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.

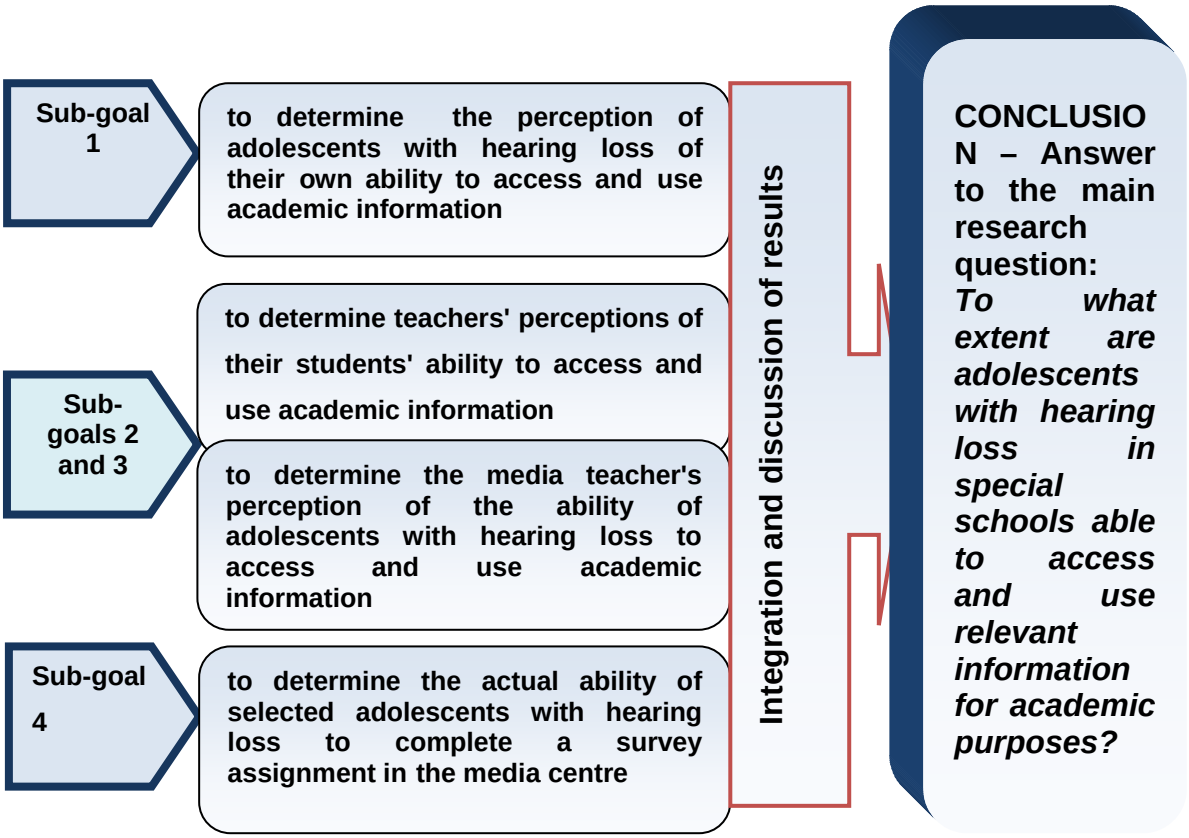


Figure 5.1: Outline of the analysis and interpretation of the data

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.

[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.

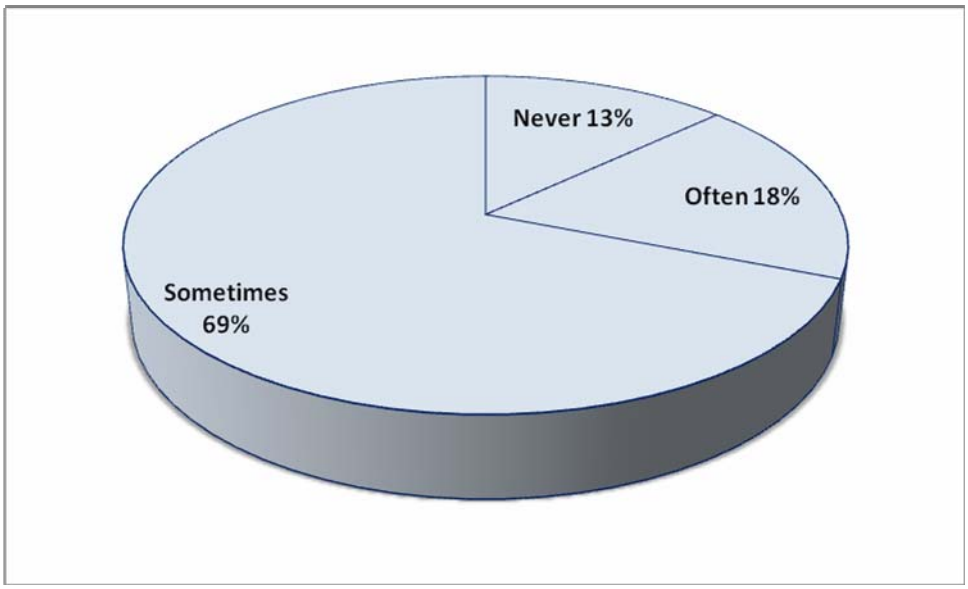


Figure 5.2: Participants visiting the media centre

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

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.

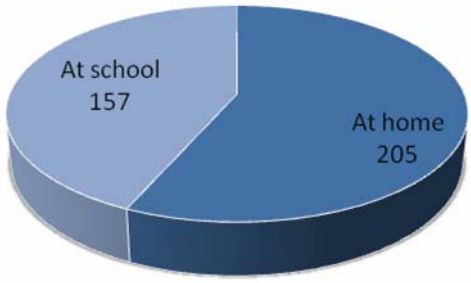
Question 2 of the background information determined the age of the participants completing the questionnaire. The researcher wanted to determine if age played a role in the participants' ability to understand academic information. The Chi-square test χ^2 for independence (SAS Procedures Guide, Version 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).**

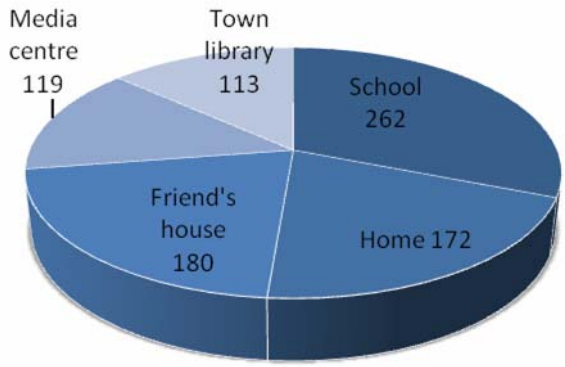
It appears, then, that there is no improvement in their ability with increase in age. In the case of normal hearing participants there is an improvement as they grow

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		
	n	% of participants (*n*=326)
At home	205	63%
At school	157	48%

Computer access and use		
	n	% of participants (*n*=326)
School	262	80%
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**.

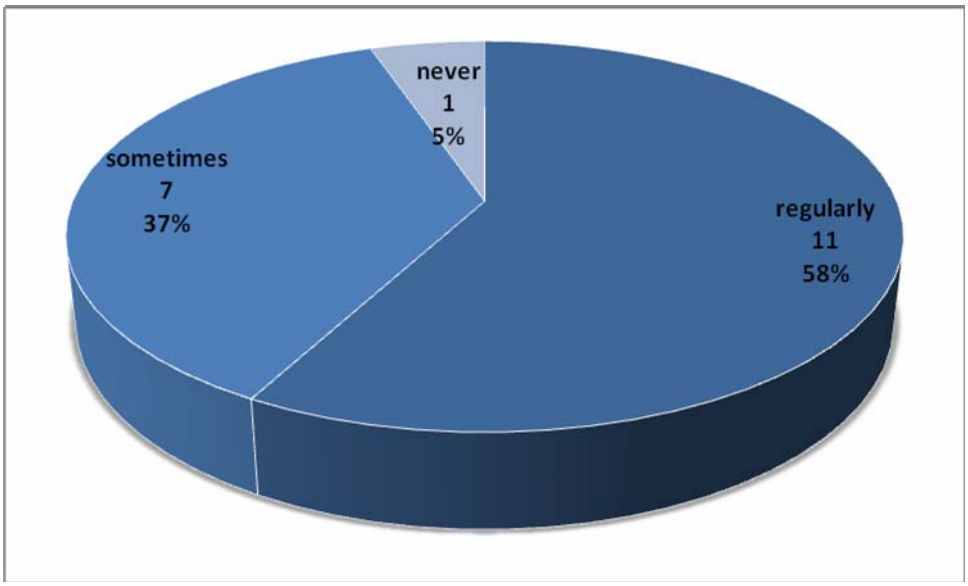


Figure 5.4: The perception of the teachers of participants visiting the media centre

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

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 5.24 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.

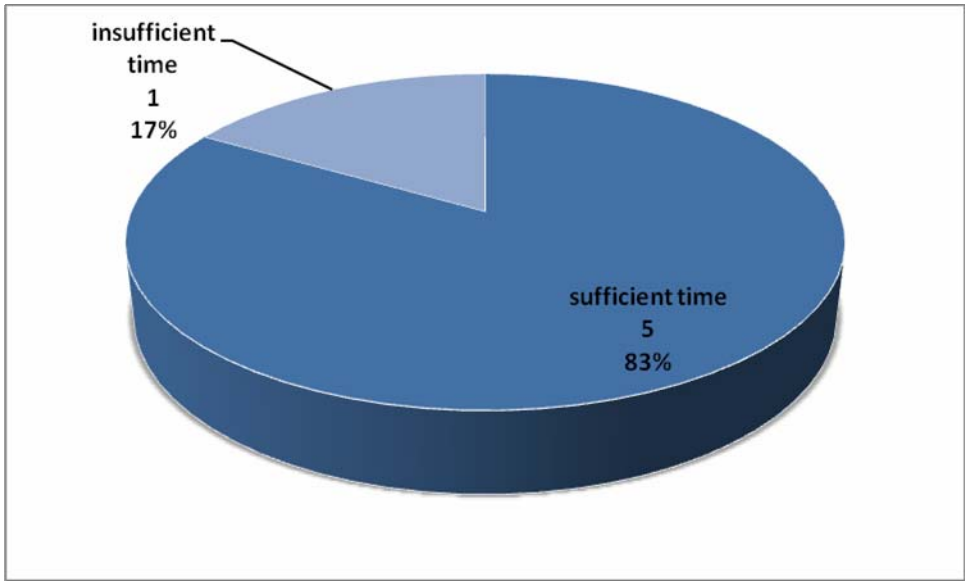


Figure 5.5: Media teachers' perception if participants had enough time to access and use academic information during the year

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 i*n 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.