THE ABILITY OF ADOLESCENTS WITH HEARING LOSS IN SPECIAL SCHOOLS TO ACCESS AND USE ACADEMIC MATERIAL IN THREE PROVINCES IN SOUTH AFRICA

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ABSTRACT

This study aimed to determine the ability of a specific group of adolescents with hearing loss to access and use academic information in order to establish the kind of support that might be required for adolescents with hearing loss. Adolescents with hearing loss who have a language delay because of this loss experience problems with access to formal as well as informal academic material. Children with severe hearing loss need special education and the teacher should receive in-service training. This is necessary because children with this degree of hearing loss have a serious language delay, and need special help in all language skills, language-based academic subjects, vocabulary, grammar, pragmatism, reading and writing (HMIE 2007:16). They also have a lack of prior knowledge to assist them in all their language skills (HMIE 2007:26). The participants of this study were adolescents with hearing loss, and teachers and media teachers at special schools that cater for adolescents with hearing loss. Questionnaires were distributed to 326 adolescents with hearing loss, 19 teachers, and six media teachers. In addition, the

researcher observed 48 adolescents with hearing loss while they completed an assignment in a media centre. The results indicated that these young people found it difficult to access and use academic information. They used academic information mainly during class and after school when they needed to, and there was not much consensus as to the purpose for which they used it. Over 50% of the participants were not able to trace other sources. Various factors were identified which influenced their ability to access and to use academic information, such as degree of hearing loss, literacy skills and information literacy skills, communication and poor cognitive skills. In the media centre the adolescents were not able to execute an assignment on academic information with ease. This was because they had difficulties with bibliographical details and a lack of knowledge about finding and accessing information (HMIE 2007:26). Suggestions are made for an information literacy programme for adolescents with hearing loss so that they could develop the relevant skills to access and use academic information.

KEY WORDS

Hearing loss, adolescents, special needs education, academic information, information literacy.

1 INTRODUCTION

Adolescents with hearing loss have multifaceted problems such as literacy (reading and writing) and language that can influence their ability to access and use academic information. This also has an implication for their views on academic work and whether they are prepared to use this work (Swanwick & Marschark 2010:225). Receptive and expressive spoken language skills generally provide for literacy development (Swanwick & Marschark 2010:225), and adolescents with hearing loss have language and literacy skills that lag behind the achievements of their hearing peers (Swanwick & Marschark 2010:225, 228). Children and adolescents with hearing loss experience problems with syntax, problem vocabulary and phonology in reading (Swanwick & Marschark 2010:229). These young people therefore need the necessary language skills and literacy in order to be able to achieve academically (Swanwick & Marschark 2010:225, 229).

An information-literate society is characterised by the use of theoretical knowledge, scientific decision-making and problem-solving skills. Members of such a society need to be able to depend on accurate and reliable information and a well-developed infrastructure for the production, distribution, retrieval and use of information (Boekhorst & Britz 2004:64). The acquisition of academic information can be regarded as essential in order to maintain an individual's independence and improve his/her knowledge base (Boekhorst & Britz 2004:64–65).

Most hearing-impaired children attend school with different educational experiences than their hearing peers. They have different problem-solving skills, and different

knowledge about organisational and auditory-visual experiences (Swanwick & Marschark 2010:220).

1.1 INFORMATION LITERACY EDUCATION

Information forms an integral part of life in modern-day society. Therefore, information literacy education aims to equip individuals to develop their ability to understand their need for information in the school and community, and to facilitate the development of information literacy. It also aims to equip individuals to critically evaluate information (Australian Library and Information Association 2005). The acquisition and utilisation of information, or the information process, is associated with the development of an individual in totality and leads to self-improvement, as well as the potential to be gainfully employed.

1.2 CHARACTERISTICS OF THE HEARING IMPAIRED

People with hearing loss are considered to be in the category of people with disabilities. Worldwide, even in developed countries, a lack of basic education or poor quality education is reported, together with a lack of sign language interpreters for people with hearing loss (Health Nexus Santé & The Health Communication Unit 2003). Swanwick and Marschark (2010:228) have indicated that children with impaired hearing often find that they understand more when teachers use sign language (or signing) for them, rather than what they read.

The current study focused on the ability of a specific group of adolescents with hearing loss to access and use information. Adolescents with hearing loss face barriers in gaining access to and using information. These barriers may be influenced by the learners' personal attributes, the educational system, and the centre of learning or school. Or, they may be influenced by the broader social, economic and political context (Department of Education 2003:131). The South African education system aims to achieve inclusive education for all learners, regardless of disability, race or gender (Engelbrecht 2006:253–264). The Department of Education concedes, however, that for some learners the special school setting may still be the most effective. A considerable number of learners with hearing loss are still accommodated in special schools, as these are seen to cater best for these learners' needs (Van Rooyen, Le Grange & Newmark 2002). If learners with hearing loss (who are in special schools) are found to lack information literacy skills, it can indicate to other schools accommodating learners with hearing loss that achieving information literacy is a special challenge for these learners.

Adolescents with hearing loss need to acquire essential skills and knowledge in order to help them plan and carry out complex projects, and to be critical, creative and reflective thinkers, decision makers and problem solvers. If they succeed in the acquisition of the ability to access and use academic information successfully, it will enable them to live

independently and to lead a life based on self-exploration and knowledge. Research has shown over the decades that employers tend to hire people with other disabilities rather than people with hearing disabilities (Stapleton & Burkhauser 2003:2; Lang 2002). One of the reasons may be that the literacy achievement of children with hearing loss is far below the average for the population at large (WFD 2007:2; Swanwick & Marschark 2010:229).

1.3 INFORMATION LITERACY SKILLS

An information literate person is able to determine whether information is factual, analytical, objective or subjective. He or she is able to distinguish between primary and secondary information. The person can determine the amount and the quality of information needed for different purposes, whether for academic or personal needs, and is able to distinguish between different types of formats and to determine whether the information is recent and of value for specific purposes (*Developing the information literate person: the UTS Statement* [n.d.]). Adolescents with hearing loss have to learn how to access and utilise all these sources.

In order for adolescents with hearing loss to access and use academic information, they need to acquire information skills, as described by Van der Walt (1992:39), Dubazana (2007:3) and Boekhorst and Britz (2004:64). Members of an information-literate society need to be able to depend on accurate and reliable information and a well-developed infrastructure in order to able to produce, retrieve and use skills. These skills refer to the ability to access academic information efficiently, to evaluate this information, to use it effectively, critically, competently, accurately and creatively. This is necessary in order to be an independent learner and to pursue academic information, as well as information about personal needs and interests; to appreciate literature and other creative expressions; and to strive for excellence in academic information-seeking and knowledge generation (Van der Walt 1992:39; Kelty [n.d.]:89).

It is important to establish why some adolescents with hearing loss succeed scholastically and some do not. It is clear that hearing loss may have an impact on the extent to which adolescents with hearing loss succeed in functioning and adapting in life, and in an increasingly information-based society (Unicef 2009:4; Mokhtar & Majid 2006). The impact of hearing loss can be seen in problems of language, reading and academic skills (Beck 2011). Some studies have indicated there is a correlation between hearing-impaired children's spoken language skills and their reading ability (Swanwick & Marschark 2010:226).

The literature (Swanwick 2010:228) and the researchers' observations indicate various reasons why the majority of adolescents with hearing loss do not have the ability to access and use academic information. One of the reasons may be that their information skills are not fully developed, as can be observed during their school years. No specific research on the topic has been conducted – to the researcher's knowledge – in the South

African setting, and no comparative study has been conducted to investigate whether learners in any specific educational setting (special school or inclusive education) do better than learners in a different setting. A cautious approach would be to establish the position regarding one group in order to have a frame of reference for the purpose of comparison.

The following research question can therefore be based on the preceding discussion: "To what extent are adolescent learners with hearing loss in South Africa able to access and use relevant information for scholastic or academic purposes?"

Key concepts

Deaf	Deafness refers to people who have a partial or complete loss of hearing and a similar term is "hearing impaired" (Unicef 2009:89)
Hearing impaired	Hearing impaired refers to people having a partial or complete loss of hearing (Unicef 2009:89) Another term that is the same is "deaf"
Literacy	Literacy is necessary for the "development, it is key to communication and learning of all kinds and a fundamental condition of access to today's knowledge societies" (Richmond, Robinson & Sachs-Israel)
Information literacy	Information literacy is the ability to "retrieve, obtain, assess and organize information relevant to one's need that is vital skills in today's information society" (Drake 2005:82).
Academic information	This is the information that an adolescent needs in school in order to be able to do homework as opposed to information needed for sport, hobbies and activities
Special school	A special school is the location where young people with special needs are educated (*Education White Paper* 6 2001:7, 21)
Outcomes-based material (OBE material)	Refers to curriculum-based outcomes, handouts, posters, assignment materials, newspaper articles, brochures in order to reach specific outcomes (Spady 2005)
Sensori-neural loss	Sensori-neural loss is the most common type of hearing loss. "It can be a result of aging, exposure to loud noise, injury, disease, oto-toxic drugs or an inherited condition." Sensori-neural loss is usually not medically or surgically treatable (Hopkins Hearing 2007)

2 METHODOLOGY

The study investigated the ability of a group of adolescents with hearing loss to access and use academic information. The researcher sought to accomplish the following subsidiary objectives:

- Sub-goal 1. To determine the perception of adolescents with hearing loss (n=326) of their own ability to access and use academic information (Phase I, Group I).
- Sub-goal 2. To determine the perception of teachers (n=19) of their students' ability (Phase I, Group II).
- Sub-goal 3. To determine the perception of media teachers (n=6) (Phase I, Group III) of the participants' ability to access and use academic information.
- Sub-goal 4. To determine the actual ability of selected participants (n=48) with hearing loss to complete a survey assignment in the media centre (Phase II, Group IV).

The survey was conducted by means of questionnaires in seven special schools in South Africa. A second phase of the study involved the direct assessment of adolescents with hearing loss access and the use of academic information while completing an assignment in the media centre.

3 RESEARCH DESIGN

The research design was an applied study, and a descriptive design was used to describe the current situation in two ways: quantitatively, as it focused on the end product that stemmed from the research problem; and qualitatively, as it studied the characteristics of a group of adolescents with hearing loss with regard to their ability to access and use academic information (Mouton 2001; Leedy & Ormrod 2005; De Vos 2002).

The empirical study consisted of a pilot study followed by the main study. A pilot study aims to confirm the exact formulation of the research problems, to give a tentative plan of the modus operandi and of how to conduct the investigation. The pilot study involved four adolescents with hearing loss at three different special schools in three provinces, two teachers randomly selected from two schools from three provinces and one media teacher from one specific school from one province. These participants were excluded from the main study. The main study was executed in two phases. During Phase I, three different groups of participants were used (Groups I, II and III). The main study consisted of 326 adolescents with hearing loss from Group I of three different schools from three provinces, 20 teachers from Group II of special schools from three provinces, and three media teachers from one special school of Group III from one province. Questionnaires were used to collect the data. Phase II comprised the survey assignment completed by Group IV in the media centre. In this group, 48 adolescents with hearing loss were from

Group IV, from three different special schools in three provinces. After the pilot study, adaptations were made to the questionnaire to be used in Phase I and to the survey assignment of Phase II.

Certain criteria were met in this study, such as reliability and validity (Leedy & Ormrod 2005:29, 99–100). The questionnaire and assignment were designed to ensure that the participants would give their cooperation and that their actual behaviour could be studied. Reliability refers to the accuracy and precision of the selected instrument, ensured in this case by formulating the items in the questionnaire as clearly and concisely as possible in order to exclude any possible ambiguities that could occur (Leedy & Ormrod 2001:32). Validity refers to the extent to which the instrument is really measuring the particular characteristic and whether it provides an adequate sample (Mouton 2001:56; Leedy & Ormrod 2001:106). In this case, the assignment was used as a valid instrument to measure the ability of the subjects to access academic information (De Vos 2002:62–69). Ethical considerations were taken into consideration by ensuring confidentiality and ensuring that no harm was done to participants. Violation of privacy was avoided. Ethical clearance was obtained from the Research Committee of the Faculty of Humanities at the University of Pretoria.

The participants were from selected schools in Gauteng, the Western Cape and KwaZulu-Natal. The reason for selecting participants from these provinces was that the adolescents had to have a sensori-neural hearing loss, as this formed the basis of the research question. They also had to understand Afrikaans or English, as the questionnaire was presented in either of these two languages. Participation was voluntary and the subjects with hearing loss had to complete a letter of consent in order to participate in the study (Leedy & Ormrod 2005). They had to be in Grade 7 to 12 or be of age 14 and older, as this group was selected as the focus group of the study.

Group II consisted of teachers who had been appointed to teach these adolescents with hearing loss and who had a sound knowledge of such learners, to educate them in all areas of academic information. They also participated voluntarily and had to complete a letter of consent in order to participate in the study. It was assumed they could speak and understand English, and therefore the questionnaire was presented in English.

Group III consisted of media teachers appointed to teach at a special school for children with hearing loss. They educate the participants with hearing loss at least once a week and had to have specific knowledge concerning such learners. They needed to have at least three years' experience at the special school, and English was also the language of their questionnaire.

Group IV consisted of 48 selected adolescents with hearing loss from one special school. These participants had a sensori-neural hearing loss, and had to be able to understand Afrikaans or English. Participation also had to be voluntary and the participants had to complete a letter of consent in order to participate.

4 MATERIAL AND APPARATUS

The data collection instruments of Phases I and II were questionnaires to be completed by both the participants with hearing loss and by teachers. Additionally, a survey assignment was completed by a group of participants with hearing loss. The researcher also used an observation form to observe the participants in the media centre. The researcher applied open-ended questions to provide the respondents with the opportunity to write anything in the open spaces of the questionnaire (De Vos 2002:179). Closed-ended questions offered the respondent a selection of one or more response choices from a number of options (De Vos 2002:179).

The questionnaires consisted of a demographic section, a biographical section, an academic section and a media centre section. The academic section consisted of questions related to the different types of academic sources, the perceived complexity of each source, where the participants found it, whether they could access and find it on their own, whether they needed assistance, and how regularly and when they accessed and used it during school, after school or during break, and the purpose for accessing and using academic information. The researcher also determined whether the media centre was consulted regularly by the participants using computer and/or internet facilities. The same questions were posed in the questionnaires to the teachers and media teachers to determine their perceptions of their students' abilities to access and use academic information.

Table 1: Ability of the participants (n=48) to complete bibliographical details after finding information on the shelves

Type of academic material	Participants successful		Participants not successful		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
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

Type of academic material	Participants successful		Participants not successful		Participants not taking part in the process	
	n	%	*n*	%	*n*	%
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

The survey assignment (Phase II) aimed to determine whether the participants were aware of the different academic information sources in the media centre, and the quantity and the quality of the academic material. It was necessary to determine whether the adolescents with hearing loss were able to work independently or if they needed assistance from interpreters to access and use academic material. The aim of the survey assignment was to determine if the participants understood how to use the media centre and to complete bibliographical details; to determine if they were able to access the catalogue; to find the material on the shelves; and to find information in the library catalogue or on the computerised catalogue or on the internet (see Table 1). The researcher observed the participants' progress by observing their information-seeking behaviour in the media centre while they were looking for academic information on a particular subject. The observation schedule was in the form of a checklist (Marx 2009:160), assisting the researcher in making notes while the participants completed the assignment in the media centre.

5 DATA ANALYSIS

In order to determine percentages and frequencies of responses, the analysis of the questionnaire included a quantitative component, especially where detailed responses occurred. Descriptive statistical procedures such as *SAS Procedures Guide* (1999, Version 9) were applied to describe and summarise the data obtained from the questionnaire survey (Leedy & Ormrod 2005). In this way, large amounts of data could be reduced and conclusions were drawn from this. The researcher summarised the responses to open-ended questions into main ideas, in order to categorise the information into more manageable units (De Vos 2002).

For the survey assignment, the researcher applied quantitative analysis where percentages and frequencies of responses had to be determined. The alpha reliability coefficient was not applicable in this study. The data were analysed using SAS 8.2 (*SAS Procedures Guide*, Version 5 1999). Chi-square tests were applied in the results to determine whether the relationships between certain variables were significant or not (Leedy & Ormrod 2005). The procedures of the study, the data collection methods, the recording methods and the analysis of the data led the researcher to certain conclusions.

6 RESULTS

The results and discussion are presented according to the four sub-goals of the study.

6.1 SUB-GOAL 1

The results indicated that the majority of the participants held the opinion that they always found academic information difficult to access and use, except where information was available in textbooks. They mainly accessed and used academic information during and after school, and mainly for assignment purposes. There was not much consensus among the participants about the purpose or reason why they accessed and used academic information. The conclusion was drawn that schoolbooks (38%, n=112), OBE material (29%, n=60), encyclopaedias (29%, n=70), and dictionaries (34%, n=97) were mainly used for assignments.

The participants described themselves as not having the ability to access and use academic information and relied on role players to help them to understand, find, and access academic material. This also refers to their parents assisting them with their knowledge and support (HMIE 2007:26, 33–34). They also preferred visual information to printed information as they found it difficult to monitor their own speech and had to rely on their visual, tactile and kinaesthetic senses (Brackett 1997:358). The participants indicated that they found OBE material difficult to access and use.

It became clear that they did not visit the media centre regularly and did not have computer and internet facilities (see Figure 1). Less than one-fifth (18% n=44) of these adolescents with hearing loss regularly went to the media centre, while 69% (n=175) indicated that they only used the media centre sometimes when necessary, and 13% (n=33) indicated that they never visited the media centre. The fact that the majority (87%, n=219) of the participants reported going to the media centre, however, is an important and positive finding. With regard to type of source, over half (58%, n=189) reported that textbooks were the only resource that they used to any meaningful extent. The participants mainly accessed and used academic information during and after school and not during recesses.

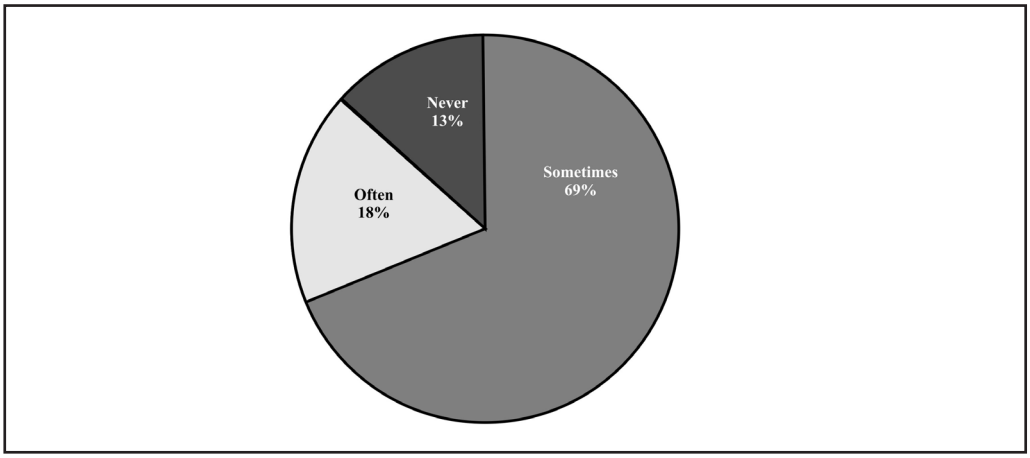

Figure 1: Participants visiting the media centre

6.2 SUB-GOAL 2

The results were obtained by means of closed-ended and open-ended questions. From the closed-ended questions the following results came to the fore. The teachers (on average 53%, n=10) were of the opinion that participants displayed problems when accessing and using academic information. They indicated that the participants needed them as role players to assist them. The teachers and media teachers also mentioned lack of motivation, lack of funds, insufficient training, and degree of hearing loss as possible constraining factors. Half of the teachers (50%, n=10) indicated that academic information was accessed and used at least once a day. More than two-thirds of the teachers (68%, n=13) also indicated that the internet was never accessed or used at all.

It is important to note that teachers seemed to be of greater assistance to participants with hearing loss than media teachers were, and research is needed to determine the reasons for this. This observation became clear in the open-ended questions of the questionnaire completed by to the media teachers. Some of the teachers (25%, n=5) also indicated that some participants used and accessed academic information after school, as they seemed to rely on other people such as friends or parents to help them. The majority of the teachers (79%) reported that the classroom was the primary location where participants accessed and used schoolbooks, dictionaries and other academic material. Nearly two-thirds of the teachers (64%, n=12) also indicated that the main reason for accessing and using academic information was for assignment purposes (see Table 2). The open-ended questions revealed additional factors that were perceived to play a role in preventing the participants from developing their ability to access and use academic information, namely language ability, degree of hearing loss, literacy level, reading and writing skills and comprehension, deficient communication skills, and poor cognitive skills. The teachers also indicated that sign language has an effect on the ability to access and use

academic information. Poor self-image, lack of self-confidence, lack of funds at school, poor teaching methods and other factors were also considered to influence access and the use of academic information by these adolescents with hearing loss negatively. This information was obtained by means of open-ended questions in the questionnaires. Lastly, teachers reported that participants found visual information easier to access and use than printed information.

6.3 SUB-GOAL 3

From the results, it was clear that the media teachers' perceptions were similar to those of the teachers. They reported that the participants with hearing loss found both English and Afrikaans as a second language difficult to understand, because most of the participants had sign language as their first language. Two-thirds (66%, n=3) of the media teachers were of the opinion that participants relied on role players such as teachers to help them access and use academic information, as well as to understand it. The media teachers were also of the opinion that the participants found academic information the most difficult to use (see Table 3). All (100%, n=6) of the media teachers expressed the opinion that the participants found most of the academic information (six of the 11 types) difficult to access and use.

Table 2: 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
Schoolbooks	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
Dictionaries	15	79	0	0	1	5	7	37
Internet	7	37	3	16	0	0	8	42

TYPE OF ACADEMIC MATERIAL	PURPOSE							
	ASSIGNMENT		HOBBY		CAREER		OWN KNOWLEDGE	
	n	%	n	%	n	%	n	%
Educational videos	15	79	0	0	4	21	2	11
Average	12	64	2	11	2	11	7	37

6.4 SUB-GOAL 4

The results of sub-goal 4 of the survey assignment in the media centre indicated that most of the participants found it difficult to complete the assignment. Over 50 per cent of the participants were not able to trace other reference sources. Most of the participants (91%, n=44) mainly used the strategy of browsing the shelves to look for information instead of consulting the computer or catalogue to determine if there is information regarding their topic. The participants also had a poor knowledge of catalogue use and limited knowledge of the Dewey Decimal Classification Scheme, which could assist them in locating the books on the shelves. Over half (52%, n=25) of the participants asked the media teachers to help them, nearly half (48%, n=23) asked their friends to help, them while only 15% (n=7) used the computerised catalogue to obtain the information.

It was clear that the participants were not able to complete the assignment on their own. They were not able to write down the name of the book, or the publication date. One-third (33%, n=16) of the participants were not sure of the table of contents or what it meant or how to use it. Only 18 participants (38%) knew what the Dewey scheme is, how to use it to locate the book or where to find to find the book on the shelf. This may be caused by the hearing loss and by cognitive skills not developing sufficiently because of inadequate teaching methods or programmes.

Table 3: The media teachers' (n=6) perception of how difficult participants found academic information to use

Type of academic material	The media teachers' perception of how difficult participants found academic information to use (n=6)					
	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
Schoolbooks	5	83	1	17	0	0

Type of academic material	The media teachers' perception of how difficult participants found academic information to use (n=6)					
	Academic information is difficult to use		Academic information is less difficult to use		Academic information is easy to use	
	n	%	n	%	n	%
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.

7 DISCUSSION

At present, a variety of options for education and training is accessible to learners with hearing loss in South Africa (Eriks-Brophy, Durieux-Smith, Andrée, Fitzpatrick, Duquette & Wittingham (2006:53–88). However, inadequate information literacy skills may prevent learners from making use of these opportunities. During the research, there was no indication of a specific information literacy education programme being applied by media teachers or subject teachers in the media centre or special school. While previous knowledge and experiences are the starting points for new learning, adolescents with hearing loss should be motivated to keep mastering new knowledge and absorb academic information. In recent years, the use of computers and information technology has profoundly affected the lives and work of all people. The internet has become an important vehicle for information dissemination across the world (Chikonzo 2005:3). Research has shown that the difficulties experienced by learners with hearing loss (in using computer and information technology) are possibly not only caused by a lack of education, but by also other barriers such as the high cost of computers (Agboola & Lee 2000:286). Limited electronic access as well as limited availability of computers, financial costs, and inappropriate training can also prevent adolescents with hearing loss from becoming fully information literate, or developing their abilities to become information literate.

8 RECOMMENDATIONS

It is important to improve the basic literacy levels of adolescents with hearing loss in special schools because literacy – the ability to understand, read and write – has an impact on the ability of adolescents with hearing loss to access and use academic information. Special schools need a vision to provide an education and training system to adolescents with hearing loss in order to help develop their ability to access and use academic information, regardless of their degree of hearing loss. Schools need to employ facilitative strategies to develop the listening skills, communication, literacy and information literacy skills of learners. This can be done by training school staff, improving teaching methods, motivating learners to access and use academic information, and developing an information literacy programme. These programmes must be integrated at school media centres.

These programmes must also be integrated with the contents of the academic programme and assignments in class (Jacobson & Mark 2000). Various role players are involved in the lives of adolescents with hearing loss, namely teachers, media teachers, parents, friends and family members. Teachers need the necessary knowledge of adolescents with hearing loss to be able to help them access and use academic information (HMIE 2007:27–28, 34). Such a programme requires collaboration between all parties. Resource materials are needed in order to apply information literacy programmes for adolescents with hearing loss and key personnel are required to implement these programmes. Adolescents with hearing loss should be encouraged to use the media centre more regularly and should be trained in learning how to use the media centre, which involves bibliographical details such as the Dewey scheme, catalogue use, and the use of computer and internet facilities.

Some authors did research on information literacy, such as the study done on information skills (UNICEF [n.d.]) and the Dubazana (2006) study of integrating the school library into the curriculum.

9 CONCLUSION

Adolescents with hearing loss are a heterogeneous group due to differences in the degree and type of hearing loss, different backgrounds, different language base and cognitive skills. The abilities of adolescents with hearing loss to access and use academic information may be influenced not only by their language delay and/or literacy skills, but also by the inadequate training of teachers, as well as the quantity and quality of academic material available in special schools. Hearing without cognition produces only limited information as well as “bottom-up” processing without appropriate “top-down” processing, as well as top-down processing of incomplete bottom-up information (Beck 2011). When hearing loss is combined with cognitive decline, the outcome is worse than the sum of the two combined factors (Beck 2011; Swanwick & Marsshark 2010:228).

If they are able to acquire the necessary literacy and information skills and become critical thinkers and problem solvers, they will be able to expand their knowledge base and improve their self-confidence by means of accessing and using various academic information sources. Being information literate will enable adolescents with hearing loss to empower themselves, as they will be able to make use of all the academic information that will help them to achieve in school.

Teachers at special schools face unique challenges and require support from their respective schools and the Department of Education to design information literacy programmes and equip effective media centres at special schools. The study aimed to show that teachers and media teachers need to apply information literacy skills and to teach adolescents how to access and use different types of academic information.

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

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