SUBJECT OUT. WHAT IS THE NAME OF THE BOOK?

7.   WHEN WAS THE BOOK WRITEN? (DATE OF PUBLICATION)

8.   DOES THE BOOK HAVE A TABLE OF CONTENTS?

9.   DOES THE BOOK HAVE AN INDEX?

10.   HOW ARE THE SUBJECTS ORGANISED IN THE INDEX?

11.   ON WHICH PAGE IS YOUR SUBJECT?

12.   WRITE A SMALL PARAGRAPH ON YOUR SUBJECT IN THE BOOK THAT YOU FOUND

13.   DO YOU KNOW HOW TO PUT THE BOOK BACK ON THE SHELF?

Yes	
No	

14.   ARE THE NUMBERS ON THE SHELF NUMERICAL?

Yes	
No	

===

ARE THERE ENCLOPAEDIAS IN THE MEDIA CENTRE? *(IF THERE ARE NO ENCYCLOPAEDIES, LEAVE THIS SECTION OPEN, PLEASE)*

Yes	
No	

ON WHICH PAGE CAN YOU READ ABOUT YOUR SUBJECT?

===

ARE THERE DICTIONARIES IN THE MEDIA CENTRE? *(IF THERE ARE NO DICTIONARIES, LEAVE THIS SECTION OPEN, PLEASE)*

Yes	
No	

ON WHICH PAGE IS THERE AN EXPLANATION OF YOUR SUBJECT?

===

IF THE MEDIA CENTRE HAS COMPUTER CATALOGUE, DO THE FOLLOWING: *(IF THERE IS NO COMPUTER CATALOGUE, LEAVE THIS SECTION OPEN PLEASE)*

1. **DOES THE MEDIA TEACHER ALLOW YOU TO USE THE COMPUTER CATALOGUE ON YOUR OWN IN THE MEDIA CENTRE?**

Yes	
No	

2. **LOOK IN THE SUBJECT SECTION ON THE COMPUTER CATALOGUE AND SEE IF YOU CAN FIND A BOOK ON YOUR SUBJECT. DID YOU FIND IT?**

Yes	
No	

3. **WHAT IS THE NAME OF THE BOOK?**

4. **SEE IF YOU CAN SEE THE NAME OF THE AUTHOR ON THE COMPUTER CATALOGUE. DO YOU SEE IT?**

Yes	
No	

5. **DO YOU SEE THE NUMBER OF THE BOOK ON THE COMPUTER CATALOGUE?**

Yes	
No	

6. **WRITE THE NUMBER OF THE BOOK WHERE YOU CAN FIND THE BOOK ON THE SHELF**

==

E.   IF THE MEDIA CENTRE HAS A COMPUTER WHERE YOU CAN FIND THE INTERNET, DO THE FOLLOWING *(IF THERE IS NO INTERNET, PLEASE LEAVE THIS SECTION OPEN PLEASE)*

1.   DO YOU KNOW WHAT IS THE INTERNET?

Yes	
No	

2.   IS THE INTERNET COMPUTER IN THE MEDIA CENTRE?

Yes	
No	

3.   DO YOU KNOW HOW TO GO ONLINE?

Yes	
No	

4.   CAN ONE FIND INFORMATION ON YOUR SUBJECT ON THE INTERNET?

Yes	
No	

5.   DO YOU KNOW WHAT IS A WEB SITE?

Yes	
No	

6   IF YOU KNOW WHAT IS A WEB SITE, WRITE THE WEB SITE OF YOUR SUBJECT

   *

7.   WHAT IS THE TITLE OF THE ARTICLE ON YOUR SUBJECT ON THE INTERNET?

8 DO YOU SEE THE NAME OF THE AUTHOR OF YOUR SUBJECT ON THE INTERNET?

Yes	
No	

WHAT IS THE AUTHOR'S NAME?

9.   CAN ONE FIND A LOT OF INFORMATION ON YOUR SUBJECT ON THE INTERNET?

Yes	
No	

Appendix H:

Observation Form

APPENDIX H. OBSERVATION FORM

Researcher observes the subject and puts an X in the appropriate box after having observed the process that the participant follows when looking for academic information in the media center

DOES THE PUPIL WRITE DOWN HIS/HER CHOSEN SUBJECT?

Yes	
No	

WHICH PROCESS DOES THE PUPIL FOLLOW WHEN LOOKING FOR ACADEMIC INFORMATION? DOES THE PUPIL GO TO THE:

	YES	NO
Card catalogue		
Shelf		
Library computer		
Internet		
Ask the teacher for assistance		
Ask the friend for assistance		

A. **AT CARD CATALOGUE**

ASSIGNMENT	YES	NO
1. Does he find title card?		
2. Does he find author card?		
3. Does he write down the name of author?		
4. Does he write down the number of the book?		
5. Does he know what the number system's name is?		
6. Does he fetch the book from the shelf?		
7. Does he write down the name of the book?		
8. The year of publication?		
9. Does he find the contents of the book?		
10. The index?		
11. Does he write down the answers on how the index is organized?		
12. Does he indicate the page of his subject?		
13. Does he write down a short version on his subject?		
14. Does he know how to place the book back on the shelf?		
15. Does he know if the numbers are numerical on the shelves?		

B. **AT ENCYCLOPEDIAS**

ASSIGNMENT	YES	NO
Does pupil know where the encyclopedia is in the media center?		
Does pupil write down number of page on where his subject is to be found?		

C. **AT DICTIONARIES**

ASSIGNMENT	YES	NO
Does pupil know where the dictionary is in the media center?		
Does pupil write down number of page on where his subject is to be found?		

D. **AT THE LIBRARY COMPUTER**

ASSIGNMENT	YES	NO
Is the pupil allowed to use library computer on his/her own?		
Does he/she find the subject on the computer?		
Does he write down the name of the book?		
The author's name?		
Does he see the book number on the computer?		
Does he write the number of the book down?		

E. **THE COMPUTER WITH INTERNET**

ASSIGNMENT	YES	NO
Does the pupil know what is the Internet?		
Does the pupil know how to go online?		
Does the pupil write down the Internet address?		
Does he write the address down?		
Does he write down the author's name?		

Appendix I:

Application for approval of research involving human subjects and/or with ethical implications

APPENDIX I
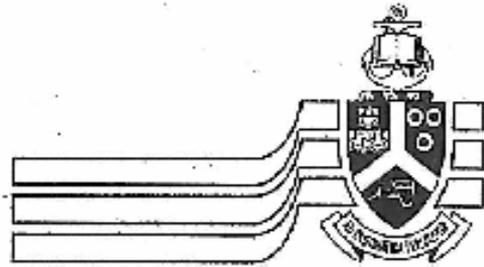
University of Pretoria

Research Proposal and Ethics Committee
Faculty of Humanities

2 October 2003

Dear Professor Hugo

Project:	*The use and access of academic information by adolescents with a hearing loss in special schools*
Researcher:	**EMM Marx**
Supervisor:	**Prof SR Hugo**
Department:	**Communication Pathology**
Reference number:	**7123876**

Thank you for providing proof of approval for conducting the research by the Gauteng Department of Education.

I have pleasure in informing you that the Research Proposal and Ethics Committee formally approved the above study on 25 September 2003.

The committee requests you to convey this approval to Ms Marx.

We wish you success with the project.

Sincerely

Prof Brenda Louw
Chair: Research Proposal and Ethics Committee
Faculty of Humanities
UNIVERSITY OF PRETORIA

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Appendix J:

Letter to office of senior manager strategic policy development

APPENDIX J: LETTER TO OFFICE OF SENIOR MANAGER STRATEGIC POLICY DEVELOPMENT

P.O. Box 12246

Hatfield

Pretoria

0046

OFFICE OF THE SENIOR MANAGER

STRATEGIC POLICY DEVELOPMENT

Department of Gauteng

ATTENTION: Sally Rowney

Information is important for everyday life and well as a means of obtaining, evaluating and using it for a wide range of purposes. There is a need to determine whether adolescents with hearing loss, currently attending special schools for children with hearing loss access and use relevant academic information. The researcher aims to determine the adolescents' own perception with regard to their own ability to access and use academic information. The second purpose is to determine the perception of teachers and media teacher with regard to the abilities of learners with hearing loss to access and use academic information. The last purpose is to determine the quantity and quality of use of relevant academic information in the media centre while completing an assignment in the media centre.

I would therefore like to request permission to conduct a study at special schools such as Sonitus, Transoranje and St Vincent

With kind regards

…………………………………………..   ………………

Researcher's Signature   Date

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Appendix K:

Request to conduct research in institutions and/or offices of the Gauteng Department of Education

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Umnyango wezeMfundo
Department of Education

Lefapha la Thuto
Departement van Onderwys

Oorspr. aan Brenda. Afskrif
22/09/2003
Ria

Date:	03 September 2003
Name of Researcher:	Marx E.M.M.
Address of Researcher:	P.O. Box 12246
	Hatfield
	Pretoria
Telephone Number:	(012) 3620149/0928214661
Fax Number:	(012) 3620149
E-mail:	marxe@worldonline.co.za
Research Topic:	The use and access of academic information by adolescents with a hearing loss in special schools
Number and type of schools:	3 Secondary Schools
District/HO	Gauteng North

Re: Approval in Respect of Request to Conduct Research

This letter serves to indicate that approval is hereby granted to the above-mentioned researcher to proceed with research in respect of the study indicated above. The onus rests with the researcher to negotiate appropriate and relevant time schedules with the school/s and/or offices involved to conduct the research. A separate copy of this letter must be presented to both the School (both Principal and SGB) and the District/Head Office Senior Manager confirming that permission has been granted for the research to be conducted

Permission has been granted to proceed with the above study subject to the conditions listed below being met, and may be withdrawn should any of these conditions be flouted:

1. The District/Head Office Senior Manager/s concerned must be presented with a copy of this letter that would indicate that the said researcher/s has/have been granted permission from the Gauteng Department of Education to conduct the research study.
2. The District/Head Office Senior Manager/s must be approached separately, and in writing, for permission to involve District/Head Office Officials in the project.
3. A copy of this letter must be forwarded to the school principal and the chairperson of the School Governing Body (SGB) that would indicate that the researcher/s have been granted permission from the Gauteng Department of Education to conduct the research study.

Office of the Senior Manager – Policy Coordination, Monitoring & Secretariat Services
Room 914, 111 Commissioner Street, Johannesburg, 2001 P.O.Box 7710, Johannesburg, 2000
Tel: (011) 355-0475   Fax: (011) 355-0512   E-mail: SallvR@gpg.gov.za   Cell: 083 310 1910

Appendix L1:

Letter faxed to principal (Afrikaans)

5 Februarie 2002

Die Hoof

Aan wie dit mag aangaan

Ek het u skool se naam verkry van Dr Naicker, Direkteur van Spesiale Onderwys in Gauteng. Ek is tans besig met my PhD aan die Universiteit van Pretoria. Die onderwerp van my tesis is *Information Use of Young Deaf Adolescents in Special Schools.*

Die doel van hierdie brief is om navraag te doen of u belangstel dat u skool deel vorm van my proefstudie. My metodologie sluit vraelyste in sowel as 'n moontlike besoek aan u skool. Die Departement Statistiek van Universiteit van Pretoria verlang egter sommige inligting so spoedig as moontlik voordat ek my navorsingsvoorstel kan voorlê.

1. Hoeveel matrikulante is daar in u skool?

    …………………

2. Hoeveel is doof?   …………………

   • Hoeveel gebruik gebaretaal?   …………………

   • Hoeveel liplees (spraaklees)?   …………………

   • Hoeveel gebruik die orale taal?

        …………………

3. Hoeveel matrikulante is hardhorend?   …………………

   • Hoeveel gebruik gebaretaal?   …………………

   • Hoeveel liplees (spraaklees)?   …………………

   • Hoeveel gebruik orale taal?   …………………

4. Hoeveel matrikulante dra gehoorapparate?   …………………

Ek sien uit na u samewerking - – my kontakdetails word onderaan verskaf.

Met vriendelike groete

Mev. Estelle Marx

Appendix L2:

**Letter faxed to principal
(English)**

APPENDIX L2. LETTER FAXED TO PRINCIPAL: ENGLISH

5 February 2002

Principal

To Whom It May Concern

I have obtained your school's name from Dr Naicker, Director of Special Education in Gauteng. I am currently doing my PhD at the University of Pretoria. The topic of my dissertation is *Information Use of Young Deaf Adolescents in Special Schools.*

The purpose of this letter is to enquire whether you would be interested in your school being part of my pilot study. My methodology includes questionnaires and a possible visit to your school. . The Statistics Department of University of Pretoria also needs some information before I can submit my research proposal to the University. This is required as soon as possible.

5.   How many matriculants are there in your school? …………………

6.   How many are deaf?   …………………

- How many pupils sign?   …………………

- Lipread   …………………

- Use oral language?   …………………

7.   How many are hard of hearing?

      …………………

- How many pupils sign?

      …………………

- Lipread   …………………

- Use oral language?   …………………

8.   How many matriculants have hearing aids?

I am looking forward in co-operating with you - my contact details are below.

Kind regards

Mrs. Estelle Marx

Appendix M1:

Letter of consent: Principal
(English)

APPENDIX M1. LETTER OF CONSENT: PRINCIPAL.
AFRIKAANS

Die Hoof
Spesiale Skole
PRETORIA EN WES KAAP

In die alledaagse lewe is dit baie belangrik om inligting aan te wend, te evalueer en vir 'n verskeidenheid doelwitte aan te wend. Daar is 'n behoefte om vas te stel of adolessente by spesiale skole met gehoorverlies toegang het tot inligting en dit gebruik.

Die prosedure bestaan uit 'n vraelys wat voltooi moet word. Die vraelys sal ongeveer 'n halfuur van u tyd in beslag neem. U hulp met betrekking tot samewerking is van uiterste belang vir die sukses van hierdie navorsing. Daar is geen risiko's verbonde aan die voltooiing van die vraelys nie. Ek sal u hulp baie waardeer.

U het die reg om ter eniger tyd te onttrek aan die studie en die resultate van die evalueringsvorm sowel as die vraelyste sal vertroulik hanteer word. Die resultate van die studie sal gepubliseer word in professionele tydskrifte of voorgedra word tydens professionele konferensies, maar die rekords van die navorser sal nie bekend gemaak word nie.

U samewerking word baie op prys gestel.

Vriendelike groete.
Mev. Estelle Marx

....
Navorser se handtekening   Datum

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Appendix M2:

**Letter of consent: Principal
(Afrikaans)**

APPENDIX M2. LETTER OF CONSENT: PRINCIPAL. ENGLISH

March 2002

The Principal
Participating Special Schools
PRETORIA AND WESTERN CAPE

In the cover letter, I have identified myself and there reasons for conducting a study at your school. Information is important for everyday life and well as a means of obtaining, evaluating and using it for a wide range of purposes.

The procedure consists of a questionnaire to be completed. The questionnaire will approximately take up half an hour of your time. Your help in participating in this project is of vital importance for the success of this research. I would appreciate your cooperation. There are no risks involved.

The benefits of the questionnaire will be the following:

- Teachers will acquire insight into the advantages, lack and problems of access and use of relevant academic information and the problems experienced by adolescents
- The Gauteng Department of Education will also receive indication of the importance of use and access of academic information at special schools; provision of necessary materials and funding; the existence of a media centre at a special school and training of media centre teachers
- The adolescents with hearing loss will realise the importance of use and access to relevant academic information; its existence and their use/lack of accessing academic information

You will have the right to withdraw from the study at any time and the results from the assessments as well as the replies to the questionnaires will be kept confidential. The results of the study will be published in professional journals

or presented at professional conferences, but the researcher's records will not be revealed.

Your cooperation is greatly appreciated.

Mrs. Estelle Marx

………………………………………….. ………………

Researcher's Signature   Date

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Appendix N1:

**Letter of consent: Parent
(Afrikaans)**

APPENDIX N1. LETTER OF CONSENT: PARENT. AFRIKAANS

Andersonstraat 312

Brooklyn

Pretoria

0140

Geagte ouer,

In die alledaagse lewe is dit baie belangrik om inligting aan te wend, te evalueer en vir 'n verskeidenheid doelwitte aan te wend. Daar is 'n behoefte om vas te stel of adolessente by spesiale skole met gehoorverlies toegang het tot inligting en dit gebruik.

Die prosedure bestaan uit 'n vraelys wat voltooi moet word. Die vraelys sal ongeveer 'n driekwartier van die respondente se tyd in beslag neem. U hulp met betrekking tot samewerking is van uiterste belang vir die sukses van hierdie navorsing. Daar is geen risiko's verbonde aan die voltooiing van die vraelys nie. Ek sal u hulp baie waardeer.

Die deelnemers het die reg om ter eniger tyd te onttrek aan die studie en die resultate van die evalueringsvorm sowel as die vraelyste sal vertroulik hanteer word. Die resultate van die studie sal gepubliseer word in professionele tydskrifte of voorgedra word tydens professionele konferensies, maar die rekords van die navorser sal nie bekend gemaak word nie.

U samewerking word baie op prys gestel.

Vriendelike groete.
Mev. Estelle Marx

....

Appendix N2:

Letter of consent: Parent
(English)

Datum

APPENDIX N2. LETTER OF CONSENT: PARENT. ENGLISH

Andersonstraat 312

Brooklyn

Pretoria

0140

Dear Parent,

Information is important for everyday life and well as a means of obtaining, evaluating and using it for a wide range of purposes. There is a need to determine whether adolescents with hearing loss, currently attending special schools for children with hearing loss access and use relevant academic information. The researcher aims to determine the adolescents' own perception with regard to their own ability to access and use academic information. The second purpose is to determine the perception of teachers and media teacher with regard to the abilities of learners with hearing loss to access and use academic information. The last purpose is to determine the quantity and quality of use of relevant academic information in the media centre while completing an assignment in the media centre.

Your child will have the right to withdraw from the study at any time and the results from the study will be kept confidential. The results of the study will be published in professional journals or presented at professional conferences, but the researcher's records will not be revealed.

Your cooperation is greatly appreciated.

Kind regards

Mrs. Estelle Marx

Researcher's Signature   Date

Appendix O1:

**Cover Letter
(English)**

APPENDIX O1. COVER LETTER. ENGLISH

This English translation of the cover letter is provided as a courtesy, as the cover letter was sent out in Afrikaans only

March 2002
Cover letter

Dear Principal

I am at present studying at the University of Pretoria for the degree D.Phil Communication Pathology. Part of the requirements for completing this degree involves a research project. I would like to invite you to participate in this research project.

- In everyday life the ability to evaluate information, and to apply information in various settings, is extremely important. There is a need to establish whether adolescents with hearing loss in special schools have access to and can use information. The first step is to determine the perception of these learners themselves concerning their access to and ucse of academic information. The second and third steps involve determining the perceptions of teachers and media teachers of the ability of learners with hearing loss to access and use academic information. The last step is to determine the quantitative and qualitative use of relevant academic information by the learners, by means of an assignment to be completed in the media centre.

  Your help is of the utmost importance for the success of this research project, and your co-operation will be highly appreciated. The identity of the school, learners, teachers, and media teachers will at all times be treated with strict confidentiality. Furthermore, I undertake that this

research project will not disrupt the school's normal routine and that it will have no financial implications for the school.

If you have any further questions or are interested in the results of the study, please contact the Department of Communication Pathology at the University of Pretoria. The contact nmber is 420-2357.

You are also most welcome to contact me:

(012) 362-0149

082 821 4661

Thank you for your time and your attention to this letter.

Kind regards,

Mrs Estelle Marx   Prof Rene Hugo

(Student)   (Head of Department)

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Appendix O2:

**Cover Letter
(Afrikaans)**

Maart 2002
DEKBRIEF

Geagte Skoolhoof

Ek is tans besig met my doktorale studie aan die Universiteit van Pretoria in die graad D.Phil Kommunikasiepatologie. As deel van die vereistes van die van die voltooiing van die graad, moet ek 'n navorsingsprojek uitvoer. Ek wil u graag uitnooi om deel te wees van hierdie navorsingsprojek.

In die alledaagse lewe is dit baie belangrik om inligting aan te wend, te evalueer en vir 'n verskeidenheid doelwitte aan te wend. Daar is 'n behoefte om vas te stel of adolessente by spesiale skole met gehoorverlies toegang het tot inligting en dit gebruik. Die eerste stap is om te bepaal wat is die persepsie van adolessente leerlinge met gehoorverlies rakende hul toegang en gebruik tot akademiese inligting. Die tweede en derde stappe behels die bepaling van die onderwysers en media onderwyser se persepsie rakende leerlinge met gehoorverlies se vermoëns tot gebruik en toegang van akademiese inligting. Die laaste stap behels die bepaling van kwantitatiewe en kwalitatiewe gebruik van relevante akademiese inligting deur middel van 'n taakopdrag in die mediasentrum.

U hulp met betrekking tot samewerking is van uiterste belang vir die sukses van hierdie navorsing. Ek sal u hulp baie waardeer.

Die skool, skoolhoofde en onderwysers se identiteit sal ten alle tye as streng vertroulik hanteer word. Voorts onderneem ek data hierdie navorsingsprojek nie die skool se normale roetine sal ontwrig nie en dat dit ook geen finansiële implikasies vir die skool sal hê nie.

Indien u enige verdere vrae het of belangstel in die uitslag van hierdie studie, is u welkom om die Departement Kommunikasiepatologie, Universiteit van Pretoria, te skakel vir terugvoering. Die kontaknommer is 420-2357.

U is ook welkom om my te skakel:
        (012) 362-0149
        082 821 4661

By voorbaat dank vir u hulp en aandag.

Vriendelike groete.

Die uwe

Mev Estelle Marx   Prof Rene Hugo
(Student)   (departementshoof)

Appendix P:

List of Schools in Provinces

APPENDIX P: LIST OF SCHOOLS IN PROVINCES

PROVINCE	Town	Sent Fax	School selected for study
EASTERN CAPE			
Efata School for the Blind and Deaf	Umtata	x	
FREE STATE			
Bartimea School for the Deaf and Blind	Thaba Nchu	x	
Thiboloha School for the Deaf and Blind	Witsieshoek		
GAUTENG			
Dominican School for the Deaf	Hammanskraal	x	x
Filadelfia Secondary School	Soshanguve	x	x
Katlehong School for the Hearing Impaired	Leondale	x	
MC Kharbai School for the Deaf	Lenasia	x	
Sizwile School for the Deaf	Dobsonville	x	
Sonitus School for the Hard of Hearing	Pretoria	x	x
St Vincent School for the Deaf	Saxonwold	x	x
Transoranje School for the Deaf	Pretoria	x	x
Fairsand Hard of Hearing Unit	Sandringham		
KWAZULU-NATAL			
Durban School for the Hearing Impaired	Amanzimtoti	x	
Fulton School for the Deaf	Gillets	x	x
Indaleni School for the Deaf	Richmond	x	
Kwa Thintwa School for the Deaf	Hillcrest	x	
Kwa Vulindlebe School for the Deaf	Durban	x	
VN Naik School for the Deaf	Newlands	x	
Vuleka School for the Deaf	Nkandla	x	

LIMPOPO			
Bosele School for the Blind and Deaf	Nebo		
Neslonskop Centre for the Hearing Impaired	Ellisras		
Tshilidzini School for the Deaf	Louis Trichard	x	
Yingisani School for the Deaf	Letaba		
MPUMALANGA			
Silindokuhle School for the Mentally Retarded, Blind and Deaf	Standerton		
NORTHERN CAPE			
No schools up to date			
NORTH WEST			
North West Secondary School	Rustenburg	x	
Kulwanong School for the Deaf	Rustenburg		
WESTERN CAPE			
De la Bat School	Worcester	x	x
Domincan Grimley School for Deaf Children	Cape Town	x	x
Dominican School for Deaf children	Wynberg	x	x
Noluthando Institute for the Deaf	Somerset-Wes	x	

REFERENCES

REFERENCES

Adams, J.W. 2004. *Handbook to service the deaf and hard of hearing : a bridge to accessibility.* London: Elsevier.

Advanced Bionics. Sv. *"speechreading"* n.d. Available online at http://www.bionicear-europe.com/en/glossary/lettre-S/glossary.html. Accessed 27th August 2009.

Agboola, I.O. & Lee, A.C. 2000. Computer and information technology access for deaf individual in developed and developing countries. *Journal of Deaf Studies and Deaf Education,* 5(3): 286-189.

Allrefer.com. Sv '*hearing loss' .* n.d Available online at http://health.allrefer.com/health/hearing-loss-info.html#definition. Accessed 5th July 2009.

Alpiner, J.G. & McCarthy, P.A. 1993. *Rehabilitative audiology children and adults.* Baltimore: Williams & Wilkins.

American Association of School Librarians (AASL). 2000. *Information Literacy: A Position Paper on Information Problem Solving.* Chicago: American Library Association. Available online at http://www.ala.org/aasl/positions/ps_infolit.html. Accessed 8th August 2005.

American Library Association (ALA). 1989. *Presidential Committee on Information Literacy – Final Report,* American Library Association, Chicago, IL. Available online at http://www.ala.org/ala/mgrps/divs/acrl/publications/whitepapers/presidential.cf m. Accessed 26th July 2004 & 22nd June 2009.

American Speech-Language-Hearing Association. *Guidelines for the audiologic assessment of children from birth to 5 years of age* 2004. Available on www.asha.org/policy.

Answers.com. Sv 'n.d *Adolescent'.* Available online at http://www.answers.com/topic/adolescent. Accessed 5th July 2009.

Anthony, T.L. & Lowry, S.S. *Developmentally appropriate orientation and mobility. Session 2: Sensory Development.* Available online at www.fpg.unc.edu/~edin/Resources/modules/om/2/session_files/session_content/OM2_SessionNotes.doc. Accessed 30th March 2008.

Antia, S.D., Reed, S. & Kreimeyer, K.H. Written Language of Deaf and Hard-of Hearing Students in Public Schools. *The Journal of Deaf Studies and Education.* 2005, 10(3):244-255. Available online at http//- http://-jdsde.oxfordjournals.org.innopac.up.ac.za/cgi/reprint/eni026v1. Accessed 16th November 2008.

Association of College and Research Libraries (ACRL). 2000. *Information Literacy Competency Standards for Higher Education.* Chicago: American Library.

Avery, E. F. *Assessing student learning outcomes for information literacy instruction in Academic institutions.* 2003. Chicago : Association of College and Research Libraries.

Babbie, E, 1992. *Survey Research Methodology.* California: Wadsworth.

Babbie, E.R. 2004. *The practice of social research.* Belmont, CA: Thomson/Wadsworth.

Babbie, E. & Mouton, J. 2002. *The practice of social research.* Oxford: Oxford University Press.

Bain, K., Basson, S, Faisman, A & Kanevsk, D. 2005. Accessibility, transcription, and access everywhere. *IBM Systems Journal*, 44(3):592-594.

Baker, T.L. 1988. *Doing social research*. London: Collier Macmillan.

Beck, T. 2006. The effectiveness of phonics instruction for children with hearing impairments. *An independent study submitted in partial fulfillment of the requirements for the degree of Master of Science in Deaf Education*, May 19.

Behrens, S.J. 1990. Librarians and information literacy. *Mousaion*, 10(1):81-88.

Behrens, S. J. 1990. Literacy and the Evolution Towards Information Literacy: An Exploratory Study. *South African Journal of Library and Information Science*, 58(4): 353.

Behrens, S.J. 1992. Librarians and information literacy. *Mousaion*, 10(1):81-88.

Behrens, S.J. 2000. *Bibliographic control and information sources*. Pretoria: Unisa.

Bench, J.R. 1992. *Communication skills in hearing-impaired children.* London:Whurr.

Bess, F. H. & Humes, L.E. 1990. *Audiology, the Fundamentals.* Baltiimore: Williams and Wilkins.

Bishop, K., & Larimer, N. 1999. Literacy through collaboration. *Teacher Librarian*, 27(1): 15-20, October.

Bloch, G. n.d *Building education beyond crisis. Development Bank of Southern Africa.* Available online at

www.dbsa.org/.../Building%20Education%20Beyond%20Crisis.doc.
Accessed 27th August 2009.

Boekhorst, A., Koers, D. & Kwast, I. 1999. *Informatie vaardigheden*. Utrecht: Lemma BV.

Boon, J.A. 1990. *Broadening horizon: education for information uses*. Paper delivered at the pre-conference symposium: Education for optimum information use. Sailis Conference.

Boon, J.A. 1992. Information and development: Some reasons for failures. *The Information Society,* 8: 227-240.

Brackett, D. 1997. Intervention for children with hearing loss in general education settings. *Language, Speech, and Hearing Services in Sch*ools 28(4):355-361.

Braden, J P. 1994. *Deafness, deprivation and IQ. Perspectives on individual differences.* New York: Plenum.

Brake, T. 1980. The need to know: teaching the importance of information technology skills. Boston Spa: British Library Research and Development Department. *Library and Information Report,* no.54.

Branson, J. & Miller. 1993. Sign language, the deaf and the epistemic violence of inclusive educationing. *Language and deafness,* 7(1): 21-41.

Breivik, P. S & Gee, E. G. 1989. *Information literacy: Revolution in the library.* New York: MacMillan

Brelje, H.W. (Ed.). 1999. *Global perspectives on the education of the deaf in selected countries.* Hillsboro: OR: Butte Publications.

Britz, J.J. 1996. *Inligtingsetiek, met spesifieke verwysing na die inligtingkundige: 'n Christelike perspektief.* DD proefskif. Universiteit van Pretoria: Pretoria.

Bruce, C. S. 1995. Information Literacy: A Framework for Higher Education. 1995. *The Australian Library Journal*, 44 (3):163, August.

Bruce, C. S. 2003. *Information Literacy as a Catalyst for Educational Change.* Available online at http://dlist.sir.arizona.edu/300/01/bruce-fullpaper.pdf. Accessed 13th July 2009.

Bundy, A. 2004. *Australian and New Zealand Information literacy framework. Principles, standards and practice.* 2nd ed. Adelaide: Australian and New Zealand Institute for information literacy.

California Media and Library Educators Association (CMLEA), 1994. *From library skills to information literacy. A handbook for the 21st century.* Colorado:Hi Willow Research and Publishing, Castle Rock.

Callison, D. 1999. Keywords in instruction: Collaboration. *School Library Media Activities Monthly,* 15 (5): 38-40, January.

Carey, S & Gelman, R. 1991. *The Epigensis of mind: Essays on biology and cognition.* .USA: Lawrence Erlbaum.

Cavaleri, S. 2005. Systems Thinking for Knowledge. World Futures: *The Journal of General Evolution*, 61(5): 378-396, August.

Chaleff, C. D. & Ritter, M. H. 2001. The use of miscue analysis with deaf readers. *The Reading Teacher, 55*(2), 190-200.

Characteristics of Programs of Information Literacy that Illustrate Best Practices: A Guideline. n.d Available on
http://www.ala.org/ala/mgrps/divs/acrl/standards/characteristics.cfm
Accessed 10th April 2007.

Chapdelaine, C.; Gouaillier, V.; Beaulieu, & .Gagnon, L. n.d *Improving video captioning for deaf and hearing-impaired people based on eye movement and attention overload.* Available online at http://members.e-inclusion.crim.ca/files/articles/SPIE-6492.pdf. Accessed 10th May 2008.

Charlesworth, A; Charlesworth, R; Raban, B. & Rickards, F. 2006. Reading recovery for Children with hearing loss. *The Volta Review,* 106(1): 29-51, Spring.

Clinical correlations related to the auditory system. Available online at http://www.neuroanatomy.wisc.edu/coursebook/audclinical04.pdf. Accessed 10th April 2007.

Coetzee, P.C. 1977. *Lees en Lesers.* Lesings oor die Leserkunde gelewer as deeltydse professor in die Departement Biblioteekkunde aan die Randse Afrikaanse Universiteit. Pretoria: Staatsbiblioteek.

Cook, B.G. & Schirmer, B.R. 2003. What is special about special education? *The Journal of Special Education*, 37 (3): 200-205.

Cook, J & Hawkins, D.B. 2006. Hearing Loss and Hearing Aid Treatment Options. *Mayo Clinic Proceedings*, 81(2): 234-237, February.

Cooper, J. D. 1993. *Literacy: Helping children construct meaning.* 2nd ed. Boston: Houghton Mifflin.

Darch, C., Karelse, C., & Underwood, P. 1997. Alternative Routes on the Super Highway. *Independent Online-Higher Education Review.* Independent Educational Media.

Davila, R.R. 2002. *Taking stock of our present and projecting the future.* New York: National Technical Institute for the Deaf at the Rochester Institute of Technology. Available online at http://www.pepnet.org/confpast/2002/pdf/davila.pdf. Accessed 13th July 2009.

De Conde Johnson, C.D., Benson, P.V., & Seaton, J.B. 1997. *Education Audiology Handbook.* San Diego: Singular.

De Jager, K. & Nassimbeni,M. 2003. An exploration of the current status of information literacy tuition in South African tertiary institutions and proposals for curriculum design. *South African Journal of Libraries and Information Science*, 69 (2): 108 –114.

De Vos, A.S. (Ed.). 1998. *Research at Grass Roots. A primer for the caring professions.* 2nd ed. Pretoria: Van Schaik.

De Vos, A.S. (Ed.). 2002. *Research At Grass Roots. A primer for the caring professions*. Pretoria: Van Schaik.

Developing the information literate person: the UTS Statement. n.d Available online at http://www.lib.uts.edu.au/sites/www.lib.uts.edu.au/files/730_Statement.pdf. Accessed 5th July 2009.

Dickenson, G.K. 2006. The spirit of inquiry in information literacy. *Teacher Librarian*, 34 (2): 23-26, Feature article.

Deafness and Hearing loss. n.d National Dissemination Center for Children with Disabilities (NICHCY). Available online at http://www.nichcy.org/Disabilities/Specific/Pages/DeafnessandHearingLoss.aspx. Accessed 2nd July 2009.

Denton, C.A. & Hasbrouck, J.E. 2000. "Early intervention" from teaching students with disabilities to read. *PEER Literacy Resource Brief # 7.* PEER project Literacy Series. Washington, DC.

Department of Education. 1994. Konsepwitskrif oor Onderwys en Opleiding. *Staatskoerant/Government Gazette,* 352(16016):1-63.

Department of Education. 1997. *A frameworks for the transformation of further education and training in South Africa.* Report of the National Committee on further education. Pretoria: Department of Education.

Department of Health. 1997. See: South Africa. 1997. *White Paper for the Transformation of the Health System in South Africa.* Available online at http://196.36.153.56.doh.docs/policy/white_paper/healthsys009_01.htm. Accessed 13th July 2009.

Department of Education. 2001. *Education White Paper 6: Special Needs Education – Building an Inclusive Education and Training System.* Pretoria: Department of Education, July.

Department of Education. 2002. *Draft Guidelines for the implementation of inclusive education.* 2nd draft. Pretoria: Department of Education.

Department of Education. 2003. *Conceptual and operational guidelines for the implementation of inclusive education: District-based Support Teams.* Pretoria: Department of Education.

Dewey, J. 1944. *Democracy and education: An introduction to the philosophy of education.* New York: The Free Press.

Dickenson, G.K. 2006. The spirit of inquiry in information literacy. *Teacher Librarian*, 34 (2): 23-26, Feature article.

Dobie, R.A. & Van Hemel, S.B. (Eds.). 2004. Hearing loss. Determining eligibility for social security benefits. Washington DC: The National Academies Press.

Doiron, R., & Davies, J. 1998. *Partners in learning: Students, teachers, and the school library.* Englewood, CO: Libraries Unlimited.

Dotter, F. & Hilzensauer, M. 2006. Inclusion of sign language users via information and communication technology. *Journal of Telecommunications and Information Technology.* (JTIT), 2(2): 41-51.

Doyle, C. 1992. *Final report to the National Forum on Information Literacy Outcomes measures for information literacy within the National Educational Goals of 1990.* (Sycrause, NY:ERIC Clearinghouse on Information Resources).

Drake, M.A. 2005. *Encyclopedia of library and information science.* First Update supplement. 2nd ed. USA: Taylor & Francis.

Durrheim, K. & Wassernaar, D. 1999. *Putting design into practice: Writing and evaluating and evaluating research proposals*. In M. Terre Blanche & K. Durrheim (Eds.), Research in Practice: Applied methods for the social sciences.

Easterbrooks, *S.* 1999. Improving practices for students with hearing impairments. *Exceptional Children,* 65(4): 537-55. In: M.L. Woolsey; T.J. Harrison, T.J & R. Garner, R. 2004. Preliminary Examination of Instructional Arrangements, Teaching Behaviors, Levels of Academic Responding of Deaf Middle School Students in Three Different Educational Settings, *Education and treatment of children,* 27 (3), August.

Education White Paper 6. 2001. *Special Needs Education. Building an Inclusive Education and Training System.* Pretoria: Department of Education, July.

Educational impact. The sounds of hearing loss, onset, type, impacts. n.d Available online at http://www.sesa.org/DHHSite/pages/HLImpactEd.html. Accessed 17th April 2007.

Effects of hearing loss on development. n.d Available online at http://www.asha.org/public/hearing/disorders/effects.htm. Accessed 14th August 2007.

Eissenberg, N.B. & Berkovitz, R.E. 1990. *Information problem-solving. The big six skills approach to library and information skills instruction.* New Jersey:Ablex.

Elkayam, J & English, K. 2003. Counseling Adolescents with Hearing Loss with the Use of Self-Assessment/Significant Other Questionnaires *Journal of the American Academy of Audiology,* 14 (9):485-499, October 15.

Engel-Eldar, R.E & Rosenhouse, J. 2000. Reading difficulty characteristics in dyslexic and hearing-impaired students. *Educational Psychology,* 20(4):460.

Eriks-Brophy, A. Duriex-Smith, A, Olds, J, Fitzpatrick, E, Duquett, C & Whittingham.J. 2006. Facilitators and barriers to the inclusion of orally educated children and youth with hearing loss in schools: promoting partnerships to support children. *Volta Review,* 106(1): 53-88.

Foster, S. 1993: Information literacy. Some misgivings. *American Libraries,* 24(4): 344-353.

Fouché, B. 1982. Libraries and the promotion of literacy. *Mousaion II,* 12:40-48.

Framework for Action on Special Needs Education, 1994. Available online at
http://unesdoc.unesco.org/images/0011/001107/110753eo.pdf
Accessed 6th July 2009.

Fraser, W.J; Loubser, C.P. & Van Rooy M.P. 1996. *Didactics for the undergraduate student.* 2nd ed. Johannesburg: Heineman.

Freebody, P. & Welch, A.R. 1993. *Knowledge, culture and power: International perspectives on literacy as policy and practice.* London: Falmer Press.

Fuhler, C.J; Farris, P.J. & Nelson, P.A. 2006. Building literacy skills across the curriculum: Forging connections with the past through artifacts. *Reading Teacher*, 59 (7): 646-659, April.

Gagne, R. n.d. *Conditions of learning.* Available online at http://tip.psychology.org/gagne.html. Accessed 10th March 2008.

Garrison, W., Long, G. & Dowaliby, F. 1997. Working memory capacity and comprehension processes in deaf readers. *Journal of Deaf Studies and Deaf Education*, 2: 78-94.

Geers, A & Moog, J. 1989. Factors predictive of the development of literacy in profoundly hearing-impaired adolescents. *The Volta Review,* 91:69:86.

Geldenhuys, T. 1994. *The right to information and human rights.* Unpublished manuscript, September.

Getting Started - Types of Information Sources. n.d. Available online at http://library.uis.edu/findinfo/types.html. Accessed 12th January 2006.

Gilton, D.L. September 1994. "A World of Difference: Preparing for Information Literacy Instruction for Diverse Groups". *Multicultural Review*, 3 (3). 3.

Glazer, S. M. 2007. Fluency Mania. *Teaching PreK*-8, 37 (5): 70.

Goldstein, D. 1989. *The hearing impaired child.* England: NFER-Nelson.

Gray, A & McKutzen, D. 2006. Young readers' use of phonological information: Phonological awareness, memory, and comprehension. *Journal of Learning Disabilities,* 39 (4): 325-333, July-August.

Gregory, J., Shanahan, T., & Walberg, H. 1984. Inclusive educationing hearing-impaired high school seniors: A re-analysis of a national survey. *American Annals of the Deaf,* 129*:*11-16. In In: M.L. Woolsey; T.J. Harrison, T.J & R. Garner, R. 2004. Preliminary Examination of Instructional Arrangements, Teaching Behaviors, Levels of Academic Responding of Deaf Middle School Students in Three Different Educational Settings, *Education and treatment of children,* 27 (3), August.

Gregory, S.; Bishop, J. & Sheldon, L. 1995. *Deaf young people and their developing understanding.* USA: Cambridge

Gross, J., & Kientz, S. 1999. Developing information literacy: Collaborating for authentic learning. *Teacher Librarian*, 27(1): 21-25, October.

Hall III, J.W. & Mueller III, H.G. 1997. *Audiologists' Desk Reference. Diagnostic audiology principles, procedures, and practices.* San Diego: Singular Publishing Group, 1:

Harrison, D.R. 1991. The development of written language in a population of hearing-impaired children. *Journal of the British Association*, 15(3): 76-85.

Harrison, S.R., Simpson, P.A. & Stuart, A. 1984. The development of written language in a population of hearing-impaired children. *Journal of the British Association of Teachers of the Deaf,* 15(3):76-85, May.

Hart, B.O. 1978. *Teaching reading to deaf children.* Washington: The Alexander Graham Bell Association.

Hay, J.F. 2003. Implementation of the inclusive education paradigm shift in South African education support services. *South African Journal of Education,* 23(2): 135-138.

Hay, J.F., Smit, J. & Paulsen, M. 2001. Teacher preparedness for inclusive education. *South African Journal of Education,* 21(4):213-218.

Haycock, K. 1998. Collaborative cultures, team planning and flexible scheduling. *Emergency Librarian*, 25(5): 28.

Hearing loss disorders. n.d Available online at http://www.acenta.com/audiology.communicationmodes.asp. Accessed 30th August 2009.

Higgins, P.C & Nash., J.E. 1987. Understanding deafness socially. Springfield: Charles C Thomas.

Highfield, R. 1999. Key to kids' language may be in their genes. *Sunday Times,* April, 4: 8.

Hindley, P. 1997. Psychiatric aspects of hearing impairments. *Journal of Child Psychiatry and Psychiatry and Applied Disciplines,* 38(1):101-117.

Hugo, R. 1987. *My kind kan nie hoor nie. Praktiese riglyne vir die hantering van die persoon met 'n gehoorverlies.* Pretoria: Sigma Pers.

Hugo, R. 1998. 'Communication pathology: the way in Africa', *The South African Journal of Communication Disorders*, 45 (1): 3-10.

Hull, R.H. 1998. *Aural rehabilitation. Serving children and adults,* 3rd ed. San Diego: Singular. International Congress on Education of the Deaf. Israel: International Congress on Education, II.:

Human Sciences Research Council. 1998. *First South African Conference on educational technology,* July: 24-26.

Information literacy: An international State-of-the Art Report. 2007. 2nd draft. Available online at http://www.jesuslau.com/docs/publicaciones/doc2/UNESCO_state_of_the_art.pdf. Accessed 21st June 2009.

Information literacy, the library at QVCC. n.d. Available online at http://www.qvctc.commnet.edu/library/infolit.asp. Accessed 17th June 2009.

Information Power: Building Partnerships for Learning. Resource Guides for School Library Media Program Development. 1998. Chicago: American Library Association Available online at http://www.ala.org/aaslTemplate.cfm?Section=resourceguides&Template=/ContentManagement/ContentDisplay.cfm&ContentID=15288. Accessed 7th April 2007.

International Conference on Libraries (ICOL). 2005. Assessing Learning Outcomes of Information Literacy Programmes: Malaysian Academic Libraries. . 2005. Malaysia, March 14-16.

Jacobson, T.E. & Mark, B.L. 2000. Separating wheat from chaff. Helping first-year students become information savy. *Journal of General Education*, 49(4): 256-279.

Joubert, J.J. 1999. *Nuwe onderwysplan vir gestremdes. Rapport,* September 19:8.

Joyce, J.Z. 2006. A Niche for Library Media Specialists: Teaching Students How to Read Informational Text. *Library Media Connection*, 24 (7): 36-38, April-May.

Kansas State Department of Education. 2009. *Special Education Services. Guide to Education of Children Who Are Deaf or Hard of Hearing,* June. Available online at http://www.ksde.org/LinkClick.aspx?fileticket=zx2msZjP5YQ%3D&tabid=2333&mid=7113. Accessed 29th August 2009.

Katz, J. 2002. (Ed.). *Handbook of clinical audiology*. Baltimore: Williams and Wilkins. .

Kerschner, R & Chaplain, R. 2001. *Understanding special educational needs. A teacher's guide to effective school-based research.* London: David Fulton.

Killen, R. 2007. *Teaching strategies for Outcomes-based education*. 2nd ed. Cape Town: Juta.

King, C. M & Quigley, S.P. 1985. *Reading and deafness.* London: Taylor & Francis.

Kothari, C.R. 2005. *Research Methodology: Methods and Techniques.* 2nd ed. New Delhi New Age International.

Ku, Y; Sheu, S. & Kuo, S. 2007. Efficacy of Integrating Information literacy Education Into a Women's Health Course on Information Literacy for RN-BSN Students. *Journal of Nursing Research*, 15 (1):67-77, March.

Kuder, S.J. 1997: *Teaching adolescents with language and communication disabilities.* Boston: Allyn & Bacon.

Kunisue K.; Fukushima, K.; Kawasaki, A.; Maeda, Y,; Nagayasu, R.; Kataoka, Y.; Kariya,S.; Fukutomi, Y,; Takami, H & Nishizaki, K. 2006. *International Journal of Pediatric Otorhinolaryngology,* 71(11):1671-1679, November.

Kyle, F.E. & Harris, M. 2006. Concurrent Correlates and Predictors of Reading and Spelling Achievement in Deaf and Hearing School Children. *Journal of Deaf Studies and Deaf Education*, (11):3: 273-288, Summer.

Lang, H.G. 2002. Higher education for deaf students: Research priorities in the New Millenium. *Journal of Deaf Studies and Deaf Education*, 7(4):267.

Leedy, P.C. & Ormrod, J.E. 2001*. Practical research: planning and design,* 7th ed. Ohio: Merrill Prentice Hall.

Leedy, P.C. & Ormrod, J.E. 2005*. Practical research: planning and design*, 7th ed. Upper Saddle River, H.J.: Pearson/Merrill Prentice Hall.

Lenox, M.F. & Walker, M.L. 1993. Information literacy in the educational process. *The educational forum,* 57:312-324, Spring.

Lepani, B. 1998. *Information literacy- The Challenge of the Digital Age*. Available online http://cal.edu.au/puclications/papers/occasional/lepani/shtmls. Accessed 4th July 2003, Summer.

Levine, E. S. 1981. *The ecology of early deafness. Guides to fashioning environments and psychological assessment.* New York: Columbia University Press.

Lloyd, J.W.; Kameenui, E.J. & Chard, D. (Eds). 1997. *Issues in educating adolescents with disabilities.* New Jersey: Lawrence Erlbaum.

Lomofsky, L., & Lazarus, S. 2001. South Africa: First steps in the development of an inclusive education system. *Cambridge Journal of Education Special*

Issue: International Perspectives on School Reform and Special Educational Needs, 31(3), 303-317.

Longman Dictionary of Contemporary English Advanced Learner's Dictionary. Sv '*signing*'. Available online at http://www.ldoceonline.com/dictionary/signing. Accessed 1st July 2009.

Lor, P.J. 1990. *Biblioteekkunde. Enigste studiegids vir BIB302-G. Die Navorsingsmetode in Biblioteek-en Inligtingkunde.* Pretoria: UNISA.

Lorenzen, M. 2001. Active Learning and Library Instruction. *Illinois Libraries*, 83, 2: 19-24. Available online at http://www.libraryinstruction.com/active.html. Accessed 2nd August 2005, Spring.

Louw, D.A. 1991. *Human Development.* Pretoria: Kagiso.

Luckner, J.L; Cooney, S.J.; Young III, J. & Muir, S.G. 2005. An examination of the evidence-based literacy research in deaf education. *American Annals of the Deaf,* 150 (6): 443-456.

Luetke-Stahlman, B & Nielsen, D. 2003. The contribution of phonological awareness and receptive and expressive English to the reading ability of deaf students with varying degrees of exposure to accurate English. *Journal of Deaf Studies and Deaf Education*, 8(4): 464:484, Fall.

Luterman, D.M. 1986. *Deafness in perspective.* USA: California College-Hill.

McNamara, D.S. 2007. *Reading Comprehension Strategies: Theories, Interventions, and Technologies*. 2007. USA. Lawrence Erlbaum

Mancall, J. C., Aaron, S. L., & Walker, S. A. 1986. Educating students to think: The role of the library media program. A concept paper written for the National Commission on Libraries and Information Science. *School Library Media Quarterly*, 15(1): 18-27.

Marais, J J. 1992. Evolution of information literacy as product of information education. *South African Journal of Librarianship and information Science,* 60(2):75-79.

Mark, R & Tett, L. 2007. Much more than a basic skill. *Adults Learning*, 18 (5): 26-27, January.

Marschark, M. 1997. Raising and educating a deaf child. New York: Oxford Univ Press. In P.E. Spencer; C.J. Erting & M. Marschark, M. (Eds.). 2000. *The deaf child in the family and at school.* London: Lawrence Erlbaum.

Marschark, M. 2000. *Education and development of deaf children – or is it development and education?* In P.E. Spencer; C.J. Erting & M. Marschark, M. (Eds.). 2000. The deaf child in the family and at school. London: Lawrence Erlbaum.

Marschark, M. 2003: Interactions of language and cognition in **d**eaf learners**:** from research to practice. *International Journal of Audiology*, 42: S41-S48. July, Supplement.

Marschark, M. 2007. *Raising and educating a deaf child: a comprehensive guide to the choices, controversies, and decisions faced by parents and educators*. UK: Oxford University Press.

Marschark, M. & Harris, M. 1996. *Success and failure in learning to read: The special case (?) of deaf children.* In C. Cornoldi & J. Oakhill (Eds.), Reading comprehension difficulties: Process and intervention (pp. 279–300). Hillsdale, NJ: Lawrence Erlbaum Associates.

Marschark, M. & Spencer, P.E. 2005*. Oxford handbook of deaf studies.* Oxford: Oxford University Press.

Martin, W.J. 1988. *The information society.* London: ASLIB.

Marx, E.M.M. 2000. *'n Ondersoek na die problematiek van inligtinggeletterdheid by die gehoorgestremde persoon in Suid-Afrika.* Unpublished M Dissertation. Pretoria: University of Pretoria.

Maughan, P.D. 2001. Assessing Information Literacy among Undergraduates: A Discussion of the Literature and the University of California-Berkeley Assessment Experience. *College & Research Libraries,* January: 71-85.

Mayer, C; Akamatsu, C.T. & Stewart, D. 2002. A model for effective practice: Dialogic inquiry with students who are deaf. *Exceptional Children*, 68(4): 485-502.

Merriam-Webster Online Search. Sv '*School books'.* Available online at http://www.merriam-webster.com/dictionary/school. Accessed 5th July 2009.

Moeller, M.P. 2007. *Current state of knowledge: Psychosocial development in children with hearing impairment.* USA: Lippincott Williams & Wilkins.

Mokhtar, I.A & Majid, S. 2006. Teaching information literacy for in-depth knowledge and sustained learning. *Education for Information*, 24(1): 31-49.

Moores, D.F. 1987. *Educating the deaf Psychology, principles and practices.* 3rd ed. Boston, MA: Houghton Mifflin.

Moores, D.F. 1996. *Educating the deaf. Psychology, principles and practices.* 4th ed. Illinois: Houghton Mifflin.

Moores, D.F. 2000. Stakes Testing: Are the Stakes Too High? *American Annals of the Deaf*, 145 (3): 235-236).

Moores, D. F. 2001. *Educating the deaf - Psychology, principles, and practices.* 5th ed. Boston: Houghton Mifflin. In: M.L. Woolsey; T.J. Harrison & R. Garner, 2004. Preliminary Examination of Instructional Arrangements, Teaching Behaviors, Levels of Academic Responding of Deaf Middle School Students in Three Different Educational Settings, *Education and treatment of children,* 27 (3): 263:279, August.

Morris, R.J. & Blatt, B. 1986. *Special education : research and trends.* New York: Pergamon Press.

Mouton, J. 2001. *How to succeed in your Master's and Doctoral Studies. A South African guide and resource Book.* Pretoria: Van Schaik's.

Mouton, J. & Marais, H.C. *Basic Concepts in the Methodology of the Social Sciences.* 5th ed. Pretoria: HSRC.

MSN. Encarta. Sv. '*books'* Available online at http://encarta.msn.com/dictionary_/book.html. Accessed 5th July 2009.

Muller, A. 1984: *Die rekenaar in die onderrig en moontlike beroepsbeoefening van die gehoorgestremde.* Pretoria: Raad vir Geesteswetenskaplike Navorsing.

Munoz-Baell, I.M. & Ruiz, M.T. 2000. Theory and methods. Empowering the deaf. Let the deaf be deaf. *Journal of Epidemiology Community Health*, 54: 40-44, January. Available online at http://jech.bmjjournals.com/cgi/content/full/54/1/40. Accesssed 12th August 2005.

Muronago, K., & Harada, V. 1999. Building teaching partnerships: The art of collaboration. *Teacher Librarian*, 27(1): 9-14, October.

Murray, J. 2000: How school librarians can contribute to the personal growth of students with disabilities. *Library Association of Australia, School & Children's libraries,* 36(2): 5-11.

Murray, J. 2001. Teaching information skills to students with disabilities: What works? *School Libraries Worldwide,* .7 (2): 1-16.

Musselman, C. 2000. How do children who can't hear learn to read an alphabetic script? A review of the literature on reading and deafness. *Journal of Deaf Studies & Deaf Education, 5:* 9-31.

Musselman, C.; Mootilal, A. & MacKay, S. 1996 *The social adjustment of deaf adolescents in segregated, partially integrated and inclusive educationed settings.* Available online at http://jdsde.oxfordjournals.org/cgi/reprint/1/1/52.pdf. Accessed 11th June 2007. .

Myklebust, H. 1964 . The psychology of deafness. New York: Grnue & Stratton. In P.E. Spencer; C. J. Erting & M. Marschark, M. (Eds.). 2000. *The deaf child in the family and at school.* London: Lawrence Erlbaum.

Naicker, S. M. 1999. *Curriculum 2005 a space for all: An introduction to inclusive education.* Cape Town: Renaissance.

Napier, J., McKee, R.L. & Goswell, D. 2006. *Sign language interpreting. Theory and practice in Australia and New Zealand.* Sydney: Federation Press.

Nassimbeni, M & May, B. 2006. Adult education in South African public libraries: a profile of activities. *South African Journal of Librarianship and Information Science*, 72 (1):12-21.

Nelson, N.W. 1998. *Childhood language disorders in context: Infancy through adolescence.* 2nd ed. Boston: Ally & Bacon.

Nelson, J.R. & Silverman, S.J. 2005. *Research methods in physical activity.* Revised ed. USA: Human Kinetics Europe Ltd.

Neuman, W.L. 1997. *Social Research Methods Qualitative and Quantitative Approaches.* 3rd ed. Boston: Allyn & Bacon.

Neuman, W.L. 2000. *Social Research Methods Qualitative and Quantitative Approaches.* 3rd ed. Boston: Allyn & Bacon.

New Dictionary of Social Work. 1995. Revised and comprehensive edition. Terminology Committee for Social Work. Pretoria: State Printers.

Newby, H.A & Popelka, G.R. 1992. *Audiology.* 6th ed. New York: Prentice Hall.

Neyhuss, A.I & Austin, G.F. 1978. *Deafness and adolescence.* USA: The Alexander Graham Bell Association for the deaf.

Nielsen, D.C. & Luetke-Stahlman, B. 2002. Phonological awareness: One key to the reading proficiency of deaf children. *American Annals of the Deaf,* 147(3): 1-11, July.

NMLC. 1997. *Land development Objective.* NMLC. Randburg.

Northern, J.L. & Downs, M.P. 2001. *Hearing in Children.* 5th ed. Lippincott Williams & Wilkins.

Norton, M.J. 1992. Effective Bibliographic Instruction for Deaf and Hearing-Impaired College Students. Reprinted from Library Trends, Summer.

Available online at http://www.rit.edu/~easi/lib/oppo6.htm.   Accessed 29th March 1992.

Nowell, R.C. & Marschak, L.E.   1994.   *Understanding deafness and the rehabilitation process.* Boston: Allyn & Bacon.

Nieuwenhuis, F.J. 1980. *Beroepsvoorligting en beroepsgerigte opleiding vir dowes op sekondêre en tersiere onderwysvlak. Deel 1. Beroepsvoorligting in enkele oorsese lande.* Pretoria: RGN.

Oakhill, J. & Cain, K. 2000. Children's difficulties in text comprehension: Assessing causal issues. *Journal of Deaf Studies and Deaf Education,* 5(1):51.

Oppenheim, A.   1966.   *Questionnaire design & attitude measurement.* London: Heinmnan Educational Books.

Other Sources of Reading Difficulty. n.d.   Available online at http://www.readingrockets.org/target/otherissues. Accessed 12th June 2009.

Owens, R.E. 2001*. Language development – an introduction.* 5th ed. Boston: Allyn and Bacon.

Owusu-Ansah, E.K. 2003. Information Literacy and the Academic Library: A Critical Look at a Concept and the Controversies Surrounding It. *Journal of Academic Librarianship*, 29 (4): 219-230, July 12.

Pagliaro, C. M. 1998a.   Mathematics preparation and professional development of deaf education teachers. *American Annals of the Deaf,* 143(5), 373-379.

Pagliaro, C. M. 1998b. Mathematics reform in the education of deaf and hard of hearing students. *American Annals of the Deaf,* 143(1), 22.   In: M.L.

Woolsey; T.J. Harrison & R. Garner, 2004. Preliminary Examination of Instructional Arrangements, Teaching Behaviors, Levels of Academic Responding of Deaf Middle School

Paul, P. 1998. *Literacy* and *deafness*: *The development of reading, writing, and literate thought.* Needham Heights, MA: Allyn & Bacon.

Paul, P.V. 2009. *Language and Deafness.* 4th ed. Sudbury, Massachusetts: Jones & Bartlett.

Paul, P.V. & Quigley. S.P. 1994. *Language and Deafness.* 2nd Ed. California: Singular Publishing.

Paul, P., & Gustafson, G. 1991. Hearing-impaired students' comprehension of high-frequency multimeaning words. *Remedial and Special Education* (RASE), 12(4): 52–62.

Perfetti, C.A. & Sandak, R. 2000. *Reading optimally builds on spoken language: implications for deaf readers.* UK: Oxford University Press.

Peters, S.J. 2003. *Inclusive education: Achieving education for all by including those with disabilities and special education needs.* Prepared for the Disability Group of the World Bank. New York: Garland Publishing, April, 30.

Phonological and phonemic awareness. n.d Available online http://www.freereading.net/index.php?title=Phonological_and_phonemic_awareness. Accessed 7th June 2009.

Planning for Literacy Instruction. n. d. Available online at http://clerccenter2.gallaudet.edu/Products/Sharing-Ideas/planning/index.html. Accessed 9th October 2003.

Position Statement on Information Literacy. n.d Available online at

http://library.concordia.ca/services/users/faculty/infolit.php. Accessed 6th July 2009.

Potgieter, C. 1992. *Technology Education 1. Only study guide for FDETE2-B. Department of Further Teacher Education. FDE: Technology Education.* Pretoria: University of South Africa.

Powers, D. 2003. Influences of Student and Family Factors on Academic Outcomes of Mainstream Secondary School Deaf Students. *Journal of Deaf Studies and Deaf Education,* 8(1):57-78, Winter.

Preston, L.D. 2004. *The role of parenting styles in the acquisition of responsibility in adolescents.* South Africa: Unisa. M.Thesis, November.

Principles of Outcomes Based Education. Available online at http://www.ukzn.ac.za/musiced/principle_of_outcomes_based_educ.htm. Accessed 27th August 2009.

Pumfrey, P. 1991. *Improving children's reading in the Junior School: Special needs in ordinary schools. Challenges and responses.* England: Cassell.

Rademeyer, A. 2005. Skok oor kinders so swak tel en swak praat. Onderwysstelsel moet drasties verbeter. *Beeld,* Julie: 15.

Rademeyer, A. 2009. 'Begin onderwys regruk met monitoring en meer boeke'. *Beeld,* May, 15:9.

Rader, H. B. 1995. "Information Literacy and the Undergraduate Curriculum". *Library Trends*, 44 (2):5 Fall.

Reason, P. 1994. *Inquiry and alienation.* In P. Reason (ed). Participation in Human Inquiry. London:SAGE.

Reynolds, C.R. & Janzen, E.F. 2002. *Concise Encyclopedia of Special Education: A reference for the Education.* USA: John Wiley & Sons.

Riedling, A.M.. 2007*. An educator's guide to information literacy what every high school senior needs to know.* Westport, Conn: Libraries Unlimited.

Rittenhouse, R.K. 1987. The attitudes of deaf and normal hearing high schoolers toward school, each other and themselves: inclusive educationed and self-contained comparisons. *Journal of Rehabilitation of the Deaf,* 21(1):24-28.

Roetz, Y. 1991. Die inligtingbestuurder- 'n verkennende studie. *Ongepubliseerde M-verhandeling*, Pretoria:Universiteit van Pretoria, November.

Ross, M., Bracket, D. & Maxon, A. B. 1991. *Assessment and Management of Mainstreamed Hearing Impaired Children.* Austin, TX: Pro-Ed.

Russell, S. *Teachers and Librarians: Collaborative Relationships*. ERIC Digest. Available online at http://www.ericdigests.org/2001-2/librarians.html. Accessed 12th August 2005.

Sampson, M. 1991. *Pathways to literacy.* USA:Holt, Rinehart & Winston.

Sanders, D.A. 1982. *Aural rehabilitation. A management model.* 2nd ed. New Jersey: Prentice-Hall.

SAS Procedures Guide. 1999. Version 9. Cary, NC: SAS Institute.

Sayed, Y. & De Jager, K. 1997. Towards an investigation of information literacy in South African Students. *South African Journal of Librarianship and Information Science,* 56 (1): 5-13.

Schein, J. D. 2000. *Reading, writing and rehabilitation. American Rehabilitation,* 25(4), Winter.

Schirmer, B.R. 1994. *Language and literacy development in children who are deaf.* New York: Merrill.

Shinew, D.M. & Walter, S. 2003. *Information literacy instruction for educators: professional knowledge for an information age.* Binghamton, NY: Haworth Information Press.

Siegel, L. 2001. The educational & communication needs of deaf and hard of hearing children: A Statement of Principle. Systemic Educational Changes. *American Annals of the Deaf,* 145(2), 1-55, April.

Slyh, D. *Language Development & Use*. n.d. Available online at http://www.deafed.net/publisheddocs/sub/971230.htm, 1998. Accessed 17th April 2007.

Smith, L.A. 2006. Think-Aloud Mysteries: Using structured, sentence-by-sentence text passages to teach comprehension strategies. *Reading Teacher*, 59 (8): 764-773, May.

Snavely, L., & Cooper, N. 1997. Competing agendas in higher education: Finding *a place for information literacy. *Reference & User Services Quarterly* 37 (1), 53-62.

Society for the Advancement of Library & Information Science (SALIS) Madras School of Social Work (MSSW) and UNESCO Workshop Proceedings and Workshop Report. 2006. *Workshop on Information Literacy Competency Development for Library & Information Science Professional and Special Educators* (Southern States), November, 6-10.

South Africa. 1997. Department of South Africa. *A framework for the transformations of further education and training in South Africa*. Report of

the National Committee on further education. Pretoria: Department of Education

South Africa. 1997. Department of Health: *White Paper for the Transformation of the Health System in South Africa.* Available online at http://196.36.153.56.doh.docs/policy/white_paper/healthsys009_01.htm. Accessed 13th July 2009.

South African Constitution. 1996. Chapter 2, article 32. Available online at http://unpan1.un.org/intradoc/groups/public/documents/UN/UNPAN005172.pd f. Accessed 17th April 2007.

South Africa. *Integrated National Disability Strategy White Paper.* Available on http://www.info.gov.za/whitepapers/1997/disability.htm. Accessed 13th August 2009.

Spady, W. 1994. *Outcome-based education: Critical issues and answers.* Arlington, VA:American Association of School Administrators.

Spear, L.P. 2000. The adolescent brain and age related behavioural manifestations. *Neuroscience and Biobehaviroural Reviews.* 24(4): 417-463.

Special Needs Education. 1993. *World Yearbook 1993.* London: Philadelphia.

Special schools as resource centres. 2002. Inclusion Conference. Birchwood Hotel, Feb 28 – March, 3.

Speech by the Minister of Education, Professor Kader Asmal, MP, at the launch of Education White Paper 6 on Special Needs Education: Building an inclusive education and training system in South Africa, Pretoria, 26 July 2001. Available online at

http://www.info.gov.za/speeches/2001/010727945a1009.htm.   Accessed 12th August 2005.

Spencer, P.E.; Erting, C.J. & Marschark, M. (Eds.). 2000. *The deaf child in the family and at school.* London: Lawrence Erlbaum.

Spitzer, K.L; Eisenberg, M.B & Lowe, C.A. 1998*. Information literacy: Essential skills for the information age.* New York: ERIC Clearinghouse on Information and Technology, Syracuse.

Stapleton, D.C. & Burkhauser, R.V. (Eds.). 2003. *The Decline in Employment of People with Disabilities - A Policy Puzzle.* Kalamazoo, Michigan.: W.E. Upjohn Institute for Employment.

Steinberg, B. 1982. Overcoming linguistic limitations of hearing-impaired children through teaching written language. *Topics in Language Disorder,* 2: 45-51.

Steiner, J., Panofsky, C. & Smith, L.. & Pretorius, (Eds). 1996. *Sociocultural approaches to language and literacy.* New York: Cambridge Univ Press.

Stevens, H. 2004: Access to higher education in Europe for Deaf Students: European governments and academic institutions turn a deaf ear on Deaf students. *International Deaf Academics and Researchers Conference,* Gallaudet University, February, 11.

Stewart, D.A. & Kluwin, T.N. 2001. *Teaching deaf and hard of hearing adolescents. Content, strategies, and curriculum.* Boston: Allyn & Bacon.

Stewart, D.A. & Luetke-Stahlman, B. 1998. The signing family: what every parent should know about sign communication. USA. Gallaudet University Press.

Stinson, M.S. & Foster, S. Socialization of deaf children and youths in school. In Akamatsu, et *al* In P.E. Spencer, P.E.; C.J. Erting, & M. Marschark (Eds.). 2000. *The deaf child in the family and at school.* London: Lawrence Erlbaum.

Stinson, M. & Liu, Y. 1999. Participation of deaf and hard-of hearing students in classes with hearing students. *Journal of Deaf Studies and Deaf Education*, 4(3): 191:202.

Sugden, D. 1989. *Cognitive approaches in special education.* London: Falmer Press.

Sutton, M.J. 2003. *Problem Representation, Understanding, and Learning Transfer Implications for Technology Education*, 40 (4). Available online at http://scholar.lib.vt.edu/ejournals/JITE/v40n4/sutton.html. Accessed 29th March 2008.

Taylor, J. 2006. *Information literacy and the school library media center.* Westport, Conn: Libraries Unlimited.

Teaching strategies for students who are deaf or hard of hearing. n.d. Available online at http://www.aheadweb.org/wiki/TeachingLearningStrategies4. Accessed 29th March 2008.

The Intelligence Quotient (IQ). The first intelligence tests used in the field of psychology. n.d. Available online at http://www.psyonline.nl/en-iq.htm. Accessed 29th March 2008.

The NQF and Curriculum 2005. A SAQA Position Paper. n.d. Available online at

http://www.saqa.org.za/show.asp?include=structure/nqf/docs/curricul2005.html. Accessed 27th August 2009.

Thomas, J.R., Nelson, J.K. & Silverman, S.J. 2005. *Research methods in physical activity.* 5th ed. 2005. USA: Human Kinetics Europe.

Thyer, B.A. 1993. *Single-system research designs.* In R.M. Grinnell. Social work research and evaluation. 4th ed. Itasca, IL:Peacock, 94-117.

Traxler, C. B. 2000. The Stanford Achievement Test. 9th ed. National norming and performance standards for deaf and hard-of-hearing students. *Journal of Deaf Studies and Deaf Education,* 5(4), 337-348.

Truax, R. 1992. Becoming literate. A sketch of the never-ending cycle. *The Volta Review*, 92:395-410, September.

Truax, R.; Foo, S.F. & Whitesell, D. 2004. Literacy learning: Meeting the needs of children who are deaf or hard of hearing with additional special needs. *The Volta Review,* 104(4): 307-326, monograph.

Tye-Murray, N. 2004. 2nd ed. *Foundations of aural rehabilitation. Children, adults, and their family members.* San Diego: Singular Publishing Group.

Type, Degree, and Configuration of Hearing Loss. n.d. Available online at http://www.asha.org/public/hearing/disorders/types.htm. Accessed 10th April 2007.

Uys, I C; Hugo, S R & Louw, B. 1994*. Sosiaal-kulturele taalverwerwing van die Afrikaanssprekende gehoorgestremde kleuter.* Pretoria: RGN. Projek no.15/1/3/3/795.

Van der Spuy, B. 1997. WITSKRIF oor gestremdes sal ook nie-gestremdes "bevry". *Beeld,* Desember 12:13.

Van der Walt, M.S. 1992. Onderrig aan vaardigheidsstudente. *South African Journal of Librarianship and Information Science*, 60(1): 39-46.

Veldsman, D. 1994. Gebruikersopleiding of gebruikersmisleiding. *Mousaion,* 12 (1):46-65.

Watson, L. 1999. Literacy and Deafness: The Challenges continues. *Deafness and Education International,* 4: 25-37.

Wauters, L.N. 2005. Reading comprehension in deaf children: The impact of the mode of acquisition of word meanings. *Doctoral Thesis.* Nijmegen: Radboud University.

Webster, A. 1986. *Deafness, development and literacy.* London: Methuen.

Weikle B. & Hadadian, A. 2004. Literacy, development and disabilities: are we moving in the right direction? *Early Child Development and Care,* 174 (7-8), December.

Weiss. J. P. 2004. Contemporary Literacy Skills. *Knowledge Quest*, 32 (4): 12-15, March-April.

Weissel, A. (ed). 1998. *Proceedings of the 18ᵗʰ International Congress on Education of the Deaf.* II. Israel:

Welch, O. M. 1993. *Research and practice in deafness.* Issues and questions in education, psychology, and vocational service provision. USA: Charles C Thomas.

WFD POLICY. Education rights for Deaf Children. 2007. A policy statement of the World Federation of the Deaf. Available online at http://www.wfdeaf.org/pdf/policy_child_ed.pdf. Accessed 30th June 2009.

What should parents know about Information Literacy. 2005. n.d Available on http://www.libraryinstruction.com/parents.html.   Accessed 12th August 2005.

White Paper for the ransformation of the Health System in South Africa. Dept of Health. 1997. April. Available online at http://www.info.gov.za/whitepapers/1997/health.htm.   Accessed 14th July 2009.

Wikipedia, the free encyclopedia.   'Sv' *Dewey Decimal Classification Scheme'.* Available online at

 http://en.wikipedia.org/wiki/Dewey_Decimal_Classification. .   Accessed 5th July 2009.

Wikipedia, the free encyclopedia, 2009. 'sv' *Hearing loss'.*   Available on http://en.wikipedia.org/wiki/Dewey_Decimal_Classification.   Accessed 10th July 2007.

Williams,   J.P.   *Strategic   Processing   of   Text.   Improving   reading comprehension of students with learning disabilities*. n.d. Available online at http://www.vtaide.com/png/ERIC/Processing-Text.html.   Accessed   13th October 2004.

Woolsey, M.L.; Harrison, T.J & Garner, R. 2004. Preliminary Examination of Instructional Arrangements, Teaching Behaviors, Levels of Academic Responding of Deaf Middle School Students in Three Different Educational Settings, *Education and treatment of children,* 27 (3), August. 263-279.

Wurst, D; Jones, D. & Luckner, J. 2005. Promoting literacy development with students who are deaf, hard-of-hearing and hearing. *Teaching Exceptional Children*, 37 (5):56-62.

Year 2007. *Position Statement: Principles and Guidelines for Early Hearing Detection and Intervention Programs*. Joint Committee on Infant Hearing Pediatrics, 120: 898-921.

Yoshinaga-Itano, C. 2003. From Screening to Early Identification and Intervention: Discovering Predictors to Successful Outcomes for Children With Significant Hearing Loss. *Journal of Deaf Studies and Deaf Education* 8(1): 11-30, Winter.

Yoshinaga-Itano, C. & Downey, D. M. 1997. Analyzing deaf or hard-of-hearing students' written metacognitive strategies and story-grammar propositions, *Volta Review,* 98 (1), 63-64.

Yoshinago-Itano, Sedey, A. & Coulter, DK. 1998. Language of early – and later-identified children with hearing loss. *Paediatrics,* 1-2(5): 1161-1171.

Zapata, M.E. 1994. The role of public libraries in literacy education. *Libri,* 44(2): 123-129.