

CHAPTER 4
METHODOLOGY

*“...scientific human inquiry might be the greatest gift that Western
consciousness has given the world.” (Reason, 1994:9)*

4.1 INTRODUCTION

In an attempt to address the shortcomings of the education of children with disabilities, the South African government proposes an inclusive educational system. It is hypothesised that this system will positively benefit these children, including children with hearing loss (Education White Paper no 6, 2001).

However, from the theoretical background discussed in chapters one, two and three, it became clear that the movement toward inclusion of children with hearing loss in the educational system will also increase the challenges already faced by teachers (Keith & Ross, 1998). Correspondingly, the needs of teachers regarding their learners' audiological and educational management will have to be addressed in order to ensure maximal learning opportunities for children with hearing loss.

One of the possible solutions to addressing teachers' needs is through the assistance of an educational audiologist (English, 1995). The educational audiologist can support teachers in modifying or adapting the teaching approaches and/or classroom environment in order to maximise the learning environment of children with hearing loss (English, 1995; Johnson, Benson & Seaton, 1997).

Addressing teachers' needs through the development of an educational audiology service delivery model is in line with current government policy on teacher support services. The educational audiologist has a unique role in the school setting which differs from the field of clinical audiology. Furthermore, the educational audiologist is uniquely skilled in managing the effects of hearing loss on the child's educational development, and is a crucial member on the educational team (English, 1995; Johnson, Benson & Seaton, 1997). The roles and responsibilities of an educational audiologist serving on an educational team are mostly determined by the educational context, the needs of the children and the needs of teachers (Johnson, Benson & Seaton, 1997). The specific nature of teachers' needs regarding the roles and responsibilities of an educational audiologist serving on an educational team in South Africa is not clear. Therefore, the appropriate research question posed is: *What are the needs of teachers in the inclusive educational system regarding an educational audiology service delivery model?* In order to provide an answer to this question, empirical research was undertaken. **The aim of this chapter is to describe the research methodology employed to answer the aforementioned research question.**

Firstly, the aims and objectives of the research are identified, followed by a discussion on the research design utilised. This is followed by a description of the selection criteria and selection procedures of the participants, and the data collection instruments and equipment used. The pilot study is then presented in terms of the aim, objectives, results and consequent adaptations for the main study. The data collection procedures, data recording procedures, and the procedures employed for data analysis are then explained.

4.2 RESEARCH AIMS

The *aim* of the study is to determine the needs of teachers of children with hearing loss regarding an educational audiology service delivery model within the inclusive educational system.

In order to achieve this aim, the following *objectives* were formulated:

- * to determine and describe the needs of teachers regarding their knowledge of educational audiology;
- * to determine and describe the needs of teachers regarding the audiological and educational management of children with hearing loss; and
- * to determine and describe the needs of teachers regarding the structure of service delivery to children with hearing loss.

4.3 RESEARCH DESIGN

The research design was a **qualitative** paradigm that was **descriptive** and **contextual** in nature (Leedy & Ormrod, 2001; Mouton & Marais, 1996; Schurink, 1998).

Primarily **qualitative** research methods were utilised for the purposes of this study. According to Kirk and Miller (1986:9), qualitative research is “...a particular tradition in social science that fundamentally depends on watching people in their own territory and interacting with them in their own language, on their own terms.” The purpose of qualitative research is to observe, describe, explain, interpret, and then to present in an organised way in order to contribute to the development of theory (Leedy & Ormrod, 2001). In the current study a qualitative analysis of teachers’ needs regarding the management of children with hearing loss within the inclusive educational system, made it possible to determine their current needs. In addition, more specific information could be obtained through comparison and dependency tests of variables, such as their level of graduate training and amount of experience.

By means of quantitative analysis, findings could be interpreted in terms of their generalizability to the whole population of teachers of children with hearing loss in South Africa. Thus, both qualitative and quantitative measures

were employed to analyze the results of this study (Mouton & Marais, 1996). The main thrust of the design remained qualitative, however.

In particular, a **descriptive** research design (Mouton & Marais, 1996) was selected for this study. This design involved the utilisation of the questionnaire survey method to obtain a measure of the needs of teachers in the inclusive educational system. The survey was supplemented by focus group interviews in order to enrich the qualitative nature of the study (Stewart & Shamdasani, 1990). A descriptive study made an in-depth description of a specific group possible and also made it possible to subsequently determine the frequency with which specific characteristics or variables occurred in that sample (Mouton & Marais, 1996). The single common element in all descriptive types of research, is the goal to describe that which exists as accurately as possible (Mouton & Marais, 1996). In the case of this study, it was to portray teachers' needs regarding an educational audiology service delivery model within the inclusive educational system.

The **contextual** nature of the research design referred to the collection of findings among a specific professional group, namely teachers of children with hearing loss within a specific geographical area, namely the whole of South Africa (Schurink, 1998).

The main research protocol comprised of a questionnaire survey followed by focus group interviews. The use of a combination of research methods to explore a particular topic had the potential of maximising the quality of data collection and reducing the chance of bias (Berg, 1998). For the present study, the use of different methods enabled the forming of a comprehensive depiction of the needs of teachers of children with hearing loss regarding an educational audiology service delivery model within the inclusive educational system.

The empirical research consisted of three main phases, namely a pilot study, the main study, and an analysis of the results. A graphic representation of the empirical research phases and their respective participants are presented in Figure 4.1.

Schools	Participants
PILOT STUDY	
<p>One school from the total of 35 schools which provided for children with hearing loss in South Africa was selected to pre-test the questionnaire and the focus group interviews.</p> <p>Where necessary, changes were made for the main study.</p>	<p>Ten teachers, representing all teaching phases, were randomly selected from the pilot school to complete the questionnaire. Six other teachers, representing all teaching phases, were randomly selected from the pilot school to participate in a focus group interview (n=16).</p>
MAIN STUDY	
<p>The remaining 34 schools were requested to participate in the questionnaire survey and focus group interviews.</p>	<p>A total of 769 teachers, representing eight provinces, were approached to participate in the questionnaire survey and focus group interviews.</p>
Questionnaire survey	
<p>From the total of 34 schools selected for the main study, 32 schools were requested to participate in the questionnaire survey.</p> <p>Results obtained from the questionnaire survey were, amongst others, used to identify themes to be used in the focus group interviews.</p>	<p>A total of 664 teachers were asked to complete the questionnaire.</p>
Focus group interviews	
<p>The remaining two schools were requested to participate in focus group interviews.</p> <p>Four separate focus group interviews were conducted with the participants, two interviews per selected school were performed.</p>	<p>Ten teachers from the junior and senior teaching phases of a school which mainly promotes spoken language participated in focus groups. Ten teachers from the junior and senior teaching phases of a school which mainly promotes Sign Language participated in focus group interviews. (n=20)</p>
ANALYSIS OF RESULTS	
<p>The results obtained from the questionnaire survey and focus group interviews were analyzed quantitatively and qualitatively.</p>	
<p>Figure 4.1: Phases of the empirical research</p>	

Firstly, a pilot study was conducted to pre-test the data collection instruments, equipment, and procedures (Leedy & Ormrod, 2001). After the necessary changes were made based on the results of the pilot study, teachers selected for the main study were requested to complete the questionnaire (Berg, 1998). Results obtained from the questionnaire survey were used to identify themes to be used in focus group interviews (Morgan, 1997). Finally, focus group interviews were conducted and results obtained were analyzed quantitatively and qualitatively (Mouton & Marais, 1996).

4.4 PARTICIPANTS

This study aimed to determine the needs of the *total population* of teachers employed at schools which provide for children with hearing loss within the whole of South Africa. Therefore, minimal criteria were set for the selection of the schools and for the selection of participants employed at these schools. However, many participant variables will be considered in order to meaningfully interpret the final results (Huysamen, 1998). The criteria and variables are as follows.

4.4.1 Selection criteria for schools

The following criteria for selection were applied to schools.

*** Geographical area**

Schools that provide for children with hearing loss in all nine provinces in South Africa, namely: Eastern Cape, Free State, Gauteng, Kwazulu-Natal, Limpopo, Mpumalanga, Northern Cape, North West, and Western Cape, were included in the questionnaire survey (See Appendix A). It was determined, however, that, to date, the Northern Cape had no schools that specifically provided for children with hearing loss.

All schools that provide for children with hearing loss in South Africa were targeted, in order to ensure the transferability of the results obtained from participants, thus ensuring that the results obtained were representative of teachers of children with hearing loss in *South Africa* (Reid & Gough, 2000).

More extended criteria regarding the selection of the geographical area were set out for the purposeful selection of schools to participate in focus group interviews (Leedy & Ormrod, 2001).

The schools that participated in focus group interviews were selected exclusively from the Gauteng province.

Schools from the *Gauteng* province were selected, because it was logistically manageable for the researcher to frequent these schools during face-to-face focus group interviews (Berg, 1998). Furthermore, schools from the Gauteng province were specifically selected, because the researcher had prior exposure to Gauteng schools providing for children with hearing loss during graduate training. Thus, the researcher had first-hand knowledge of the teaching standards of these schools, as well as of their willingness to participate in research projects.

* **Nature of schools**

All schools included had to provide for children with *hearing loss*. However, all schools that provide for children with hearing loss are not mutually exclusive, as some of these schools jointly provide for regular children; children with visual impairment; cognitive impairment; and/or physical impairment.

The above-mentioned schools were therefore also targeted in order to ensure the inclusion of the needs of the total population of teachers of children with hearing loss, thus ensuring that the results obtained were representative of *all teachers* of children with hearing loss in South Africa (Reid & Gough, 2000).

For the purposes of this study, however, schools providing for children with hearing loss excluded educational establishments that exclusively offered schooling in the *pre-school* phase. These schools were excluded, because they are privately owned and therefore will not be directly effected by the government's plans for transition into the greater inclusive educational system (Education White Paper no 6, 2001).

4.4.2 Selection criteria for participants

The following criteria were set for selection of participants.

*** Employment**

The participants had to be employed as teachers by any of the schools mentioned above in order to ensure that they had teaching experience with children with hearing loss and that they were familiar with the educational-setting in South Africa.

Participants employed at *special schools*, as opposed to participants working at regular schools, were selected for two main reasons.

Firstly, teachers employed at regular schools have limited or no exposure to the audiological and educational management of children with hearing loss. Therefore, participants may not be fully aware of the special needs of these children and therefore may have limited insight as to the need for support in various areas by educational audiologists. Keith and Ross (1998) revealed in a South African study that the majority of teachers did not believe that having a child with hearing loss in their class would require much extra effort. Lampropoulou and Padeliadu (1997) found that regular education teachers were more positive towards inclusion than teachers of children with hearing loss, because they might have based their opinions about inclusion on humanitarian grounds, as they had no experience in educating children with hearing loss. Therefore, the study utilised the knowledge and expertise of teachers who educate children with hearing loss and therefore have better

insight about the audiological and educational need for support when managing the child with hearing loss.

Secondly, participants employed at special schools, as opposed to participants working at regular schools, were selected, because, according to the Education White Paper no 6 (2001), teachers with specialised knowledge and skills are regarded as human resources who should be utilised to the benefit of learners with barriers to learning. It can therefore be assumed that teachers of children with hearing loss will be placed within the inclusive educational system to offer support to children with hearing loss. Furthermore, teachers with specialised knowledge and skills will be used to train teachers with less exposure in managing the child with hearing loss (Education White Paper no 6, 2001). Therefore, the study selected participants who were currently educating children with hearing loss, and who most likely will continue to manage these children in the inclusive educational system.

*** Communication instructional approach**

Participants included had to represent the two main approaches to communication instruction found among teachers providing for children with hearing loss in South Africa.

Teachers providing for children with hearing loss can be divided into mainly two sub-groups, namely: teachers who mainly promote the use of spoken language among their learners and teachers who mainly promote the use of Sign Language as a mode of communication (Moore, 1996).

The different communication instructional approaches followed by teachers gives rise to differences in teaching practices and educational philosophies amongst the sub-groups (Moore, 1996). Thus, the focus group interviews had to be conducted with participants of both sub-groups, in order to obtain representative responses from all teachers of children with hearing loss in South Africa (Reid & Gough, 2000).

4.4.3 Variables considered in participant selection

A variable is a characteristic of the participants, or a condition which they have been exposed to, that is not the same for all participants (Huysamen, 1998). Variables can influence the meaningful interpretation of findings and are therefore clarified (Huysamen, 1998). The following variables could not be controlled and will be considered during the interpretation of results obtained from participants (Mouton & Marais, 1996):

- * Participants were divided into their respective *sub-groups according to their communication instructional approach*. This variable will be considered as participants of these sub-groups may have different needs for an educational audiology service delivery model.
- * The variables *gender, age and experience* will be considered in order to determine the influence thereof on participants' needs for an educational audiology service delivery model.
- * *Home language and medium of language instruction* were variables noted in order to determine whether there are differences in the needs of participants using different languages. In addition, it will be used to determine whether participants teaching in a language other than their home language have additional needs.
- * *Highest educational qualification, specialised training as well as in-service training* of participants, will be considered to determine if there are different needs among participants with varying levels of training.
- * *Educational phases taught* by participants as well as the *teacher/learner ratio* may influence the needs among participants and will be considered.

4.4.4 Selection procedures of schools

The following procedures were employed for the selection of schools.

All 35 schools currently providing for children with hearing loss in South Africa were identified from a list obtained from the Deaf Federation of South Africa

(DEAFSA, 2001a) and were included in the questionnaire survey (See Appendix A).

The transferability of the results obtained from participants was increased by the inclusion of *all* schools in South Africa, thus ensuring that the results obtained were representative of teachers of children with hearing loss in *South Africa* (Reid & Gough, 2000)

Two schools of the total number of schools were purposefully (Leedy & Ormrod, 2001) selected from the list of Gauteng schools for participation in the focus group interviews.

The schools to participate in focus group interviews were purposefully selected, because this facilitated analysis of differences between pre-determined heterogeneous groups (Morgan, 1997). Furthermore, these two schools were specifically selected, because both of these schools had a national reputation for being schools with high teaching standards and dedicated teaching staff; and had shown a willingness to participate in research projects in the past.

4.4.5 Selection procedures of participants

The following procedures for the selection of participants were employed.

- * During the questionnaire survey, school principals were requested to provide the number of teachers currently employed at their school in order to issue these participants with questionnaires.
- * During focus group interviews, a list of all the teaching personnel was obtained from the schools in order to randomly select participants from the various teaching phases of each school (Leedy & Ormrod, 2001).
- * The school principals had to indicate in which of the two categories of the communication instructional approach the teachers could be classified, and participants were divided into their respective sub-groups. Teachers who followed either Sign Language, Total Communication, or

Bilingual/Bicultural communication approaches, regarded themselves as teachers who mainly promote Sign Language, whereas teachers following the Oral-Aural approach categorised themselves as mainly promoting spoken language.

- * Participants were randomly selected from both the junior and senior phases to ensure representativeness during the focus group interviews (Leedy & Ormrod, 2001).
- * Two focus groups were conducted with each selected school, totalling four separate focus group interviews. Five participants were randomly selected from the junior phase of a school (ranging from pre-school to grade 6) for the first focus group interview. For the purposes of the second focus group interview, five participants were randomly selected from the senior phase of a school (ranging from grade 7 to vocational phase). These selection procedures allowed for a more equal distribution of participants among the teaching phases.
- * The selection of five teachers per focus group interview was regarded as a sufficient number of participants, because according to Morgan (1997), a smaller number of participants are required if the participants have a high level of involvement with the topic and a smaller group allows the researcher to exercise more control over the active involvement of each participant. Furthermore, five teachers were selected for each focus group interview, because findings from the pilot study (section 4.6.8) revealed this to be a desirable number of participants for active focus group participation.

A visual representation of the participant selection procedure for focus group interviews can be seen in Table 4.1.

Table 4.1: Participant selection procedure for focus group interviews			
School # 1: Participants mainly promoting spoken language approach	5 participants from the Junior Phase	Focus group 1	TOTAL: 20 participants 4 focus groups
	5 participants from the Senior Phase	Focus group 2	
School #2: Participants mainly promoting Sign Language approach	5 participants from the Junior Phase	Focus group 3	
	5 participants from the Senior Phase	Focus group 4	

4.4.6 Description of participating schools

Questionnaires were sent to 32 of the total of 35 schools, thereby excluding the three schools used during the pilot study and focus group interviews. These three schools were excluded in order to avoid data-contamination (Neuman, 1997). After completion of the survey, 84% of schools returned their questionnaires. Of the total number of schools providing for children with hearing loss in South Africa, 77% of schools participated in the survey. As mentioned previously, only eight of the nine provinces had schools providing for children with hearing loss in South Africa. Schools that participated in the survey, represented all eight provinces with schools for children with hearing loss, namely: Eastern Cape, Free State, Gauteng, Kwazulu-Natal, Limpopo, Mpumalanga, North West, and Western Cape (See Appendix A). This is a very good statistical representation of the total population of schools in South Africa (Huysamen, 1998).

Table 4.2 provides a summary of the relevant characteristics of the schools that met the selection criteria.

Table 4.2: Description of participating schools in the questionnaire survey (n=32)						
PROVINCE	SCHOOL	NATURE OF SCHOOL	COMMUNICATION INSTRUCTIONAL APPROACH	EDUCATIONAL AUDIOLOGISTS POSTED AT SCHOOL	TEACHERS EDUCATING CHILDREN WITH HEARING LOSS	NUMBER OF LEARNERS WITH HEARING LOSS
Eastern Cape	1	hearing loss & visual impairment	Sign Language	1	35	120
	2	regular school & unit for hearing loss	Oral-Aural	0	5	40
	3	hearing loss	Total Communication	1 vacancy	11	110
	4	hearing loss	Sign Language	0	38	300
Free State	5	hearing loss & visual impairment	Sign Language	1 vacancy	16	160
	6	hearing loss & visual impairment	Sign Language	0	20	210
Gauteng	7	hearing loss, visual impairment & physical impairment	Total Communication	2	14	40
	8	hearing loss	Oral-Aural	0	35	189
	9	hearing loss	Total Communication	1	16	102
	10	hearing loss	Total Communication	1 vacancy	22	170
	11	hearing loss	Sign Language	1	25	161
Kwazulu-Natal	12	hearing loss	Total Communication	1 vacancy	20	150
	13	hearing loss	Bilingual/Bicultural	1	25	99
	14	hearing loss	Total Communication	1	14	108
	15	hearing loss	Sign Language	1	27	241

Table 4.2 continued

	16	hearing loss	Sign Language	0	3	12
	17	hearing loss	Total Communication	1	18	265
	18	hearing loss	Total Communication	2	28	240
	19	hearing loss	Sign Language	1 vacancy	30	275
Limpopo	21	hearing loss, visual impairment	Sign Language	1	16	189
	22	hearing loss	Oral-Aural	0	2	36
	23	hearing loss, visual impairment & physical impairment	Sign Language	1 vacancy	21	197
	24	hearing loss	Sign Language	1	23	240
Mpumalanga	20	hearing loss, visual impairment & cognitive impairment	Total Communication	0	6	60
Northern Cape	No schools providing for children with hearing loss to date					
North West	25	hearing loss	Sign Language	0	7	60
	26	hearing loss	Total Communication	0	30	300
Western Cape	27	hearing loss	Total Communication	1	30	200
	28	hearing loss	Oral-Aural	1	15	70
	29	hearing loss	Total Communication	2	15	200
	30	hearing loss	Oral-Aural	1	13	84
	31	hearing loss	Total Communication	1	29	150
	32	hearing loss	Oral-Aural	2	55	506
TOTAL:					664 teachers	6 215 learners

Table 4.2 reveals that the majority of schools are dedicated to exclusively providing for children with hearing loss, whereas a few include other disabilities such as visual impairment, physical impairment, and/or cognitive impairment. Most schools mainly promote Sign Language and only six of these schools mainly promote spoken language as a mode of communication. Nine of these schools were unfortunate not to have any posts allocated for speech-language therapists/audiologists by the provincial Department of Educational, whilst vacancies for speech-language therapists/audiologists existed at six other schools. This indicates a lack of intervention by the speech-language therapists/audiologists at these schools that may negatively affect the audiological and educational management of children with hearing loss (Johnson, Benson, & Seaton, 1997).

The descriptive characteristics of the two schools included in the focus group interviews are not provided, as anonymity was ensured, and these features may reveal the identity of these schools.

4.4.7 Description of participants

Participants of the questionnaire survey and focus group interviews will be described separately.

*** Participants in the questionnaire survey**

Questionnaires were sent to 664 of the total population of 769 teachers of the 32 schools, thereby excluding the participants used during the pilot study and focus group interviews. As mentioned previously, these participants were excluded in order to avoid data-contamination (Neuman, 1997). A return rate of 55% completed questionnaires was achieved. This is considered a good return rate as the general return rate for mailed questionnaires is usually in the region of 20% (Berg, 1998). Forty seven percent of the total population of teachers providing for children with hearing loss in South Africa participated in the questionnaire survey. The resulting sample consisted of 45% teachers

who mainly promote spoken language and 48% teachers who mainly promote Sign Language.

It is concluded that the sample was representative of the total population of teachers providing for children with hearing loss in South Africa considering the following (Huysamen, 1998):

- * participants represented all eight provinces that have schools providing for children with hearing loss in South Africa;
- * participants represented 77% of all the schools providing for children with hearing loss;
- * participants from the sub-groups representing the two communication instructional approaches were represented nearly equally percentage-wise; and
- * a large number of completed questionnaires (n=364) were received from participants.

Figure 4.2 provides a summary of the description of participants included in the questionnaire survey.

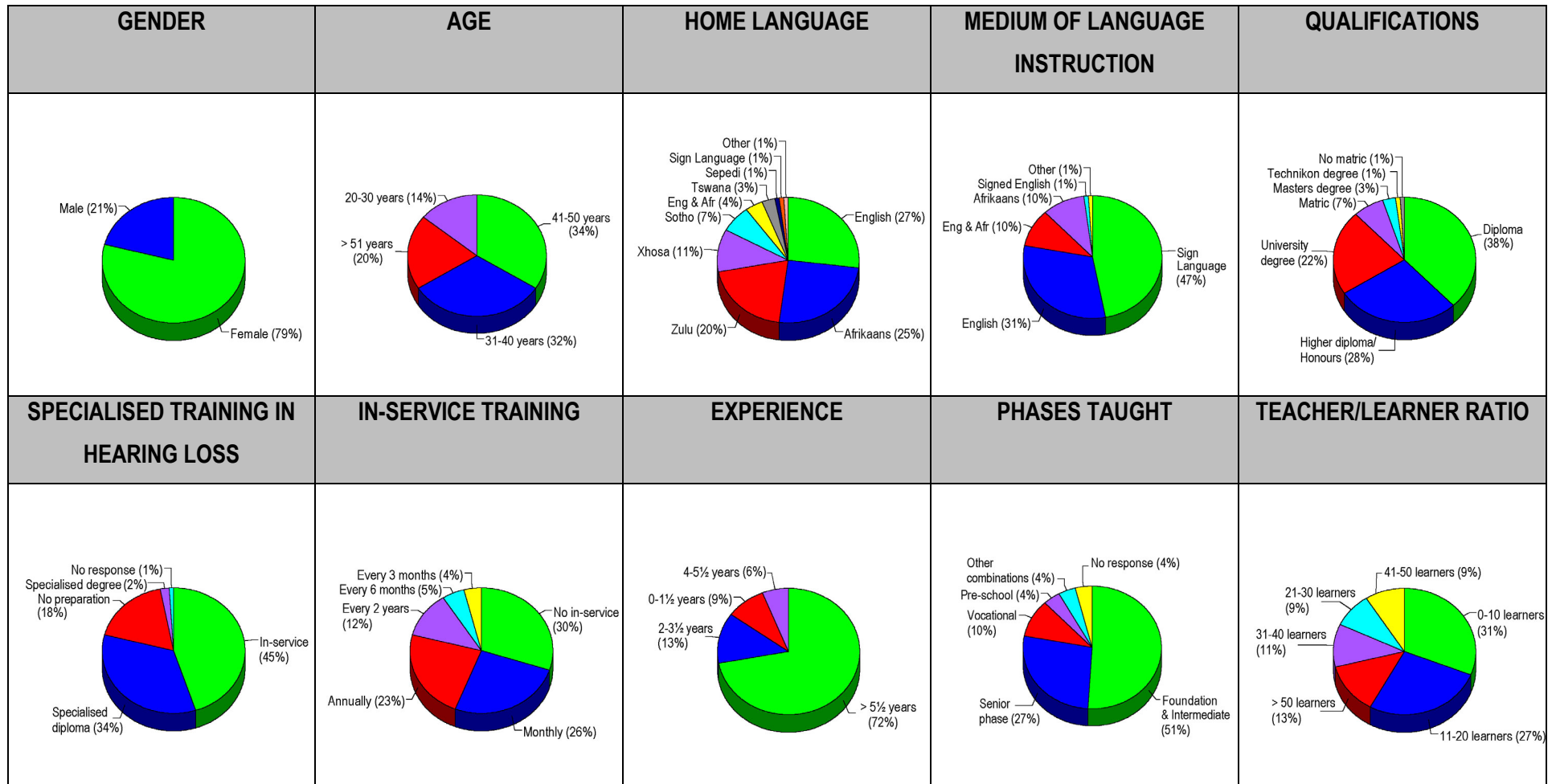


Figure 4.2: Description of participants in the questionnaire survey (n=364)

According to Figure 4.2, participants were mostly female and mainly spoke English, Afrikaans, or Zulu. Zulu was the main African language spoken among participants. This can be explained by the fact that KwaZulu-Natal (where Zulu is spoken) had the majority of schools providing for children with hearing loss and therefore many Zulu-speaking participants were included in the study. Other home languages (1%) spoken by participants included, inter alia, Ndebele, Siswati, Tsonga, and Venda. Participants mainly had diplomas or honours degrees/higher diplomas. Teachers received specialised training in the management of children with hearing loss mainly through in-service training or by obtaining a specialised diploma. The majority of participants had more than 10 learners in their classrooms.

*** Participants in focus group interviews**

A visual representation of the participant selection procedure for focus group interviews have already been provided in Table 4.1

Teachers who met the selection criteria and acted as participants in the focus group interviews, are described in Figure 4.3.

According to Figure 4.3, the participants were mostly Afrikaans-speaking females and had mostly obtained higher education diplomas. It becomes clear that participants in the focus group interviews differ from the participants in the questionnaire survey. Participants in the focus group interviews are mostly Afrikaans-speaking, are more qualified, and have had more specialised training than participants in the questionnaire survey. However, dependency tests will determine the influence of the aforementioned variables and differences between the participants with respect to home language, qualifications and specialised training will be clarified during the interpretation of the results. Furthermore, it was decided to conduct focus group interviews with Afrikaans-speaking participants, as this is the researcher's first language.

4.5 DATA COLLECTION INSTRUMENTS AND EQUIPMENT

Data collection instruments, as well as various equipment were employed in order to obtain the information required from the participants and are presented forthwith.

4.5.1 Data collection instruments

A questionnaire (See Appendix D) and focus group interviews (See Appendix E) served as data collection instruments for the study, and are described in the following discussion.

4.5.1.1 The questionnaire

The design of the questionnaire is described in the following section:

Justification for the use of a questionnaire:

The use of a questionnaire as a data collection instrument for this study was considered the most advantageous for the following reasons (Berg, 1998; Neuman, 1997):

- a wide geographical area (as in this case the whole of South Africa) could be included in the survey;
- questionnaire surveys are more time-effective, since a large number of responses can be obtained in a limited period of time;
- questionnaire surveys are more cost-effective in comparison with face-to-face contact with participants; and
- a questionnaire is answered in privacy, therefore participants are more likely to express their true opinions and views.

However, the main disadvantage of a mailed questionnaire is that there tends to be a poor response rate (Neuman, 1997). This limitation was acknowledged, and guidelines in the literature were followed in order to facilitate a good response rate (Berg, 1998; Neuman, 1997):

- principals were contacted telephonically prior to the mailing of the questionnaires in order to explain the aim of the research and to obtain their permission;
- principals received follow-up telephone calls to inquire whether the teachers have completed and re-mailed the questionnaires;
- the majority of questionnaires were sent by courier services, to ensure that principals received the questionnaires at the school premises within approximately two days of the initial phone call; and
- questionnaires were supplied with postage-paid, self-addressed envelopes that were registered at the post-office, to ensure that these parcels could be tracked within the postal system.

Aim of the questionnaire:

The aim of the questionnaire was to obtain information from the participants regarding teachers' needs, in order to develop an educational audiology service delivery model for use within the inclusive educational system.

Language of the questionnaire:

The questionnaire was compiled in both English and Afrikaans, as either or both of these languages are spoken by teachers in South African schools for children with hearing loss.

Format and content of the questionnaire:

A questionnaire was designed using relevant literature sources and guidelines for questionnaire construction. Seven areas and their impact on the child's ability to be educated were identified from the literature, namely the effects on the child's: hearing ability, language skills, speech acquisition, communication skills, literacy skills, academic achievement, and psychosocial development (ASHA, 1993; Bess & McConnell, 1981; Bunch, 1987; English, 1995; Ferguson, Hicks & Pfau, 1988; Froehlinger & Bryant, 1981; Jamieson, 1994; Johnson, Benson, & Seaton, 1997; McAnally, Rose & Quigley, 1987; Moores, 1996; Sanders, 1988). These seven areas were used to structure the main content of the questionnaire, in order to determine the teachers' need for support with regard to addressing these areas, when educating children with hearing loss in the inclusive educational system. The validity of the questionnaire content was ensured by the inclusion of all the relevant theoretical areas of educating children with hearing loss (Reid & Gough, 2000).

Two key principles were kept in mind during the formulation of the questions, namely: avoiding confusion and keeping the participant's perspective in mind (Neuman, 1997). Therefore, attention was given to the following during the development of the questionnaire (Berg, 1998; Mouton & Marais, 1996; Neuman, 1997):

- the wording of instructions and questions were kept simple and precise, in order to avoid ambiguity;
- the terminology used in the questionnaire was appropriate and familiar to persons in the teaching profession; and

- questions phrased in a manner, which could have been perceived as threatening or judgmental, were avoided.

The arrangement and sequencing of questionnaire-items could significantly effect the results (Berg, 1988). The questions had to be sequenced logically in order to minimise discomfort and confusion among participants. The funnel sequence (Berg, 1998) was therefore used, beginning with general questions probing biographic information and ending with more specific questions on the teachers' needs. Most questions were close-ended to ease accuracy and speed of completion by the participants (Neuman, 1997). Another reason for using more close-ended questions was that open-ended questions featured in the focus group interviews. However, as the aim was to describe teachers' needs with regard to educating children with hearing loss in the inclusive educational system, it was necessary to add open questions, in order to probe their detailed opinions and suggestions for the inclusive educational system.

Although the main aim of the study was to determine the *needs* of teachers of children with hearing loss, additional information was also probed in the questionnaire. Participants had to recommend areas of which teachers had to have knowledge and/or intervention steps that teachers had to execute. Information on the aforementioned was obtained, because the need for support can best be understood if areas of importance to the participants were identified. However, the results and discussion focused mainly on the *needs* of teachers and this additional information was solely utilised to clarify the identified needs of participants.

The questionnaire was comprised of 30 questions distributed across 12 pages, and consisted of three sections, namely Section A, Section B, and Section C.

Although a 12-page questionnaire seemed lengthy, most of the questions were closed-ended in nature that participants only had to tick off. Therefore, the duration for completion (approximately 20 minutes) was considered as being within reasonable limits (Berg, 1998).

Table 4.3 depicts the development of the questionnaire in terms of the content included and the justification for the inclusion thereof.

Table 4.3: Development and description of questionnaire content			
SECTION	QUESTIONS	TOPIC	JUSTIFICATION
Section A: consists of 5 close-ended questions & 1 open-ended question	Questions 1 to 6	Biographic information of participants	Questions were included on participants' personal characteristics such as: gender; age; home language; qualifications; specialised training; and experience in order to describe the participants included in the study, as well as to draw correlations during data analysis.
Section B: consists of 7 close-ended questions & 1 open-ended question	Questions 7 to 12	Information regarding teaching practices	Questions requested information with regards to teaching practices and included: the educational phases taught; number of learners; medium of language instruction; method of communication instruction; and in-service training in order to describe the schools included in the study, as well as to draw comparisons during data analysis.
Section C: consists of 15 close-ended questions & 5 open-ended questions	Question 13	Knowledge of the various aspects of hearing loss and the need for support	<p>This question was included to determine whether participants realised the importance of having knowledge in these areas, in order to successfully educate children with hearing loss in the inclusive educational system. In this question provision was also made for determining participants' need for support in order to acquire this knowledge. This was included, because teachers will benefit from the support of an educational audiologist in order to acquire knowledge of the child with hearing loss (Johnson, Benson & Seaton, 1997). This question consisted of the following items:</p> <ul style="list-style-type: none"> * An item was included on the knowledge of the process of communication interaction. This area was included because knowledge of the process of communication helps teachers to have a better understanding of what is needed by the child to communicate successfully. Therefore, knowledge of the process of communication interaction creates an awareness as to why communication breakdowns occur, and this knowledge may help teachers to address the child's communication breakdowns more effectively (Sanders, 1988). * The different communication options available to the child was included, because knowledge thereof will help teachers to make an informed decision as to what the best option for the child is based on each option's potential strengths and weaknesses (Lynas, 1994). * Items were included on the anatomy and functioning of the ear; the interpretation of audiograms; causes of hearing loss; types of hearing loss; and factors that can further damage hearing. These areas were included, because knowledge thereof will result in teachers understanding the impact of the hearing loss on the child's ability to communicate and to be educated as well as to equip teachers with the knowledge to advocate hearing conservation among their learners (Johnson, Benson & Seaton, 1997).

Table 4.3 continued

			<ul style="list-style-type: none"> * The purpose, functioning and trouble-shooting of FM systems and hearing aids were included, because teachers need to understand and manage these devices in order to help the child to maximally utilise their residual hearing (English, 1995). * The impact of hearing loss on child's ability to be educated was included, because teachers need to take into account the effect of hearing loss in order to make adaptations to the child's education programme (Bunch, 1987).
	Question 14	Knowledge of the areas that hearing loss impacts on and the need for support	<p>This question was included to determine whether participants had knowledge of all the areas that hearing loss impacted on. Participants' need for support in obtaining knowledge in order to be able to address the negative impact of the hearing loss was also probed in this question. This was included, because teachers will benefit from the support of an educational audiologist in order to address the negative impact of the hearing loss on the child's ability to be educated (Johnson, Benson & Seaton, 1997).</p> <p>This question consisted of the following items: language development; speech production; communication skills; literacy skills; academic achievement; and psychosocial development. These areas were included, because according to various literature sources that include ASHA (1993); English (1995); Johnson, Benson & Seaton (1997); McAnally, Rose & Quigley (1987); Moores (1996); and Sanders (1988), a hearing loss could negatively impact thereon.</p>
	Question 15	Knowledge of the steps to be taken in order to develop the child's residual hearing and the need for support to obtain this knowledge	<p>This question was included to determine whether participants had knowledge of all the steps that needed to be taken in order to optimally develop the child's residual hearing. Participants' need for support in order to obtain knowledge on how to develop a child's residual hearing was also included in this question. This was included, because teachers will benefit from the support of an educational audiologist in order to obtain knowledge on how to optimally develop the residual hearing of a child with hearing loss (Johnson, Benson & Seaton, 1997).</p> <p>This question consisted of the following items:</p> <ul style="list-style-type: none"> * Identification and reduction of noise levels in the school environment; and improvement of sound quality in the classroom were included, because teachers will improve the listening conditions of the child by having knowledge and skills in these areas, and thus will ultimately contribute to the optimal development of residual hearing (Berg, Blair & Benson, 1996). * Items were included on advocating for FM systems and the continual use of hearing aids, because teachers will contribute to the optimal utilisation of the child's residual hearing if they have knowledge and skills in these areas (Crandell & Smaldino, 2000). * Items were included on the instruction of correct listening behaviours and speech-reading techniques. These items were included because knowledge and skills in these areas will improve the child's ability to receive auditory information and in this way will contribute to the optimal development of residual hearing (Berg, 1993; Moores, 1996).

Table 4.3 continued

	Question 16	Knowledge of the steps to be taken in order to develop the child's language skills and the need for support	<p>This question was included to determine whether participants had knowledge of all the steps that needed to be taken in order to develop the child's language skills. Participants' need for support in order to develop the child's language skills, was also included in this question. This was included, because teachers will benefit from the support of an educational audiologist in order to develop the language skills of a child with hearing loss (Johnson, Benson & Seaton, 1997).</p> <p>This question consisted of the following items:</p> <ul style="list-style-type: none"> * The use of the hierarchy of normal language development and regarding the child's language level during communication and during lessons, were included in this question. These items were included, because teachers will only be able to appropriately plan for language activities, subject content, and communication interaction, if they consider the child's level of language functioning as well as the natural phases for language acquisition (McAnally, Rose & Quigley, 1987). * Modification and/or adaptation of teaching materials, techniques, and the classroom environment, to meet the language needs of the child, were included in this question. These items were included, because teachers will aid comprehension of lessons if they have knowledge and skills in these areas (Moores, 1996). * An item was included on the knowledge of different language instructional approaches, because knowledge thereof will help teachers to make an informed decision as to what the best option for the child is based on each option's potential strengths and weaknesses (Moores, 1996). * Emphasis on language across contexts, and within activities of social interaction, were included in this question. These items were included, because teachers will contribute to the development of the child's language skills if they have knowledge and skills in these areas (McAnally, Rose & Quigley, 1987). * Awareness of the possible presence of additional language pathologies were included, because children with hearing loss may also exhibit other language pathologies that, if not identified and treated, may further negatively affect the child's language development (McAnally, Rose & Quigley, 1987).
	Question 17	Knowledge of the steps to be taken in order to develop the child's speech production skills and the need for support	<p>This question was included to determine whether participants had knowledge of all the steps that needed to be taken in order to develop the child's speech production skills. Participants' need for support, in order to develop the child's speech production skills, was also included in this question. This was included, because teachers will benefit from the support of an educational audiologist, in order to develop the speech production skills of a child with hearing loss (Johnson, Benson & Seaton, 1997).</p> <p>This question consisted of the following items:</p> <ul style="list-style-type: none"> * The following items were included in this question: use of the hierarchy of normal speech development; considering the child's level of oral-motor functioning; obtaining information on the child's phonetic repertoire; and monitoring and documenting changes in the

Table 4.3 continued

			<p>child's speech deficits. These items were included, because teachers will only be able to appropriately plan for activities for the improvement of speech intelligibility if they consider these areas (McAnally, Rose & Quigley, 1987).</p> <ul style="list-style-type: none"> * An item was included on the knowledge of different speech instructional approaches, because knowledge thereof will help teachers to make an informed decision as to what the best option for the child is based on each option's potential strengths and weaknesses (Moores, 1996). * Awareness of the possible presence of additional speech pathologies were included, because children with hearing loss may also exhibit other speech pathologies, which if not identified and treated, may further negatively affect the child's development of speech production (Sanders, 1988).
	Question 18	Knowledge of the steps to be taken in order to develop the child's communication skills and the need for support	<p>This question was included to determine whether participants had knowledge of all the steps that needed to be taken in order to develop the child's communication skills. Participants' need for support in order to develop the child's communication skills was also included in this question. This was included, because teachers will benefit from the support of an educational audiologist, in order to develop the communication skills of a child with hearing loss (Johnson, Benson & Seaton, 1997).</p> <p>This question consisted of the following items:</p> <ul style="list-style-type: none"> * An item was included on the development of communication skills through exposure to interactional experiences. This item was included, because teachers will contribute to the development of the child's communication skills if they have knowledge and skills in this area (Lynas, 1994). * The application of communication repair strategies was included, because teachers will be able to promote the development of better communication skills if they have knowledge and skills in this area (Brackett, 1997). * An item was included on the knowledge and application of different communication options, because knowledge thereof will help teachers to make an informed decision as to what the best choice for the child is, based on each option's potential strengths and weaknesses (Moores, 1996).
	Question 19	Knowledge of the steps to be taken in order to develop the child's literacy skills and the need for support	<p>This question was included to determine whether participants had knowledge of all the steps that needed to be taken in order to develop the child's literacy skills. Participants' need for support, in order to develop the child's literacy skills, was also included in this question. This was included, because teachers will benefit from the support of an educational audiologist in order to develop the literacy skills of a child with hearing loss (Johnson, Benson & Seaton, 1997).</p> <p>This question consisted of the following items:</p> <ul style="list-style-type: none"> * Acquisition of language skills before proceeding with literacy instruction, was included. This item was included, because teachers with an awareness of this matter will not spend their time fruitlessly on reading and writing activities, but will first develop the

Table 4.3 continued

			<p>child's foundation of language (Moore, 1996)</p> <ul style="list-style-type: none"> * Items were included on the identification and remediation of reading and writing errors, because teachers will be able to promote the development of better literacy skills if they have knowledge and skills in this area (Paul & Quigley, 1994). * An item was included on the knowledge of different literacy instructional approaches, because knowledge thereof will help teachers to make an informed decision as to what the best option for the child is, based on each option's potential strengths and weaknesses (Paul & Quigley, 1994)
	Question 20	Knowledge of the steps to be taken in order to promote the child's academic achievement and the need for support	<p>This question was included to determine whether participants had knowledge of all the steps that needed to be taken in order to promote the child's academic achievement. Participants' need for support in order to promote the child's academic achievement, was also included in this question. This was included, because teachers will benefit from the support of an educational audiologist, in order to develop the academic skills of a child with hearing loss (Johnson, Benson & Seaton, 1997).</p> <p>This question consisted of the following items:</p> <ul style="list-style-type: none"> * Customisation of the learning experience to meet the child's cognitive, physical, social, and emotional level, was included. This item was included, because teachers will more successfully contribute to the development of the child's academic skills if they keep these areas in mind (Bunch, 1987). * Modification of the curriculum by controlling the vocabulary and syntax, was included in this question, because knowledge and skills in this area will aid comprehension of subject content, and will thus promote the child's development of academic competency (Bunch, 1987).
	Question 21	Knowledge of the steps to be taken in order to develop the child's psychosocial well-being and the need for support	<p>This question was included to determine whether participants had knowledge of all the steps that needed to be taken in order to develop the child's well-being. Participants' need for support, in order to develop the child's psychosocial well-being was also included in this question. This was included, because teachers will benefit from the support of an educational audiologist in order to develop the psychosocial skills of a child with hearing loss (Johnson, Benson & Seaton, 1997).</p> <p>This question consisted of the following items:</p> <ul style="list-style-type: none"> * Items on promotion of confidence; and acceptance and respect from hearing classmates, were included. These items were included, because teachers will contribute to the child's development of sound psychosocial skills if they have knowledge and skills in this area (Sanders, 1988). * Monitoring social adjustment and integration in class was included in this question, because teachers need to consider these aspects in an attempt to develop the child's psychosocial well-being (Sanders, 1988). * The item opportunity for socialisation and expression, was included, because if teachers provide these opportunities, the child with hearing loss may be less prone to troublesome

Table 4.3 continued

			psychosocial development (Sanders, 1988).
	Question 22	Information on the selection of relevant team members for the inclusive educational system	This question was asked to determine which team members participants wanted to include during teamwork in the inclusive educational system. This question consisted of the following items: the child with hearing loss; the parents; the speech therapist; the educational audiologist; the social worker; the psychologist; the occupational therapist; and an option to add a person not mentioned. These options were included, because working with other team members is a crucial part in the success of educating the child with hearing loss (Johnson, Benson & Seaton, 1997). Although any fellow team members can be selected by the participants, literature states that of all the team members involved with the child with hearing loss, the child and the parents/guardians should always be involved (English, 1995).
	Question 23	Information on the selection of a team co-ordinator for teamwork in the inclusive educational system	This question was asked to determine participants' opinions on which person they thought should fulfil the role of team co-ordinator during teamwork in the inclusive educational system. This question consisted of the following items: the child with hearing loss; the parents; the teacher; the educational audiologist; the speech therapist; the social worker; the psychologist; or the occupational therapist. According to literature, any of these persons, except the child, can function as a team co-ordinator. It is, of course, felt that, due to the educational audiologist's expertise in the educational and audiological management of the child with hearing loss, the educational audiologist is best suited for the role of team co-ordinator (English, 1995; Johnson, Benson & Seaton, 1997).
	Question 24	Information on the selection of methods available for teacher support in the inclusive educational system	This question was asked to determine participants' opinions on what methods of support they thought could benefit teachers in the inclusive educational system. This question consisted of the following items: once-off training session; regular workshops; continuous in-service training; and hands-on assistance when needed. All of these methods of support have their benefits, but, arguably, continuous in-service training may provide the most benefit to teachers, due to the higher frequency of such training sessions (English, 1995).
	Question 25	Information on the selection of an educational audiology service delivery model for use within the inclusive educational system	This question was asked to determine participants' opinions on what educational audiology service delivery model they thought could benefit teachers in the inclusive educational system. This question consisted of the following items: the school-based system; the contractual agreement system; and a combination of the two systems. (See explanation of the three systems in Chapter 3). These three options were identified as the three main educational audiology service delivery systems found in school settings, and were therefore included (Johnson, Benson & Seaton, 1997).
	Question 26	Knowledge of the functions of an	This question was included to determine whether participants had knowledge of the roles and responsibilities of the educational audiologist in the school setting. In addition, this

Table 4.3 continued

		educational audiologist	question was asked to determine participants' opinions on what they thought the roles and responsibilities of the educational audiologist in the school setting within the inclusive educational system should be. This question was included, because if teachers have knowledge of the roles and responsibilities of the educational audiologist, they will be inclined to more frequently utilise the support from the educational audiologist, and, as a result, the child with hearing loss will benefit from these support services (Johnson, Benson & Seaton, 1997).
	Question 27	Information on the necessity and advantages of receiving support from the educational audiologist when including a child with hearing loss	This question was included to determine whether participants had knowledge of the advantages of receiving support from the educational audiologist in the inclusive educational system. In addition, this question was asked to determine participants' opinions on what they thought the advantages of receiving support from the educational audiologist in the inclusive educational system should be. This question was included, because, if teachers have knowledge of the advantages of the support from an educational audiologist they will be inclined to more frequently utilise the support from the educational audiologist and as a result the child with hearing loss will benefit from these support services (Johnson, Benson & Seaton, 1997).
	Question 28	Information on the challenges faced by teachers when including the child with hearing loss	This question aimed to determine participants' opinions on what they thought the challenges might be when educating the child with hearing loss in the inclusive educational system. This question was included, because the transition toward the inclusive educational system will undoubtedly present challenges to teachers that need to be identified.
	Question 29	Information on the possible suggestions to address these anticipated challenges	This question aimed to explore participants' suggestions on how to overcome the challenges they identified in question 28. This question was included, because suggestions on how to overcome these challenges may be incorporated in a proposal for an educational audiology service delivery model
	Question 30	Information on the advantages or disadvantages of including the child with hearing loss	This question aimed to determine participants' opinions on what they thought the advantages or disadvantages of the inclusive educational system for the child with hearing loss could be. This question was included, because some of the potential disadvantages could be addressed through the support from an educational audiologist. The advantages identified will highlight the possible success teachers may have when educating the child with hearing loss.

4.5.1.2 Focus group interviews

Focus group interviews were utilised as an additional data collection instrument for the study and contributed to findings obtained from the questionnaire survey. The design of the focus group interviews is described forthwith:

Justification for the use of focus group interviews:

A focus group interview is a discussion in which a group of participants, under the guidance of a facilitator, talk about topics important to the investigation (Stewart & Shamdasani, 1990). This method may be used for exploration and/or confirmation of knowledge (Stewart & Shamdasani, 1990). Focus group interviews were included in the study in order to confirm findings obtained from the questionnaire survey (Stewart & Shamdasani, 1990). The quantitative data obtained from the questionnaire survey was supplemented and enriched by focus group interviews (Morgan, 1997). The use of focus group interviews were regarded as an important data collection instrument in the current research for the following reasons (Morgan, 1997; Stewart & Shamdasani, 1990):

- some of the quantitative results obtained from the questionnaire survey could be qualitatively interpreted;
- concentrated amounts of data, on precisely the topic of interest could be extracted;
- new ideas and creative concepts could be stimulated;
- complex behaviours and opinions could be more clearly studied; and
- participants could be made stakeholders in the research process, when they were given a chance to freely voice their feelings and suggestions.

However, the most common disadvantage of utilising focus group interviews is that the small numbers of participants included in focus group interviews limits the generalisation of findings to the larger population (Stewart & Shamdasani, 1990). Therefore, this data collection method was not used in isolation in this

study, but was combined with a questionnaire survey in order to make findings more generalizable.

Aim of focus group interviews:

The aim of the focus group interviews was to obtain more detailed information on teachers' needs in order to plan for the development of an appropriate educational audiology service delivery model in South Africa. The use of focus group interviews provided the opportunity to embark on an in-depth investigation into participants' opinions and suggestions regarding the inclusive educational system and the managing of children with hearing loss (Stewart & Shamdasani, 1990).

Content and format of focus groups:

One focus group interview schedule (See Appendix E) was compiled after completion of the questionnaire survey, by using existing themes from the questionnaire, as well as including a topic aimed at answering the research question of the study. This focus group interview schedule was used during all four focus group interviews. The focus group schedule consisted of two topics, and each of these topics had corresponding interview probes to guide the participants during the focus group interviews (Stewart & Shamdasani, 1990).

Topic 1 of all four focus groups was selected as follows. Participants of the questionnaire survey responded extensively to Questions 28, 29 and 30 of the questionnaire. The participants of the questionnaire survey revealed mixed feelings amongst themselves, even amongst participants of the same school in response to these questions. The following question was therefore probed: *"How do you feel about the inclusive educational system and children with hearing loss?"*. This topic remains controversial internationally amongst many teachers of children with hearing loss (English, 1995; Moores, 1996). By determining participants' views, such as, e.g., the challenges they foresee, and the solutions they suggest, will aid the development of an educational

audiology service delivery model, that can attempt to address these challenges.

Topic 2 was selected in order to fulfil the aim of the study, which is to develop an educational audiology service delivery model for use within the inclusive education system. Subsequently, the following question was probed: “*How do you feel about the role of a hearing therapist (audiologist) in the inclusive educational system?*”. By determining teachers’ need for support and the challenges of current service delivery by the educational audiologist, the educational audiology service delivery model can be developed according to the findings.

Guidelines on conducting focus group interviews were followed (Morgan, 1997; Steward & Shamdasani, 1990). It was decided that the duration of a single focus group interview should be approximately 30 minutes, in order to correspond with the schools’ in-service time that teachers were requested to attend after school hours. A choice had to be made between a more structured approach, a less structured approach, or a combination of both (Morgan, 1997). Generally, more structured focus groups are useful when there is a strong pre-existing agenda for the research, whereas less structured focus group interviews are more advantageous during exploratory research (Morgan, 1997). The *Funnel Strategy* is a compromise between more structured interviews and less structured interviews, and was decided on for the following reasons (Morgan, 1997):

- free discussion is emphasised during the initial part of the focus group interview. This allows for the participants to reveal their own perspectives and opinions, without being influenced by the researcher’s predetermined agenda. The researcher can use these responses to further extract specific themes for later discussion.
- during the second part of the focus group interview, the researcher can move towards a more structured discussion on specific themes of interest, in order to answer the research question.

It was decided to conduct two focus groups at each of the two selected schools, thus totalling four separate focus group interviews. It was decided to involve *two schools*, because the descriptive data indicated that the schools providing for children with hearing loss can mainly be divided into two sub-groups, namely those schools who mainly promote the use of spoken language among the children, and those schools where the children mainly use Sign Language as a mode of communication. This allowed for a more accurate depiction of responses obtained from teachers at schools providing for children with hearing loss.

The reason for conducting *two focus groups* within the same school, was to ascertain that the responses of participants within the same school were fairly homogenous and a representation of that school (Morgan, 1997). If the responses were fairly homogenous across the groups within the same school, more focus groups would not generate new understanding as data saturation had occurred (Morgan, 1997).

It was decided to include five participants per focus group interview as this was regarded as a sufficient number of participants, because according to Morgan (1997), a smaller number of participants are required if the participants have a high level of involvement with the topic and a smaller group allows the researcher to exercise more control over the active involvement of each participant. Furthermore, five teachers were selected for each focus group interview, because findings from the pilot study revealed this to be a more desirable number of participants for active focus group participation.

Language of focus group interviews:

All four focus group interviews were conducted in Afrikaans, as this was the language preference indicated by the participants at the selected schools and this is the researcher's first language. This ensured that the focus group interviews were fluently conducted and that content could be correctly interpreted.

4.5.2 Data collection equipment

The following equipment was used during focus group interviews. The focus group interviews were recorded on 60 minute *Sony EF*® audiocassettes by means of a *Panasonic Slim Line*® Audiocassette Recorder. An external *Sony*® microphone was inserted in order to ensure high quality recordings. It was decided to make only audio recordings of the focus group interviews and not video recordings, because according to Morgan (1997), video recordings generally tend to make participants more self-conscious and cause far greater invasion of privacy than audio recordings. However, the value of non-verbal cues during focus group interviews were not overlooked, and the researcher documented distinct non-verbal behaviours such as frowning, gesturing or winking, that aided the interpretation of the content (Steward & Shamdasani, 1990).

4.6 PILOT STUDY

A pilot study was undertaken before the main study was carried out and is described below:

4.6.1 Aim

The aim of the pilot study was to improve the trustworthiness, reliability and validity of the data collection instruments (questionnaire and focus group interviews) used, and to identify aspects of the research design and procedures that needed refinement (Neuman, 1997).

The objectives of pre-testing the questionnaire survey and focus group interviews are as follows (Berg, 1998; Leedy & Ormrod, 2001; Morgan, 1997, Neuman, 1997; Steward & Shamdasani, 1990):

- * to determine the clarity of instructions;
- * to evaluate the clarity of terminology used;
- * to evaluate the unambiguity of questions;

- * to determine whether questions were too invasive or of a sensitive nature;
- * to determine the appropriateness and relevance of the choice of words;
- * to determine the appropriateness and relevance of the content of questions;
- * to gain experience with the format of conducting focus group interviews;
- * to evaluate the format, fluency, and ease of the focus group interview;
- * to determine the duration of completion;
- * to evaluate the ease of questionnaire coding;
- * to evaluate the ease of focus group transcription; and
- * to evaluate the strategies proposed for data analysis.

4.6.2 Selection criteria for the school

The selection criteria as set out in the main study in section 4.4.1 were used for the pilot study.

4.6.3 Selection criteria for participants

The selection criteria as set out in the main study in section 4.4.2 were used for the pilot study.

4.6.4 Selection procedures of the school

One school was purposefully selected from the list of Gauteng schools that provided for children with hearing loss (Leedy & Ormrod, 2001). This school was selected, as it was logistically manageable for the researcher to frequent during the pilot study. This school was also selected as it was regarded to be representative of the majority of South African schools for children with hearing loss, as it was a semi-rural school; had a large number of learners; and no educational audiologists were employed in the school (Pottas, 1998). This school was excluded from the main study, in order to avoid data-contamination (Neuman, 1997).

4.6.5 Selection procedures of participants

Ten teachers were randomly selected from the school's personnel list to complete the questionnaire (Leedy & Ormrod, 2001). It was ensured that the participants represented each teaching phase.

A further six teachers were randomly selected from the personnel list in order to participate in the pre-testing of the focus group interview (Leedy & Ormrod, 2001). The participants represented all three teaching phases.

4.6.6 Data collection instruments and equipment

Data collection instruments and equipment used for questionnaire completion were similar to items stipulated in section 4.5.

4.6.7 Procedures

The following methods were used to pre-test the questionnaire survey (Berg, 1998; Neuman, 1997):

- Permission was obtained from the Superintendent General of the Gauteng Department of Education to conduct a pilot study at this school (See Appendix F);
- The principal of this school was contacted telephonically and by fax, to explain the aims and purpose of the research project, and permission was requested in order to conduct a pilot study at the school. The principal was also requested to give teachers permission to participate in the pilot study (See Appendix B);
- the aim of the research, as well as the role of the participants, were explained to the principal and participants;
- participants were requested to complete the questionnaires in the presence of the researcher;
- participants were encouraged to mark any questions that were not clearly understood, and these questions were discussed after completion of the questionnaire;

- after questionnaire completion, the researcher requested the participants to comment on the instructions used in the questionnaire, phrasing of questions, terminology used, and the questionnaire content;
- comments and suggestions were followed up where applicable; and
- all questionnaires were scanned after completion and participants were requested to comment on the questions they had omitted.

The following procedures were used to pre-test the focus group interviews (Morgan, 1997; Steward & Shamdasani, 1990):

- the first three methods employed to pre-test the questionnaire survey are identical, as the same school was utilised for pre-testing the focus group interviews;
- the participants received refreshments, and sat in a semi-circle around a table, while audio recordings were made of the focus group interview (Steward & Shamdasani, 1990);
- the focus group interview was conducted by means of the focus group interview schedule (See Appendix E);
- participants were encouraged to indicate questions and probes that were not clearly understood;
- after completion of the focus group interview, the participants had to comment on the: instructions, phrasing of questions, terminology used, the interview content, as well as the method of interviewing; and
- comments and suggestions were followed up where applicable.

4.6.8 Results

The objectives, methods and results of pre-testing both data collection instruments are summarised in Table 4.4.

Table 4.4: Objectives, methods and results of pre-testing the questionnaire survey and focus group interviews		
OBJECTIVE	METHOD	RESULTS
To determine the clarity of instructions (Neuman, 1997)	Participants were asked to comment on the clarity of instructions after completion.	The instructions to Questions 13 to 21 of the questionnaire survey were not clear to one of the participants. See adaptation of the questionnaire-item in Table 4.5.
To evaluate the clarity of terminology used (Neuman, 1997)	Participants were asked to comment on the clarity of terminology used after completion.	Some participants were unsure about the terminology used in Question 7, Question 11 and Question 22 of the questionnaire survey. See adaptation of these questionnaire-items in Table 4.5.
To evaluate the unambiguity of questions (Berg, 1998)	Participants were asked to comment on the unambiguity of questions after completion.	The wording of Question 22 of the questionnaire survey was seen as ambiguous by one of the participants. See adaptation of the questionnaire-item in Table 4.5.
To determine whether questions were too invasive or of a sensitive nature (Berg, 1998)	The researcher viewed the questionnaires after completion of the questionnaire survey to determine whether questions were omitted. The reasons for omission were established during discussions. The researcher observed whether participants revealed any body language during focus group interviews that indicated that questions were too invasive or of a sensitive nature. Participants in focus group interviews were asked to identify questions of an invasive or insensitive nature.	Question 2 of the questionnaire survey was regarded by one of the participants as too invasive. See adaptation of the questionnaire-item in Table 4.5.
To determine the appropriateness and relevance of the choice of words (Leedy & Ormrod, 2001)	Participants were asked to comment on the clarity of instructions after completion.	Some of the participants preferred different terminology to that used in Question 5 of the questionnaire survey. See adaptation of the questionnaire-item in Table 4.5.

Table 4.4 continued

<p>To determine the appropriateness and relevance of the content of questions (Neuman, 1997)</p>	<p>Participants were asked to comment on the appropriateness and relevance of content after completion.</p>	<p>One of the participants wanted to add another option to choose from in Question 9 of the questionnaire survey. See adaptation of the questionnaire-item in Table 4.5.</p>
<p>To gain experience with the format of conducting focus group interviews (Steward & Shamdasani, 1990)</p>	<p>The researcher made fieldnotes on interview techniques and procedures that needed refinement.</p>	<p>The researcher felt confident in the conducting of the focus group interview and no adaptations were necessary.</p>
<p>To evaluate the format, fluency and ease of the focus group interviews (Steward & Shamdasani, 1990)</p>	<p>The researcher made fieldnotes on the format, fluency and ease of the focus group interviews.</p>	<p>During the focus group interview it became apparent that there was not enough opportunity for <i>all</i> of the participants to express their opinions. See adaptation of this item in Table 4.6.</p>
<p>To determine the duration of completion (Steward & Shamdasani, 1990)</p>	<p>The researcher timed the duration of completion with a stopwatch.</p>	<p>It was established that it took approximately 20 minutes to complete the questionnaire, this was considered within reasonable limits. The duration of the focus group interview complied with the 30 minutes that was available during the schools' in-service training time.</p>
<p>To evaluate the ease of questionnaire coding (Leedy & Ormrod, 2001)</p>	<p>The researcher coded participant responses during the questionnaire survey.</p>	<p>The coding of responses were completed without difficulty.</p>
<p>To evaluate the ease of focus group transcription (Morgan, 1997)</p>	<p>The researcher listened to clarity of the audio recording and transcribed a small part of the interview.</p>	<p>The audiocassette recording was intelligible and could be transcribed without difficulty.</p>
<p>To evaluate the strategies proposed for data analysis (Neuman, 1997; Steward & Shamdasani, 1990)</p>	<p>The researcher analysed data according to strategies proposed.</p>	<p>Strategies employed for analysis of data seemed appropriate.</p>

The subsequent adaptation of the data collection instruments based on these results follow. The adaptations for the questionnaire survey and the focus group interview are presented separately in Table 4.5 and Table 4.6.

Table 4.5: Adaptation of questionnaire-items based on results from the pilot study. (Similar adaptations were made to the Afrikaans-questionnaire).		
QUESTIONNAIRE-ITEMS THAT WERE QUERIED, MISUNDERSTOOD OR OMITTED BY PARTICIPANTS	COMMENTS/SUGGESTIONS MADE BY THE PARTICIPANTS	ADAPTATION OF THE QUESTIONNAIRE-ITEM FOR USE IN THE MAIN STUDY
<p>Question 2 <i>What is your age?</i></p>	<p>One of the participants felt too self-conscious to write down her age and did not complete the question.</p>	<p>This open-ended question was changed to a multiple-choice question with four possible categories to choose from, namely: <i>20-30 years, 31-40 years, 41-50 years and 51 years and older</i>. This adaptation attempted to ensure that participants felt less self-conscious by not requesting their exact age and thus encouraged participants to complete the question.</p>
<p>Question 7 <i>Which phases do you teach?</i> <i>[pre-primary] [primary]</i> <i>[secondary] [vocational]</i> <i>[technical]</i></p>	<p>All of the participants indicated that their school used different classification of educational phases and that the old classification of phases found in the questionnaire was no longer used.</p>	<p>With further inquiry elsewhere it was established that the grouping of grades have changed nationally and that another classification of grades is currently used. Therefore, the options were changed to the new classification system, namely: <i>pre-school, foundation, intermediate, senior, and vocational/technical</i>. This adaptation aimed to prevent confusion among participants as to which option to choose and ensured that the researcher correctly interpreted the responses obtained.</p>
<p>Question 9 <i>What medium of language instruction do you use at your school?</i> <i>[Afrikaans] [English] [Sotho]</i> <i>[Zulu] [Xhosa] [Sign Language]</i> <i>[Other (Specify:)]</i></p>	<p>One of the participants suggested that a separate category should be added for <i>Signed English</i>.</p>	<p>It was decided not to add a separate category for <i>Signed English</i>, because then the categories <i>Signed Afrikaans, Signed Sotho, Signed Zulu, and Signed Xhosa</i> would also have to be added which would make the options to choose from too cumbersome. It was felt that one of the options, namely <i>Other (Specify:)</i> made provision for other language mediums not mentioned in the question.</p>

Table 4.5 continued

<p>Question 11 <i>Have teachers at your school received any specific in-service training in terms of managing the child with hearing loss?</i></p>	<p>Some of the participants were uncertain whether the term <i>in-service training</i> included workshops that the teachers have attended outside the school.</p>	<p>The phrase: (e.g. <i>any workshops, seminars, hands-on demonstrations</i>) was added at the end of the question. This adaptation provided participants with more clarity on what was being asked.</p>
<p>Questions 13 to 21 <i>Please tick off your choices in both columns <input checked="" type="checkbox"/></i>:</p>	<p>One of the participants asked whether she had to tick of both columns and whether the researcher should not omit one of the columns to avoid confusion.</p>	<p>No adaptation was made to this instruction, because it was decided that this instruction was as clearly stated as possible. The suggestion to omit of one of the columns would render the aim of the questionnaire pointless. The other participants understood the instruction clearly and completed this question appropriately.</p>
<p>Question 22 <i>Which of the following persons should a teacher in an inclusive educational system involve during teamwork in order to successfully plan the child's educational programme?</i> <i>[the child] [the parents]</i> <i>[the speech therapist] [the hearing therapist (audiologist)]</i> <i>[the social worker] [the psychologist] [the occupational therapist] [Others, (specify):]</i> <i>[None of the above-mentioned]</i></p>	<p>One of the participants was unsure whether the option <i>the child</i> implied the child with a hearing loss or if it could refer to a peer in the classroom.</p> <p>-----</p> <p>Some of the participants enquired as to why there was an option for <i>the speech therapist</i> as well as <i>the hearing therapist (audiologist)</i> when, according to their knowledge, this was the same professional.</p>	<p>The option <i>the child</i> was changed to <i>the child with hearing loss</i>. This adaptation provided participants with more clarity on what was being asked.</p> <p>-----</p> <p>This question was not adapted, because although speech therapy and hearing therapy is a dual qualification in South Africa, literature clearly indicates that a professional functioning as an educational audiologist at a school for children with hearing impairment has different responsibilities from a therapist practising speech therapy (Johnson, Benson & Seaton, 1997). This question aimed to identify their separate functions and was therefore not altered. It was speculated that if the participants were unsure, they would tick both options.</p>

Only one adaptation was made to the format of focus group interviews, and is described in Table 4.6 below.

Table 4.6: Adaptation of focus group interviews based on results from the pilot study		
FOCUS GROUP ITEM	FINDING	ADAPTATION FOR USE IN THE MAIN STUDY
Not enough opportunity available for <i>all</i> of the participants to express their opinions during the interview.	This implied that either the duration of the interview was too short or that there were too many participants. However, the interview time could not be lengthened, as it had to comply with the 30 minutes available during in-service training at schools.	The number of participants was reduced from six teachers to five teachers for the main study. This is still regarded as a sufficient number of participants for focus group interviews (Stewart & Shamdasani, 1990).

Based on the results, changes were made to the areas identified and the main study was carried out thereafter.

4.7 PROCEDURES

The procedures of the collection, recording, and analysis of data are presented forthwith.

4.7.1 Data collection procedures

The following procedures of data collection were utilised during the questionnaire survey and during focus group interviews.

4.7.1.1 Data collection by questionnaire survey

Data collection by questionnaire survey proceeded as follows:

- * The Superintendent Generals of the eight education departments were contacted by telephone and fax, in order to obtain permission to include the selected schools in the respective provinces. Only eight of the nine provinces had schools that provided for children with hearing loss and permission was obtained from these eight departments (See Appendix F). To date, the Northern Cape province has no schools that provide for children with hearing loss.
- * The principals of the selected schools were contacted telephonically to explain the aims and purpose of the research project and permission was requested to conduct research at their schools. The principals were also requested to give their teachers permission to participate in the research.
- * The principals who were willing to participate in the research received a follow-up covering letter (Appendix B) with the questionnaires, in order to revise the research aims and procedures of questionnaire distribution.
- * The remaining schools received their questionnaires by courier service within approximately two days of the initial telephone call to the principal.
- * The principal of each school was requested to oversee that questionnaires were distributed to teachers and re-posted to the researcher after completion.
- * Schools were provided with postage-paid, registered, self-addressed envelopes, in order to facilitate the return rate of the questionnaires, as it minimised the personal cost and effort of the participants (Neuman, 1997). Returning the questionnaires by registered mail ensured that the whereabouts of these packages could be tracked within the postal system. These self-addressed envelopes were marked with a code in order to keep track of schools that returned their questionnaires and those schools that did not return their questionnaires. After questionnaires were received, all identifying information was removed.
- * All questionnaires were accompanied by a covering letter to the principals (Appendix B) and participants (Appendix C). The covering letter explained

the purpose of the study, confirmed permission from the local Department of Education, assured anonymity and confidentiality, and requested participants' informed consent (See Appendix C).

- * It was suggested that participants were given a half-hour in which to complete the 20 minute-questionnaire.
- * Schools that agreed to participate in the study, but who did not complete or return their questionnaires after a period of three months, received follow-up telephone calls, and were reminded to complete and return their questionnaires, to ensure a higher return rate (Neuman, 1997).

4.7.1.2 Data collection by focus group interviews

The collection of data during the focus group interviews took place in the following manner.

- * Permission to conduct focus group interviews at the selected schools was obtained from the Superintendent General of the Gauteng Department of Education (See Appendix F).
- * The principals of the selected schools were contacted telephonically to explain the aims and purpose of the research project, and permission was requested in order to conduct focus group interviews at their schools.
- * Before the commencement of each focus group interview, the researcher explained the aim and purpose of the study to the participants, confirmed that permission had been obtained from the local Department of Education, assured anonymity and confidentiality, and requested their informed consent (See Appendix E).
- * Each group of participants received refreshments, and sat in a semi-circle around a table to promote a feeling of comfort and intimacy that aimed to facilitate more informal communication and opportunity for expression (Steward & Shamdasani, 1990).
- * Four separate focus group interviews were conducted using one interview schedule (See Appendix E). At the first selected school, the first focus group interview involved 5 randomly selected teachers from the junior phase, and the second focus group interview comprised of 5 randomly

selected teachers from the senior phase. The second selected school involved 4 randomly selected teachers from the junior phase during the third focus group interview as one of the selected participants were absent; and the fourth focus group interview comprised of 5 randomly selected teachers from the senior phase (See Table 4.1).

- * The duration of focus groups interviews was approximately 30 minutes each and was conducted on the school premises on separate days during in-service training time. This was done to ensure that participants would not feel resentful due to the extension of their work hours.
- * Audio recordings were made of the focus group interviews, in order to aid written transcriptions.
- * During the focus group interviews the researcher made notes of distinct nonverbal behaviour, such as frowning, gesturing or winking, that aided the interpretation of the content of the audiocassette recordings at a later stage (Stewart and Shamdasani, 1990).
- * After completion of the focus group interviews, the participants were thanked for their time and contribution towards the research project.

4.7.2 Data recording procedures

The procedures utilised for the recording of the data were as follows.

4.7.2.1 Data recording of the questionnaire survey

- * The participants' responses were exclusively coded by the researcher herself in the column provided on the questionnaire, in order to avoid the possibility of inter-coder discrepancy. The dependability of results was hereby increased (Reid & Gough, 2000).
- * A data-transfer typist of the Department of Statistics, University of Pretoria, typed the raw coding onto spreadsheets that were later analyzed by means of computer software. The researcher verified that raw data was correctly transferred by the data-transfer typist by means of random examination of data.

- * All the various responses to open-ended questions were typed by the researcher by means of *Microsoft Word*® word processing software in order to ease later analysis into main categories of content.

4.7.2.2 Data recording of focus group interviews

- * Each focus group interview was manually transcribed by repeated listening to the audio recordings of each interview.
- * Critical nonverbal cues were added to excerpts, in order to ensure that the entire character of the discussion was made clear for further analysis (Stewart & Shamdasani, 1990).
- * The manually transcribed focus group interviews were typed by means of *Microsoft Word*® word processing software (See Appendix H) in order to aid further analysis.
- * The typed transcriptions were compared to the original audio recordings to verify their accuracy.

4.7.3 Data analysis

The procedures of data analysis are presented below.

4.7.3.1 Data analysis of the questionnaire survey

Analysis of questionnaire data included quantitative analysis where percentages and frequencies of responses were determined, as well as qualitative analysis, where responses were described in detail.

Data obtained from the questionnaire survey was analyzed by means of descriptive statistics in order to describe and summarise the collection of scores obtained. The purpose of descriptive statistics was to physically reduce large amounts of data and to facilitate the drawing of conclusions about them (Bless & Higson-Smith, 1995).

Raw data transferred onto data spreadsheets was analyzed by means of computer software, namely SAS/STAT® (version 8) from the SAS Institute.

Responses to open-ended questions were abstracted into main ideas, in order to categorise answers of all the participants into more manageable units (Berg, 1998). Table 4.7 provides a summary of the statistical procedures used during data analysis of the questionnaire survey.

Table 4.7: Summary of statistical procedures of data analysis of the questionnaire survey		
OBJECTIVES OF THE QUESTIONNAIRE	DESCRIPTION OF STATISTICAL PROCEDURES	REFERENCES
<p>Section A: To obtain biographic information from the participants</p>	<ul style="list-style-type: none"> * Frequency tables were used to determine the composition of characteristics of the sample. * Descriptive statistics were employed. These comprised of tabulated data and the calculation of descriptive quantities in order to identify tendencies and characteristics of the sample. * The Chi-squared test (χ^2-test) was used to ascertain whether two qualitative variables were related or to infer whether differences existed. * The content of open-ended questions were analysed qualitatively 	<p>Huysamen (1998) Keller & Warrack (2000) Leedy & Ormrod (2001)</p>
<p>Section B: To obtain information from participants with regards to their teaching practices</p>	<ul style="list-style-type: none"> * Descriptive statistics were used. These consisted of tabulated data and the calculation of descriptive quantities in order to identify tendencies of the sample * The Chi-squared test (χ^2-test) was used to ascertain whether two qualitative variables were related or to infer whether differences existed. * The content of open-ended questions were analysed qualitatively 	<p>Huysamen (1998) Keller & Warrack (2000) Leedy & Ormrod (2001)</p>
<p>Section C: To obtain:</p> <ul style="list-style-type: none"> * participants' recommendations on knowledge and skill in the educational and audiological management of the child with hearing loss * participants' recommendations on need for support by an educational audiologist in various areas 	<ul style="list-style-type: none"> * Frequency tables were used to evaluate the performance of the sample. * Descriptive statistics were used. These comprised of tabulated data and the calculation of descriptive quantities in order to identify tendencies and distributions * Weighted averages were calculated in order to obtain a condensation of results. * The Chi-squared test (χ^2-test) was used to ascertain whether two qualitative variables were related or to infer whether differences existed. * The content of open-ended questions were analysed qualitatively and presented by means of descriptive statistics 	<p>Huysamen (1998) Keller & Warrack (2000) Leedy & Ormrod (2001)</p>

4.7.3.2 Data analysis of focus group interviews

Analysis of data obtained from the focus group interviews was qualitative in nature.

The *Cut-and-Paste technique* described by Stewart and Shamdasani (1990) was used in order to analyze and interpret data obtained from the focus group interviews. This technique has distinct steps that are critical in order to establish the dependability of data recording and analysis (Reid & Gough, 2000). This technique consists of four steps, and the first step includes the recording of data. The remaining three steps of data analysis are described below:

Step 1: Units of relevance are identified - The researcher identified units from the transcript that were relevant to the research aims. A unit included a phrase, a sentence, or long exchanges (Stewart & Shamdasani, 1990). These units were underlined by means of the word processing program.

Step 2: Classification of themes - After re-reading the transcript, major themes were identified by the researcher. According to Stewart and Shamdasani (1990), a balance must be struck between what themes are important and relevant to participants and what is important to the researcher. However, it must be noted that for the purposes of this study, focus group interviews are utilised as a method of confirmation of the results of the questionnaire survey as opposed to the exclusive exploration of new knowledge (Stewart & Shamdasani, 1990). Therefore, themes of focus group interviews were identified by selecting themes that corresponded with those of the questionnaire items. Since a combination of structured and less structured interview techniques were used (Morgan, 1997), not all themes were represented during focus group discussions.

The units relating to these themes were colour-coded by means of the word processing program. After all units were colour-coded according to the themes, these units were cut and pasted into their respective classifications

by means of the word processing program. These sorted themes provided the basis for further categorisation of content (Stewart & Shamdasani, 1990).

Step 3: Categorisation of supporting material - Units that supported each theme were further categorised in order to form an interpretative representation of responses. These excerpts were numbered and were presented within a format that clearly captured the findings of each theme (Stewart & Shamdasani, 1990).

4.8 RELIABILITY, VALIDITY, AND TRUSTWORTHINESS ISSUES

Both qualitative and quantitative research methods were utilised for the purposes of this study (Leedy & Ormrod, 2001). The nature and purpose of quantitative and qualitative research differ, and therefore it is erroneous to apply the same quality criteria such as validity, reliability and trustworthiness to both (Krefting, 1991). The following steps were taken to ensure quality measures during the quantitative and qualitative research methods.

*** Quantitative research methods**

Quantitative research methods were mainly employed during the questionnaire survey, and the quality criteria of validity and reliability are discussed forthwith.

Ensuring reliability:

- Reliability was concerned with the accuracy and consistency of measurements (Bless & Higson-Smith, 1995). Reliability means that the information provided by indicators does not vary as a result of characteristics of the indicator, instrument or measurement device itself. If indicators have a low degree of reliability, the final results would be questionable (Neuman, 1997). Reliability was necessary for validity, and was more achievable than validity.

- The reliability of questionnaire completion was determined by: providing concise and simple instructions; keeping the length of the questionnaire within reasonable limits; and by ensuring that questions were reader-friendly and as effortless as possible to answer (Leedy & Ormrod, 2001).
- During data analysis of questionnaires, the researcher herself exclusively coded the participants' responses, in order to avoid the possibility of inter-coder discrepancy which could affect the reliability of results (Leedy & Ormrod, 2001).
- The researcher attempted to take an unbiased stand during data recording and analysis in order to satisfy reliability criteria (Leedy & Ormrod, 2001).

Ensuring validity:

- Measurement is the tool of research, and validity is the attempt to determine whether a type of measurement actually measures what it is presumed to measure (Mouton & Marais, 1996). Absolute validity can never be achieved, because constructs are abstract ideas, that cannot be directly observed or isolated. Validity is part of a dynamic process of accumulating evidence, and without it, all measurement becomes meaningless (Neuman, 1997).
- The validity of responses obtained from the participants in the questionnaire survey was ensured by including a counter-test question in the questionnaire (Berg, 1998). Counter-test questions are those questions roughly equivalent to the essential questions, but worded slightly different, in order to determine the validity of the participant's responses (Berg, 1998). The third item of Question 18 was built in to counter-test the second item of Question 13. Statistical analysis revealed that 96% of participants answered the second item of Question 13 identical to the third item of Question 18 within the same questionnaire. These findings confirm the validity of participants' responses (Berg, 1998).
- The use of leading questions affects the construct validity of responses obtained from participants (Leedy & Ormrod, 2001). Therefore, a

question (See Appendix D, Question 22) determining which team members should be involved in the child's educational management deliberately omitted the option of *family*. Instead, an opportunity was provided for the participant to add this member in the space provided for members not specified. This ensured that participants did not blindly tick of the given options, but instead provided *their* true opinions on teamwork, and not those which the researcher might have anticipated.

- The content validity of the questionnaire was increased by selecting the most salient theoretical areas in the education of children with hearing loss, as well as by pre-testing the questionnaire content (Leedy & Ormrod, 2001)

* Qualitative research methods

Qualitative research methods were employed throughout the main thrust of the research study. In particular, focus group interviews were entirely qualitative in nature, and the questionnaire survey displayed qualitative characteristics.

In social sciences research, quality criteria, such as validity and reliability are better suited to mainly quantitative research (Moilanen, 2000). Criteria such as credibility, transferability, dependability and confirmability are used instead, to evaluate the trustworthiness of the main thrust of the research endeavour, and in particular the focus group interviews (Krefting, 1991; Moilanen, 2000).

Table 4.8 provides a brief definition of each qualitative term.

Table 4.8: Definition of trustworthiness criteria for evaluating qualitative research [compiled from: Poggenpoel (1998) and Reid & Gough (2000)].

Trustworthiness criteria	Definition
Credibility	Authentic representation of the human phenomena
Transferability	Fit within contexts outside the study situation, i.e. applicability
Dependability	Minimisation of idiosyncrasies in interpretation and variability tracked to identifiable sources
Confirmability	Extent to which biases, motivations, interests or perspectives of the researcher influence interpretations

Strategies were employed to ensure trustworthiness throughout the main thrust of the research endeavour and the aspects that were taken into account are described below.

Ensuring credibility:

- A thorough literature review was conducted to ensure the credibility of the theoretical underpinnings of the study (Krefting, 1991).
- The research aim and objectives were carefully constructed in order to form clear unambiguous goals for the research study (Reid & Gough, 2000).
- The use of a combination of research methods, such as a questionnaire survey and focus group interviews, ensured credibility of the research design and outcomes (Krefting, 1991; Poggenpoel, 1998).
- Questionnaire items were accurately phrased, so as to elicit specific information sought from the participants (Reid & Gough, 2000).
- The credibility of focus group interview outcomes will be accounted for by ensuring that the researcher elicits the specific information sought from the participants during the interviews (Leedy & Ormrod, 2001; Reid & Gough, 2000).
- Conducting more than one focus group per school ensured credibility of the data obtained from focus group interviews (Reid & Gough, 2000).

- Throughout the research process, the researcher reflected on the possible influence of her own background, perceptions, experience and interests on the interpretation of findings, and thus cautioned against these biased influences (Krefting, 1991).

Ensuring transferability:

- The limitations of transferring focus group interview findings to the entire population of teachers in South Africa, were clearly stated in section 4.5.1.2, as the focus group interviews merely involved a small purposefully selected sample of teachers (Leedy & Ormrod, 2001).
- Detailed descriptions of the participants, data collection instruments, procedures and variables of this specific research were provided, in order to allow transferability judgements to be made to other contexts (Krefting, 1991). The anonymity of participants was, however, not compromised by these detailed descriptions (Berg, 1998).

Ensuring dependability:

- The exact methods of data collection, recording, analysis, and interpretation of results were described in order to provide information on the repeatability of the research (Krefting, 1991).
- The use of a combination of research methods, such as a questionnaire survey and focus group interviews ensured dependability of the research design (Krefting, 1991; Poggenpoel, 1998).
- Questionnaire survey outcomes were verified with findings in the literature (Poggenpoel, 1998; Reid & Gough, 2000).
- The specific terminology employed has a great influence on the dependability of responses obtained from participants (Reid & Gough, 2000; Neuman, 1997). Therefore, the term *professional* as opposed to the term *audiologist* was used in questions where participants had to indicate their need for support in various areas of development (See Appendix D, Questions 13 to 21). This was done, because teachers are not always aware of the various areas of support offered by educational audiologists (Pottas, 1998). Thus, if participants were not aware of the educational audiologists' role of support, they might not

have indicated the areas in which they required support, because they would have assumed it was the responsibility of another team member.

- The dependability of participants' responses was ensured by not including questions that revealed their identity, by assuring the anonymity of their school throughout the study and by portraying an unjudgmental attitude during participant contact (Reid & Gough, 2000). These measures ensured that participants felt free to state their true opinions and views about the topics of discussion.
- Great care was taken in the translation of focus group excerpts from Afrikaans to English as not to change the content or meaning of what was being said. A language editor served as an independent rater and verified that the translations were an accurate depiction of participants' discussions.
- The dependability of focus group responses were enhanced by discussing questions that were of particular interest and relevance to the participants (Reid & Gough, 2000).
- During data analysis, distinct steps as described by Stewart and Shamdasani (1990) were used in order to analyze and interpret data obtained from the focus group interviews. These distinct steps were critical in order to establish the dependability of data analysis (Reid & Gough, 2000).

Ensuring confirmability:

- The researcher attempted to take an unbiased stand during data recording and when drawing conclusions from the data in order to satisfy confirmability criteria (Reid & Gough, 2000).
- The provision of transcripts of focus group interviews and the documentation of all non-verbal gestures and facial expressions of participants within these transcripts ensured confirmability of the focus group findings (Reid & Gough, 2000).

Although complete reliability, validity and trustworthiness can never be achieved (Leedy & Ormrod, 2001; Moilanen, 2000), the above-mentioned strategies contributed to ensure quality measures in the present research.

4.9 ETHICAL CONCERNS

Ethical concerns are the issues, dilemmas, and conflicts that cross the pathway to conduct proper research with participants, employers, and others involved. Research ethics define what is legitimate and moral during research procedures (Neuman, 1997). According to Strydom (2002), ethical issues can be divided into harm to participants, informed consent, deception of participants, violation of privacy, researcher competence, cooperation with collaborators, and release of findings. The researcher attempted to conduct herself ethically in each of these areas.

Participants were not harmed in a physical and/or emotional manner during the research (Strydom, 2002). Participants were in no means disadvantaged if they chose not to participate in the research, and this was clearly stated to them.

A covering letter accompanied by a letter of informed consent (See Appendix C) was provided to all participants, explaining the aims of the research, the procedures to be followed, and stating that participation in the study was entirely voluntary (Strydom, 2002). Therefore, participants were not coerced or manipulated into volunteering, and had to give their informed consent in order to participate in the research project (Berg, 1998). Participants were also able to withdraw from the research whenever they chose to do so (Strydom, 2002).

The researcher ensured that participants were not deceived in any way as to the goal of the study, their real function, the experiences that they were subjected to, or the use of the data accumulated by clearly stipulating these points in a covering letter (Strydom, 2002).

It was essential that the researcher acted with the necessary sensitivity where privacy of participants was concerned. Therefore, respondents were not requested to reveal their names. In addition, the participants were ensured of

the confidentiality of their responses by removing from the research records any element that may have indicated the participant's identity (Berg, 1998).

The researcher assured all parties involved of her competence, skill and thorough preparation to undertake the investigation at hand (Strydom, 2002). The research design, data collection instruments, and procedures were reviewed by experienced research supervisors prior to the main study.

Prior to conducting the fieldwork, permission to carry out the research was obtained from the relevant authorities, namely: Research Ethics Committee: Faculty Humanities, University of Pretoria (Appendix G) by submitting a research proposal prior to the intended study. Permission was also obtained from the various departments of Education (Appendix F), the school principals (Appendix B), as well as the participants (Appendix C) (Strydom, 2002).

Questionnaires were distributed and completed during break-time so as not to interfere with regular school duties. Focus group interviews were conducted after school hours during a time allocated for in-service training so as not to have caused interference with participants' regular school hours.

The participants were informed that the information obtained from the research would only be used for research purposes and would not be misused or used to cause any harmful effects to the reputation of individual participants or to the professional groups involved (Neuman, 1997). After completion of the research, a summary of findings will be made available to the departments of education as well as the schools that participated in the research (Strydom, 2002). Scientific articles will also be published based on the research carried out.

Thus, the research was cautiously planned by taking the above-mentioned ethical concerns into account (Strydom, 2002).

4.10 CONCLUSION

Research pertaining to the needs of South African teachers of children with hearing loss regarding an educational audiology service delivery model within the inclusive educational system is, as far as known, non-existent to date. The evaluation of the service delivery system is the responsibility of the educational audiologist to ensure the efficacy of services within the educational system (EAA, 2002b). Therefore, research on best practices in supporting teachers in the audiological and educational management of children with hearing loss is of the utmost importance to render accountable services in accordance with current trends (ASHA, 1993). The empirical research was planned to obtain information from participants, in order to develop an educational audiology service delivery model for use within the inclusive educational system in South Africa that is based upon sound scientific findings (Berg, 1998).

4.11 SUMMARY

In this chapter the methodology used to execute empirical the research was described. In the introduction, a justification was provided for embarking on the research project. This was followed by the research aim and objectives, the research design, the participants, the data collection instruments and equipment, the pilot study, research procedures, reliability, validity and trustworthiness issues, and finally, ethical concerns during the research were stipulated. The pilot study was found to be a valuable tool for identifying aspects of the data collection instruments that needed refinement. It was concluded that the methodology described was the most suitable and therefore the main study could proceed. The chapter ends with a conclusion and summary.