

**Teachers' attitudes towards
students with LNFS
using two AAC devices.**

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TABLE OF CONTENTS

HEADING	PAGE
CHAPTER 1: INTRODUCTION TO THE STUDY	
1.1 PROBLEM STATEMENT	1
1.2 DEFINITION OF TERMS	5
1.2.1 Little or no functional speech	5
1.2.2 Alternative augmentative communication	5
1.2.3 Picture communication symbols	5
1.2.4 Voice output communication aids	5
1.2.5 Alpha Talker™	6
1.2.6 Communication board	6
1.2.7 Attitudes	6
1.2.8 Teachers' sense of self-efficacy	6
1.2.9 Expectations	6
1.2.10 Interactions	6
1.3 OUTLINE OF THE CHAPTERS	7
1.4 ABBREVIATIONS	8
1.5 SUMMARY	8

HEADING	PAGE
CHAPTER 2: LITERATURE STUDY	
2.1 INTRODUCTION	9
2.1.1 Scope of this chapter	9
2.1.2 Background	9
2.2 TEACHER STUDENT INTERACTIONS	9
2.3 TEACHERS' EXPECTATIONS	10
2.4 EFFICACY	12
2.5 TEACHER TRAINING	13
2.5 ATTITUDES	14
2.6 VOICE OUTPUT COMMUNICATION AIDS	16
2.7 CONCLUSION	18
2.9 SUMMARY	19
CHAPTER 3: METHODOLOGY	
3.1 INTRODUCTION	21
3.2 AIMS OF THE STUDY	21
3.2.1 Main research aim	21
3.2.2 Sub-aims	21
3.3 RESEARCH DESIGN	22
3.3.1 The research design	22
3.3.2 The research phase	22
3.4 PILOT STUDY	23
3.4.1 Objectives	23
3.4.2 Schools selected for the pilot study	23
3.4.3 Procedure	24
3.4.4 Objectives, results and recommendations	24
3.4.5 Summary	26

3.5	MAIN STUDY	26
3.5.1	Selection Criteria for schools	26
3.5.1.1	Geographical area	26
3.5.1.2	Registered schools	26
3.5.1.3	Description of schools	26
3.5.1.4	Schools for children with mental disabilities	27
3.5.2	Description of the teachers	27
3.5.2.1	Qualifications	28
3.5.1.5	Years of experience	30
3.5.1.6	Age of teachers	31
3.5.1.7	Experience with children with LNFS	31
3.5.3	Materials used in the study	33
3.5.3.1	Video tapes	33
3.5.3.2	Children	34
3.5.3.3	Communication Board	34
3.5.3.4	Alpha Talker	34
3.5.4	Equipment used in the study	35
3.6	DEVELOPMENT AND DESCRIPTION OF SURVEY INSTRUMENTS	36
3.6.1	The questionnaire	36
3.6.2	The TAS	37
3.7	DATA COLLECTION PROCEDURE	40
3.7.1	Preparation for field work	40
3.7.2	Fieldwork	41
3.8	DATA ANALYSIS AND STATISTICAL PROCEDURES	42
3.9	SUMMARY	43

HEADING	PAGE
CHAPTER 4: RESULTS AND DISCUSSION	
4.1 INTRODUCTION	44
4.2 TEACHERS ATTITUDES TOWARDS THE COMMUNICATION BOARD AND ALPHA TALKER	44
4.2.1 Teachers' perceptions of their own abilities	45
4.2.2 Teachers' expectations of the child	47
4.2.3 Teachers' perceptions of classroom interactions	50
4.2.4 Teachers' perceptions of the device	52
4.2.5 Teachers' perceptions of communication abilities	54
4.3 COMPARISON OF TEACHERS' ATTITUDES TOWARDS THE COMMUNICATION BOARD AND ALPHA TALKER™	55
4.3.1 Carry-over test	56
4.3.2 The influence of the device on attitudes	57
4.4 SUMMARY	59
CHAPTER 5: SUMMARY AND CONCLUSION	
5.1 INTRODUCTION	60
5.2 SUMMARY OF RESULTS AND INTERGRATION OF RESULTS	60
5.3 CRITICAL EVALUATION	62
5.4 CLINICAL IMPLICATIONS	63
5.5 RECOMMENDATION FOR FUTURE RESEARCH	64
5.6 SUMMARY	65
REFERENCES	66
APPENDIX A Questionnaire	77
APPENDIX B TAS	78
APPENDIX C Changes made after the pilot study	83
APPENDIX D Overlay	85
APPENDIX E Letter to principal	86
APPENDIX F Letter to parents	88
APPENDIX G Letter to principal	90
APPENDIX H Letter to teachers	92

LIST OF TABLES

TABLE	PAGE
2.1 Summary of attitudinal studies	20
3.1 Objectives, results and recommendations following the pilot study	25
3.2 Description of schools included in the study	27
3.3 Table showing the videotapes	34
3.4 Criteria for developing the video material	35
3.5 The equipment used in the study	36
3.6 The development of the questionnaire	38
3.7 The development of the TAS	39
3.8 Sequence of video presentation	40
3.9 Data Analysis	42
4.1 Teachers' perceptions on their own abilities	45
4.2 Teachers' expectations of the child	48
4.3 Teachers' perceptions of classroom interactions	50
4.4 Teachers' perceptions of the AAC device	52
4.5 Teachers perceptions of communicative interactions	54
4.6 P value for the carry-over effect	56
4.7 P value for the treatment effect	57

LIST OF FIGURES

FIGURE	PAGE
3.1 Qualifications of teachers	28
3.2 Specialized training	29
3.3 Years of experience	30
3.4 Age of teachers	31
3.5 Experience with children with LNFS	32
4.1 Section B – Teachers' expectations of the student	58
4.2 Section C - Teachers' perceptions of classroom interactions	58
4.3 Section D - Teachers' perceptions of the AAC device	58
4.4 Section E – Teachers' perceptions of communicative competence	58

Abstract

The aim of this study was to determine and compare teachers' attitudes towards students with little or no functional speech, using two Alternative and Augmentative communication (AAC) devices i.e. an Alpha Talker™ and communication board. Teachers viewed videotapes showing students communicating using either AAC device. Attitudes were measured using the Teacher Attitudinal Scale (TAS) and biographical information about the teachers was obtained using a questionnaire. The results revealed teachers were generally positive towards both devices. A comparison of teachers' attitudes towards the devices revealed no statistically significant differences in teachers' attitudes. Hence, teachers had similar attitudes towards both devices. However, there was a consistent tendency to perceive the Alpha Talker™ more positively. Reasons for this finding are discussed, as are the implications of this finding for implementing AAC services. In addition, the results revealed that teachers perceived a need for training in AAC strategies. Furthermore, the suggested mismatch between teachers' attitudes and the reality of the teaching context supports the need for teacher training prior to facilitating the implementation of AAC strategies and devices within the classroom context.

Key terms:

- Little or No Functional Speech (LNFS).
- Alternative and Augmentative Communication (AAC).
- Picture Communication Symbols (PCS).
- Voice Output Communication Aids (VOCA).
- Alpha Talker.
- Communication Board.
- Attitudes.
- Teacher self - efficacy.
- Expectations.
- Interaction.

Opsomming

Die doel van hierdie studie was om onderwysers se houdings teenoor studente met min of geen funksionele spraak wat twee Aanvullende en Alternatiewe Kommunikasie (AAK) hulpmiddels gebruik het. 'n Alpha Talker™ en a kommunikasiebord, te bepaal en vergelyk. Onderwysers het na videobande gekyk van studente wat met behulp van die onderskeie hulpmiddels kommunikeer. Houdings is met behulp van die "Teacher Attitude Scale" (TAS) gemeet en biografiese inligting is deur middel van 'n vraelys verkry. Die resultate het aangetoon dat onderwysers oor die algemeen positief was jeens beide hulpmiddels. 'n vergelyking tussen houdings rakende die hulpmiddels het op geen statisties noemenswaardige verskille in onderwysers se houdings gedui nie. Dit blyk dat onderwysers in hierdie studie soortgelyke houdings teenoor beide hulpmiddels gehad het, maar daar was 'n konstante neiging om die Alpha Talker™ meer positief te bejêen. Die redes vir hierdie bevinding word bespreek asook die implikasies hiervan vir die implementering van AAK-dienslewering. Die resultate het ook aangetoon dat onderwysers 'n behoefte vir opleiding in AAK-strategieë het. Die voorgestelde aanpassing tussen onderwysers se houdings en die realiteit van die onderwys konteks ondersteun die belang van onderwyseropleiding alvorens die implementering van AAK strategieë en hulpmiddels in die klaskamer konteks plaasvind.

Terme:

- Min of geen funksionele spraak (MGFS)
- Aanvullende en Alternatiewe Kommunikasie (AAK)
- Picture Communication Symbols
- Stem-uitset kommunikasiehulpmiddels
- Alpha Talker™
- Kommunikasiebord
- Verwagtinge
- Interaksies

CHAPTER ONE INTRODUCTION TO THE STUDY

1.1 PROBLEM STATEMENT

The issue of education, and access to it, is a problem that exists in many countries. This problem is further exacerbated, in developing countries like South Africa, by limited financial and personnel resources (Guma, 1992). Resource limitations have resulted in mainstream education taking precedence over the provision of education for children with special needs. Similarly, in South Africa the perceived prohibitive cost of special education services has been cited as a reason for not providing services (Gwalla – Ogisi, 1988). Fortunately, during the past two decades special education has received considerably more attention. The International Year of the Disabled in 1981 marked a renewed interest in both the welfare and education of the disabled, throughout the world. This renewed interest was also evident nationally, in the National Health Plan that stressed the importance of access to education for all, including students with disabilities (National Health Plan, 1994).

Unfortunately, despite legislation propagating the need for education for children with disabilities, the reality is that special education in South Africa is still problematic. Often, institutionalization and residential care are considered the only alternatives for these students. The mismatch between legislation and the current reality regarding special education may be attributed to a variety of factors including lack of political will, lack of knowledge, restrictive attitudes, poorly trained teachers, lack of professional support and inappropriate curricula (Malapka & Sakui, 1992; Baine, 1990).

Special education curricula are often merely “watered down” versions of mainstream education curricula (Baine, 1988). More difficult tasks are replaced with simpler craft activities or more practical skills. Alternatively, students with disabilities are expected to follow mainstream curricula but at a slower pace than mainstream students. Other

problems inherent in the curricula are that greater emphasis is placed on memorization and there is a separation of school and community. This separation results in students being trained in skills that leave them unfit for life in their respective communities (Baine, 1988).

It is evident that special education has various problems in meeting the needs of disabled students and lags behind, particularly regarding facilitating their integration into society, independence and the development of students' communication skills. The gap in the development of students' communication skills is particularly relevant for a large group of students with disabilities. These students are classified as having little or no functional speech (LNFS). It is estimated that approximately 39% of students with disabilities at special schools, i.e. for children with disabilities, have LNFS (Borman, 1995). These students' access to education is further hampered by their limited speech, as research indicates that teachers of these students adopt limited and altered patterns of interaction with these students. Students' limited speech output results in teachers feeling uncertain about what the student understands, needs and prefers, thereby limiting the communication opportunities provided to these students and their access to interaction. Limited access to interaction results in limited social, educational and occupational opportunities (Blackstone, 1989) which is in contrast to current trends regarding human and individual rights to a better quality of life.

Alternative and Augmentative Communication (AAC) is an instructional approach that can facilitate students with LNFS towards more fully realizing their potential (Lloyd, Fuller & Arvidson, 1997, p.1). AAC has been defined as the "supplementation or replacement of natural speech and or writing using aided and unaided symbols" (Lloyd *et al.*, 1997, p.524). The aim of AAC intervention, within classrooms, is to enable students with LNFS to attain their fullest potential through meeting their communication and learning needs with effective communication skills (Musselwhite & St Louis, 1988). In addition to enhancing the communication of students with LNFS, AAC also promotes the development of literacy skills by providing students with access to symbols which can function as a "bridge" to literacy (Alant & Emmett, 1995, p.3). The implementation of AAC services at schools serving students with LNFS is, therefore, important in ensuring that students receive a relevant education. AAC provides individuals with the ability to participate actively in

interaction, recreation and education, resulting in an improvement in their quality of life (Beukelman, 1991; Lock & Piche, 1994).

The provision of appropriate AAC systems to students with LNFS is pivotal to facilitating their participation in classroom interactions and subsequently student learning. However, researchers caution that the mere provision of an AAC device does not improve students' ability to meet the social and academic demands of school. The successful use of AAC within the classroom context is enhanced by teachers supporting and implementing AAC strategies, as well as carefully prepared AAC intervention procedures.

AAC intervention involves a team approach that includes, amongst others, teachers and support personnel including occupational therapists, speech language therapists and physiotherapists. However, there is little provision for such services in our current educational context, due to the lack of trained professionals and to limited financial resources. Hence, there has been a general movement, both nationally and internationally, towards therapists functioning as consultants (Goodman & Kroc, 1981; Baker, 1993), rather than being the individual responsible for implementing AAC. Teachers are, therefore, provided with support from therapists, while teachers retain the primary responsibility of implementing AAC in the classroom. Hence, the commitment, support and co-operation of teachers are required in order to ensure that AAC is successfully implemented in the classroom (Soto, 1997).

However, prior to teachers implementing AAC, there is a need to provide teachers with training and support. Teacher training is required as teachers, working with students with LNFS, often do not have special training in working with children with disabilities. Furthermore, teachers have little or no exposure to AAC, or training in the implementation and use of AAC. Many teachers may feel threatened by AAC systems, as they are not confident with technology and, therefore, do not feel competent when interacting with an AAC user (Baker, 1993).

In order to gain insight into interactions between teachers and students who use AAC, it is important to understand the attitudes that each communication partner brings to the interaction (Kraat, 1987). It is vital to investigate teachers' attitudes, as teachers'

behavior is guided by their thoughts, judgements and decisions (Shavelson, 1983). In addition, teachers' attitudes towards AAC are important, as teachers play a primary role in implementing AAC strategies, and their negative attitudes may form barriers to interaction and the successful implementation of AAC strategies within the classroom context.

Attitudinal investigations of the effect of the provision of an AAC device on attitudes towards non-speaking individuals have been controversial (Gorenflo & Gorenflo, 1991) and limited. Alm (1991) suggests that while the use of computer technology for communication may be positively perceived due to its association with high intelligence, others feel it highlights the disability, thereby negatively influencing attitudes (Cavalier, 1987). In addition, there is a possibility of attitudes being influenced by the physical and design characteristics of the device (Blockberger, Armstrong, O'Connor & Freeman, 1993). Research investigating adults' attitudes towards AAC as a function of the device utilized revealed more positive attitudes as the method of communication became more complex (Gorenflo & Gorenflo, 1991). Hence, adults in the study had more positive attitudes towards devices with speech output and less positive attitudes towards alphabet boards and unaided communication. Studies which investigated teachers' attitudes have been limited primarily to a study conducted in the United States of America in which teachers' attitudes towards AAC were investigated (Soto, 1997). However, there is a paucity of research on teachers' attitudes towards children with LNFS as a function of the type of device they utilize.

It is in terms of this framework that the current study investigates teachers' attitudes towards students with LNFS using two AAC devices. It is hoped that this investigation will result in a clearer understanding of teachers' perceptions of communication devices and of these students' communication and classroom interaction abilities. The information will be useful when considering the implementation of AAC at schools, as well as in highlighting areas that need consideration when training and preparing teachers to work more effectively with this group of students.

1.2 DEFINITION OF TERMS

The following frequently used terms need clarification.

1.2.1. Little or no functional speech

For the purpose of this study, the term little or no functional speech will refer to students who speak less than fifteen intelligible words (Burd, Hannes, Bornhoeft & Fischer, 1983).

1.2.2. Alternative and augmentative communication

Alternative and augmentative communication is the “supplementation or replacement of natural speech and or writing using aided or unaided symbols” in order to enhance the communication skills of persons with little or no functional speech (Lloyd *et al.*, 1997, p. 524).

1.2.3. Picture communication symbols

This refers to a set of symbols composed “primarily of simple line drawings with words printed above them” (Lloyd *et al.*, p.537).

1.2.4. Voice output communication aids

An augmentative and alternative communication device that has an electronic voice output capability. The voice output may be synthesized or digitized speech (Lloyd, *et al.*, 1997, p.543).

1.2.5. Alpha Talker[®]

An Alpha Talker[®] is a high technology AAC device. It has a digitized recorded speech output (Quist & Lloyd, 1997, p.148).

1.2.6. Communication board

A communication board is a low technology AAC device. “Typically, letters, words, pictures or other graphic symbols are arranged on paper, pasteboard, oil cloth, an apron or other material according to pre - determined categories or topics” which are referred to as Communication Boards (Quist & Lloyd, 1997, p.110).

1.2.7. Attitudes

Attitudes refer to an internal tendency, which influences an individual to react positively or negatively to an object, person or situation (Aiken, 1996; Mendes & Rato, 1996, p.12).

1.2.8. Teacher self-efficacy

This construct refers to teacher’s expectations that their teaching can result in students learning (Ashton & Webb, 1986, p.4)

1.2.9. Expectations

Expectations are unavoidable predictions that teachers make about the academic achievement as well as classroom behavior of their students (Brophy & Good, 1970). The effects of expectations depend on the accuracy, flexibility and manner in which teachers’ expectations are communicated to students, which in turn may affect students’ behaviors or responses (Larsen, 1975, p. 1).

1.2.10. Interaction

Interaction refers to the pattern of mutual influence as well as adjustment in which both partners are involved in creating in a common communicative context (Malamah-Thomas, 1988).

1.3 OUTLINE OF CHAPTERS

Chapter 1 provides a motivation for the study and an outline of the chapters as well as a definition of the key terms used.

Chapter 2 describes the role of teachers in facilitating interactions with an AAC user. The importance of teacher' expectations, self-efficacy and attitudes are highlighted in terms of their influence, both on interactions and the successful implementation of AAC, within the classroom context.

The methodology is described in Chapter 3. This includes a description of the aims, the research design, pilot study, the schools, teachers, material and equipment used in the study, the data collection procedures and finally the data analysis and statistical procedures.

Chapter 4 presents a description and discussion of the results, in accordance with the aims of the study. A description of the attitudes towards the communication board and Alpha Talker[®] are described and compared.

An integrated discussion of the results is the focus of Chapter 5. A critical evaluation of the study is presented followed by implications of the study and finally recommendations for future research.

1.4 ABBREVIATIONS

AAC - Augmentative and Alternative Communication

VOCA - Voice Output Communication Aids

LNFS - Little or No Functional Speech

TAS - Teacher Attitudinal Scale

PCS - Picture Communication Symbols

1.5 SUMMARY

This chapter has provided a motivation for the study, highlighting the current situation in special education and the need to examine teachers' attitudes. This chapter concluded with definitions of key terms and an outline of the chapters to follow.

CHAPTER TWO

LITERATURE STUDY

2.1 INTRODUCTION

2.1.1 Scope of this chapter

This chapter describes the role of teachers in facilitating interactions with AAC users in the classroom context. The importance of teachers' expectations, self-efficacy and attitudes are highlighted in terms of their influence, both on interactions and the successful implementation of AAC within the classroom context.

2.1.2 Background

Teachers have diverse roles and responsibilities in schools serving students with LNFS (Locke & Mirenda, 1992). They play a critical role in supporting AAC strategies, as well as carefully planned intervention procedures. Furthermore, they are responsible for providing the AAC user with communication opportunities to facilitate their inclusion in classroom interactions, thereby improving the students' ability to meet the social and academic demands of school (Beukelman & Mirenda, 1992). Teachers are important interaction partners and their ability to facilitate interactions with the AAC user will greatly influence the success or failure of the AAC device as a communication tool in the classroom (Dalton & Bedrosian, 1989).

2.2 TEACHER-STUDENT INTERACTIONS

It is important that there is adequate and sufficient interaction between students with LNFS and teachers in order to facilitate student learning. However, when teachers interact with students with LNFS, they are faced with the situation where the student

does not respond verbally, resulting in teachers feeling uncertain about the student. They react to these students with limited and altered patterns of interaction (Light, 1988; Basil, 1992; Cicognani & Zani, 1992). A consequence of teachers' limited interactions with students with LNFS is that students can adopt an exaggerated passivity and develop an attitude of "learned helplessness" (Basil, 1992). This attitude, together with limited access to interaction, results in limited social, academic and vocational opportunities for students with LNFS (Blackstone, 1989).

Research has revealed that the frequency of adult interaction with children increases as a function of the child's verbal abilities (Malamah-Thomas, 1988; Beveridge & Hurrell, 1980). Adults have also been found to interact less frequently with children with LNFS than with speaking children (Basil, 1992; Cicognani & Zani, 1992). Studies investigating teachers' interaction with students with LNFS indicated that teachers tend to dominate interactions by initiating conversations, taking more turns and maintaining control of conversations. They also utilize more direct questioning, attention directing statements and requests, and provide fewer answers, and less imitation and praise to students with LNFS than more verbal students (Cicognani & Zani, 1992). Furthermore, teachers' interactions with students with LNFS are confined to a small number and limited variety of utterances (Popich, 1997; Popich & Alant, 1997). The researcher suggests that while the students' verbal abilities had the greatest influence on teacher interactions, other factors may also have contributed to the interaction patterns observed. Factors identified as important to influencing interaction with students with LNFS included teachers' knowledge of the importance of interaction, their skill in incorporating the student into an interactive situation, the personality of the child, the teachers' ability to predict the students' performance on interactional tasks, teachers' attitudes towards the student and teachers' expectations of the student (Beukelman & Mirenda, 1992; Beveridge, Ramsden & Leuder, 1989; Light & McNaughton, 1993).

2.3 TEACHERS' EXPECTATIONS

Teacher expectations are defined as the inferences that teachers make about the achievement of students based on what they know about the students' present performance (Larsen, 1975). Teachers' expectations are important, as they play an

important role in determining teachers' behavior, and thus in turn, that in turn influences students' responses (Zurroff & Rotter, 1985). It is important that expectations are appropriate, in order to enhance students' learning experiences thereby facilitating their progress through the curriculum at an appropriate pace.

While it is not understood how teachers' expectations are formed (Light & McNaughton, 1993), their expectations influence students in two ways. Firstly, expectations influence the priority given to an activity and, secondly, the expectations can be communicated to the student thereby influencing the students' own expectations of success (Light & McNaughton, 1993). Brophy and Good (1970), suggest a model of how teachers' expectations affect students' performance. They postulate that teachers have varying expectations for various students, which in turn informs the students on how they are expected to perform on an academic task. If teachers' treatment of a student is consistent over time, and if the student does not challenge these expectations, the student begins to exhibit behaviors that complement and reinforce the teachers' initial expectations.

Research trends investigating teachers' expectation highlight the link between teacher expectations and their subsequent influence on students' performance, teacher student interactions and responsiveness (Beveridge & Hurrell, 1980; Parsons, Kaczala & Meece, 1982; Light & McNaughton, 1993). Despite research indicating that teacher responsiveness has a positive influence on students' conversational abilities (Miranda & Donnellan, 1986), more than 50% of initiations of children with mental disabilities are not responded to by teachers (Beveridge & Hurrell, 1980). Teachers' responsiveness to students with LNFS is influenced by the personality of the child, the teachers' ability to predict the students' ability to interact and, finally, teachers' expectations of students. This is supported by a study that revealed that the high expectations of teachers are one of the factors that influences the development of academic skills in the mainstream population (Parsons, Adler & Kaczala, 1982). In addition, teacher' expectations of students influence their resulting interaction with students, as teachers provide greater interaction opportunities for students of whom they have higher expectations and whom they think will perform better on interactional tasks (Brophy & Good, 1970; Light & McNaughton, 1993). Another contributing factor to facilitating teacher-student interactions is the teachers' sense of

self-efficacy, which has been defined as teachers' belief in their own abilities to facilitate learning in students.

2.4 EFFICACY

Efficacy theory postulates that the most important variable in teacher effectiveness and subsequently student success is teachers' belief in their own abilities (Ashton & Webb, 1986). Efficacy has two distinct dimensions. General efficacy refers to factors beyond the schools' control that limits the teachers' ability to perform actions that promote student learning. Teaching efficacy or teachers' sense of self-efficacy refers to the belief that teachers have in their own ability to perform the necessary actions that result in students learning. This belief influences teacher-student interactions, students' achievement and teachers' motivation and effort (Ashton & Webb, 1986). Higher self-efficacy has been consistently found to contribute towards student achievement, self-esteem, and their expectations of students, and has been positively related to teachers' commitment to an instructional approach (Guskey, 1988; Ross, 1992).

For teachers' of students with LNFS, a sense of self-efficacy is particularly relevant because of the nature of the student population. These students require specialized instructional techniques and materials, such as AAC. Often teachers of these students do not have special training in working with children with disabilities and have limited knowledge and exposure to AAC. Hence, they feel threatened by AAC systems and may not feel competent when interacting with an AAC user (Baker, 1993).

AAC users in the classroom initiate conversations, use complex sentences, exercise control in interactions and exhibit communicative competence (Smith, 1994).

However, AAC users are not always functional participants in the classroom with students using a limited range of speech acts, infrequently interacting with their peers and rarely initiating interactions (Calculator, 1988; Todman & Alm; 1994; Basil, 1992). This ineffective and inefficient communication by AAC users and limited use of AAC restricts AAC users' opportunities. Inefficient use of AAC may be attributed to AAC being perceived as a magic device that allows for instant participation.

Hence, little emphasis is placed on acquiring the skills necessary to facilitate the successful use of the device. Furthermore, the focus of AAC intervention may be on improving verbal communication rather than facilitating interactions (Archer, 1977).

Adequate and sufficient interaction between an AAC user and a teacher is important, as the competency of an AAC user is closely related to the skill of the communication partner in interacting with the AAC user (Oslwang, Kriegsman & Mastergeorge, 1982). It is unreasonable, however, to expect teachers to facilitate interactions with an AAC user and assume a primary role in implementing AAC without providing teachers with training and support in this regard. Furthermore, training focussed on varying social factors (such as individual and group interaction) and functional communication goals (such as communicating basic needs and engaging in social communication interactions) has been found to increase the communication partners' skill in interacting with the AAC user (Landry & Lovelan, 1989; Busch, 1993).

2.5. TEACHER TRAINING

Teacher training is an important element in the process of training AAC use and facilitates effective interaction with the AAC user (Dalton & Bedrosian, 1989; Mendes & Rato, 1996). Furthermore, literature indicates that the manner in which technology is integrated into the classroom is dependent on the type of preparation teachers receive, prior to its introduction into the classroom (Carney & Dix, 1992).

In addition to facilitating interactions, teachers play a primary role in implementing and supporting AAC in the classroom. They have the dual responsibility of developing AAC users' skills in utilizing AAC devices and their academic skills. This involves selecting vocabulary, writing goals and objectives for the AAC user and adapting the curriculum.

The level of qualification of teachers who are working with children with LNFS varies greatly, with many teachers having little or no training in working with students with disabilities (Alant & Emmett, 1995) or in AAC. Training should, therefore, focus on the development of teachers' operational strategies as well as the development of strategies to ensure the effective AAC implementation. (Blackstone,

1986). It is, therefore, important to train teachers in the areas of AAC systems, techniques, strategies, ways of interacting with the AAC user, adaptation of the curriculum, instructions, methods to use with the AAC user and finally in writing goals and objectives for the development of the AAC users' skills (Blackstone, 1989; Baker, 1993).

Literature indicates that training results in a change in teachers' interactions. They have been found to use more questions that promote the development of cognitive skills (Greenberg & Woodside, 1994). They have also been found to depend less on directive questioning and use more pauses (Todnem, 1994). Furthermore, research indicates that the more knowledge about AAC and experience teachers have the more roles and responsibilities they feel they are able to assume when implementing AAC. Therefore, in addition to in-service training, college courses and workshops, teachers need to develop practical experience with AAC users (Locke & Mirenda, 1992). Training is important as it can also facilitate a change in attitudes towards students. Research indicates that teachers have more positive attitudes as they have raised expectations of these students and better knowledge of their abilities (Wilson & Silverman, 1991; Mendes & Rato, 1996).

2.6 ATTITUDES

The preferences and attitudes of teachers are important as these may pose a barrier to facilitating interaction with students. Attitudes may be defined as a mental state, organized through personal experiences which exerts a dynamic influence upon one's response to situations with which it is related (Allport, 1967). They have been conceptualized as comprising an affective, behavioral and cognitive component (Triandis, 1971). The affective component refers to the emotional association with a belief, the behavioral component refers to the readiness to respond in a certain way, and the cognitive component refers to the belief about an object or situation. Restrictive or negative attitudes that can form barriers are extensive and may be held by teachers. While attitudes may be blatant, they are more often quite subtle and insidious, due to people realizing that these views are socially unacceptable.

Insidious, restrictive or negative attitudes towards technology may result in the limited use of assistive technology, including AAC. Stineman (1998) suggests that limited use of assistive technology may be attributed to a variety of factors including: little or no improvement in function, breaking easily, being unreliable, being difficult to learn to use, being very stigmatized and not fitting into the individuals' home or work environment. Such factors are in contrast to the principle of affordability and effectiveness of services rendered, which are primary concerns in rendering services in the South African context. Other principles that need to be considered are the appropriateness of technology and whether the services are perceived as acceptable and appropriate to the persons receiving services. The principles of affordability, acceptability, appropriateness of technology and effectiveness of services are fundamental to the National Health Plan.

The principle of appropriateness of technology is particularly relevant to the current study, in order to avoid the lack of use of AAC. To ensure that this principle is addressed it is necessary to examine the beliefs or attitudes of teachers. Attitudinal barriers, as proposed by the participation model, are another reason for lack of use of AAC systems (Beukelman & Mirenda, 1992). Thus, it is possible that despite an appropriate AAC system being available, the AAC system may not be utilized or, alternatively, the AAC user may not be provided with appropriate communication opportunities, because of the attitudes of the communication partners of the AAC user.

Attitudes towards AAC users, as a function of the type of device being used is intriguing due to the possibility of the physical or design characteristics of the device influencing attitudes. Studies have attempted empirically to investigate the influence of various different AAC devices on the attitudes of the communication partner of the AAC user (Coxson & Mathy-Laikko, 1983; Blockberger et al., 1993; Gorenflo & Gorenflo, 1991; Beck & Dennis, 1996). However, these have been limited primarily to the attitudes of children, college students and staff members at institutions. The basic methodology of these studies involved subjects watching a videotaped interaction between an AAC user, using various AAC devices, and a natural speaker. Thereafter, their attitudes were measured using Likert type multidimensional attitudinal scales (Table 2.1).

Studies by Blockberger *et al.* (1993) and Beck & Dennis (1996) investigated childrens' attitudes towards similar aged peers who used various communication devices i.e. high technology aids (aided electronic) and low technology aids (aided non electronic and unaided). The results indicated that the type of device used did not yield significantly different attitudes of social acceptability. Similarly, persons with personal exposure to AAC users have displayed a preference for low technology devices because they make possible greater and more active involvement in the communication exchange.

However, research conducted on adults displayed attitudinal patterns that are in contrast with the findings of attitudinal investigations utilizing children. In an unpublished study by Coxson & Mathy-Laikko (1983) college students were found to have less favorable attitudes towards an AAC user of a low technology device (an alphabet board) than one who used a high technology device (voice output). In addition, Gorenflo & Gorenflo (1991) investigated the attitudes of able-bodied college students towards a disabled peer using high and low technology devices. The results revealed significantly more positive attitudes, as the method of communication became more complex. Hence, attitudes were most positive towards the computer based voice output aids, less positive towards the alphabet board and finally least positive towards unaided communication comprising gestures and vocalizations. The general trend that emerged from these studies is that adults exhibit more positive attitudes towards high technology devices, particularly those with voice output capabilities, termed Voice Output Communication Aids (VOCA). These more positive attitudes may be attributed to AAC users of high technology devices being perceived as more intelligent and, therefore, viewed more positively. Furthermore, it is postulated that high technology devices were perceived as "better" than low technology devices due to the numerous interaction advantages of a VOCA.

2.7 VOICE OUTPUT COMMUNICATION AIDS (VOCA)

VOCA enables the AAC user to be an active participant in interaction (Lock & Piche, 1994). It makes it possible to interact in larger groups, over a distance and over the telephone (Kannenberg, Marguadt & Larson, 1988) and to talk with persons not

looking at the device, thereby reducing the strain placed on the listener (Rahavendra & Allen, 1993). In addition, VOCA provides the AAC user with the most natural form of communication (Musselwhite & St Louis, 1988) and it enables the AAC user to have the “normal” experience of hearing him/herself speak (McNaughton & Lindsay, 1995).

Furthermore, the VOCA user has more independence, as s/he is able to gain people’s attention with voice, rather than relying on others’ translations of his or her gestures.

The advantages of VOCA are supported by the study conducted by Schepis & Reid (1995) which found greater interactions between staff members and an AAC user when the AAC user used VOCA as compared to a communication board. In addition, Calculator & Dollaghans’ (1982) study found that students with LNFS rarely used their communication boards in spontaneous interactions with their teachers in the classroom setting, despite being able to utilize them in one to one interactions with others. The use of communication boards did not increase the likelihood of student success in providing a message or in decreasing the ambiguity of a message. The decreased use of the communication boards with the teachers may be attributed to the communication boards being unable to offer a means whereby the intent of a message can be communicated. This places greater demands on teachers as they must decode the students’ message and attempt to infer the intent of the message. By contrast, a VOCA in contrast places fewer demands on the listener in terms of decoding a message. However, a disadvantage of VOCA may be the reduced intelligibility of the device due to the poor quality of the speech output or robotic quality of the speech (Beukelman & Mirenda, 1992).

Considerable research has accumulated regarding the intelligibility of the voice output of AAC systems, in terms of acceptability and naturalness from a social perspective. Listener preferences of both sexes to natural and synthetic speech have been investigated (Mirenda, Eicher & Beukelman, 1989; Crabtree, Mirenda and Beukelman, 1990). The results revealed that female listeners had a strong preference for natural female voices (adult or child) as an acceptable replacement to their own speech. Males appeared more flexible about gender appropriateness for themselves but selected female voices for females. Gender appropriateness was considered more appropriate than age appropriateness in the rating of various voice outputs.

While research has focussed on investigating attitudes towards VOCA and various AAC devices, it focussed primarily on children, college students and the general population as is evident in Table 2.1. A descriptive survey was used as the standard method of obtaining data in these attitudinal studies. Research investigating teachers' attitudes towards AAC has been limited primarily to Sotos' (1997) study. This preliminary study investigated teachers' attitudes towards AAC and did not investigate teachers' attitudes towards various AAC devices. Her findings revealed that the majority of teachers surveyed had positive attitudes towards communication training for students with LNFS. Due to the paucity of research regarding teachers' attitudes towards students with LNFS using various AAC devices, the current study was conducted. It was postulated that the type of AAC device would influence teachers' attitudes and that a device with voice output capabilities would elicit more positive attitudes than a device without a voice output. Hence, the aim of the study is to determine teachers' attitudes towards a student with LNFS using two AAC devices viz. an Alpha Talker 9 utilizing voice output and a communication board.

2.8 CONCLUSION

The general trend in research investigating the impact of the type of AAC device on attitudes is that adults exhibit more positive attitudes towards VOCA than towards a communication aid without voice output. VOCA elicits more positive attitudes and facilitates greater interaction with the adult population. However, there is a need to conduct more attitudinal studies of AAC users' communication partners, including teachers, so that their attitudes can be considered realistically and sensitively when planning AAC intervention. The attitudes of teachers are particularly relevant due to their attitudes influencing their sense of self-efficacy as well as their interactions with and expectations of students. In addition, teachers' beliefs play a pervasive and important role in classroom interactions (Kagan, 1992).

Table 2.1: Summary of Attitudinal Studies

No.	Researcher(s)	Year	Title	Main Aims	Survey Instrument	Video	Subjects	Research Design
1.	Gorenflo & Gorenflo	1991	The effects of information and augmentative communication technique on attitudes towards non-speaking individuals.	<ul style="list-style-type: none"> To determine the effect an augmentative technique has on attitude. To determine attitudes towards alphabet board, VOCA To examine the influence of information on attitudes. 	<ul style="list-style-type: none"> Attitudes towards non-speaking persons scale 5 point Likert scale 	Quadriplegic spastic cerebral palsied male (22 years old)	Non-disabled undergraduate students.	Descriptive survey
2.	Blockberger <i>et al.</i>	1993	Children's attitudes towards a non-speaking child using various AAC techniques.	<ul style="list-style-type: none"> To determine if children's attitudes changed according to the technique used i.e. alphabet board, VOCA and unaided communication. 	<ul style="list-style-type: none"> Chedoke – McMaster attitudes towards children with handicaps (CATCH) 5 point scale 	Spastic, diplegic female child (9 years 1 month)	Fourth grade able-bodied children.	Descriptive Survey
3.	Beck & Dennis	1996	Attitudes of children towards a similar aged child who uses augmentative communication.	<ul style="list-style-type: none"> To determine children's attitudes towards an alphabet board, VOCA. 	<ul style="list-style-type: none"> CATCH 5 point scale 	Cerebral Palsied male (13 years)	Fifth grade able-bodied children.	Descriptive Survey
4.	Soto	1997	Special education teacher attitudes towards AAC: Preliminary survey.	<ul style="list-style-type: none"> To examine and describe the belief of teachers towards the use of AAC by students with severe communication impairments. 	<ul style="list-style-type: none"> Teachers' attitudes towards AAC 5 point scale 	Not utilised	Special education teachers.	Descriptive Survey
5.	Mirenda <i>et al.</i>	1989	Synthetic and natural speech preferences of male and female listeners in four age groups.	<ul style="list-style-type: none"> To examine the preferences of both sexes in four age groups towards natural and synthetic speech. 	<ul style="list-style-type: none"> Questionnaires 5 point Likert scale 	Audio cassette tapes	Male & Female able-bodied people from four age groups i.e. 6-8 year olds, 10-12 year olds, adolescents and adults.	Descriptive Survey
6.	Crabtree <i>et al.</i>	1990	Age and gender preferences for synthetic and natural speech.	<ul style="list-style-type: none"> To examine the preferences of listeners to natural and synthetic speech. 	<ul style="list-style-type: none"> Questionnaires 5 point Likert scale 	Audio cassette tapes	Males and females from four age groups as specified above.	Descriptive Survey

2.9 SUMMARY

In this chapter, emphasis was placed on highlighting the influence of teachers' expectations, attitudes and sense of self-efficacy on teacher-student interaction and the implementation of AAC within the classroom context. Relevant studies were discussed in order to emphasize the importance of conducting attitudinal studies, particularly with regard to teachers' attitudes.

CHAPTER THREE METHODOLOGY

3.1 INTRODUCTION

This chapter describes the research methodology of the study. Firstly, the aims and sub-aims of the study are presented followed by a discussion of the research design. The pilot study is then presented in terms of the results and recommendations. A description of the subjects, materials and equipment used in the study are provided. Finally, the data collection procedure and data analysis are described and discussed.

3.2 AIMS OF THE STUDY

3.2.1 Main research aim

The aim of the study is to determine and compare teachers' attitudes towards children with LNFS using a communication board and an Alpha Talker 9. This will be achieved through three sub-aims.

3.2.2 Sub-aims

- To determine teachers' attitudes towards a child with LNFS using a communication board.
- To determine teachers' attitudes towards a child with LNFS using an Alpha Talker 9.
- To compare teachers' attitudes towards a child with LNFS using a Communication Board versus an Alpha Talker 9.

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3.3 THE RESEARCH DESIGN

3.3.1 The research design

A comparative survey with a classic crossover design was utilized for the purpose of this study. The researcher chose the survey instrument because surveys have been identified as suitable for determining attitudes and used as the standard method of obtaining data in attitudinal studies (Table 2.1). The study involved teachers completing an attitudinal scale based on a video recording of students with LNFS using AAC devices. The teachers were randomly assigned to two groups. This was necessary in order to ensure that the sequence in which the videos was presented did not influence attitudes. Each group of teachers watched a video of a student with LNFS using an AAC device, and then completed a survey instrument. Thereafter, teachers watched a video of another child using a second AAC device, and again completed a survey instrument. In this way, teachers' attitudes towards the two AAC devices were discerned. With the data obtained it was possible to determine teachers' attitudes towards each device, as well as compare teachers' attitudes towards the different devices. Teachers' attitudes towards the devices were compared as the crossover design enabled a within group comparison (Jones & Kenward, 1989).

3.3.2 The research phase

The research consisted of the following phases, which followed a linear course.

- Development of a survey instrument which comprised a questionnaire and TAS. See Section 3.6 for a discussion and description of the development of the survey instrument.
- Identification of all the special schools for children with mental disabilities in the Northern Province. Personal contact with the schools was established and an explanation of the aims of the study was provided. Dates and times for fieldwork were arranged.

- Conducting a pilot study to pretest the survey instrument. The information obtained from the pilot study necessitated certain changes to the survey instrument. See Section 3.4 for a discussion of the pilot study.
- Conducting the fieldwork. The data collection procedures employed are discussed in Section 3.8.
- Data capture and analysis. The researcher coded the raw data in the pre-designed blocks on the survey instrument in order to facilitate data capturing by computer. After the results had been computerized, statistical analysis was conducted. An interpretation and discussion of the data, highlighting the relevance of the study, followed this.

3.4 PILOT STUDY

3.4.1 Objectives

The objectives of the pilot study were to refine and pretest the quality of the survey instrument (Appendix A and B) in terms of:

- Understandability of terminology;
- Ease with which the survey instrument was understood;
- Presence of ambiguous or misleading statements or questions;
- Complexity of instructions;
- Ease of coding;
- Time required to complete the data collection;
- Strategies intended regarding the analysis of data, and
- Feasibility of the procedures utilized (Katzennelenbogen, Yach & Joubert, 1991)

3.4.2 Schools selected for the pilot study

One school for children with mental disabilities in the Northern Province was selected as it met the criteria specified for the schools utilised in the main study (see Section 3.5.1). The school was registered with the Department of Education and classified as

a school for children with mental disabilities.

3.4.3 Procedure

The same procedure outlined for the main study was followed (See Section 3.8). However, teachers were required to provide feedback regarding the survey instrument. Their comments were considered and the necessary modifications to the survey were made.

3.4.4 Objectives, results and recommendations

The objectives, results and recommendations made after the pilot study, are provided in Table 3.2.

Table 3.1: Objectives, Results and Recommendations following the Pilot Study

Objectives	Materials and Equipment	Procedures	Results	Recommendations
1. To evaluate the understandability of the terminology used in the survey instrument.	Questionnaire and TAS	Teachers completed the questionnaire and TAS independently. Discussion.	During discussions, teachers commented on difficult terminology	The difficult to understand words were replaced with more appropriate words. See Appendix C for changes made after the pilot study.
2. To evaluate the ease with which the survey instrument was understood.	Questionnaire and TAS	Teachers completed the questionnaire and TAS independently. Discussion.	During discussions, teachers commented that the level of English in the Survey instrument was appropriate except for certain terminology (discussed above).	The relevant changes to the terminology were made.
3. To test for ambiguous and misleading questions and statements.	Questionnaire and TAS	Teachers completed the questionnaire and TAS independently. Discussion.	Questions and statements identified as ambiguous were primarily related to difficulties in understanding of terminology used.	More appropriate words were used. See Appendix C.
4. To determine if instructions were clear.	Questionnaire and TAS	Teachers completed the questionnaire and TAS independently. Discussion.	Instructions were clear. However, teachers found statements with 5-point scale difficult to complete. No problems were found with marking more than one option when required. No questions or statements were left unanswered.	Instructions were not altered. However, an example was provided for statements to give teachers an opportunity to practise completing statements with a 5-point scale. See Appendix C.
5. To evaluate the coding of the questionnaire and TAS.	Questionnaire and TAS	Teachers completed the questionnaire and TAS independently. Discussion.	The results of both the questionnaire and TAS were coded.	No difficulties in coding were experienced.
6. To test the time required to complete the questionnaire and TAS.	Questionnaire and TAS	Teachers completed the questionnaire and TAS independently. Discussion	Teachers needed approximately 5 minutes to complete the questionnaire and 20 minutes to complete the TAS the first time. On the second time they needed 15 minutes.	With clearer terminology the time needed to complete the TAS was reduced.
7. To determined the feasibility of the procedures used in the project.	Questionnaire and TAS	Teachers completed the questionnaire and TAS independently. Discussion	Teachers completed the questionnaire and TAS without any difficulties. However, difficulties arose in pairing the questionnaire and TAS to a video, as no identifying information was provided on the TAS.	The respondent number and video number were added to each TAS. The questionnaire and two copies of the TAS were collated, and provided to the teacher once.

3.4.5 Summary

The results of the pilot study necessitated minor modifications to the survey instrument (questionnaire and TAS). The procedure was found to be suitable for obtaining the data required.

3.5 MAIN STUDY

Criteria that were set for inclusion in the study will be discussed.

3.5.1 Selection criteria for schools

3.5.1.1 Geographical area

The research was conducted in the Northern Province, Central Region, as it was accessible to the researcher. Hence, convenience sampling was used (Dooley, 1995). The schools were all within an hour and a half from Pietersburg and were, therefore, termed peri-urban.

3.5.1.2 Registered school

All schools registered with the Department of Education, Northern Province, as schools for children with mental disabilities were considered. These schools were considered as the candidacy for AAC in these schools are very high (Matas, Mathy-Laikko, Beukelman & Legresely, 1985).

3.5.1.3 Description of schools

All the schools were considered to be previously disadvantaged and lacked services in terms of speech therapy, occupational therapy and physiotherapy services (Table 3.3).

Table 3.2: Description of Schools included in the Study

No.	Number of Teachers	Number of Speech Therapists	Number of Occupational Therapists	Number of Physiotherapists	Number of Nurses	Number of Psychologists	Predominant Language of Instruction
1.	16	0	0	0	0	0	Northern Sotho
2.	16	0	0	0	1	0	Northern Sotho
3.	8	0	0	0	0	0	Northern Sotho

3.5.1.4 Schools for children with mental disabilities

Seven schools for children with mental disabilities were identified in the Northern Province. Of these, four schools were excluded from the main study as:

- One school was used for the pilot study; and
- Two schools were in another region and were, therefore, not in close geographic proximity to the researcher.

3.5.2 Description of the teachers

The teacher sample comprised all teachers employed at the schools. A total of 43 teachers participated in this study. 81.4% of the teachers were female and 16.6% were male. The teachers were randomly assigned to two groups with Group 1 and 2 comprising 21 and 22 teachers respectively.

3.5.2.1 Qualifications

Figure 3.1 describes the highest educational qualifications of the teachers. These results refer to qualifications already obtained and do not include studies in which teachers were currently enrolled.

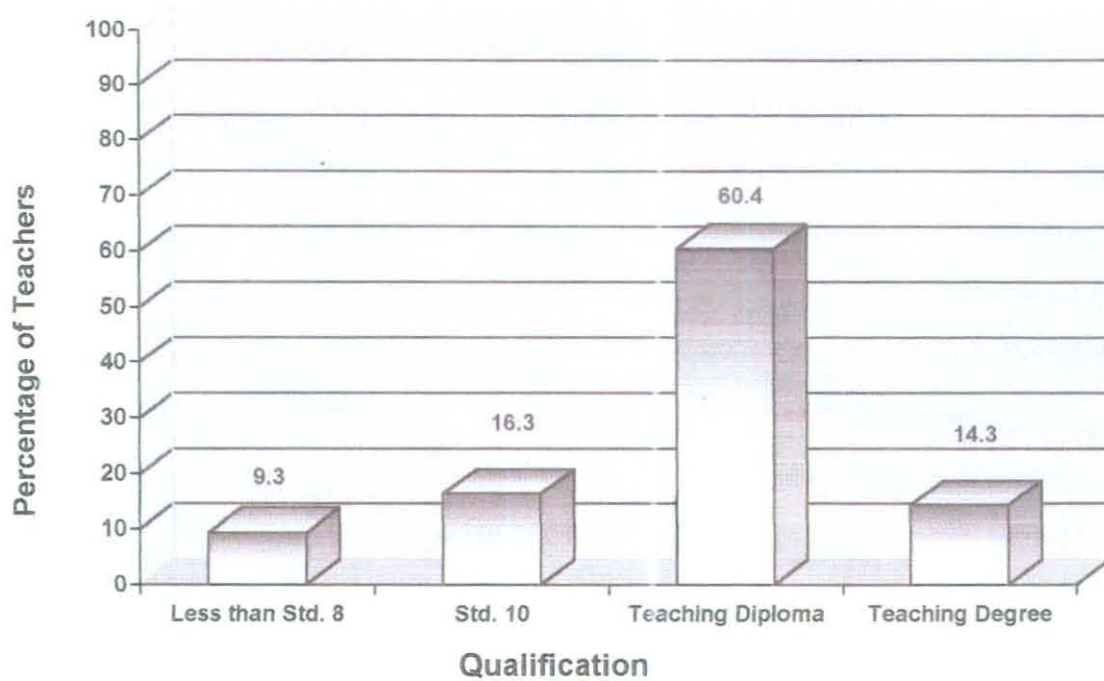


Figure 3.1: *Qualifications of Teachers*

Figure 3.1 indicates that the majority of the teachers had obtained a teaching diploma. 74.3% of the teachers held the qualification of either a teaching diploma or degree. The remaining 9.3% and 16.3% had obtained a Std 8 qualification and a matric certificate respectively. This finding is supported by other studies conducted in the South African context. Alant & Emmett (1995) and Borman (1995) found that between 80 and 84% of teachers, at schools for children with mental disabilities in the Pretoria area, had between 2 and 4 years of post matric qualifications. Furthermore, approximately 6% and 4 and 10% had a Std 8 qualification and a matric certificate respectively. Together, these data suggest that students with LNFS tend to be taught by teachers with the least qualifications, which may be attributed to the intervention philosophy focussing on “care giving” rather than the education of students (Alant, 1999, p.88).

Figure 3.2 describes the special training teachers received in working with students with disabilities.

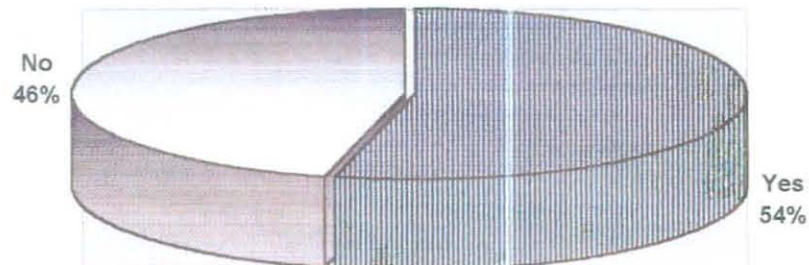


Figure 3.2: Specialised Training

Figure 3.2 indicates that 54% of teachers received special training in working with students with disabilities. The majority of the teachers had obtained diplomas in special or remedial education. However, 46% of the teachers had no additional training in working with disabilities. This finding is supported by literature that indicates that teachers do not have sufficient training in working with children with disabilities (Baker, 1993). This absence of training has negative implications for teachers' sense of self-efficacy.

3.5.2.2 Years of experience with disabled children

Figure 3.3 depicts the total number of years of experience that the teachers have in working with such children.

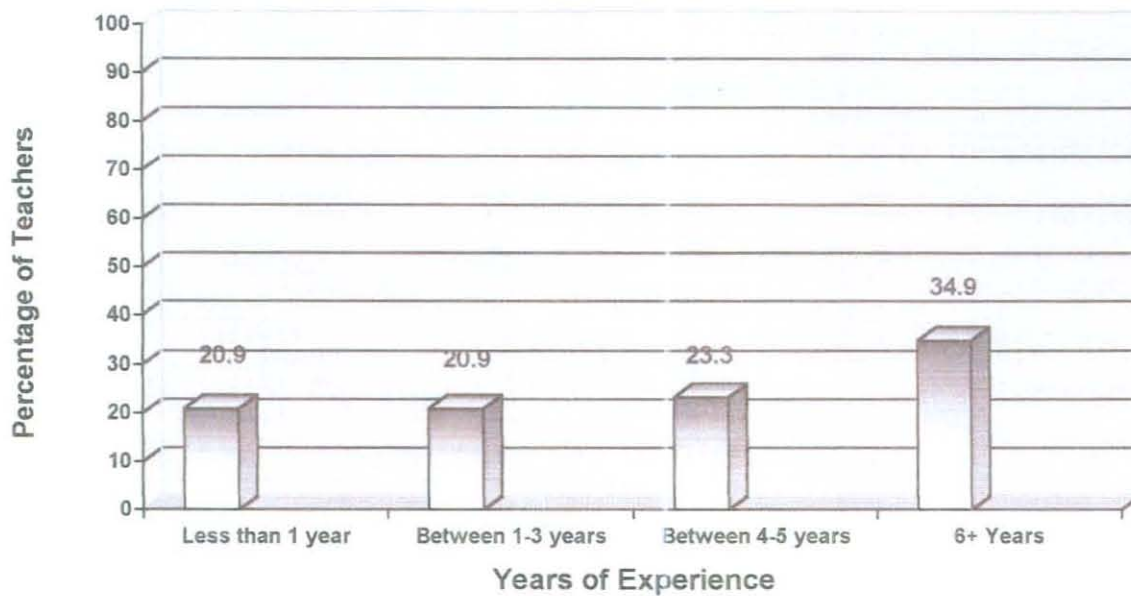


Figure 3.3: Years of Experience

Figure 3.3 indicates that the majority of teachers had more than 6 years' experience (34.9%) followed by 4 and 5 years' experience (23.3%). There was no difference between teachers who had less than one year (20.9%) and those who had between 2 and 3 years' experience (20.9%). Hence, a total of 41.8% of the teachers had less than 3 years experience in working with students with disabilities.

3.5.2.3 Age of teachers

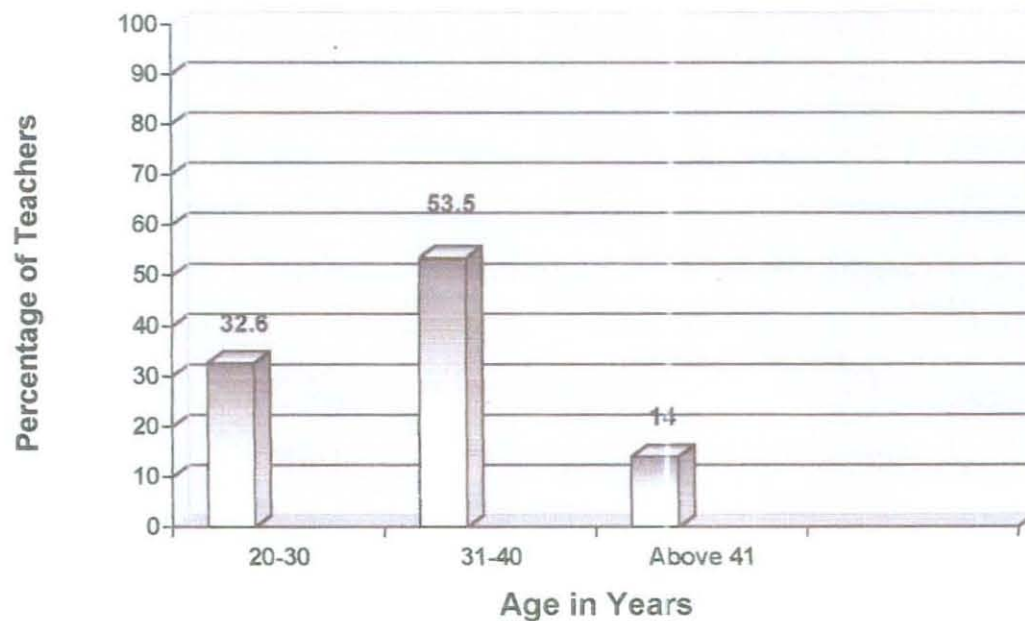


Figure 3.4: Age of Teachers

Figure 3.4 indicates that the majority of teachers (53.5%) were between 31 and 40 years. The remaining 32.6% and 14% were between the ages of 20 and 30 and above 41 years respectively.

3.5.2.4 Experience with children with LNFS

Figure 3.5. describes the number of students with LNFS that teachers had worked with. This includes all experience obtained, and not only experience obtained at a specific school.

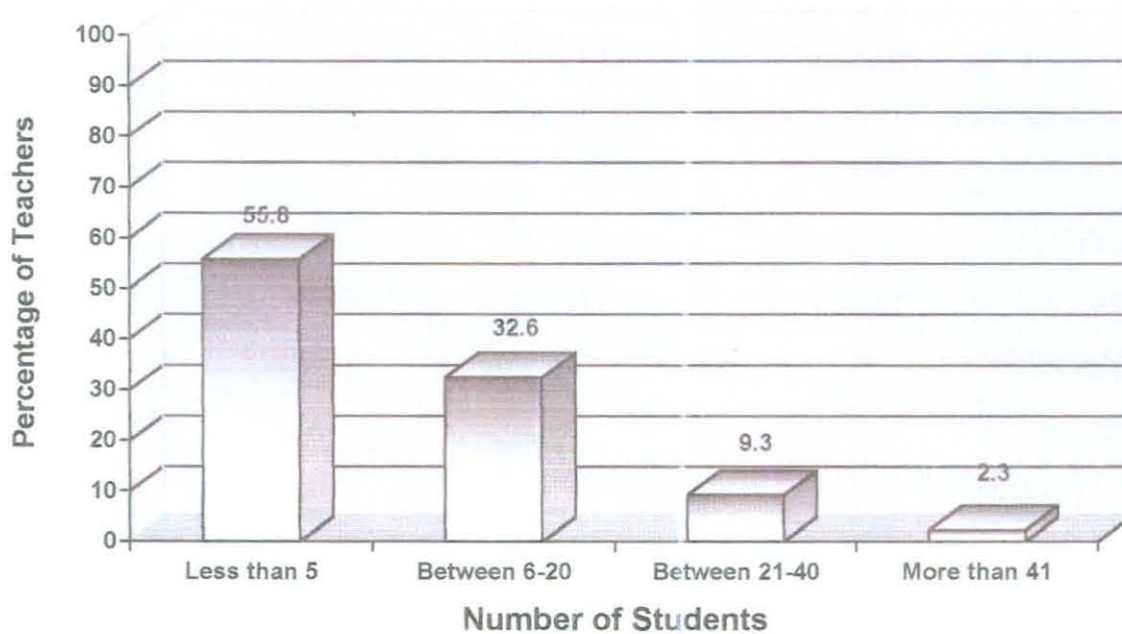


Figure 3.5: Experience with Children with LNFS

Figure 3.5 indicates that the majority of teachers (55.8%) had contact with less than 5 students, 32.6% had contact with between 6 and 20 students, 9.3% had contact with 21 and 40, and 2.3% had contact with more than 41 students. Teachers' rich experience with students with LNFS is important, as research indicates that practical experience with these students results in teachers feeling confident about assuming more responsibilities when educating these students.

In summary, the majority of the teachers was female, had obtained post matric qualifications and had experienced working with students with disabilities. However, 25.6% of the teachers had no post matric qualification, while 55.8% had limited experience teaching students with LNFS. This was supported by Alant and Emmetts' (1995) finding that teachers of students with LNFS were the least experienced and least qualified teachers in schools. This tendency might reflect a situation in special education where the focus is primarily on "care" and not "education" (Calculator & Bedrosian, 1988) reflecting an underlying assumption that these children have little educational potential. Teachers are, therefore, required to be caring rather than educationally orientated. As highlighted in Chapter 2 this orientation has negative

implications for teachers' sense of self-efficacy as well as for their expectations of students.

3.5.3 Materials used in the study

As part of the study two video recordings had to be made of children with LNFS using two AAC devices. Videos had to be clear in demonstrating the communication devices whilst not providing information that could bias the impressions of the teachers in favor of either device.

3.5.3.1 Videotapes

Four videotapes were prepared and depicted cerebral palsied children with LNFS, interacting with a speaking adult female. Research trends indicate that video recordings of AAC users can be successfully utilized in investigations of attitudes (Table 3.1). The conversational samples were video recorded using a Sony Handicam LLD F355E with quality Sony videocassette tapes. The setting was the Occupational Therapy Room and was the same for all four samples.

The adult female voice was an occupational therapist from the school, who was familiar with both the children and two AAC techniques used in the video. The adult female was not visible, but her voice was heard.

The videotapes depicted a child communicating in two conditions viz. aided electronic (Alpha Talker 9) and an aided non-electronic (communication board) communication system. Each videotape began with a focus on communication symbols, which was gradually zoomed out to focus on the entire communication device. In each condition, the child was seated in his/her wheelchair at a table; the angle used in the video focussed primarily on the device and only the back of the child was visible.

The conversational sample comprised an interaction between the adult female and the child. The interaction comprised the adult female asking the child questions regarding school activities. Each recording was approximately 5 minutes long.

Table 3.3: Table showing the videotapes

No.	Child	Aid	Video Number
1	One	Communication board	1
2	One	Alpha Talker 9	3
3	Two	Communication board	2
4	Two	Alpha Talker 9	4

3.5.3.2 Children

The children used in the video were two athetoid cerebral palsy children with LNFS, attending the same school in Kwa-Zulu Natal. One of the children was a 7-year-old athetoid cerebral palsied boy, the other was an 11-year-old girl. Both children were from the same racial group as the teachers and both had limited use of their limbs and therefore made use of a head pointer for direct selection. They were judged, by their school speech therapist and occupational therapist, to be equally proficient in utilizing the communication board and an Alpha Talker 9.

3.5.3.3. Communication Board

A low technology communication board was utilised. The overlay used comprised black line drawing and graphic symbols (PCS) which were arranged on paperboard and covered in transparent plastic (Appendix D).

3.5.3.4 Alpha Talker 9

The Alpha Talker 9, a voice output communication aid, using digitized-recorded speech, was utilised. The voice of a male Occupational Therapy student was recorded, in English, in the designated area of the VOCA. The same overlay used for the communication board was used on the Alpha Talker 9.

Table 3.4: Criteria for developing video material

No.	Criteria	Motivation	Control
1.	Proficiency in using the device	The proficiency exhibited by a novice and experienced AAC user may influence teachers' attitudes towards the AAC device.	The speech and occupational therapist rated the students as equally proficient in using both the devices.
2.	Race	Research indicates that teachers' attitudes towards students are influenced by the racial grouping that a student belongs to. (Marwik, Marwik & Walker, 1978).	Children from the same racial grouping were selected.
3.	Angle of the video focussed on the device	Research indicates that teachers' attitudes are influenced by students' attractiveness. (Marwik, Marwik & Walker, 1978).	The angle of the video focused on the device and the back of the student in order to ensure that the variable of students' physical appearance did not influence teachers' attitude.
4.	Number of children	The monotony of watching the same child using two devices may have influenced attitudes	Two children with LNFS, each using both the AAC devices, were recorded. Hence, teachers were able to watch two different children using two different devices.
5.	Constant overlay	The overlay was kept constant, in order to control for the possible influence of differences in the characteristics of the graphic symbols on attitudes.	The overlays were kept constant for both children using both devices. The dimensions of the overlay were 27cm X 47cm, and comprised 38 PCS, and each symbol was 3.8cm x 3.8cm.

3.5.4 Equipment used in the study

The following equipment was employed in the making of the video recording and in showing the videos to the teachers.

Table 3.5: The equipment used in the study

No.	Equipment	Model
1	A video recording camera	Sony Handicam LLD F355E
2	Television	Blaupunkt
3	VCR	Sharp High Quality H80 HQ VAS
4	Tape Recorder	Sony
5	Video Cassette VCR	Sony Audio Tape Recorder
6	Audio Tape	Sony High Quality HEB

3.6 DEVELOPMENT AND DESCRIPTION OF SURVEY INSTRUMENTS

A survey instrument, comprising two parts, was developed for the purpose of this study. The survey comprised a questionnaire (Appendix A) and a Teacher Attitudinal Scale (TAS) (Appendix B). The survey aimed at determining attitudes towards children with LNFS using two AAC devices. A survey was the chosen instrument as it “provides a lot of information fairly speedily and allows speed of analysis (can be coded and edited quickly)” (Edwards & Talbot (1994, p. 25). Surveys have the added advantage of being suitable for use with a small sample and have been found to be appropriate in determining attitudes and have been employed as the standard method in obtaining data in all attitudinal studies (Table 2.1). In addition, the data were qualitative in nature and required statistical analysis to extract their meaning, allowing for the possible identification of relationships between data (Groenewald, 1986). An attitude is a personal opinion, and testing attitudes may arouse sensitive feelings. Surveys foster great co-operation and frankness with regard to sensitive studies (Huysmen, 1994). Thus, the final rationale for making use of a survey was its usefulness in relation to sensitive studies, such as this one.

3.6.1 The questionnaire

This was a short one-page questionnaire that had to be completed by the teacher, prior to watching the video. The eight-item questionnaire was based on the questionnaire utilised in Bormans' (1995) study. The questionnaire comprised close-ended questions with a number of options in order to reduce the length of time needed to complete the questionnaire. The focus of the question was on obtaining relevant biographical information regarding the teacher. For further details on the motivation for the specific areas included in the questionnaire see Table 3.7.

3.6.2 The TAS

A scale was developed to assess teachers' attitudes towards children with LNFS. The Teacher Attitudinal Scale towards AAC, developed by Soto (1997) served as a framework for developing the TAS. A summated scale or Likert type scale was used for this attitudinal survey, due to the multidimensional nature of the attitudes being measured (Katzenellenbogen *et al.*, 1991). A five point Likert scale of attitude measurement was employed as it allows the researcher to study possible patterns of attitudes that may exist (Oppenheim, 1973).

The TAS comprised 63 close-ended statements. Close-ended questions were used in the scale as this facilitates ease of completion and fosters greater co-operation from subjects (Rosenberg & Daly, 1993). Statements were positively and negatively worded in order to counteract acquiesce type of responses, thereby enhancing the construct validity of the TAS, and also reducing the bias of the scale (Oppenheim, 1994). The statements were randomly ordered, in each section, as suggested by Oppenheim (1973). These statements were grouped under 5 areas viz.:

- Teachers' perceptions on their own abilities;
- Teachers' perceptions of the child,
- Teachers' perception of classroom interaction;
- Teachers' perceptions on the AAC device;
- Teachers' perceptions on the communication interaction.

Statements were grouped into sets under the respective headings to facilitate ease of completion, increase reliability and provide consistency of results (Oppenheim, 1994). See Table 3.8 for further details on the development of the TAS.

Table 3.6: The Development of the Questionnaire

No.	Area	Reason for Inclusion of Question	Additional Information
1	Identifying Data Name of school, Gender of teacher, and Age	Age seems to be an important variable in influencing values or attitudes towards disability (Richardson, 1970).	It was decided to start the questionnaire by asking impersonal questions. The questions on the identifying data were close-ended questions with different categories.
2	Qualifications Highest educational qualification obtained	This variable was included to determine if teachers had special training in working with disabilities.	This was a close-ended question with different categories.
3	Experience with children with LNFS disability	Experience tends to result in a more stable sense of self-efficacy (Ross, 1994) in teachers. In addition, the relationship between teachers' characteristics i.e. gender, years of teaching experience, prior training and sense of self-efficacy, needs to be investigated (Gibson and Dembo, 1984, Prieto & Almauer, 1994).	A close-ended question with different categories was used.
4	Special Training	This variable was included to determine the nature of teachers' training, and the type of training.	A filter question was used as special training may not be applicable to all teachers.

Table 3.7: The Development of the TAS

No.	Area	Reasons for Inclusion	Examples
1	Teachers' perceptions of their own abilities.	Teachers' sense of self-efficacy has been found to be related to student achievement as well as teachers' willingness to implement novel instructional approaches (Ashton & Webb, 1986)	Appendix B, Section A
2	Teachers' expectations of the child.	Teachers' expectations influence teacher-student interactions, as well as subsequent student achievement (Brophy & Good, 1970).	Appendix B, Section B
3	Teachers' perceptions of classroom interactions.	Teachers play an important role in facilitating students' participation in classroom interactions (Beukelman & Mirenda, 1992).	Appendix B, Section C
4	Teachers' perceptions of the device.	Attitudes toward the device may influence interactions with a student and willingness to implement a device. In addition, it is important to determine teachers' attitudes towards devices in order to gain insight into the possible constraints of a device (Beukelman & Mirenda, 1992).	Appendix B, Section D
5	Teachers' perceptions on communication interactions.	Light (1988) highlighted the importance of the communications functions of an AAC device. Teachers' perceptions of the students' ability to meet the communication interaction needs with an AAC device are important to facilitating classroom interaction and subsequently students' learning.	Appendix B, Section E

3.7 DATA COLLECTION PROCEDURE

A classic crossover design was employed, for the purpose of this study. The teachers were randomly assigned to the two groups. Group one and two comprised 21 and 22 teachers respectively. In order to ensure that teachers' attitudes were not influenced by the sequence of the presentation of the videos, the videos were presented in a manner characteristic of the classic crossover design, as evident in Table 3.8.

Group	Sequence	Videos
Group One	Communication board followed by Alpha Talker 9	Video 1: Child one using the communication board, followed by Video 4: Child two using the Alpha Talker 9.
Group Two	Alpha Talker 9 followed by communication board	Video 3 : Child two using the Alpha Talker 9, followed by Video 2: Child one using the communication board.

3.7.1 Preparation for fieldwork

Step 1: A principal at a school that has AAC users was contacted, in order to obtain information on AAC users who could be used in the video recordings (Appendix E).

Step 2: The permission of the parents of the children who would be used in the video recordings was obtained (Appendix F).

Step 3: The video recordings of two children using two AAC devices was made.

Step 4: Telephone contact with the principals of schools for the mentally disabled was made in order to make an appointment to meet the principal. At the meeting the principal was informed of the nature and importance of the study. In addition, the consent of the principal and teachers was obtained (Appendices G & H).

Step 5: A formal letter was sent to the schools to confirm the date and time for the data collection.

Step 6. The pilot study was conducted in order to determine the feasibility of the study.

3.7.2 Fieldwork

Step 1: Arrived at the school and organized the venue and seating arrangements. Ensured that the equipment was working properly.

Step 2: Teachers were randomly assigned to two groups.

Group 1 proceeded to the video room.

Group 2 remained in the staff room.

Step 3: The Research Phase

- Teachers were seated and provided with respondent numbers based on the alphabetically arranged register.
- The questionnaire and TAS were distributed. Teachers completed the questionnaire.
- The instructions, had been audio taped to ensure consistency. The instructions were: “You are going to watch a video of a student using a communication device called a communication board. After viewing the video you will be required to complete the TAS”.
- Teachers’ then watched the 5 minute video recording of child one using the communications board (Video 1). Thereafter they completed the TAS which took approximately 20 minutes.
- Teachers received their second instructions. “You are going to watch a second video of a student using a communication device called an Alpha Talker 9. After viewing the video you will be required to complete the TAS again”.
- Teachers watched the video of child two using an Alpha Talker 9 (Video 4). Thereafter, they completed the TAS.

- The questionnaires and TAS were collected.
- Teachers returned to the staff room.
- The same procedure was followed for group one and two. In order to account for the sequence effect, however, a crossover in the presentations of videos was implemented. Therefore Group 2 viewed child one with the Alpha Talker 9 first (Video 3) followed by child two with the communications board (Video 2).
- The researcher coded the questionnaire and TAS. The encoded data was keyed into the computer for statistical analysis.

3.8 DATA ANALYSIS AND STATISTICAL PROCEDURES

All the data were coded on the questionnaire and TAS, in the predesigned column, marked "For Official Use". This researcher encoded the data, which were subsequently computerized for statistical analysis with the SAS program. The data were then analyzed using a variety of statistical procedures.

No.	Statistical Procedure	Motivation
1.	Descriptive Statistics	In order to describe the data, frequency distribution counts were calculated for all the variables on the questionnaire and TAS, percentages were determined and presented in tables and, mean scores and standard deviations were calculated and presented graphically.
2.	Carry-over Effect	This was investigated to determine whether teachers' attitudes towards the first viewing sequence were influenced by their attitudes towards the second viewing sequence.
3.	Non-parametric Wilcoxon Rank Sum	This was used to determine whether there was a difference in teachers' attitudes towards the two AAC devices, when the carry-over effect was present.
4.	Treatment Effect	This was used to determine whether teachers' attitudes differed as a function of the AAC device, when the carry-over effect was absent.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 INTRODUCTION

The results of this study are described and discussed, in this chapter, in accordance with the aims of the study as outlined in Chapter 3. A description of teachers' attitudes towards the communication board and Alpha Talker 9 is provided which is followed by a comparison of teachers' attitudes towards these devices.

4.2 TEACHERS' ATTITUDES TOWARDS THE COMMUNICATION BOARD AND ALPHA TALKER 9

Teachers' attitudes towards the two AAC devices are described and discussed in accordance with the TAS. The results of each section of the TAS are presented in a table, followed by a description and a discussion of the results. The sections of the TAS include:

- teachers' perceptions of their own abilities,
- teachers' expectations of students,
- teachers' perceptions of classroom interactions,
- teachers' perceptions of the device, and
- teachers' perceptions of students communication abilities.

4.2.1 Teachers' perceptions of their own abilities

Table 4.1 depicts teachers' perceptions of their own abilities in coping with a student with LNFS using the communication board and Alpha Talker 9. A total of six statements were used to ascertain teachers' perceptions of their own abilities as can be discerned from Table 4.1.

Table 4.1: Teachers' perceptions on their own abilities in coping with a student with LNFS using the communication board and Alpha Talker 9.

No.	Section	Device	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1	I would be able to teach this child.	Communication Board	32.6%	44.2%	18.6%	2.3%	2.3%
		Alpha Talker	32.6%	44.2%	16.3%	4.7%	2.3%
2	I would be able to teach this child to read.	Communication Board	20.9%	44.2%	23.3%	7.0%	4.7%
		Alpha Talker	9.3%	48.8%	25.6%	14.0%	2.3%
3	I would feel confident About Teaching this child.	Communication Board	39.5%	34.9%	23.3%	2.3%	-
		Alpha Talker	32.6%	44.2%	16.3%	4.7%	2.3%
4	I am trained to teach this child.	Communication Board	11.6%	23.3%	16.3%	39.5%	9.3%
		Alpha Talker	14.0%	20.9%	4.7%	51.2%	9.3%
5	I would need Extra training to teach this child.	Communication Board	62.8%	27.9%	-	7.0%	2.3%
		Alpha Talker	60.5%	37.2%	2.3%	-	-
6	I would be able to cope with this child in my class.	Communication Board	11.6%	34.9%	25.6%	16.3%	11.6%
		Alpha Talker	11.6%	34.9%	20.9%	18.6%	14.0%
7	I would Need an assistant if this child were in my class.	Communication Board	34.7%	41.9%	9.3%	9.3%	4.7%
		Alpha Talker	27.9%	44.2%	11.6%	11.6%	4.7%

The results of statements 1 to 3 indicate that teachers felt that they would be able to teach a student with LNFS using an AAC device. Hence, these teachers had a positive belief in their own ability to perform the necessary actions that would result in student learning and student acquisition of literacy skills. By contrast, however, the findings for statements 4 and 5 indicate that teachers felt that they were not trained to teach these students. Statements 4 and 5 served as a check against acquiesce type responses. The consistency of teachers' responses is a positive indicator for the reliability of the information obtained. The majority of the teachers (62.8% and 60.5%) perceived the need for extra training in order to teach a student with LNFS

using an Alpha Talker 9 and communication board respectively. Finally, statement 6 reveals that teachers were positive about their ability to cope with these students in their classrooms while statement 7 reveals that they perceived the need for an assistant.

Teachers' positive perceptions about their ability to teach these students, particularly to read, is promising. This attitude has important implications for the development of literacy skills for these students as Light & McNaughton, (1995) suggest that teachers' expectations and students' exposure to literacy activities are important for the acquisition of literacy skills. The acquisition of literacy skills for these students is vital, due to the fact that many AAC users have severe physical impairments that limit vocational options to those that require literacy skills rather than manual skills (Smith & Blischak, 1997). However, despite the importance of the development of literacy skills in these individuals, very few AAC users achieve functional literacy skills (Smith & Blischak, 1997; Alant & Emmett, 1995).

A possible explanation for poor literacy skills in this population, according to recent publications, may be the lack of exposure of AAC students to literacy activities that can facilitate functional reading and writing skills (Koppenhaver, Evans & Yoder, 1991; Light, Binger & Smith, 1994). Similar teaching trends were identified in the South African context, as 78% and 70% of teachers reported spending little to no time on reading and writing activities respectively (Alant & Emmett, 1995; Alant, 1999). Alant & Emmett (1995) investigated the communication and education of children with severe disabilities. Their study was conducted at schools for children with mental disabilities and used teachers as respondents. The teacher sample in their investigation was similar to those included in the current study, as they were primarily from historically under-served, peri-urban schools for children with mental disabilities. Although teachers perceived that they were able to teach these students literacy skills, the teaching environment has little focus on these skills. Hence, there appears to be a discrepancy between teachers' perceptions and the reality of the teaching context. This discrepancy may be attributed to the orientation of special education, which emphasises that teachers be caring rather than educationally oriented (Alant & Emmett, 1995). They found that 50% of teachers spent a fair amount of time on free

play, with 13% spending most or all of the time on free play. This is indicative of a less demanding teaching context for these students. This highlights the need for efficient teaching, something that is crucial to handicapped students whose development is behind that of their peers (Baine, 1990).

The need for teacher training is supported by the fact that teachers surveyed in this study had limited exposure to AAC. In addition, literature highlights the need for teacher training for the successful implementation of AAC within the school context (Baker, 1993). Similarly, Alant (1999) found that while teachers perceived students' with LNFS as having a desire to communicate, they did not use AAC techniques with these students. Instead, they relied on unaided techniques with these students. It is postulated that this reliance on unaided techniques may be attributed to teachers' limited knowledge of AAC. Furthermore, the results of the current study indicate that teachers perceived the need for training in order to teach these students, particularly those utilising an Alpha Talker 9. Hence, teachers' attitudes towards training varied as a function of the device, as more teachers felt the need for training with regard to the Alpha Talker 9. This may be attributed to the Alpha Talker 9 being a high technology device (Quist & Lloyd, 1997); teachers may feel threatened by the device, as they are not confident with technology (Baker, 1993).

4.2.2 Teachers' expectations of the child

Table 4.2 reflects teachers' expectations towards the student with LNFS using a Communication Board versus an Alpha Talker. A total of seven statements were utilised to ascertain teachers' expectations of the student.

Table 4.2: Teachers' expectations towards students with LNFS using a communication board versus an Alpha Talker 9

No.	Section	Device	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1	This child Wants to learn.	Communication Board	69.8%	25.6%	2.3%	2.3%	-
		Alpha Talker 9	62.8%	37.2%	-	-	-
2	This child will eventually learn to read.	Communication Board	20.9%	51.2%	18.6%	9.3%	-
		Alpha Talker	16.3%	58.1%	11.6%	11.2%	2.3%
3	This child is a quick learner.	Communication Board	16.3%	32.6%	9.3%	30.2%	11.6%
		Alpha Talker	9.3%	27.9%	16.3%	44.2%	2.3%
4	This child will need extra help to learn.	Communication Board	46.5%	39.5%	4.7%	2.3%	7.6%
		Alpha Talker	9.3%	2.3%	-	44.2%	44.2%
5	This child will be able to go to normal school.	Communication Board	4.7%	7.0%	9.3%	34.9%	44.2%
		Alpha Talker	32.6%	34.9%	20.9%	9.3%	2.3%
6	This child will eventually need a disability grant.	Communication Board	58.1%	23.3%	2.3%	9.3%	7.0%
		Alpha Talker	46.5%	37.2%	7.0%	4.7%	4.7%
7	This child will find a job one day.	Communication Board	32.6%	41.9%	11.6%	9.3%	4.7%
		Alpha Talker	18.6%	44.2%	16.3%	14.0%	7.0%

The results for statements 1 and 2 reveal that the majority of the teachers perceived the students as capable of acquiring literacy skills. Statements 3 and 4 reveal that teachers' perceptions of students' abilities to learn varied as a function of the device. 32.6% and 27.9% of the teachers perceived the student using the communication board and Alpha Talker 9 respectively as being able to learn quickly. By contrast,

however, 46.5% and 9.3% of the teachers felt that the students using the communication board and Alpha Talker 9 would need extra help to learn. Hence, teachers might have an underlying perception that students using the Alpha Talker 9 as more intelligent. This is supported by literature that indicates that high technology is positively perceived, due to its association with high intelligence (Alm,1991). Furthermore, this notion is supported by statement 5, which reveals that 34.9% and 7.0% of the teachers perceived the students using the Alpha Talker 9 and communication board respectively, as being able to attend regular schools. Finally, statements 6 and 7 reveal that teachers perceived these students as requiring a disability grant, although they felt that these students have potential for employment.

Teachers' positive expectations of these students have implications for student-teacher interaction and subsequently student performance (Parson *et al.*, 1982; Light & McNaughton, 1993). However, positive expectations alone are not sufficient to facilitate students' progress. Positive expectations coupled with appropriate learning experiences will enhance students' progress. While the teachers in this study had high expectations of students in terms of acquisition of literacy and motivation to learn, research indicated that students with LNFS spend most of their school time engaged in free play activities and spend very little time on reading and writing instruction (Alant, 1999). Hence, there is a vital need for teacher training to ensure that teachers are capable of providing students with appropriate learning experiences.

There is a need to improve the quality and effectiveness of teaching for these students as Alant & Emmett (1995) found that, currently, teachers do not expose students to activities that would enhance independent living. The current study found that most teachers felt these students would require a disability grant, which reveals an unexpressed perception that they do not really believe these students can live independently. In addition, this perception is a reflection of the situation in South Africa in which 99% of the disabled population are unemployed (Department of Health, 1994, Section 15). While teachers felt that these students could be employed, they also stated that these students would need a disability grant. Hence, it is postulated that while teachers expect these students would find employment, the type

of employment and remuneration would be limited, thereby making these students dependent on disability grants.

4.2.3 Teachers' perceptions of classroom interactions

Table 4.3 reflects teachers' perceptions of classroom interactions with a student with LNFS using a communication board and an Alpha Talker 9.

Table 4.3: Teachers' perceptions on classroom interactions with students with LNFS using a communication board and Alpha Talker 9.

No.	Section	Device	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1	This child would disturb others in class.	Communication Board	16.3%	18.6%	14.0%	39.5%	11.6%
		Alpha Talker	4.7%	32.6%	11.6%	32.6%	4.7%
2	This child would be able to answer questions in class.	Communication Board	25.6%	46.5%	7.0%	11.6%	9.3%
		Alpha Talker	16.3%	69.8%	2.3%	7.0%	4.7%
3	This child would be able to participate in class.	Communication Board	37.2%	34.9%	11.6%	11.6%	4.7%
		Alpha Talker	14.0%	69.8%	2.3%	14.0%	-
4	This child would be able to ask questions in class.	Communication Board	20.9%	37.2%	16.3%	9.3%	-
		Alpha Talker	11.6%	34.9%	27.9%	20.9%	4.7%
5	This child would be lonely in class.	Communication Board	-	20.9%	23.3%	37.2%	18.6%
		Alpha Talker	2.3%	18.6%	20.9%	44.2%	14.0%
6	This child would be isolated from participating in class.	Communication Board	7.0%	9.3%	11.6%	53.5%	18.6%
		Alpha Talker	4.7%	14.0%	9.3%	55.8%	16.3%
7	This child would be able to tell a story.	Communication Board	16.3%	39.5%	14.0%	16.3%	14.0%
		Alpha Talker	16.3%	39.5%	11.6%	20.9%	11.6%

The results for statement 1 reveal that teachers perceived students using the Communication Board as less disruptive to the class. Teachers were divided, however, regarding the student using the Alpha Talker 9 with an equal percentage (i.e. 32.6%) perceiving the students as a disturbance and not a disturbance. It is postulated that the presence of the voice output may contribute to teachers perceiving the Alpha Talker as a disturbance. This could indicate an underlying perception that students need to be quiet in class. Statements 2, 3 and 4 reveal that teachers perceived students as being able to participate in class. 69.8% of the teachers perceived the student using the Alpha Talker as being able to answer questions and participate in class as opposed to 46.5% and 34.9% of the teachers for the students using the Communication Board. Statements 5 and 6 revealed that students using either device would not be isolated in class. These statements served to check against acquiesce type responses. The consistency of the teachers' responses is a positive indicator of the reliability of the information obtained. Finally statement 7 reveals that teachers perceived these students as being able to tell a story and, therefore, to participate in class academically and socially.

Classroom participation has important positive implications for social and academic development of these students within the classroom context (Pierce & McWilliams, 1993). While teachers perceive that students are able to participate in class, research indicates that teachers adopt altered patterns of interaction with students with LNFS (Beveridge & Hurrell, 1980; Popich & Alant, 1997).

AAC should facilitate interactions within the classroom setting. However, teachers' perceptions that the Alpha Talker 9 as a disturbance could indicate an underlying perception that these students should be quiet in class. This is in contrast with literature that highlights the importance of interactions to student learning (Ashton & Webb, 1986). In addition, the ability to answer questions in class is important as teachers use the questioning technique to stimulate thought, maintain control, provide repetition and emphasise central issues (Camp, 1993). Questioning also has an influence on the amount of learning that takes place (Cicognanvi & Zani, 1992). The need for training is highlighted as teachers need to be trained in terms of the importance of classroom participation in facilitating student learning and the

importance of providing appropriate communication opportunities for these students in class.

4.2.4 Teachers' perceptions of the device

Table 4.4 depicts teachers' perceptions of the communication board and Alpha Talker⁹. A total of eight statements were used to ascertain teachers' perceptions of the device.

Table 4.4: Teachers' perceptions of students with LNFS using a communication board and an Alpha Talker ⁹.

No.	Section	Device	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1	The way this child 'talks' is preventing him from progressing at school.	Communication Board	7.0%	14.0%	18.6%	41.9%	18.6%
		Alpha Talker	9.3%	20.9%	4.7%	55.8%	9.3%
2	The way this child 'talks' is helping him progress at school.	Communication Board	37.2%	44.2%	9.3%	7.0%	2.3%
		Alpha Talker	14.0%	53.1%	11.6%	9.3%	7.0%
3	The way this child 'talks' is preventing him from speaking.	Communication Board	11.6%	7.0%	18.6%	41.9%	20.9%
		Alpha Talker	7.0%	18.6%	23.3%	39.5%	11.6%
4	The way this child 'talks' helps others to communicate with him.	Communication Board	32.6%	55.8%	4.7%	4.7%	2.4%
		Alpha Talker	14.0%	67.4%	2.3%	14.6%	2.3%
5	The way this child 'talks' is easy to understand.	Communication Board	11.6%	44.2%	23.3%	11.6%	9.3%
		Alpha Talker	16.3%	34.9%	11.6%	27.9%	16.3%
6	This child takes too long to talk.	Communication Board	4.7%	60.5%	9.3%	18.6%	7.0%
		Alpha Talker	11.6%	57.2%	9.3%	20.9%	7.0%
7	The way this child 'talks' can only be used with trained teachers.	Communication Board	2.3%	25.6%	-	30.2%	41.9%

		Alpha Talker	44.2%	32.6%	7.0%	14.0%	2.3%
8	The way this child 'talks' can be used with other children in my class.	Communication Board	9.3%	48.8%	11.6%	16.3%	14.0%
		Alpha Talker	11.6%	39.5%	16.3%	18.6%	14.0%

Statements 1 and 2 served as a check against acquiesce type responses and revealed consistency of teachers' responses. Teachers perceived both AAC devices positively and did not consider them a hindrance to academic progress. Statement 3 revealed that teachers did not perceive the device as preventing the students from speaking. In fact, teachers felt the device was a means of facilitating communicating as revealed in statement 4. Statement 5 revealed different perceptions towards the AAC device where 44.2% of the teachers disagreed and strongly disagreed with the statement regarding the Alpha Talker 9, as compared to 20.9% for the communication board. Hence, the VOCA option was not perceived more positively. Statement 6 revealed that teachers perceived both devices as time consuming. Statement 7 revealed that teachers perceived the need for training, particularly for the Alpha Talker. The need for training for the Alpha Talker was also evident in Section 4.2.1. Finally, statement 8 revealed those teachers who perceived both devices as having a wider application and, therefore, appropriate for other students in their classes. This finding is relevant as 44.2% had experience with between 5 and 41 students with LNFS, as is evident in Figure 3.5 (Methodology).

The results revealed that teachers perceived both the devices positively in terms of promoting academic success and enhancing students' communication abilities. Teachers' perceptions of devices being time consuming is supported by literature which indicates that one of the major difficulties associated with aided communication is a slower rate of communication (Quist & Lloyd, 1997). In addition, the Alpha Talker was perceived as being unintelligible, which is a disadvantage of VOCA's identified in the literature (Musselwhite & St Louis, 1988). It is postulated that the voice may have been foreign to the teachers, resulting in its perceived unintelligibility. Furthermore, it is postulated that the teachers were inexperienced in listening to voice output technology and, therefore, considered it unintelligible. These findings, together with the fact that the Alpha Talker 9 was

unintelligible. These findings, together with the fact that the Alpha Talker 9 was perceived as a disturbance (Section 4.2.4), could reflect a certain intolerance or apprehension towards the device. This would serve to indicate the need for teacher training regarding the interactive advantages of VOCA.

4.2.5 Teachers' perceptions of communication abilities

Table 4.5 depicts teachers' perceptions of the communication interactions of these students. A total of six statements were used to obtain teachers' perceptions.

Table 4.5: Teachers' Perceptions on the communication interactions of students with LNFS using the communication board and an Alpha Talker 9.							
No.	Section	Device	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1	This child is able to ask for things that he needs.	Communication Board	25.6%	53.5%	9.3%	7.0%	4.7%
		Alpha Talker	25.6%	48.8%	7.0%	16.3%	2.3%
2	This child can start a conversation.	Communication Board	11.6%	51.2%	20.9%	9.3%	7.0%
		Alpha Talker	16.3%	41.9%	14.0%	16.3%	11.6%
3	This child will have difficulties in developing personal relationships.	Communication Board	9.3%	14.0%	23.3%	39.5%	14.0%
		Alpha Talker	2.3%	23.3%	18.6%	46.5%	9.3%
4	This child is impolite.	Communication Board	2.3%	14.0%	20.9%	39.5%	23.3%
		Alpha Talker	2.3%	11.6%	25.6%	39.5%	20.9%
5	This child is well mannered.	Communication Board	20.9%	44.2%	20.9%	11.6%	2.3%
		Alpha Talker	25.6%	48.8%	20.9%	4.7%	-
6	This child has difficulty in sharing information with others.	Communication Board	14.0%	16.3%	20.9%	39.5%	9.3%
		Alpha Talker	4.7%	34.9%	11.6%	37.2%	11.6%

The results for statements 1, 2 and 3 revealed that teachers perceived the students using either device positively in terms of their ability to ask for things, initiate conversations share information and develop personal relationships. In addition,

statements 4 and 5 revealed that teachers perceived the students as well mannered and polite. These statements revealed consistency of teachers' responses. A high percentage of teachers were uncertain, with between 20.9% and 25.6% of the teachers being uncertain about whether these students were well behaved. Finally, statement 6 revealed that teachers perceived that the student using the communication board would not have difficulties in sharing information. Teachers were divided however, in their perceptions towards a student using the Alpha Talker 9 with 34.9% of the teachers agreeing and 37.2% disagreeing with the statement.

The results reveal that teachers had positive perceptions of the students' communication needs. This has important implications, as the aim of the AAC intervention is not only to meet students' learning needs but also to meet their communication needs in order to develop their fullest potential (Musselwhite & St. Louis, 1988) as AAC facilitates classroom interaction and subsequently students' learning.

While teachers were positive about these students, they perceived that students using the Alpha Talker 9 would have difficulties sharing information. This may be attributed to the reduced intelligibility of the voice output as discussed in Section 4.2.4. In addition, teachers were uncertain about the behaviour of students. This may be indicative of a perception that AAC users are more demanding, due to their increased communicative competence. This competence may have been perceived as potentially changing the dynamics of the classroom as students would not be passive and, therefore, well behaved. Hence, teachers may be unsure about these students' behaviour. The underlying perception that VOCA are not necessarily perceived more positively than low technology is highlighted again. This may be attributed to low technology devices having more appeal, in terms of appropriateness and acceptability of the technology, to their peri-urban context or communities.

4.3 COMPARISON OF TEACHERS' ATTITUDES TOWARDS THE COMMUNICATION BOARD AND ALPHA TALKER 9

In order to make possible a comparison of teachers' attitudes towards the two AAC devices, a classic crossover design was used. The crossover design allows one to make comparisons employing:

- The carry-over test, which enables one to ascertain whether the first viewing (group 1 video 1; group 2 video 2) influenced the second viewing (group 1 video 2; group 2 video 1);
- The treatment effect, which enables one to ascertain the influence of the videos (devices) on teachers' perceptions. This can only be calculated if the carry-over test yields statistically insignificant p values.

4.3.1 Carry-over test

The N par 1 Procedure–Wilcoxon scores (rank sums) of the SAS statistical procedure were calculated for each section. A statistically significant crossover effect is indicated when $p \leq 0,05$.

Table 4.6: P value for carry-over test.

No.	Section	P Value	Statistical Significance
1	Section A Teachers' perceptions of their own abilities	0,0103	Present
2	Section B Teachers' perceptions of the child	0,8937	Absent
3	Section C Teachers' perceptions of classroom interactions	0,3494	Absent
4	Section D Teachers' perceptions of the AAC device	0,6527	Absent
5	Section E Teachers' perceptions of the communication interactions	0,6012	Absent

The results reveal that a statistically significant carry-over effect was present for Section A i.e. teachers' perceptions of their own abilities. This implies that the first viewing influenced teachers' perceptions of the second viewing. Since the teachers included in the study had limited exposure to AAC, it is postulated that exposure to the first video may have provided them with an unintentional training in AAC, which resulted in a change in their perceptions' regarding their sense of self-efficacy. Hence, the treatment effect cannot be discerned for Section A. Therefore, a non-parametric

test was used to compare teachers' attitudes towards the two AAC devices for Section A.

The non-parametric Wilcoxon rank sum test was used to compare teachers' attitudes towards the two AAC devices for Section A. The level of significance was $p \leq 0.05$. The result revealed a p value of 0,2684, which is not statistically significant. Hence, there was an insignificant difference in teachers' attitudes towards the two AAC devices.

4.3.2 The influence of the device on attitudes

The treatment effect was calculated for Sections B to E, as the carry-over effect was statistically non-significant, as discussed in Section 4.3.1. A p value of $\leq 0,05$ is considered statistically significant for the treatment effect. Table 4.7 illustrates the p value for treatment effect for Section B to Section E.

No.	Section	P Value	Statistical Significance
1	Section B Teachers' perceptions of the child	0,4713	Absent
2	Section C Teachers' perceptions of classroom interactions	0,9320	Absent
3	Section D Teachers' perceptions on the AAC device	0,1042	Absent
4	Section E Teachers' perceptions on communication interaction abilities	0,3872	Absent

The result reveals no statistically significant difference in teachers' attitudes towards the two AAC devices. Hence, both devices were perceived similarly by the teachers. However, on comparison of the mean score for each group towards each device, there is a tendency for teachers to perceive the Alpha Talker[®] more positively than the communication board. This tendency is evident as both groups have a higher mean for the Alpha Talker[®] than the communication board, which is evident in Figure 4.1 to Figure 4.4.

The results of Figure 4.1 to Figure 4.4 revealed that there is a tendency for teachers to perceive the Alpha Talker⁹ more positively than the communication board, albeit not significantly. The presence of high technology VOCA, despite its interactional advantages, did not significantly influence attitudes of the teachers in this study. The results of the current study are in contrast with attitudinal investigations, conducted in the United States of America, which revealed more positive attitudes towards high technology devices with VOCA (Coxson & Mathy-Laikko, 1984; Gorenflo & Gorenflo, 1991).

It is postulated that both technologies were perceived as similar, that is as a means of facilitating communication. High technology devices were not necessarily perceived more positively, it is postulated, due to their being perceived by some teachers as unintelligible and a disturbance. Finally, the low technology devices may have been perceived as more acceptable, affordable and appropriate to their peri-urban context, as it is possible for teachers to make the devices themselves at a low cost. The high technology device may have been perceived as uneconomical, in terms of the initial cost and maintenance and repair of the device, which is considerations that are particularly relevant in South Africa.

4.4 SUMMARY

This chapter described and discussed the results of this study. The results revealed that the majority of the teachers had positive attitudes toward students with LNFS using the communication board and Alpha Talker ⁹. While there was no statistical difference in teachers' attitudes toward the devices there was a tendency for teachers to perceive the Alpha Talker⁹ more positively than the communication board. The implications of teachers' attitudes toward their sense of self-efficacy, expectations of students, student-teacher interactions, and classroom and communication interactions, were discussed with reference to the current context of special education in South Africa.

CHAPTER 5

SUMMARY AND CONCLUSION

5.1 INTRODUCTION

This chapter provides a short summary of the results of this study and an integrated discussion of the results. The clinical implications of the results are followed by a critical evaluation of the study. Finally, recommendations for further research are made.

5.2 SUMMARY OF RESULTS AND INTEGRATION OF RESULTS

The purpose of this study was to describe the attitudes of teachers towards students with LNFS using an Alpha Talker[®] and communication board. The data was obtained through the TAS, which was completed by the teachers after watching a video recording of students using the devices.

The importance of determining teachers' attitudes has been highlighted in the literature, which emphasised the role teachers play in student-teacher interaction, student learning and the successful implementation of AAC within the classroom context. In addition, teachers' attitudes towards AAC devices may also influence whether AAC devices are utilised in the classroom. It is important to understand teachers' attitudes, as their negative attitudes may result in the lack of use of AAC devices within the classroom.

In South Africa, as in other developing countries, the principles of affordability and acceptability, amongst others, are central concerns when implementing services. Understanding teachers' attitudes would make possible the implementation of services

in a way that is sensitive to teachers, as teachers play a vital role in the implementation of AAC in the classroom.

The result of the current study revealed that the majority of the teachers had a positive perception of students with LNFS using either AAC devices. Teachers had positive attitudes in terms of their expectations for these students as well as these students' communication interactional ability and interaction skills within the classroom setting. While teachers had positive attitudes about their ability to teach these students, they perceived a need for training. The need for training, particularly of the communication partners of AAC users, has been highlighted in the literature (Baker, 1993; Berhramann, 1995; Tanchat & Swayer, 1998).

Teachers' positive attitudes have promising implications for the successful implication of AAC within these schools. However, there is an apparent mismatch between teachers' attitudes and the reality of what occurs in the special education context. Alant and Emmett (1995) found in their study that the majority of teachers at schools for the mentally disabled spend a fair amount of time on free play while most teachers spend little or no time on teaching literacy skills. Their findings reflect a teaching context that is more oriented towards free play with little exposure to actual skills training.

It is clear that the general exposure of these students to activities, which could enhance independence, could be improved on by spending more time on such activities and by improving the quality and effectiveness of teaching. Hence, more professional and in-service support is required to facilitate teaching effectiveness (Alant, 1999). This in turn could contribute to greater adaptation of the curricula to suit the needs of students. It is postulated that the suggested mismatch between teachers' attitudes and the reality of the teaching situation may be attributed to teachers being sensitive to the social desirability of having positive attitudes towards the disabled. This highlights the difficulty with measuring attitudes, since we must rely on inferences, it being impossible to measure attitudes directly (Henerson, Morris & Cubbun, 1987).

An unexpected finding of this study was that teachers' attitudes towards the AAC devices did not vary significantly, although there was a tendency to perceive the Alpha Talker 9 more positively. This finding was in contrast to research trends, which revealed more positive attitudes toward high technology devices (Gorenflo & Gorenflo, 1991). This may be attributed to teachers in this study having no prior exposure to AAC and, therefore, viewing both technologies as similar, that is, as a means of communication. Perhaps they perceived the mere introduction of an AAC device as a means of improving students' communication abilities (Mendes & Rato, 1996). Another explanation may be that high technology devices are perceived as uneconomical, in terms of the cost of purchasing the device as well as the sustainability of the device. Finally, teachers may be technophobic, due to limited exposure to technology and, therefore, did not necessarily view high technology more positively (Baker, 1993).

5.3 CRITICAL EVALUATION

- This study is an initial study of its kind in South Africa, as it describes the attitudes of teachers toward students with LNFS using AAC devices. It provides insight into teachers' perceptions of their own abilities, their expectations of these students and their communication and classroom interactional abilities, and finally their own perceptions toward the devices. The understanding of teachers' attitudes provides a basis from which to initiate service delivery. In addition, teachers' attitudes could be compared to the reality of the teaching context in schools for children with mental disabilities, as revealed by Alant and Emmett (1995). A mismatch between teachers' attitudes and the reality of the teaching context was suggested. It is postulated that this mismatch may be a reflection of the teachers' sensitivity to the social desirability of positive attitudes, particularly with the current political climate, which stresses positive attitudes towards the disabled. In addition, the difficulty of assessing attitudes is also apparent in this mismatch.
- Despite the constraints of measuring attitudes, the TAS provides a scale that enables one to ascertain teachers' attitudes. The TAS was based on theory and is,

therefore, considered valid in construction. However, the internal consistency of the TAS was not investigated. Finally, the TAS was easy to score as all the scales were filled out correctly.

- Teachers' attitudes were obtained after they had watched a video recording of the students. The video recording specifically focussed on the device and the back of the student. This angle enabled one to ensure that the physical appearance of the device did not influence teachers' attitudes.
- A methodological constraint of the study is that it was conducted at registered special schools in a certain region. Generalisations of these findings cannot, therefore, be made. However, the study provides research on one of the poorest areas in South Africa, which was historically under served.

5.4. CLINICAL IMPLICATIONS

- The most important finding of this study is that teachers have positive attitudes towards AAC. This positive attitude, as well as the fact that the majority of teachers have been exposed to students with LNFS, indicates that perhaps the implementation of AAC within this context will be considered positively by the teachers.
- While teachers revealed positive attitudes towards AAC, the need for training in AAC was identified. Furthermore, training is essential as teachers play a vital role in implementing and sustaining this service as there are no additional therapists to support them.
- Teacher training is vital, as these teachers had no previous exposure to AAC. Training would provide teachers with knowledge and reduce their anxiety when dealing with these students, thereby increasing their sense of self-efficacy (Mendes & Rato, 1996).

- The suggested mismatch, between teachers' attitudes and the reality as reflected in the teaching environment, reveals that perhaps teachers need to be re-educated in order to be critical of the quality of teaching they provide (Guma, 1992) and the skills required effectively to teach these students (Alant, 1999). Training can result in teachers better understanding the abilities of their students and can perhaps raise teachers' expectations of these students (Mendes & Rato, 1996)
- When implementing services, the principles of acceptability and appropriate technology are important. The finding of no statistically significant difference in teachers' attitudes toward the devices but a positive tendency toward the Alpha Talker[®] needs to be considered when implementing services.

5.5 RECOMMENDATIONS FOR FUTURE RESEARCH

The recommendations for future research are:

- Further development of the TAS in terms of determining the internal consistency of the measuring instrument utilising factor analysis.
- Training to determine whether teachers' perceptions of their own abilities become more critical, as the results of the current study suggests that teachers' attitudes contrasted with the reality of their teaching contexts. Teachers, for example, believed that they could teach students using AAC devices literacy skills even though, Alant & Emmett (1995) found, this activity was not stressed in their daily classroom activities. Perhaps if teachers were exposed to teaching sessions with these students, they would become more sensitive towards the skills required to teach these students.
- Research to delineate whether the type of VOCA used influences attitudes. Preferences in terms of natural and synthetic voices can be investigated. This is particularly relevant as most synthetic speech used in VOCA have a speech output with an accent that is foreign to South Africans. This foreign accent may influence intelligibility of the VOCA.

- A replication of this study on a more comprehensive scale to facilitate generalisation of results. Due to the presence of the carry-over effect, for Section A, it is recommended that future replicate studies have a constant time interval between the presentation of videos.

5.6 SUMMARY

This chapter summarised the results and discussion of the survey. This was followed by a critical evaluation of the study and its clinical implications. Finally, recommendations for future research were provided.

REFERENCES

Aiken, L.R. (1996). *Rating scales and checklists for evaluating behavior, personality and attitudes*. New York: John Wiley & Sons Inc.

Alant, E. (1999). Students with little or no functional speech in schools for students with severe mental retardation in South Africa. *Alternative and Augmentative Communication*, 15(2), 83-94.

Alant, E. & Emmett, T. (1995). HSRC *Breaking the silence: Communication and education for children with severe handicaps*. Pretoria: HSRC Publishers.

Alm, N. (1991). Issues in the research and development of technological aids in AAC. Reactant paper 1. In J. Brodin & E. Bjorck-Akesson (Eds.), *Methodological issues in research in AAC* (pp. 65-71). Stockholm: The Swedish Handicap Institute.

Allport, G.W. (1967). Attitudes. In M. Fishbein (Ed.), *Attitudes and Measurement* (pp.2-12). New York: John Wiley and Sons.

Archer, L.A. (1977). Blissymbolics: A nonverbal communication system. *Journal Of Speech and Hearing Disorders*, 42(14), 568-579.

Ashton, P & Webb, R. (1986). *Making a difference: Teachers sense of self efficacy and student achievement*. New York: Longman.

Baine, D. (1988). *Handicapped children in developing countries: Assessment, curriculum and instruction*. Canada: University of Alberta Printing.

Baine, D. (1990). Curricula used with handicapped children in developing countries. Issues and recommendations. In W.I. Fraser (Ed.), *Key issues in mental retardation research* (pp.310-315). New York: Routledge.

- Baker, L.A. (1993). Description and analysis in classroom talk. *Journal of Classroom Interaction*, 27(2), 9-14
- Basil, C. (1992). Social interaction and learned helplessness in severely disabled children. *Alternative Augmentative Communication*, 8(3), 188-199.
- Beck, R.A. & Dennis, M. (1996). Attitudes of children towards a similar-aged peer who uses augmentative communication. *Alternative Augmentative Communication*, 12(2), 78-87.
- Behrmann, M.M. (1995). Assistive technology training. In A.M. Cook & S.M. Hussey (Ed.), *Assistive technology: Principles and practice* (pp.170-192). Missouri: Mosby Year.
- Beukelman, D.R. (1991). Magic and cost of communicative competence. *Alternative and Augmentative communication*, 7(1),2-9.
- Beukelman, D.R. & Mirenda, P. (1992). *Alternative and augmentative communication: Management of severe communication disorders in children*. Baltimore: Paul H. Brooks Publishing.
- Beveridge, M. & Hurrell, P. (1980). Teachers' responses to the initiations of ESN(S) children. *Journal of Child Psychology and Psychiatry*, 21 (1), 175-181.
- Beveridge, M., Ramsden, G. & Leudar, I. (1989). *Language and communication in mentally retarded children*. London: Chapman & Hall.
- Blackstone, S.W. (1986), Augmentative communication: An introduction. *American Speech-Language-Hearing Association*, U.S.A.

- Blackstone, S.W. (1989). Augmentative communication services in the schools. *American Speech Hearing Association*, 31, 61-63.
- Blockberger, S., Armstrong, R.W., O'Connor, A & Freeman, R. (1993). Children's attitudes towards a non-speaking child using various augmentative and alternative communication techniques. *Alternative and Augmentative Communication*, 9(4), 243-250.
- Borman, J. (1995). The prevalence of non-speaking children in schools for children with mental handicaps in the Pretoria area: A demographic perspective on communication and related behavior. *Unpublished master's thesis, Department of Communication Pathology, University of Pretoria.*
- Brophy, J.E. & Good, T.E. (1970). Teachers communication of differential expectations for children's classroom performance: Some behavioral data. *Journal of Educational Psychology*, 61 (5), 365-374.
- Burd, L., Hammes, K., Bornhoeft, D., & Fisher, W. (1988). A North Dakota prevalence study of nonverbal school-age children. *Language, Speech, and Hearing Services in Schools*, 19 (4), 371-373.
- Busch, C.R. (1993). Functional outcome: Reimbursement issues. *Clinical Aphasia*, 21,73-78.
- Calculator, S.N. (1988). Promoting the acquisition and generalization of conversational skills by individuals with severe disabilities. *Alternative and Augmentative Communication*, 4 (2), 94-103.
- Calculator, S.N. & Bedrosian, L. (1988). *Communication assessment and intervention for adults with mental retardation*. Toronto: A College-Hill Publication.

Calculator, S. N. & Dollaghan. C. (1982). The use of communication boards in residential setting: An evaluation. *Journal of Speech & Hearing Disorders*, 47, 281-287.

Camp, W.G. (1993). Improving your teaching: Questioning techniques. *The Agricultural Education Magazine*, 66, 17-23.

Carney, J & Dix, C. (1992). Integrating assistive technology in the classroom and community. In G. Church & S. Glennen (Eds.), *Handbook of assistive technology* (pp.207-240). California: Singular Publishers.

Cavalier, A. (1987). The application of technology in the classroom and work place: Unvoiced premise and ethical issues. In A. Gartner & T. Joe (Eds.), *Images of the disabled, disabled images* (pp.129-141). New York: Praeger.

Cicognani, E. & Zani, B. (1992). Teacher children interaction in a nursery school: An exploratory study. *Language and Education*, 6 (1), 1-12.

Coxson, L & Mathy-Laikko, P. (1983). Listener reactions to three non-vocal communication outputs. *Unpublished master's thesis: Washington State University*.

Crabtree, M., Mirenda, P & Beukelman, D. (1990). Age and gender preferences for synthetic and natural speech. *Alternative and Augmentative Communication*, 61 (4), 256-261.

Dalton, B.M. & Bedrosian, J.L. (1989). Communicative performance of adolescents with severe speech impairment: Influence of context. *Journal of Speech and Hearing Disorders*, 54, 403-421.

Department of Health. (1994). The health priorities of the Reconstruction and Development programme. *Unpublished Document: Pretoria*.

Dooley, D. (1995). *Social research methods*. New Jersey: Prentice Hall Inc.

Edwards, H. & Talbot, R. (1994). *The hard-pressed researcher: A research handbook for caring professionals*. London: Longman.

Fuller, D.R. & Lloyd, L.L..(1997). AAC model and taxonomy. In L.L.Lloyd, D.R. Fuller & H.H.Arvidson (Eds.), *Augmentative and alternative communication: A handbook of principles and practice*. Massachusetts: Allyn and Bacon.

Gibson, S. & Dembo, M.H. (1984). Teacher efficacy: A construct validation. *Journal Of Educational Psychology*, 76 (4), 569-582.

Goodman, L & Kroc, R. (1981). A classroom sign communication programme for the severely handicapped. *Language, Speech and Hearing Services in Schools*, 12 (4), 233-239.

Greenberg, K.H. & Woodside, M.R. (1994). Differences in the degree of mediated learning and classroom interaction structure for trained and untrained teachers. *Journal of Classroom Interactions*, 29 (2), 1-9.

Groenewald, J.P. (1986). *Social research: Design and analysis*. Stellenbosch: University Publishers & Booksellers.

Gorenflo, C.W. & Gorenflo, D.W. (1991). The effects of information and AAC techniques on attitudes towards non-speaking individuals. *Journal of Speech and Hearing Disorders*, 34 (1), 19-26.

Guskey, T.R. (1998). Teacher efficacy, self concept and attitudes towards the implementation of instructional innovation. *Teaching and Teacher Education*, 4 (1), 63-69.

Gwala-Ogisi, N. (1982). Special Education in South Africa. In M. Nkomo (Ed.), *Pedagogy of domination: Towards a democratic education in South Africa* (pp.271-288). New Jersey: Africa World Press.

- Guma, M. (1992). Special education for a whole generation of politically constructed learning disabled: Republic of South Africa. *International Journal of Special Education*, 7 (2), 133-138.
- Henerson, M.E., Morris, L.L. & Cubbun, L.T.F. (1987). *How to measure attitudes*. California: Sage Publications.
- Howell, D. C. (1995). *Fundamental statistics for the behavioral sciences*. USA: Internal Thamsan publishing.
- Huysmen, R.D. (1994). *Methodology for the social and behavioral sciences*. Pretoria: Southern Book Publishers Co.
- Jones, B. & Kenward, M.G. (1989). *Design and analysis of crossover trials*. London: Chapman and Hall.
- Katzenellenbogen, J., Joubert, G & Yach, D. (1991). *Introductory manual for epidemiology in Southern Africa*. Tygerberg: Medical and Research Council.
- Kagan, D.M. (1992). Implications of research on teachers belief. *Educational Psychologist*, 27 (1), 65-90.
- Kannenber, P., Marquardt, T.P. & Larson, J. (1988). Speech output of two voice output communication aids. *Journal of Communication Disorders*, 21, 11-20.
- Kraat, A.W. (1987). *Communication interaction between aided and natural speakers: State of the art report*. (2nd ed.). University of Wisconsin: Madison WI
- Koppenhaver, D.A., Evans, D.A. & Yoder, D.E. (1991). Childhood reading and writing experiences of literate adults with severe speech and motor impairments. *Alternative and Augmentative Communication*, 7, 20-33.

- Landry, S.M. & Lovelan, K. A. (1989). The effect of social context on functional communication skills of autistic children. *Journal of Autism and Developmental Disorders*, 19 (2), 283-294.
- Larsen, N. (1975). The influence of teachers' expectations on the school performance of handicapped children. *Focus on Exceptional Children*, 6 (8), 1-4.
- Light, J. (1988). Interaction involving individuals using AAC systems: State of the art and future directions. *Alternative and Augmentative Communication*, 4(2), 66-72.
- Light, J., Binger, G & Smith, A. (1994). Story reading interactions between pre-schoolers who use AAC and their mothers. *Augmentative and Alternative Communication*, 10 (4), 255-268.
- Light, J. & McNaughton, D. (1993). Literacy and AAC: The expectations and priorities of parents and teachers. *Topics in Language Disorders*, 13(2), 33-46.
- Lloyd, L.L., Fuller, D.R. & Arvidson, H.H. (1997). *Alternative and augmentative communication: A handbook of principles and practices*. Massachusetts: Allyn & Bacon.
- Locke, P.A. & Mirenda, P. (1992). Roles and responsibilities of special education teachers serving on teams delivering AAC services. *Augmentative and Alternative Communication*, 8(3), 200-209.
- Locke, P.A. & Piche, P. (1994). Inclusion + technology = friendships. *Communication Outlook*, 16(4), 5-8.
- Malamah-Thomas, A. (1988). *Classroom interaction*. London: Oxford University Press.
- Malapka, W.G. & Sakui, W. (1992). Educational planning and special education in developing countries: A match or mismatch. *International Journal of Special Education*, 7 (2), 188-193.

- Marwik, K.L., Marwik, S.J. & Walker, F. (1978). Effects of students' race and physical appearance on teachers' judgements of transgressions. *Journal of Educational Psychology*, 70,911-915.
- Matas, J.A., Mathy-Laikko, P., Beukelman, D.R. & Legresely, K. (1985). Identifying the non-speaking population: A demographic study. *Alternative Augmentative Communication*, 1 (1), 17-31.
- Mendes, T & Rato, J. (1996). From system to communication: Staff training for attitude change. In S. Von Tetchner & M. Jensen (Eds.), *AAC European Perspectives* (pp. 342-352). London: Whurr Publishers.
- McNaughton, S. & Lindsay, P. (1995). Approaching literacy with AAC graphics. *Alternative and Augmentative Communication*, 11(4), 212-217.
- Mirenda, P & Donnellan, A. (1986). Effects of adult interaction style on conversational behavior in students with severe communication problems. *Language, Speech and Hearing Services in Schools*, 17 (2), 126-139.
- Mirenda, P., Eicher, D & Beukelman, D.R. (1989). Synthetic and natural speech preferences of male and female listeners in four age groups. *Journal of Speech and Hearing Research*, 32 (1), 175-183.
- Musselwhite, C.R. & St Louis, K.W. (1988). *Communication programming for persons with severe handicaps: vocal and augmentative strategies*. Toronto: Little Brown and Company.
- National Health Plan. (1994). *A National Health Plan For South Africa*. Johannesburg: ANC.
- Olswang, L.B. Kriegsmann, E. & Mastergeorge, A. (1982). Monitoring children's treatment progress. *Language, Speech and Hearing Services in Schools*, 13, 202-222.

Oppenheim, A.N. (1973). *Questionnaire design and attitude measurement*. London: Heinmann Educational Books Ltd.

Oppenheim, A.N. (1994). *Questionnaire design, interviewing and attitude measurements*. London: Printa Publishers.

Parsons, J.E., Kaczala, C.M. & Meece, J.L. (1982). Socialization of achievement attitudes and beliefs: Classroom influences. *Child Development*, 53 (2), 322-339.

Parsons, J.E., Adler, T.F & Kaczala, E.M. (1982). Socialization of achievement attitudes and beliefs: Parental influences. *Child Development*, 53 (2), 310-321.

Pierce, L. & McWilliam, D. (1973). Emerging literacy and children with severe speech and physical impairments: Issues and possible intervention strategies. *Topics in Language Disorders*, 13 (2), 7-56.

Prieto, L.R. & Altmaier, E.M. (1994). The relationship of prior training and previous experience to self-efficacy amongst graduate teaching assistants. *Research in Higher Education*, 35 (4), 481-497.

Popich, E. (1997). The impact of a digital speaker on a teachers' interaction with a non- – speaking child in the classroom situation. *Unpublished study, Department of Communication Pathology, University of Pretoria*.

Popich, E. & Alant, E. (1997). Interactions between a teacher and the non-speaking as well as speaking children in the classroom. *The South African Journal of Communication Disorders*, 44, 31-40.

Quist, R.W. & Lloyd, L.L. (1997). High Technology. In L.L.Lloyd, D.R. Fuller & H.H. Arvidson. (Eds.), *Alternative and augmentative communication: A handbook of principles and practices* (pp. 137-168). Massachusetts: Allyn & Bacon.

Rahavendra, P. & Allen, G.D. (1993). Comprehension of synthetic speech with three text to speech contexts using a sentence. *Alternative and Augmentative Communication*, 9, 126-133.

Richardson, S.C. (1970). Age and sex differences in values towards physical handicaps. *Journal of Health and Social Behavior*, 4, 207-214.

Ross, J.A. (1992). Teacher efficacy and the effect of coaching on student achievement. *Canadian Journal of Education*, 17, 51-65.

Rosenburg, K.M. & Daley, H.B. (1993). *Foundations of behavioral research: A basic question approach*. Orlando: Holt, Rinehart & Winston Inc.

Schepis, M.M. & Reid, D.H. (1995). Effects of voice output communication aid on interactions between support personnel and an individual with multiple disabilities. *Journal of Applied Behavior Analysis*, 28 (1), 73-77.

Shavelson, R.J. (1983). Review of research on pedagogical judgements, plans, and decisions. *The Elementary School Journal*, 4 (1), 393-413.

Smith, M.M. (1994). Speech by any other name: The role of communication aids in interactions. *Journal of Disorders in Communication*, 29, 225-240.

Smith, M.M. & Blischak, D.M. (1997). Literacy. In L.L.Lloyd, D.R. Fuller & H.H. Arvidson (Eds.), *Augmentative and alternative communication: A handbook of principles and practice* (pp. 414-444). Massachusetts: Allyn & Bacon.

Stineman, M.G. (1988). Multidimensional assessment of assistive technology outcomes. In D.M. Gray, L.A. Quantrano & L.M. Lieberman (Eds.), *Designing and using assistive technology* (pp. 50-65). Baltimore: Paul H Brooks Publishing Company.

Soto, G. (1997). Special education teachers attitudes towards AAC: Preliminary survey. *Augmentative and Alternative Communication*, 13 (3), 186-197.

Tanchak, T.L. & Sway, C.M. (1998). Augmentative Communication. In D.M. Gray, L.A. Quantrane & M.L. Lieberman. (Eds.), *Designing and using assistive technology*. Baltimore: Paul H Brookes Publishing Company.

Tondman, J. & Alm, N. (1994). Computer-aided conversation: A prototype system for non-speaking people with physical disabilities. *Applied Psycholinguistics*, 15 (4), 45-73.

Todnem, G.R. (1994). The Quilt program assesses teacher and student change. *Journal of Staff Development*, 15 (4), 66-67.

Triandis, J.C. (1971). *Attitude and attitude change*. New York: John Wiley and Sons.

Wilson, A. J. & Silverman, H. (1991). Teachers' assumptions and beliefs about the delivery of services to exceptional children. *Teacher Education And Special Education*, 14 (3), 198- 206.

Zurroff, D.C. & Rotter, J.B. (1985). Historical and methodological concerns. In J.B. Dusek. (Ed.), *Teacher expectancies*. New Jersey: Lawrence Erlbaum Associates Publishers.

QUESTIONNAIRE

Instructions:

Kindly complete this confidential questionnaire. Kindly place your tick next to the most appropriate option. *Thank You.*

<p>1. Respondent Number: _____</p> <p>2. School: _____</p> <p>3. Group: _____</p> <p>4. Video Number: _____</p> <p>5. Gender: _____</p> <p>6. What is your highest educational qualification (Please tick where appropriate)</p> <p>Standard nine or lower <input type="checkbox"/></p> <p>A matric certificate <input type="checkbox"/></p> <p>Teaching diploma <input type="checkbox"/></p> <p>Teaching degree <input type="checkbox"/></p> <p>Other (please specify) <input type="checkbox"/> _____</p> <p>7. How long have you been working with disabled children? (Please tick where appropriate)</p> <p>Less than one year <input type="checkbox"/></p> <p>1 - 3 years <input type="checkbox"/></p> <p>4 - 5 years <input type="checkbox"/></p> <p>More than 6 years <input type="checkbox"/></p> <p>8. Have you had additional training in working with disability? (Please tick where appropriate)</p> <p>No <input type="checkbox"/></p> <p>Yes <input type="checkbox"/></p> <p>If Yes, please specify _____</p> <p>9. How old are you? (Please tick where appropriate)</p> <p>Less than 20 years old <input type="checkbox"/></p> <p>Between the ages of 20 - 30 <input type="checkbox"/></p> <p>Between the ages of 30 - 40 <input type="checkbox"/></p> <p>Above 50 <input type="checkbox"/></p> <p>10. How many children, with little or no speech (less than 15 understandable words), have you worked with? (Please tick where appropriate)</p> <p>Less than 5 <input type="checkbox"/></p> <p>Between 6 - 20 <input type="checkbox"/></p> <p>Between 21 - 40 <input type="checkbox"/></p> <p>More than 41 <input type="checkbox"/></p>	<p>Official Use</p> <p><input type="checkbox"/><input type="checkbox"/> 1-2</p> <p><input type="checkbox"/> 3</p> <p><input type="checkbox"/> 4</p> <p><input type="checkbox"/> 5</p> <p><input type="checkbox"/> 6</p> <p><input type="checkbox"/> 7</p> <p><input type="checkbox"/> 8</p> <p><input type="checkbox"/> 9</p> <p><input type="checkbox"/><input type="checkbox"/> 10-11</p> <p><input type="checkbox"/> 12</p>
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Section B: Teachers' Expectations of the Child

No.	Statement	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1.	This child wants to learn.					
2.	This child is a quick learner.					
3.	This child will need extra help to learn.					
4.	This child will eventually learn to read.					
5.	This child will eventually need a disability grant.					
6.	This child will be able to go to a normal school					
7.	This child will find a job oneday.					

 22 23 24 25 26 27 28

Section C: Teachers' Perceptions on Classroom Interactions

Official Use

No.	Statement	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1.	This child would disturb others in class.					
2.	This child would be able to answer questions in class.					
3.	This child would be able to participate in class.					
4.	This child would be able to ask questions in class.					
5.	This child would be lonely in class.					
6.	This child would be isolated from participating in class.					
7.	This child would be able to tell a story.					

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Official Use

Section D: Teachers' Perceptions on the Device.

No.	Statement	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1.	The way this child "talks" will prevent her from progressing at school.					
2.	The way this child "talks" can be used with other children in my class.					
3.	The way this child "talks" helps other to communicate with her.					
4.	The way this child "talks" is helping her progress at school.					
5.	The way this child "talks" is preventing her from speaking.					
6.	The way this child "talks" can only be used with trained teachers.					
7.	This child takes too long to talk.					
8.	The way this child "talks" is easy to understand.					

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Official Use

Section E: Teachers' Perceptions on Communication Interactions.

No.	Statement	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1.	This child is able to ask for things that he needs.					
2.	This child can start a conversation.					
3.	This child will have difficulties in developing personal relationships.					
4.	This child is impolite.					
5.	This child has difficulties in sharing information with others					
6.	This child is well mannered.					

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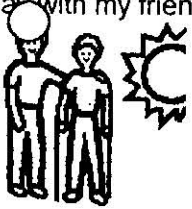


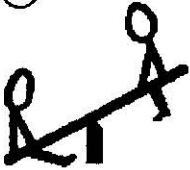

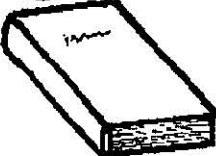

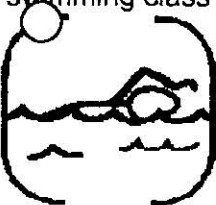
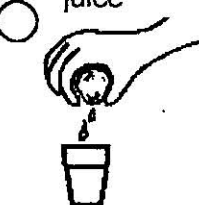
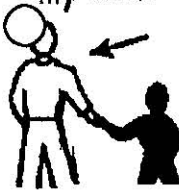

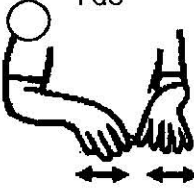
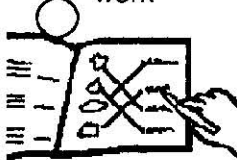
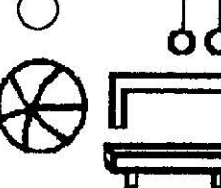
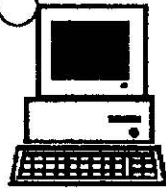
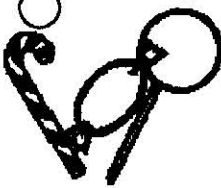
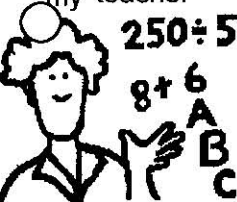




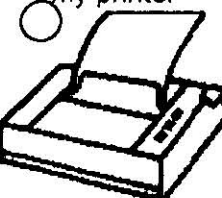
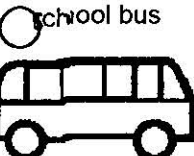
APPENDIX C

Changes made after the Pilot Study

Questions included in the Pilot Study	Questions included in Main Survey
Questionnaire Question 8 How many children with 15 intelligible (clear words), have you worked with?	Questionnaire Question 10 How many children with little or no speech (less than 15 understandable words), have you worked with?
	Questionnaire Added the following Questions <ul style="list-style-type: none"> • Question 3 Group: • Question 4 Video Number: • Column for official use
TAS	TAS Added the following: <ul style="list-style-type: none"> • Respondent Number • Video Number • Column for official use • Example I enjoy teaching Teaching is Tiring
TAS Section A Statement 3 I would be able to cope independently with this child in my class.	TAS Section A Statement 3 I would be able to cope with this child in my class, without help.

Appendix C (continued)

Questions included in the Pilot Study	Questions included in Main Survey
TAS Section B Statement 1 This child is motivated to learn. Statement 6 This child will be able to go to a regular school	TAS Section B Statement 1 This child wants to learn. Statement 6 This child will be able to go to a normal school
TAS Section C Statement 1 This child would distract others in class	TAS Section C Statement 1 This child would disturb others in class
TAS Section D Statement 7 This child's way of "talking" is time consuming.	TAS Section D Statement 7 This child takes too long to "talk".
TAS Section E Statement 2 This child can initiate conversation.	TAS Section E Statement 2 This child can start a conversation.

I like 	is easy $\begin{array}{r} 1 \\ + 1 \\ \hline \end{array}$	I play with my friends 	reading 	maths $\begin{array}{r} 2 \\ + 3 \\ \hline 5 \end{array} \quad \begin{array}{r} 3 \\ - 1 \\ \hline 2 \end{array}$	I do exercises 	my mother 	to play 
don't like that 	is hard $\begin{array}{r} 259 \\ \times 917 \\ \hline \end{array}$	I enjoy books 	occupational therapist 	swimming class 	juice 	my father 	games 
it's fun 	I do 	work 	physical therapist 	computer 	the tuckshop 	my teacher $250 \div 5$ $8 + 6$ A B C 	I swam in gala 
headpointer 	when 	spelling 	speech therapist 	my printer 	sandwiches 	school bus 	the easter holiday 

APPENDIX E

School Address

Date

Dear Principal

Re: Assistance with video making.

I am a Masters student at the University Of Pretoria, Centre for Alternative and Augmentative Communication (AAC). I am currently conducting research on Teachers attitudes towards non speaking children using various AAC devices viz. Communication Board and an Alpha Talker (reference enclosed).

I am requesting your permission to, approach two children at the school to participate in a video that will be utilised for the study. The parents will be provided with letters aimed at obtaining their consent for their child's participation in the video (enclosed).

In addition, permission is requested to make the video at the school utilising Ms M. Lilienfeld in the video. Ms M. Lilienfeld has been consulted and has agreed to participate in the video, during school break.

Kindly complete the attached consent form.

I trust my request will be considered favourably.

Thanking you in anticipation.

Ms S. Dada
Speech Therapist

Cell: 0829355207
Fax: (031) 2074333
e-mail : sdada@mweb.co.za

Consent Form.

I _____ hereby:

(please tick where appropriate)

Provide consent

Do not provide consent

to Ms S. Dada to approach the parents of two children at the school to participate in the video making process. In addition, she may make the video recordings at school with Ms M. Lilienfeld.

Signature of Principal

Date

APPENDIX F

Date

Dear Parents

Re: Participation of your child in a video that will be utilised for research purposes.

I am a Masters student at the University of Pretoria, Centre for Alternative Augmentative Communication (AAC). I am currently conducting research on teacher's attitudes to non-speaking children using various AAC devices viz. Communication Board and an Alpha Talker.

I am requesting permission to make a video of your child utilising a Communication board and an Alpha Talker . The video will contain interactions between your child and Ms. Margi Liliensfeld, which will be recorded at school. The recording will be 15 minutes and later edited to be 5 – 10 minutes in duration. The edited version will then be shown to teachers at 4 schools in the Northern Province. Thereafter the teachers will be required to complete a questionnaire (enclosed), based on the video.

Kindly complete the attached consent form.

I hope my request will be considered favourably. Please do not hesitate to contact me for further information.

Thanking you in anticipation.

Ms S. Dada
Speech Therapist

cell: 0829355207
fax: (031) 2074333

Consent Form

I, _____ (*parents name*)

give permission

do not give permission

for Ms S. Dada to make video recordings of _____ (*Childs name*)

Consent was also obtained from _____ (*Child=s name*) to participate in the video. Furthermore, permission for the video to be viewed by teachers, for the purpose of this study, is granted.

Signature

Date

Additional Information.

If you have given your consent to your child participating in the video, please complete the following :

Contact telephone number(s) :

Fax number :

I will contact you to make arrangements for a suitable date, time and place for you to view the completed video.

Thank you for agreeing to participate in this study.

APPENDIX G

School Address

Date

Dear Principal

Re: Permission to conduct study.

I am a Masters student at the University of Pretoria, Centre for Alternative Augmentative communication (AAC). I am currently conducting research on teacher's attitudes towards various AAC devices.

The study involves teachers watching 2 videos of approximately 5 minutes each and completing a survey after viewing each video. The entire process should take 90 minutes.

In order to complete the study, all I require is:

- X assistance with the distribution and collection of teachers consent forms (provided),
- X a suitable venue where teachers can view the videos. The venue should have an electrical outlet in order for a television and video recording machine to be connected and
- X a list of all the teachers at the school

I will contact you at a later date to arrange a suitable date for the study, pending your consent.

I hope my request will be considered favourably. Please do not hesitate to contact me for further information.

Kindly complete the attached Consent Form and place in the pre stamped, self - addressed envelope and post. The teachers consent forms should also be placed in this envelope.

Thanking you in anticipation.

Ms S. Dada
Speech therapist

Cell: 0829355207
Fax: (031) 2074333

Email: sdada@mweb.co.za

Consent Form.

I _____ (principals name)

(please place tick in appropriate box)

Give permission

Do not give permission

for Ms S. Dada to conduct her study at Grace and Hope School.

Signature

Date

NOTE:

Please remember to include the completed Teacher's Consent Forms.

APPENDIX H

Date

Dear Teacher

Re: Participation in a research study.

I am a Masters student at the University Pretoria, Centre for Alternative Augmentative Communication (AAC). I am currently conducting research on teacher's attitudes towards children using various communication aids.

The research requires teachers to watch two 5minute videos, of children communicating using different communication aids. Thereafter, the teacher will be required to complete an attitudinal scale based on the video.

The school principal has provided consent for the study to be conducted at the school. I am hereby requesting your consent to participate in the study. The date for the study will probably be in May 1999, however an exact date will be confirmed at a later stage.

I trust my request will be considered favourably.

Kindly complete the attached consent form and return to your principal by the **30/3/1999**.

Thanking you in anticipation.

Ms S. Dada
Speech Therapist

Teachers Consent Form.

I _____ (Teachers name)

from _____ (Schools name)

(please place tick in appropriate box)

give consent

do not give consent

to participate in the study.

Signature

Date