

THE DEVELOPMENT OF AN AFRIKAANS SPEECH ASSESSMENT
PROCEDURE FOR HEARING IMPAIRED CHILDREN,
AND ITS USE IN COMPARING PHONEME DEVELOPMENT
UNDER TWO CURRICULAR APPROACHES

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as a requirement for
the degree of
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CHAPTER 1
INTRODUCTION

Area of study, aims, survey by chapter and terminology

Area of Study

The area of concern designated by this thesis is the speech of hearing impaired school children with special emphasis on the investigation of the segmental aspects of speech. The focus is the development of an Afrikaans assessment procedure that tests this. The usefulness of the assessment procedure is tested: (a) in a school situation and (b) in a pilot study which investigates the variable of educational environment on speech proficiency across schools, with special reference to the work of Markides (Markides, 1970a).

Aims

It is hoped that a contribution can be made both on a wider theoretical and a narrower practical level.

- 1) Theoretical level: An exploratory investigation into the comparative phoneme development of pupils drawn from two schools is given. This investigation has three aims:

- (i) To judge the efficacy of utilizing the test developed in an interschool speech investigation.
 - (ii) To make tentative statements on the results of speech curriculum and speech improvement. This has been identified as a pressing need. (Vorce, 1974)
 - (iii) To view the research experientially and critically, in order to made recommendations for future research designs.
- 2) On a practical level: To develop a suitable Afrikaans speech assessment procedure for use by teachers of the hearing impaired.

This work is divided into three main sections:

Part 1: Relevant background. This defines tenets, the theoretical and research parameters on which subsequent portion of the work stands

Part 2: The assessment procedure

Part 3: The experiment

SURVEY BY CHAPTER

PART I: BACKGROUND

Chapter 2 : The unusual role of the teacher of the deaf in the assessment and remediation of speech problems is examined and stated as axiomatic to the development that follows.

Chapter 3 : The nature of deafness and a brief historical overview of deaf education is given. Special reference is made to the history of speech teaching, the development of different teaching philosophies and the variables affecting speech proficiency.

Chapter 4 : This chapter reviews findings related to the speech of the hearing impaired.

Chapter 5 : A rationale for continued expenditure of effort despite the pessimistic current situation in this direction is offered, namely that educational environment has an influence on the speech skills of hearing impaired children. Special reference is made to the research of Markides. (Markides, 1970a)

PART II: ASSESSMENT

In the light of the rationale an assessment procedure is devised, both to investigate interschool differences, and as a practical tool.

Chapter 6 : This chapter views the importance of speech assessments. The options available to deaf children are described and reasons for the choice of test are given.

Chapter 7 : The parameters of the test and those factors which influenced the design of the test are described in the Summary.

Chapter 8 : The parameters of the test are discussed in greater depth.

Chapter 9 : Additional factors relating to specific needs of the hearing impaired are described and shown to be an integral part of the design of the test.

Chapter 10 : The validity, reliability and limitations of the test are discussed.

PART III : THE EXPERIMENT

Chapter 11 : Relevant aspects of Markides' (1970a) investigation are summarized.

Chapter 12 : A longitudinal pilot study of the phoneme development of pupils of two schools, viewed over a one year period is described. Significant here are a description of speech curricula, school population and auditory exploitation. Speech developments between the schools are described statistically.

Chapter 13 : The results of a spelling investigation utilizing the test words is given and its implications for future research are examined.

Chapter 14 : Conclusions and implications for further study are examined.

Terminology

At the outset clarification of the terms used below is a prerequisite. Other terms will be defined as they are used, further in the text.

Terms that cover speech production

Speech : The term 'speech' is used in this text in the same way that Ling does (Ling, D., 1976) to designate defects of speech, as seen against defects of language. This means that lexicon, morphology, syntax, semantics and the pragmatics of language are not addressed here. Three interrelated areas are delineated by this term:

- 1) Suprasegmental aspects : This term includes vocal intensity, pitch, quality, resonance and prosody.
- 2) Segmental elements : The production of vowels and consonants.
- 3) Intelligibility : How much speech can be understood by the listener.

Phonemes: The elemental speech sounds which are classified as vowels or consonants (Boone, 1965). These are represented by phonetic symbols in the slashed brackets, e.g. /sa:m/ as representing the Afrikaans word "saam".

Vowels: Phonemes which are spoken with little or no stoppage of the breath stream (Boone, 1965), e.g. /a:/

Diphthongs: Two vowel elements which form one phoneme, e.g.

/ɔɪ/

Consonants: A phoneme uttered when the breath stream is interrupted in some manner (Boone, 1965) which may be voiced or voiceless, nasal or oral.

Graphemes: These are orthographic symbols. Where particular graphemes are referred to they are placed between commas, e.g. 'p'.

Visemes: The visual picture that a phoneme presents. Approximately 40 English phonemes are reduced to about 9 to 14 visemes in conversational speech (Jeffers and Barley, cited by Erber, 1982).

Terms that define an aural handicap

A complicated nomenclature has arisen in the last century. (Purseglove, 1971) Advances in technology and new development in teaching methods have meant changes in terms and the development of new terms.

"Deaf and dumb": This term has become an anachronism and is only used in this text in the appropriate historical context. It is significant that the association between speech and mental capacity has been recognised for so long

that the word 'dumb' has become synonymous with dull-witted.
(Whetnall, 1964)

'Deaf' versus 'hearing impaired'

The term 'hearing impaired' is newer than the term 'deaf'. The term 'deaf' was felt to have negative connotations. It has been espoused most particularly by those who follow the academic approach, such as Pollack. (Pollack, 1974)

There is lack of universal agreement over the use of these two terms. When terms referring to a hearing loss are not used precisely, it is difficult to understand what group of children are being referred to. (Speth, 1981)

This confusion is well expressed by the director of the Instituut Voor Doven:

"You have asked me to speak about 'Remediation with hearing impaired children.' With this proposal of the subject you have confused me a little. Why? I don't know what you mean by 'hearing impaired'. Do you mean 'deaf' and 'hard of hearing' children?" (Van Eindhoven, 1982, p. 65)

In order to view the usage of the terms 'deaf' and 'hearing impaired' in this thesis with clarity, below follow three accounts of their usage by well known educators in this field.

Ling, (Ling, D., 1976) : Ling uses the term "hearing impaired". He states: "The term hearing impaired is applied to a range of children which includes both the hard of hearing and the totally deaf child." (Ling, D., 1976, p.3)

Calvert and Silverman (Calvert and Silverman, 1983) : They describe their use of these terms in this way:

"Throughout we have used the terms deaf and hearing impaired interchangeably. Agreement on the precise definition of these terms is still not universal." (Calvert and Silverman, 1983, p. 5)

Van Uden : Van Uden of the Instituut Voor Doven uses the term 'deaf' intentionally and precisely. In the introduction to 'A World of Language for Deaf Children' (Van Uden, 1970) he states:

"By the term 'deaf' children will be meant in this book the following: Prelingually deaf children who are so deaf that - even with the best hearing aid and the best possible auditory training - they will never reach a level of understanding speech mainly by hearing." (Van Uden, 1950 cited by Van Uden 1970, p.13)

In a lecture he gave in 1980, he stated that when he referred to deafness he excluded "... those children who have losses of less than 90dB (Fletcher Index ISO) and also those children who suffer from a so-called 'ski slope hearing loss'." (Van Uden, 1982, p. 135)

In summary three criteria must be met before the term 'deaf' can be applied to a person who has a hearing loss, according to Van Uden's definition.

- 1) The degree of hearing loss. This must be greater than 90 dB (Fletcher Index)
- 2) The time the hearing loss was sustained. Only a prelingual loss is considered.
- 3) The configuration of the audiogramme. Children with relatively intact hearing for the lower frequencies are not considered deaf.

Use of the term 'deaf' and 'hearing impaired' in this thesis

Although the writer concurs with Speth (1981) and Van Eindhoven (1982) that imprecise use of terms describing an aural handicap leads to confusion, the terms 'deaf' and 'hearing impaired' are none the less used interchangeably. This is in accordance with the manner of usage and considerations of Calvert and Silverman (1983). When referring specifically to deaf children, according to Van Uden's (1970) definition, the term "profoundly prelingually deaf" will be used.

PART I : BACKGROUND

CHAPTER 2THE CLASS TEACHER OF THE HEARING IMPAIRED : HER INVOLVEMENT
IN THE ASSESSMENT AND REMEDIATION OF SPEECH AND VOICE

In other spheres of education the class teacher will not be directly involved in the assessment and remediation of speech and voice defects. A pupil in a regular school who lisps, stutters or has a voice problem will be referred to a speech therapist for aid.

In the education of the hearing impaired this is not the case. The teacher is directly involved in the assessment and remediation of the speech of her pupils. (Calvert and Silverman, 198;, Ling, D., 1976; Ling, D. and Ling, A.H., 1978; Schulte, 1982, Vorce; 1974)

The class teacher's involvement in the assessment, development and remediation of speech is an important tenet that is axiomatic to the development that follows. The rationale of the speech test devised is based on the assumptions described in this chapter.

The role of the class teacher of the hearing impaired in speech teaching and speech assessments

The necessity of her involvement in an area which is traditionally the province of the speech pathologist, can be viewed as falling into two broad categories. Firstly, the shortage of the necessary number of speech therapists available at schools for the hearing impaired, and secondly, the desirability of involvement with speech teaching by the class teacher of the hearing impaired.

1) Shortage of speech therapists at schools for the hearing impaired

The demand for individual speech therapy sessions exceeds the supply. (Albertini et al., 1983; House, 1980)

Both the schools selected for this study exemplify this. At the one there are currently (1987) two speech specialists and in excess of 300 children while at the other there is one speech therapist and over 300 pupils. . All children with significant hearing losses need help with speech. Those with grossly defective speech need help as do those with relatively intact speech. The pupils with the most intelligible speech may well be passed over in favour of a pupil with more

severe speech problems, whereas, in fact, the more proficient pupil, who is part of the hearing world, may gain the most from help.

2) The desirability of the classroom teachers's involvement in teaching

Even if individual speech therapy sessions by a speech therapist were an available option for the pupil, if such help is the only provision made for speech teaching, it does not appear to be an effective option. Various factors indicate this:

1) Speech should pervade all instructional activities

Attention to speech is not just a matter of something that is given for x number of minutes per day but should pervade all of the instructional procedures and activities. (Calvert and Silverman, 1983) This has been asserted repeatedly by numerous writers. (Ling, D. 1976, Rotter, 1981, Clarke School for the Deaf, 1971)

2) Ability to monitor speech

Constant control of speech and speech correction are indispensable at all levels. (Schulte, 1981) A

teacher who has not developed speech teaching skills will not be able to effectively monitor the speech of her pupils. (Ling, D. and Ling, A.H., 1978)

3) Responsibility for improving speech

The teacher may feel, if the child is taught by an outside specialist, that the child's speech is not her responsibility (Ling, D. and Ling, A.H., 1978) and consequently not be motivated towards helping him in this area.

4) The importance of non-acceptance of below standard speech

A teacher who is not involved in developing and correcting speech may not be sufficiently aware of what speech skills the child has and therefore will not encourage correct use in the classroom. (Ling, D. and Ling, A.H., 1978) If this is the case she is reinforcing incorrect speech production, for any time the child produces spoken language, that pattern becomes an evermore permanent part of his speech system. (Nittroer and Hochberg, 1985)

5) The importance of viewing speech as oral communication

When the primary responsibility for speech teaching rests with the classroom teacher there is a higher likelihood that the concept of speech will be viewed as oral communication, because the classroom teacher is more frequently in situations requiring interchanges with students. (Nittroer and Hochberg, 1985) When speech work is not undertaken by the teacher, but instead is delegated to a clinician therapist, speech production tends to become less relevant and less functional for the child. (Heidinger, 1972 cited by Ling, D., 1976) Speech should be seen to be a part of communication and not a splinter skill which is developed as an end in itself, reserved for special periods.

In the light of these factors it is understandable that many leaders of deaf education have asserted that the class teacher should be primarily responsible for the speech training of his or her pupils. (Nittroer and Hochberg, 1985) and that: "Every teacher is also a teacher of speech . We cannot stress this point too strongly." (Calvert and Silverman, 1983, p. 4) (Original author emphasis)

The necessity for the teacher to assess the speech of her pupils

The importance of assessment generally will be dealt with further on in this text. At this juncture the necessity of the class teacher's involvement in assessment is pertinent.

Teachers have a responsibility for assessing the speech of their pupils. (Calvert and Silverman, 1983) While there is less in the literature on this aspect of teacher involvement, various factors would seem to indicate the importance of speech assessment by teachers.

1) Training in listening

Assessing speech directs teachers to listen to speech more critically

"The teacher's ear is one of the most fundamental factors that contributes to the effectiveness of speech instruction." (Calvert and Silverman, 1983, p.241) However teachers become accustomed to the deviant speech of their pupils. Calvert (1983) calls this "reverse auditory training". (Calvert, 1983, p.241) Assessment of speech directs teachers towards a conscious listening attitude. This observation by Markides (July, 1970b) demonstrates this:

"When comparing the first and second ratings of class teachers it was noted that in their first ratings they tend to normalize the speech qualities of their pupils."

"Although small deviations were expected to occur between their first and second ratings the large deviations observed were disturbing and they could not possibly be justified by the limitations inherent in recording and reproduction."
(Markides, 1970b, p.329)

This would seem to demonstrate how efficiently focussed listening is during assessment procedures and how this trains teachers to more acute listening.

2) Qualitative aspects

During the assessment procedure qualitative observation of the pupils' responses may direct teaching goals.

A child may, for example, indicate an awareness of the fact that he cannot produce a sound and that this distresses him. The teacher can use this motivation and awareness to her advantage.

3) Unfamiliarity with the tester

This may stress the child:

- (a) he may not be able to give of his best speech and this will affect the validity of the test;

(b) the unfamiliar tester will not know whether the speech he is assessing is a true reflection of the child's speech.

A child who speaks very softly, for example, may be speaking in that manner because he is nervous of the test situation or because he has a vocal intensity problem. Only an individual who is familiar with his speech will know this.

4. Autonomy of the teacher

It is this writer's assumption that a teacher who has actively discovered the errors of her pupils will have a greater interest in remediating them than if she has passively received an assessment sheet done by someone else.

5. Close connection between evaluation and teaching

Evaluation of a child's spoken language is inextricably bound up in the instructional process. (Calvert and Silverman, 1983)

In conclusion, for the reasons listed above, the class teacher has a responsibility for active involvement with speech remediation. This is most pertinent where individual help by a speech therapist is not an available option.

Terminological issues arising from the discussion above

The importance with which the concept of speech teaching for the hearing impaired is regarded as being an integral part of the educational situation is reflected by the nomenclature chosen. The term "teacher" is used in the same manner as by Calvert (1980), to apply to all instructional personnel in schools, and to speech pathologists working with hearing impaired children. The terms "speech lessons" and "pupils" are used in preference to "therapy sessions" or "patients".

CHAPTER 3HISTORICAL OVERVIEW OF SPEECH TEACHING

Deafness is an invisible handicap, for this reason the devastating impact it imposes may not be fully understood by the naive observer. Consequently a hearing impaired individual will receive less sympathy than an obviously handicapped blind or cerebral palsied person. The complex nature of a hearing impairment means that the handicap is not limited to the peripheral physical handicap as is blindness, in fact the inability to hear is a relatively subordinant handicap (Montgomery, 1967) compared to the way the hearing loss affects all levels of communication.

Helen Keller described one aspect of this, the isolation that a deaf individual suffers because he cannot understand language:

"The problems of deafness are deeper and more complex than those of blindness. Deafness is a much worse misfortune for it means the loss of the most vital stimulus - the sound of the voice that brings language and sets thoughts astir and keeps us in the intellectual company of man."
(Publication by the Medical Association of South Africa, "Better Hearing for All" (no date) p.3)

Another barrier that impedes hearing impaired individuals' communication is an inability by many to speak in a way that will be understood by the vast majority of hearing people.

This problem has challenged man for many centuries and has not been solved yet.

A brief review of the history of speech teaching serves to explain the different teaching methodologies, the conflict that at times exists between protagonists of each, and the possible effects that methodological issues may have on speech proficiency. Below follows a brief account of some of the most significant educators and trends.

History of speech teaching of the hearing impaired

Speech teaching in antiquity

The complex nature of the handicap affected the way deaf people were viewed for many centuries and the educational aspirations that were deemed feasible for them.

The true nature of deafness confounded the ancients, Hippocrates included. (Markides, 1985) They mistakenly assumed that dumbness was the necessary accompaniment of deafness. They believed a certain paralysis of the tongue existed in what they saw as the joint problem of deafness and dumbness. It is easy to see why the tongue was deemed defective. Deaf children who have poor speech skills retract their tongues (Ling, D., 1976) into a stiff position, which makes it look as though it is a defective organ.

The first account of teaching, separate from biblical descriptions of miraculous healing, is generally accorded to Bishop John of Beverley. English scholar, Bede, described in 1685 how Bishop John taught a deaf and dumb youth to speak. (Mullet, 1971)

"The Bishop, Bede begins, having ordered the boy to show his tongue bade him say "yea", which he did, immediately. Then pronouncing one by one the names of all the letters the Bishop directed the lad to say them, thereafter the boy proceeded to repeat syllables and words put to him by the Bishop who also commanded him to utter sentences." (Mullet, 1971, p.123)

The boy was so pleased with this new skill that:

"... he did not cease all that day and the next night so long as he could keep awake..." (Mullet, 1971, p.123)

Bishop John's technique can be viewed as following the Van Riper frame: following a pre-speech activity ("he laid his tongue out") the youth was helped to develop:

- 1) The sound alone
- 2) The sound in a syllable
- 3) The sound in a word
- 4) The sound in sentences (Van Riper, 1954)

The account below of speech teaching for the hearing impaired, nearly three hundred years later, shows great similarity to Bede's description of 1685.

"Each phoneme was taught in the following way. The sound was first elicited in isolation ... (then) sequences of syllables were practiced ... the sound is introduced into words ... the next stage is to practice the sound in phrases and sentences." (Ward and Rodswell, 1968, p.124)

Speech teaching in 16th century Spain

The first accorded non-miraculous account occurred in Spain in the 16th century. Pedro Ponce de Leon, a Benedictine monk, achieved a notable reputation for his ability to teach the deaf and dumb to talk. Genetic deafness was a trait common to the upper class Spanish families. Spanish social stratification was rigid and intermarriage between members of similar social groups was the norm. The dominant gene of deafness was transmitted and became widespread among the Spanish nobility. (Kapp, 1976)

Wealthy Spanish parents were anxious to have their children educated because Spanish law decreed that those who were deaf but able to speak enjoyed full legal rights, but those who were mute forfeited their inheritance. (Kapp, 1976)

Despite the success demonstrated by Ponce de Leon, speech training did not become general in the private education of the deaf. It was thought by those who accepted the validity

of his results that Ponce de Leon had, by the grace of God, a purely personal, almost miraculous talent for teaching speech to deaf mutes. (Markides, 1985). Increasing numbers of deaf mutes were taught to read, to write and do arithmetic. Others were trained for occupations such as drawing and painting, but speech training was confined to a few isolated cases. The rareness of formal speech training is still a factor today. (Markides, 1970a)

Advances in the seventeenth century

1600-1700 proved to be a period of transition for deaf education. In this period the idea that dumbness was the inevitable and incurable concomitant of deafness was rejected.

The direction now moves away from the realms of the religious and the miraculous towards that of the educational. Professional speech teachers of the deaf made their appearance. They were unwilling to share their secrets as they had found a unique way to secure a livelihood and clung to their secrets.

A Swiss doctor, Conrad Amman (1669-1724), who had made his home in Holland, was atypical of his contemporaries in this and shared his knowledge. He wrote a book, "Surdus Louquens", (1694) (The Speaking Deaf Man) wherein he described the method he used to teach a deaf pupil, Hester

Koolart, to speak. This book was translated into different languages and influenced teachers of the deaf. Amman's motivation had a religious overlay. He regarded speech as a "Gift from God", "An emanation from the very spirit which God breathed in Man's nostrils when he created him a living soul." (Amman, The Talking Deaf Man, 1972 Book 2, p.6, (Translation))

The connection between religious and deaf education while not as overt today, is still present. Several well-known schools are headed by religious personnel. The Instituut vir Doven in Holland and the St. Joseph's Institute for the Deaf in America are examples of this. In South Africa, The Dominican School for Deaf Children, The Dominican Grimley School for Deaf Children and St. Vincent's School for the Deaf are examples that attest to the same fact.

Amman's motivation was spiritual, however the principles he based his teaching on were scientifically valid. His descriptions of the vocal organs, including the functioning of the soft palate, were detailed and correct. His knowledge of phonetics was extensive. (Kapp, 1976) His method of speech teaching followed the progression of voice to consonant production advocated again today by Daniel Ling.

Changes in the eighteenth century

Education of the deaf, as does education in general, reflects contemporary, social and political events. Eighteenth century man was influenced by the ideals of the French Revolution. For the deaf this meant that education was no longer deemed the privilege of the wealthy minority, but a right for all. In France, a philanthropic priest, Abbe de L'Epee, greatly disturbed by the plight of the deaf, was the first one to put into practice the idea of popular education for all deaf children, including those of the poorest parents. (Markides, 1985) He began by teaching speech but, owing to the pressure of work, concentrated his teaching exclusively on methodical signs. (Markides, 1985) These manual methods were heavily criticised by Heinicke, a German teacher. The opposing camps were known respectively as the "French method" and the "German method". From that time on a tremendous controversy arose between protagonists of the "French" signing method and those of the "German" oral method.

The influence of human foibles and attitudes on important aspects of education for the deaf can be clearly seen with the introduction of the manual method into the United States where it has gained widespread support. (Lattimer, 1983)

Signing is introduced to America

While de L'eppee was teaching manual signs to the deaf in France, Thomas Braidwood had established an oral school in England. This school had acquired a prestigious reputation for the standard of speech demonstrated by the pupils. (Kapp, 1976)

Gallaudet was sent from America to England to learn this method. Braidwood, however, would not divulge his methods. Gallaudet went to France where he was trained in the signing method and introduced that to schools in the United States. Today the Gallaudet College in America is a University for deaf students which teaches by a system of signs and speech termed Total Communication.

Treaty of Milan : 1880

In 1880 a conference was held in Milan to attempt to resolve the "war of methods". Using battle terminology the decision taken was termed 'The Treaty of Milan'. The decision taken was that the oral method was superior, and all deaf children were to be educated in this way.

The controversy continues

The controversy, begun so many years ago, continues today as can be seen by the selection of juxtaposing comments.

Denton, representing the manual side states:

"It is my personal hope and my belief that the crippling and debilitating controversy over methods which grew out of the Milan Congress is now a thing of the past and that the use of manual communication is a fundamental right of the hearing impaired." (Denton, 1981, p.2)

As against this, Larkin (Larkin, 1981, p.242):

"To whom can the manually educated sign? To each other of course and to other similarly educated, thus perpetuating a closed deaf community of little opportunity, denied intercourse with the majority of hearing society, classified as freaks, all of which is in complete antithesis to the aims of teachers of the deaf since the asylums of the deaf and dumb were established."

Evidence as to the effect of manual communication on oral skills is unclear.

Montgomery's (1966) results show statistically that manual methods have no adverse effects upon the development of oral skills. (cited by Denmark, J., 1974)

Ling, D., in a panel discussion in 1972, refutes this and accuses Montgomery of: "... very poor statistical treatment of his data and a very poorly designed experiment." (Panel Presentation at 1972 Bell Association National Conference, reported in the Volta Review, Dec., 1972, p.554)

He asks rhetorically:

"... that children taught by total communication do not fall behind educationally and learn high level language skills? That is garbage." (Panel Presentation at 1972 Bell Association National Conference, reported in the Volta Review, Dec., 1972, p.554)

In support of this view Markides' (1976) investigation of two methodologically different schools revealed that the pupils from the oral school for the deaf, although being slightly more handicapped in terms of hearing loss, initial selection, teacher calibre and additional handicap, were far superior to the pupils from the manual school for the deaf in the area of linguistic development and in speech intelligibility. (Markides, 1976)

In the light of the conflicting opinions, research design and interpretation of results should take cognisance of possible inferences that arise from this issue. It is significant that communication principles at both schools described in Part III are the same.

Advances in the twentieth century

The twentieth century has seen advances in two areas:

- (1) technical advances that have made early detection and superior amplification available

(2) advances in the field of psycholinguistics

In the wake of this a new method has emerged. The terms auditory global, acoupedic, unisensory, an oral-aural (Calvert, 1982) an auditory verbal method, (Long, Sutton, Fitzgerald and Rollin, 1983) and the natural method (Griffey, 1981) are among the labelling variations.

A child who can profit from this method must meet certain criteria, the most important of which are early detection and amplification and committed parents, especially the mother. (Du Toit, 1981) Where this method has been successful children acquire natural speech and may be integrated into regular schools. (Du Toit, 1981)

The introduction of this has meant that the oral teaching is divided into two methods:

- 1) The multisensory method: A multisensory approach to speech and language with significant use of visual cues
- 2) The unisensory (acoupedic, oral-aural etc.) method: Here the auditory channel is the prime avenue for learning speech and language

Children who have profited from the unisensory method are not addressed by this study. They do not have the same

predictable phonological error pattern of other deaf children. (Du Toit, 1981) The hearing impaired children referred to in this text are children who need deliberate intervention to help them to acquire functional speech.

This chapter reviewed the history of speech teaching, from the miraculous to the educational. The following chapter views the picture that the contemporary educational paradigm presents.

CHAPTER 4

A REVIEW OF LITERATURE AND RESEARCH STUDIES RELATED TO THE DEVELOPMENT OF SPEECH OF HEARING IMPAIRED SCHOOLCHILDREN

The problem of helping hearing impaired children, especially the prelingually profoundly deaf, to acquire functional speech has not been solved. This has been asserted repeatedly by various writers. (Ling, D., 1976; Subtleny, 1980; Markides, 1974; Marimount, 1984; Ling, D., 1980) This chapter reviews several significant studies supporting this pessimistic view. Three interrelated areas will be reviewed:

- 1) Intelligibility ratings
- 2) The effect of additional schooling on intelligibility
- 3) The effect of additional schooling on vocal quality

1. Studies of speech intelligibility

Brannon (1974) (cited by Ling, D., 1976) assessed and worked with 20 children from a large day school for the hearing impaired. Ages ranged from 12-15, hearing level was 75dB or below, intelligence was normal and they had no additional handicaps. He found that only 20-30% of the words they had practised were intelligible to listeners unfamiliar with hearing impaired children's diction.

Markides (1970a) studied 58 seven year old and nine year old children. 31% of their words were intelligible to experienced listeners. 19% of their words were intelligible to naive listeners.

Heidinger (1972) (cited by Ling, D., 1976) studied the speech of 20 children enrolled at a residential school for the hearing impaired. Their ages ranged from 12-14. Hearing loss was 85dB or greater in the better ear. Less than 20% of their words, in short sentences, were rates as intelligible by experienced listeners. (Cited by Ling, D., 1976)

Smith (1972) (cited by Ling, D., 1976) studied 40 day and residential pupils. Two age ranges were examined: i) 8-10, and ii) 13-15.

All had hearing losses greater than 80dB at 1000 Hz. 120. Judges unfamiliar with the speech of the hearing impaired children rated the speech. The mean score for intelligibility was 18.7%.

The general view of these studies is that the prevailing standard of speech intelligibility is poor.

2. Studies demonstrating the effect of additional schooling on the intelligibility of hearing impaired children

The two succeeding studies attempted to discover the relationship between additional schooling and speech intelligibility.

The first study did this by assessing different age groups. The older children have been at school longer than the younger children.

The second study did this by assessing the same group of children over a 3 year period.

1) Jensema, Karchmer and Trybus (1978) (cited by Smith, 1980) rated speech intelligibility of hearing impaired children in special education programmes. 1300 children were assessed. They were divided into 4 age groups:

(1) under 7

(2) 8-11

(3) 12-15

(4) over 16

The several age groups did not differ from each other by more than a few percentage points.

- 2) Levitt, Stark, McGarr, Carp, Stromberg, Gaffney, Barry, Vilez, Osberger, Leiter and Friedman (1978) (cited by Smith, 1980) carried out a longitudinal study of the communication skills of children over a 3 year period: 1973-1975. This study was carried out under the auspices of the Co-operative Research Endeavours in the Education of the Deaf Program, New York State Education Department. More than 100 children from 10 different schools who were 10 years old at outset were assessed repeatedly over this time on a number of different skills.

The findings were not encouraging. For each of the three years during which assessments were made, more than 70% of the children were rated as "difficult" or "impossible" to understand.

These studies indicate that additional schooling does not significantly improve speech intelligibility.

3. Observations concerning the deterioration of voice quality of hearing impaired children at special schools

Various writers have commented that the vocal quality of hearing impaired children appears to deteriorate as the child grows older.

(i) Sibley Haycock, writing in 1933, commented:

"The earliest spontaneous vocal utterances of the young deaf child is as a general rule normal in quality and produced in an early natural manner ... pleasant and agreeable to the ear and though they may be weak and thin ... are often delightfully free from those blemishes which are characteristic of the voices of the majority of deaf children in the upper classes of our schools." (Haycock, 1933, p.27)

Later, in 1974, the same observation is made by Vorce.

She writes:

"It is generally accepted that the voices of young deaf children are free of major problems - unfortunately something happens in the process of acquiring speech ... " (Vorce, 1974, p.27)

She hypothesizes that the cause for this may be in the teaching methods. Traditional analytic methods and tense didactic teaching situations may have produced the very characteristics which stigmatise the pupils as having unnatural voices. (Vorce, 1974)

ii) As recently as 1983, Monsen comments "Teachers of children often report an intuitive feeling that poor voice quality develops as the children learn to speak. When children are very young and do not yet speak, teachers often feel that the voices are normal sounding. As they teach children to speak, they often sense the development of abnormal voice quality but are

at a loss to correct it or impede its further development." (Monsen, 1983, p.12)

For fifty years this same observation has been voiced.

Reviewing this last chapter, the evidence above points to a situation where:

- 1) Most of the speech of children with a loss greater than 60dB is unintelligible (Brannon, 1974; Markides, 1970a; Heidinger, 1972; Smith, 1972; all cited by Ling, D., 1976)
- 2) Speech skills do not improve significantly with additional schooling (Jensema et al., 1978; cited by Smith, 1980; Levitt et al., 1978, cited by Smith, 1980)
- 3) Vocal quality appears to deteriorate with additional schooling (Haycock, 1933; Vorce, 1974; Monsen, 1983)

This is undoubtedly a pessimistic picture. The next chapter poses the question whether deaf children, because of the nature of their disability, are not able to acquire functional speech.

CHAPTER 5

RATIONALE AND MANDATE FOR FURTHER STUDY

In the light of the pessimistic findings of the previous chapter, two conflicting possibilities exist:

- 1) Because of the constraints of the disability, most deaf children, especially the prelingually profoundly deaf, cannot acquire functional speech, despite the best educational efforts.
- 2) Deaf children, including the profoundly prelingually deaf, have, in the main, the potential to acquire functional speech, but they have not been provided with the opportunity to do so.

Consequences of the first possibility

Speech is not feasible for the majority of the deaf. This has the same consequence as the historical view that the tongue was defective in deaf individuals. Speech training, an arduous and time consuming task, becomes a futile activity, except for the few exceptional deaf who would benefit. Efforts at improving speech could be better directed elsewhere, for example, to teach deaf children how to cope without speech, perhaps by using writing as a means of communication.

Possibility 2

If this possibility is accepted, the educational environment needs to be critically re-examined to help educators identify factors that help and hinder progress, and to provide concrete help to change the situation.

In support of possibility 2

Ling, D. (1976), Van Uden (1976), Pronovost (1979), Van Dijk and Van Uden (1976) and numerous other writers have asserted that many more deaf children could be helped to develop functional speech despite the pessimistic picture that has emerged, if they were provided with the opportunity to learn.

Direction taken in this thesis

The writer concurs with those educationalists who assert that many more deaf children could be helped to develop functional speech if they were taught properly. Two groups of children are, however, excluded from this:

- 1) Late beginners. Neurologically speaking (Griffey, 1977) if critical language and speech learning periods are not timeously exploited they cannot be returned to
- 2) Dyspractic and dyssymbolic deaf children (Van Uden, 1976, Van Dijk and Van Uden, 1976) These conditions

have been identified relatively recently by Van Uden and his co-workers at the Instituut Voor Doven.

They state:

"The fact that some deaf children speak so badly is, however, not always due to failure of early treatment. There may be disorders present in the child which form a great impediment towards the development of oral education." (Van Dijk and Van Uden, 1976, p.74)

Rationale for the direction taken

- 1) The speech performance of many profoundly deaf children indicates that good speech is a possibility. (Ling, D., 1986)

The reason above could point to a group of profoundly deaf children who are the gifted exceptions. However, seen in combination with the above factor is the following:

- 2) Markides (1970a) investigated interschool intelligibility, he demonstrated that educational environment is an important variable in the level of speech functioning. The children from certain schools in his study were more skilled in speech ability than the children from other schools.

He states:

"The educational environment and educational aspirations set by each school was one of the most important single factors affecting speech intelligibility. So much so that degree or type of hearing loss becomes of secondary importance." (Markides cited by Isseldyk, 1982, p.62)

In the writer's estimation those two factors, viewed together, point to a situation where the possibility exists that deaf children could acquire functional speech in specific environments.

This view was strengthened when in 1986, the writer attended the Maternal Reflective Method (International Short Course), given by Van Uden and co-workers at the Instituut Voor Doven in the Netherlands. This school has acquired a prestigious reputation for their outstanding results (Lowe, 1981) and the excellence of instructional programmes. (Kopp, 1981)

Only profoundly prelingually deaf children, according to Van Uden's definition (see Chapter 1) attend this school. Despite this level of aural handicap the pupils throughout the school demonstrated speech of a high standard. The similarity of Afrikaans and Dutch made it possible for this to be judged this at first hand.

Justification for the direction taken in this study

1) Research that contributes practically

Smith (1980) comments that while research has given speech teachers knowledge of the problems of the speech of hearing impaired children, little time has been devoted to those same problems in many master's study programmes. Stated differently, researchers have described what is wrong but have not expended energy into trying to solve the problem.

Ling reiterates this succinctly: "... far more Ph.Ds have been earned describing faults than to try to do something to remediate them." (Ling, D., 1981, p.391)

This thesis focusses on an aspect of research that has practical implications for the hearing impaired child in South Africa, that is, the development of a suitable assessment procedure for Afrikaans hearing impaired children, which would contribute to one aspect of speech teaching that is not adequately dealt with at the moment.

- 2) Research that addresses itself to an area identified as wanting

The relationship between resulting performance and curriculum

"The relationship between the resulting speech and any particular curriculum is not known." (Vorce, 1981, p.236)

The longitudinal pilot study described in Chapter 10 formulates a possible research design to do this, and tentative conclusions are stated.

The two aspects of this work should be seen as complementary. The development of an assessment procedure is (1) an end in itself, as a researched contribution to the tools that aid speech teachers and (2) necessary to investigate the comparative speech functioning of Afrikaans children.

The subsequent section, Section II, which incorporates Chapters 6, 7, 8, 9 and 10 deals with the development of this assessment procedure.

PART II : ASSESSMENT

CHAPTER 6

ASSESSMENT : THE IMPORTANCE OF ASSESSING THE SPEECH OF THE HEARING IMPAIRED, THE DIFFICULTIES INVOLVED AND THE OPTIONS AVAILABLE

Importance of assessing speech

Speech evaluations for the hearing impaired are considered a prerequisite for effective teaching. (Subtleny 1980; Ling, D., 1976; Ling, D. and Ling, A.H., 1978; Monsen, 1981)

Teachers need assessments for three reasons:

1) Identification

To identify the skills the child has and the skills he lacks. (Ling, D., 1976; Ling, D. and Ling, A.H., 1978)

2) Planning

To provide specific guidelines for remedial work. (Ling, D., 1976; Ling, D. and Ling, A.H., 1978; Pronovost, 1979)

3) Comparison

To serve as a baseline against which results of training can be measured. (Ling, D., 1976; Ling, D. and Ling, A.H., 1978; Mager, 1962) Unless one can identify behaviours one seeks to establish and then

demonstrate that the child is achieving successive mastery of them one cannot show that one is teaching anything at all. (Mager, 1962)

Speech assessments are also necessary for research purposes to compare speech performances.

Difficulty of assessing the speech of the hearing impaired

Despite the acknowledged importance of testing it is not routine in most schools for the hearing impaired in the United States (Monsen, 1981), nor in the writer's experience, in schools for the hearing impaired in South Africa. One of the main reason that testing is not done routinely is that it is extremely difficult to assess the speech of the deaf. (Monsen, 1981) As Monsen comments:

"When deaf speakers make an error they don't just substitute some other English sound but often they will produce a sound that does not occur in English at all." (Monsen, 1981, p.846)

Even when a sound is recognisable it may still be somewhat different to the way it is produced by hearing speakers. (Monsen, 1981) There is a certain leeway in speech production of normally speaking, hearing people. We do not all produce sounds in the same way. The American, Australian and British production of vowels vary, however, they are recognisable and for purposes of intelligibility,

correct. The recognisable variations of the speech of the hearing impaired do not have the same quality.

Lack of any Afrikaans speech assessment for the hearing impaired

Afrikaans hearing impaired children have even less chance of being assessed than their English speaking counterparts. There is no speech test designed specifically for the Afrikaans speaking hearing impaired population.

There is a test available designed to investigate the articulation skills of hearing children, called "Die Afrikaanse Artikulasie Onderzoek". (Lotter, 1979)

Articulation tests designed for hearing children are not suitable for hearing impaired subjects. (Smith, 1980; Levitt, 1980) This test is no exception. Its drawbacks include:

- 1) It makes no provision for the testing of vowels
- 2) No provision is made to assess spontaneous speech
- 3) Suprasegmental aspects are not viewed
- 4) Intelligibility is not rated in any way

- 5) Certain stimulus words are not in the vocabulary of the average hearing child, and absolute familiarity with the test words is a prerequisite for speech tests. (Smith, 1980)

For these reasons it was necessary to devise an Afrikaans testing procedure suitable for hearing impaired children. The majority of Afrikaans schools for the deaf were contacted and expressed an interest in obtaining a test thus developed.

Available options devised for the assessment of English speaking children were viewed. A summary of the findings is given below.

Speech assessments designed for English speaking hearing impaired subjects : available options

Tests designed for English speaking hearing impaired children can be broadly viewed in two categories. (Levitt, 1980)

- 1) Tests that measure performance
- 2) Tests that give diagnostic information

1) Tests that measure performance

These are usually tests which rate intelligibility, i.e. how much of the subject's speech can be understood by a listener. The child produces a speech sample. The sample can be elicited in various ways: a spontaneous speech sample in response to questions, by reading prepared material or by getting the child to describe pictures. The two main methods used have been oral reading and picture description. (Markides, 1978) Recordings are made which are played to listeners who are not familiar with the test material.

The speech is then usually measured by one of two procedures: (Porter and Bradley, 1985)

- (a) Word identification tests How many words the listener identifies correctly may be scored into a percentage and used as a measure of percent intelligibility
- (b) Scaling techniques Here hearing impaired speakers read or produce a spontaneous speech sample and listeners rate their intelligibility

Word identification tests are considered to have more face validity than scaling procedures because listeners are

required to demonstrate the degree to which they actually understood what was said. (Porter and Bradley, 1985)

2) Diagnostic tests

These tests are structured to reveal specific speech faults. Two levels of testing can be distinguished:

1) Suprasegmental level

This is not concerned with phonemes but with voice and prosodic features.

2) The segmental level

Investigations here view the production of vowels and consonants. Testing phoneme production can be looked at via two avenues, phonetic and phonological:

(i) Phonetic: The phoneme is tested in a non-meaningful context. For example if the examiner wishes to test the /s/ sound he instructs the child to say /sa/ and judges the production of the /s/

(ii) Phonological: Here the phoneme is tested in a meaningful context. The child's production of the /s/ when tested phonologically may be judged by the way he pronounces the word "sun"

Ling. D.'s (1976) tests of phonological and phonetic level speech have become increasingly popular. (Smith, 1980)

Disadvantages common to performance and diagnostic tests

1) Variability

Variability can be seen as occurring on three counts (Levitt, 1980)

i) Variability across testers (Levitt, 1980)

An utterance that one tester scores as correct, may be scored incorrect by another tester

ii) Variability of the child's performance (Levitt, 1980; Ling, D. and Ling, A.H., 1978)

The child's performance may differ in between testing sessions, not because of learning but because of inconsistency of correct production due to other factors, for example, motivation

iii) Variability of the same tester over time (Levitt, 1980)

Because of the difficulty in judging the speech of the hearing impaired a tester may score the same utterance as correct on one occasion and incorrect on another

Trybus (1980) aptly states: "Speech intelligibility is in the ear of the listener as well as the mouth of the speaker." (Trybus, 1980, p.69) The writer would extend this limitation to cover the assessment of the phoneme production of the hearing impaired, which too is in the ear of the listener as well as the mouth of the speaker.

2) Lack of normative data

Adequate data to establish norms for hearing impaired children have not been established, neither in terms of age, nor in terms of relative degree of hearing loss. (Smith, 1980) This means that exactly what a test states in terms of other hearing impaired children is unknown.

Disadvantages particular to intelligibility tests

Intelligibility tests are widely used in research studies but are not used for routine evaluations of children's speech in schools. (Levitt in Subtleny, 1980) Reasons for this include:

1) Too time consuming

Intelligibility tests are too time consuming to be used with any regularity in a school. (Ling, D. and Ling, A.H., 1978)

2) Too many people are required to administer the test

(Ling, D. and Ling, A.H., 1978; Monsen, 1981; Smith, 1980)

A panel of judges is normally required to listen to the recording of speech.

The writer concurs with Smith (1980) that in the real world a teacher or speech pathologist does not have access to the people or availability of the time demanded to use such tests on a regular basis.

3) Does not provide the teacher with diagnostic information

Intelligibility tests do not reveal specific faults. They tell how much of an utterance can be understood, but not which phonemes are misarticulated. A teacher needs the kind of evaluation that will give focus to her work. (Ling, D., 1976)

Disadvantages particular to diagnostic tests

1) Variability

The variability between raters applies particularly to judgements of suprasegmental features, where there is little agreement between judges. (Markides, 1970a)

2) One word utterances

If the diagnostic test elicits and judges single words it is subject to certain caveats in terms of test validity. (Levitt, 1980) The child's production of single words may be better than use of those words in spontaneous speech. As linguistic complexity increases, correct production of phonemes decreases. (Haycock, 1949)

3) Difficulty of phonetic transcriptions

Most diagnostic tests depend on phonetic transcriptions. As discussed earlier, the errors of the hearing impaired are often untranscribable.

4) Difficulty of knowing whether it is right or wrong

This has been discussed earlier. The quality of production of sounds of the hearing impaired is extremely complex.

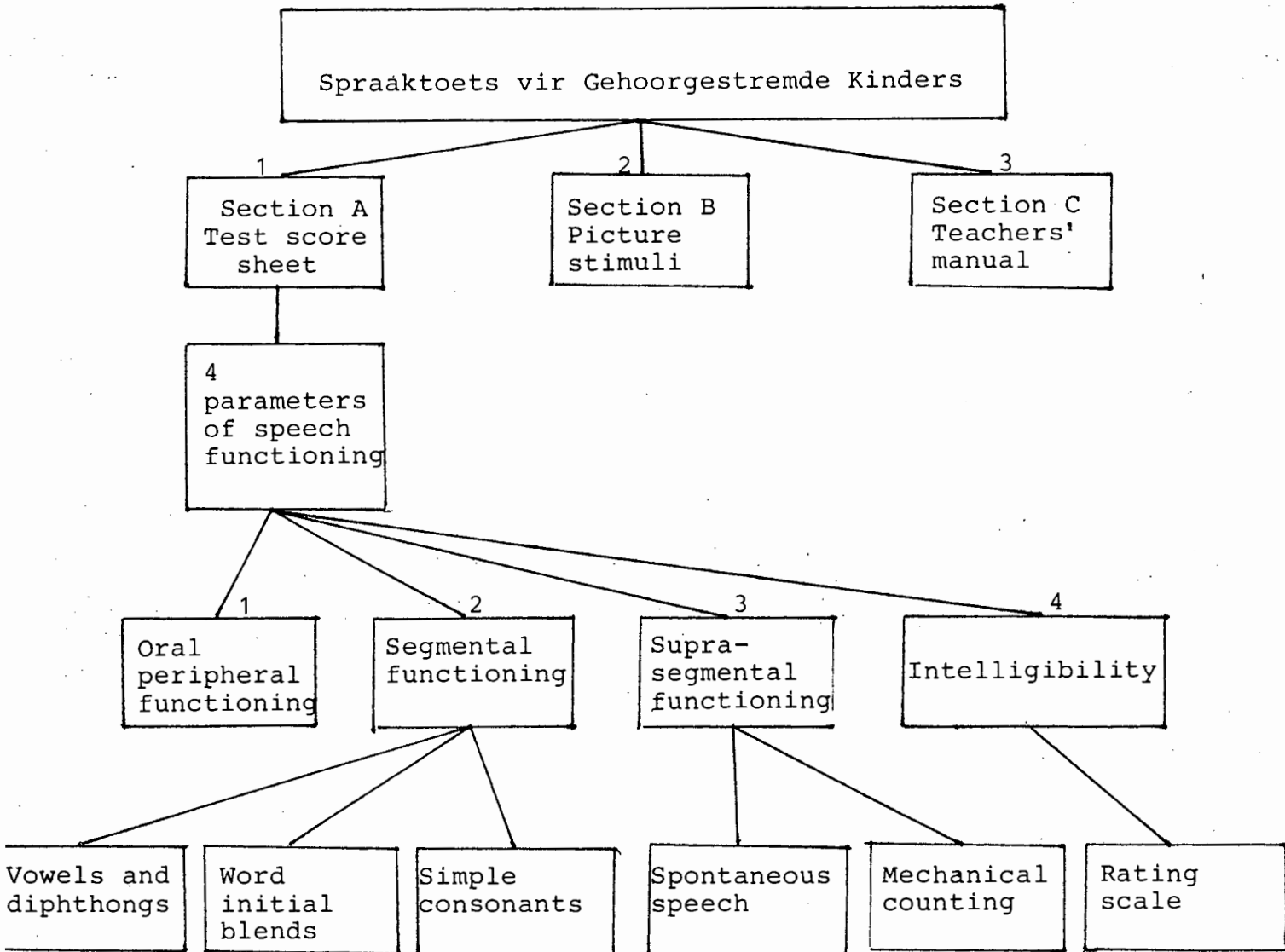
Mandate for development of the proposed assessment procedure

Assessment then is a necessary but rarely performed task in most schools for the hearing impaired. Consensus on methods of evaluation has not been reached. (Ling, D., 1981) Both performance and diagnostic tests have flaws which do not seem to be entirely erasable. For any assessment procedure to be of worth it must attempt to optimise the strengths inherent in the available options and minimise, as far as possible, the flaws which remain. These efforts in relation to the test devised will be described in the following chapter.

CHAPTER 7

AN OVERVIEW IN SUMMARY OF THE TEST AND THE TEST PROCEDURE

This chapter provides a brief summary of the phonological test devised. The subsequent two chapters describe the test in greater depth. The test, entitled "Spraaktoets Vir Gehoorgestremde Kinders", is presented as Appendix 2. It has been specifically designed that it may be photocopied. A graphic summary of the parameters of the test:



The test is divided into four separate printed sections.

1. SECTION A : THE TEST SCORE SHEET
(Afdeling A : Resultate van spraaktoets vir gehoorgestremde kinders).
2. SECTION B : PICTURE STIMULI
(Afdeling B : Prentstimuli)
3. SECTION C : TEACHER'S MANUAL
(Afdeling C : Onderwysersgids)

Test procedure:

Four parameters of speech functioning are observed:

- 1) Oral peripheral functioning: The examination procedure is described in the Teacher's Manual.
- 2) Segmental investigation: The child is directed to name the picture he is shown in Section B. This is scored on the test form (Section A). There are three sections (i) vowels and diphthongs, (ii) simple consonants, (iii) word initial blends.

The teacher listens to a specific sound and marks it as correct (✓), incorrect (X) or omitted (-). If the

child does not produce the sound spontaneously, but is stimuable for the sound it is scored (S). Where one sound is substituted by another the specific substitution is recorded. Certain words in the simple consonant section have two productions of the sound under investigation available for testing. To qualify as correct both productions must be correct. Further details of scoring for specific phonemes are given in the following chapter. One mark is allotted per correct response. Responses that are incorrect, or qualified in any way are given no points. Particular stress is given to eliciting natural speech and the child is not motivated to try to speak well. Where subjects are no longer scoring on the simple consonant section, the teacher is not required to test word initial blends.

- 3) The teacher describes suprasegmental aspects of the child's speech, based on a spontaneous speech sample. This is elicited in conversation. In addition to this the child is required to count numbers aloud. Where conversation is not possible, suprasegmental aspects are judged entirely on mechanical counting.
- 4) Intelligibility: Based on the child's connected speech ability the teacher rates intelligibility.

The test takes approximately 20 minutes to complete.

CHAPTER 8

THE PARAMETERS OF THE TEST INCLUDING FACTORS WHICH INFLUENCED THE DESIGN OF THE TEST

This chapter outlines the parameters of the test in some depth. It takes particular account of factors which influenced the design of the test.

Provision is made to record the pupil's name, date of birth, etiology of deafness, time deafness was sustained and preschool education, the name/names of the testers, dates of assessments and abbreviations used. An audiogram form is provided to view the child's hearing acuity. The importance and interrelationship of this data is discussed in the Teacher's Guide.

All four parameters of speech functioning are represented in the test score sheet. These are:

I Oral peripheral functioning

The summary form presented was translated from Ling, D. (1976).

Various aspects of the structure and functioning of the speech organs are viewed.

1) Facial structure

2) Lips The four lip functions required in speech are investigated:

(i) rounding-protrusion

(ii) spreading

(iii) breath retention

(iv) repeated closure

3) Jaw

4) Teeth

5) Tongue

6) Hard palate

7) Soft palate

8) Larynx

Strategies for investigation follow those advocated by Ling, D. (1976). They are described in the teacher's manual and illustrated by diagrams.

II Segmental skills

Phoneme proficiency is investigated phonologically, viewing the production of specific phonemes in single words. Fifty-seven phonemes are tested.

Order of phonemes tested

The order of the phonemes tested and subdivisions of phonemes into specific categories was taken from Ling's Phonologic Level Speech Evaluation (Ling, D., 1976). The order of phonemes in Ling's evaluation reflects the hierarchical skills described in his seven stage teaching model. This is a progression from vowels and diphthongs to simple consonants, word initial and word final blends. Word final blends were omitted from the test.

Adaptations to Afrikaans

It was necessary to make certain changes in order for the test to be adapted into Afrikaans. These were:

- 1) Phonemes that do not occur in Afrikaans were omitted

Phonemes which occur in the English phonological system but do not occur in the Afrikaans phonological system or occur very rarely were omitted from the test. They are given below.

(i) Vowels and diphthongs

<u>Phoneme</u>	<u>Keyword</u>
(1) /ɔʊ/	c <u>ow</u>
(2) /æ/	ca <u>t</u>
(3) /ʌ/	cu <u>p</u>
(4) /ɜ/	bi <u>rd</u>

(ii) Consonants

<u>Phoneme</u>	<u>Keyword</u>
(1) /ʃ/	ch <u>ase</u>
(2) /dʒ/	ju <u>g</u>
(3) /θ/	th <u>ree</u>
(4) /ð/	th <u>is</u>
(5) /g/	g <u>oat</u>
(6) /z/	z <u>oo</u>
(7) /ʒ/	treas <u>ure</u>

2) Different phonetic environments were considered

Certain phonemes are not used in the same phonetic environments as in English.

(a) voiced stops

Voiced stops are not used word finally in Afrikaans.

(i) /d/ is not used word-finally. Even when a word is spelled with a 'd' grapheme word finally, it is produced as a /t/ phoneme. The 'd' grapheme in the Afrikaans word 'bed' is produced as the /t/ phoneme.

(ii) Similarly /b/ is not used word finally.

(iii) The semi vowel /w/ occurs only in a blend with /t/ as in 'twaalf', 'twee', 'twis'. It does not occur alone. Other than in the context of 'tw' blends the Afrikaans grapheme 'w' refers to the /v/ phoneme.

- 3) Phonemes that occur in the Afrikaans but not the English phonological system were added

Certain phonemes do not occur in the English phonology but occur in the Afrikaans phonology.

(i) Vowels and diphthongs

<u>Phoneme</u>	<u>Testword</u>
(1) /y:/	mu <u>r</u>
(2) /o/	bo <u>o</u> m
(3) /e/	tw <u>e</u> e
(4) /ɔ/	de <u>u</u> r
(5) /œy/	hu <u>i</u> s

(ii) Consonants

<u>Phoneme</u>	<u>Testword</u>
(1) /x/	g <u>e</u> el
(2) /r/	r <u>o</u> oi

The Afrikaans /r/ is not produced in the same way as The Standard English retroflex 'r'. It is most commonly the rolled 'r'.

Where the velar 'r' was part of the dialect of the pupil it was taken as correct.

THE TEST WORDS

Below, boxed in, are the 57 testwords. The phoneme under investigation is underlined. A brief explanation is given as to the categorization of phonemes. The three phonological sections are: (i) vowels and diphthongs; (ii) simple consonants; and (iii) word initial blends.

Vowels and diphthongs

Ten words and four diphthongs were tested.

(i) Vowel testwords:

(1)	/ʊ/	bo <u>e</u> k
(2)	/ɔ/	h <u>o</u> nd
(3)	/a:/	a <u>a</u> p
(4)	/ɑ/	ba <u>l</u>
(5)	/o/	bo <u>o</u> m
(6)	/e/	tw <u>ee</u>
(7)	/ɛ/	se <u>s</u>
(8)	/i:/	vi <u>er</u>
(9)	/y:/	mu <u>ur</u>
(10)	/ɒ/	de <u>ur</u>
<u>Diphthong testwords:</u>		
(11)	/ɔey/	hu <u>is</u>
(12)	/aʊ/	bl <u>ou</u>
(13)	/ai/	swa <u>ai</u>
(14)	/eɪ/	vy <u>f</u>

(ii) Consonants

Twenty consonants are grouped together and labelled according to manner of production.

Consonant grouping

plosives	(eksplosiewe)
stops	(eindepolsiewe)
nasals	(nasale)
fricatives	(frikatiewe)

ConsonantsPlosives (Eksplosiewe)

- (1) /b/ baba
 (2) /d/ deur
 (3) /p/ piesang
 (4) /t/ tafel
 (5) /k/ kat

Stops (Eindeplosiewe)

- (6) /p/ sep
 (7) /t/ kat
 (8) /k/ koek

Nasals (Nasale)

- (9) /m/ muis
 (10) /n/ neus
 (11) /ŋ/ tong

Semi vowel

- (12) /y/ jas

Liquid

- (13) /l/ lepel

Fricatives (Frikatiewe)

- (14) /r/ rooi
 (15) /h/ huis
 (16) /f/ vyf
 (17) /ʃ/ sjokolade
 (18) /s/ ses
 (19) /v/ water
 (20) /x/ geel

(iii) Word initial blends

Twenty-three word initial blends are examined. A description of the manner of production of each category of blends is given in the teacher's manual.

- 1) Two-organ sequential blends (Twee spraakorgane opeenvolgend)

/sm// /sp// /sw/

- 2) Single-organ sequential blends (Een spraak orgaan opeenvolgend)

/sk// /sl// /sn// /st/

- 3) Two-organ coformulated blends (Twee spraak organe gelyktydig in een funksie gebruik)

/bl// /br// /fl// /fr// /kw// /pl// /pr// /tw/

- 4) Single-organ coformulated blends (Een spraak orgaan verrig twee funksies gelyktydig)

/dr// /kr// /tr// /~~kr~~/

- 5) Complex word initial blends (Kompleks)

/skr// /spr// /str/

Word initial blend testwords:Two-organ sequential

- (1) /sm/ smeer
 (2) /sp/ speel
 (3) /sw/ swaai

Single-organ sequential

- (4) /sk/ skoen
 (5) /sl/ slaap
 (6) /sn/ snor
 (7) /st/ stoel

Two-organ coformulated

- (8) /bl/ blou
 (9) /br/ brood
 (10) /fl/ vliegtuig
 (11) /fr/ vrugte
 (12) /kw/ kwaad
 (13) /pl/ pleister
 (14) /pr/ prop
 (15) /tw/ twee

Single-organ coformulated

- (16) /ʁr/ groen
 (17) /dr/ drie
 (18) /kl/ klippe
 (19) /kr/ kraan
 (20) /tr/ trein

Complex

(21) /skr/	<u>skryf</u>
(22) /spr/	<u>spring</u>
(23) /str/	<u>stryk</u>

Choice of lexicon

Words were chosen for lexical familiarity among the hearing impaired. Numbers, colours and body parts were particularly suitable in this regard. Some words were used more than once to score phonemes in different subsections. For example the word 'stoel' is used in the vowel section to judge the phoneme represented by /u/ and again in the word initial blend section to judge the blend /st/.

Certain words in the word initial blend section were not familiar to a significant proportion of the pupils. These include 'pleister', 'snor' and 'prop'. Where words were not familiar they were scored on imitation.

III Suprasegmental investigation

The teacher is directed to view the child's speech functioning as a gestalt, taking into particular account suprasegmental errors of pitch, rhythm and

stress, rate of utterance and vocal quality. She is directed to do this in two ways:

(i) Conversation: The teacher engages the child in conversation and listens to his speech functioning for connected utterances. Speech elicited in response to questions or as a part of conversation is a very powerful technique for obtaining samples of spontaneous speech (Levitt, 1980). Eliciting spontaneous conversation with a hearing impaired child, especially a deaf child, with poor communication skills can be problematic. Success is dependent upon the skills of the child and the abilities of the teacher to elicit conversation (Levitt, 1980). The advantage of a teacher who is well known to the child assessing speech is pertinent here. Where a tester is not well known to the child the child may experience difficulty on three counts. Firstly, he may find it difficult to speech-read an unfamiliar person, secondly an unfamiliar person may not understand him and this may lead to discouragement and thirdly, an unfamiliar person may not be cognisant of his interests and find engaging in conversation difficult.

"It depended very much on the temperament of the individual whether they were seriously discouraged by the interviewer's failure sometimes to understand them. Some, used to the far greater ability to interpret their imperfect speech became impatient. Others

who were more withdrawn and less confident became silent."

(Report of the Health of the School Child 1962-1963; by the chief medical officer of the Department of Health and Science, In The Teacher of the Deaf, 1965, p.234).

(iii) Mechanical counting Much information can be gained from listening to the child's connected speech in this way (Smith, 1980). Generally, all suprasegmental features can be reviewed. Smith (1980) describes some of these:

"During the counting test the degree of movement of the articulators, degree of pressure build-up for stop consonants, presence of hypernasality glottalization and intrusive sounds ..." (Smith, 1980, p.26)

Other areas of speech functioning that can be viewed are pitch, intensity, stress. Breath control may be gauged by viewing how many words the child produces on one breath stream.

A singular advantage that mechanical counting offers is that the evaluator does not need to expend simultaneous energy on eliciting conversation and attempting to analyse the speech faults.

IV Intelligibility The Speech Intelligibility Rating Scale, developed at the National Technical Institute for the Deaf (cited by Geffner and Freeman, 1980) was selected and translated into Afrikaans. The teacher is required to rate intelligibility of the child.

The Teacher's Manual (Section C)

The test instructions are given in the Teacher's Manual. The manual, however, attempts to go beyond this function. Relevant aspects of research are given. The writer concurs with Schulte that those teachers who are aware of scientific findings and combine them with the best prerequisites of practice, will have the best results. (Schulte, 1981)

Two factors have influenced the style of writing:

1) Readability has been maximized

(a) References have been limited to the single reference not available in this thesis. Teachers who wish to have further knowledge of research data are referred to this thesis.

(b) Terminology has been selected to be appropriate to non-speech specialists.

- 2) Psychological aspects have been taken into account
- (a) The responsibility of teachers for teaching speech is stated and discussed.
 - (b) The inadequacy that teachers feel at teaching speech (Dale, 1971) is anticipated. Reassurance and encouragement are given in an effort to mitigate this.

The Picture Stimuli (Section B)

Empirical research was done to ensure that the picture stimulated the child to say the required word. Certain pictures were eliminated because the children from both schools gave similar incorrect lexical responses. These included:

- 1) A picture of a ring, which sought to elicit the word "ring", in order to assess the /ŋ/ phoneme. A high proportion of the children from both schools constantly responded with the word "trou"
- 2) A picture of a bed, which sought to elicit the word "bed", in order to assess the /ɛ/ phoneme. A high proportion of the children from both schools responded with the word "slaap"

In order to obviate incorrect responses, different picture stimuli were tested and those found to be most suitable selected for the final version of the test.

CHAPTER 9

TWO ADDITIONAL FACTORS RELATING TO THE SPEECH ASSESSMENT NEEDS OF THE HEARING IMPAIRED AS THEY AFFECTED THE DESIGN OF THE SCORING SHEET

Two strategies, reflected in the scoring sheet, were adopted with the specific needs of the hearing impaired in mind. These are, firstly a test designed to demonstrate small increments of gain, and secondly to identify faults that are common to the hearing impaired.

1) Test designed to demonstrate small increments

There is a continuing need for the development of assessment devices which can measure continuous small increments in speech proficiency for the hearing impaired (Trybus, 1980).

To this end, provision is made for four successive tests on one test form. These are marked T1, T2, T3 and T4 (Toets een, Toets twee, Toets drie and Toets vier). The scores are given directly below each other.

This design was adopted in order that gains over time, or the lack of such gains, be effectively viewed. It should not be viewed as a surface change in test presentation. It is more complex, for it is an attempt to view the child's speech in a relative manner. In the writer's estimation a

tester who is aware of the pupil's previous responses is responding with finer judgement, consciously listening for specific aspects of change.

Pritchers, reviewing the broader area of general assessment for the hearing impaired, states:

"Assessment implies a continuous review of progress and change against a background of initial information." (Pritchers, 1978, p.156)

This observation is deemed by the writer to be pertinent for the specific requirements of speech assessments.

2) To identify faults that are common to the hearing impaired

Certain disorders of speech are both singular to deaf children (Black, 1971) and relatively common to them (Dodd, 1976; Calvert, 1982).

Articulation tests designed for use with those with normal hearing are liable to be inadequate for testing the speech of hearing impaired, especially the severely hearing impaired (Calvert, 1982) because they are not designed to identify speech faults common to the hearing impaired such as errors of addition, gross exaggeration or the faulty duration of vowels (Calvert, 1982). These typical faults were taken into account in the scoring of each of the

sections of the segmental test. An exhaustive provision for scoring such disorders is not given. This would become too unwieldy for teachers to administer. Faults deemed by the writer to be significant and easily observable were taken into account.

These are discussed below for:

- A) Vowels and diphthongs
- B) Simple consonants
- C) Word initial blends

A. Faults relating to vowel production

(1) Neutralization (Black, 1971; Levitt, 1971; Angelocci, Kopp and Holbrook, 1964). The correct target configuration for the vowel is not reached and the /ə/ (schwa) is substituted.

(2) Diphthongization (Black, 1971; Calvert, 1982; Ling, D., 1976). The vowel is produced with two elements instead of one element.

(3) Nasalization (Black, 1971; Ling, D., 1976). Appropriate velarpharyngeal closure is not effected and the voice is nasally directed.

(4) Prolongation (Ling, D., 1976; Levitt, 1971). The duration of the vowel is unnaturally extended.

(5) Substitution (Black, 1971; Calvert, 1982; Ling, D., 1976; Levitt, 1971). One vowel is substituted by another.

(6) Exaggeration (Ling, D., 1976). Exaggerated movements of the jaw lead to abnormal tongue and lip target behaviours.

(7) Voice The writer concurs with Ling and Ling, that non-segmental aspects of speech are not separate from vowel production (Ling, D. and Ling, A.H., 1978), and therefore regards suprasegmental deviation as a deviation of vowel production. Therefore voice quality is noted in this regard.

Scoring of vowels to reflect the considerations discussed above

These faults are explained in the Teacher's Manual, and teachers are directed to write in the specific fault.

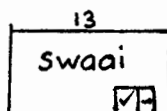
Abbreviations are given:

neu = neutralization (Afrikaans term: Neutralisasie)
 dip = diphthongization (Afrikaans term: Diftoongasie)
 nas = nasalization (Afrikaans term: Nasalisering)
 verl.= prolongation (Afrikaans term: Verleng)
 verv.= substitution (Afrikaans term: Vervanging)
 E = exaggeration (Afrikaans term: Oordrywing)

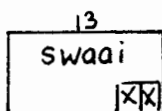
If the fault is not among those listed above the teacher is directed to record it in the test form.

Diphthongs

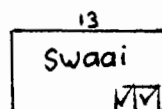
In addition to the faults described above, the second element of diphthongs is commonly omitted (Black, 1971; Markides, 1981). The scoring block for each diphthong is provided with two blocks. The teacher is directed to listen for both elements. If both elements are present and correct she will tick both blocks, if only the first element is present she will tick the first block and mark the second block as incorrect.

Example 1 : the diphthong /aI/

This indicates that the first element /a/ was correct, but the second element /I/ was absent or incorrect.

Example 2

This indicates that both elements of the diphthong were incorrectly produced.

Example 3

This indicates that both elements of the diphthong are present and correct.

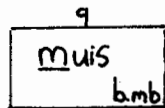
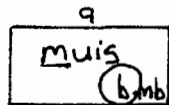
B. Faults relating to the production of simple consonants

These are subdivided into: (i) errors of substitution for the phonemes /m/, /n/ and /s/; (ii) errors of omission for the phonemes /ŋ/ and /k/.

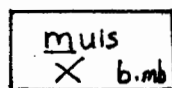
1) Errors of substitutionsi) The phoneme

/m/

The phoneme /m/ is frequently produced /mb/ or /b/ (Ling, D., 1976; Calvert, 1983). The scoring block for /m/ has these two substitutions written in

Example 1

This indicates the child's production is incorrect, and that he has substituted a /b/.

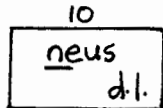
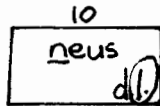
Example 2

The /m/ is incorrect, but the child has not made either of the common errors.

ii) The phoneme

/n/

/n/ is frequently substituted by an /l/ (Haycock, 1942) or a /d/ (Calvert, 1982). The scoring block for /n/ has these two substitutions written in.

Example

The child's production was incorrect, he has substituted a /l/.

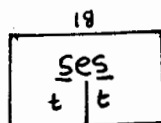
iii) The phoneme

/s/

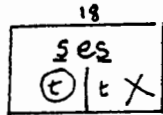
A /t/ is frequently substituted for an /s/ (Ling, D., 1976). The scoring block for /s/ has been divided into two sections because two productions of the /s/ are elicited by the word 'ses'. Each section has a 't' written in, so that each /s/ may be viewed separately.

Examples

- 1) The scoring
block



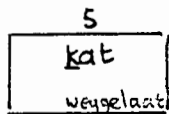
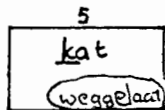
2)



Both productions of the pupil were incorrect. The first /s/ was substituted by a /t/, the second /s/ was incorrect, but was not substituted by a /t/.

2) Errors of omissionThe phoneme k

The /k/ is frequently omitted (Geffner and Freeman, 1980). The score block for the /k/ reflects this, both as a plosive and as a word final stop.

Example 1 : Scoring blockExample 2

The pupil's production of /k/ is incorrect, he has omitted it.

Example 3

5

kat
X weggelaat

The pupil's production of /k/ is incorrect. The tester has not qualified this any further.

The phoneme 'ng'

/ŋ/ 'ng'

This is the most frequently omitted phoneme among hearing impaired children (Geffner and Freeman, 1980).

Examples

- 1) The scoring
block

||

tong
weggelaat

- 2)

||

tong
weggelaat

The subject's production of 'ng' is not correct. He has omitted the /ŋ/.

C. Common disorders relating to the use of word initial blends

In addition to the faults described for simple consonants, two additional faults are common in the production of blends.

1) Intrusive voicing

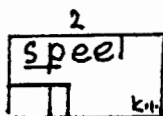
The insertion of a superfluous vowel between consonants is a common fault (Calvert, 1982). Instead of saying 'stoel' (the Afrikaans word for 'chair') the child will say 'setoel'. This is scored k.i. (Klank invoeging) on the test form.

2) Omission

Part of the blend may be omitted and instead of saying 'stoel' the child says 'toel'. For this reason the scoring block is divided up into two sections (where the blend is made up of two consonants) or three sections (where the blend is made up of three consonants).

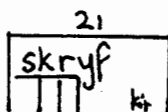
Examples

1)



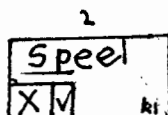
The 'sp' blend has two consonantal elements, therefore the scoring block has two divisions.

2)



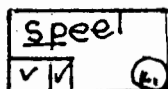
The 'skr' blend is made up of three consonants, therefore the scoring block has three divisions.

3)



The production of /s/ is incorrect, the production of /p/ is correct, there has been no intrusive voicing.

4)



Both consonants are correctly produced, however intrusive voicing was present. Consequently production is incorrect.

Voiced voiceless substitution

The substitution of surd-sonant consonant cognates (voiceless and voiced sounds) is an error typical of profoundly deaf speakers (Calvert, 1982). This fault has not been scored or described because of its complexity. It is more complex than the simple substitution of one sound for another (Calvert, 1982) but involves among other factors, duration of the vowel preceding the consonant (Calvert, 1982). For this reason it has been omitted from the score sheet. It was hypothesized by the writer that the teacher had sufficient listening to do as to manner and place of substitutions and that, compared to manner and place substitutions, voice voiceless substitution is difficult to listen for and a relatively less noxious fault.

CHAPTER 10

THE RELIABILITY, VALIDITY AND LIMITATIONS OF THE TEST

Two of the most important concerns in the development of any test are reliability and validity (Levitt, 1980). Reliability refers to the self consistency of the test as a measuring instrument (Hilgard et al., 1953). If a test is reliable then separate applications will yield essentially the same information (Levitt, 1980). The validity of the test refers to its predictive significance (Hilgard et al., 1953). This will be demonstrated by the accuracy with which the test score is a measure of the quantity or quantities to be measured (Levitt, 1980). The reliability and validity of the intelligibility rating and suprasegmental sections and that of the segmental section will be discussed separately.

A. Reliability and validity of the intelligibility rating and suprasegmental sections of the test

Intelligibility rating

The intelligibility rating scale was not devised by the writer, but translated from one already in accepted use. The rating scale chosen was the Speech Intelligibility Rating Scale, developed at the National Technical Institute for the Deaf, cited by Geffner and Freeman (1980). The validity and reliability was accepted as having been

demonstrated by the educators who developed it. A rating scale was chosen above a word recognition task, despite the greater face validity of the latter (Porter and Bradley, 1985) because it does not require extra personnel and is quicker to administer. The intelligibility rating is not regarded by the writer as an objective measurement, but as a qualitative description. Rating scales provide only an estimate of the speech intelligibility of each child (Markides, 1977). It is worthwhile for practical reasons to have such an estimate of each child's speech intelligibility (Markides, 1977) but for research purposes a more refined measurement is required (Markides, 1977). For this reason the intelligibility scale was not taken into account in the research study described in Section III.

Suprasegmental features

The judgement of suprasegmental features too is qualitative and descriptive. Being open-ended, it does not lend itself to quantification. For this reason comments on suprasegmental aspects were not used in the research study described in Section III.

B.(i) Reliability of the segmental section

Two areas of variation that could affect reliability were investigated:

Variation of the same tester over time, (Levitt, 1980). This is termed intratester reliability, and secondly, variation across different testers. (Levitt, 1980)

1) Intratester reliability

Because of the difficulty of judging the speech faults of hearing impaired children (discussed in Chapter 6), there is the possibility that a tester may mark a phoneme as incorrect on one occasion and as correct on another occasion, even though the phoneme itself was produced consistently, without variation on both occasions. To test for this, one tester (the writer) tested 11 children on two occasions, one day apart.

There is, in view of the arduous task of speech improvement, virtually no chance that the subjects will learn to produce the phoneme any better by saying it once without receiving any correction or additional aid by the teacher.

A Tetrachoric R computation was used to analyse the data. This formula was chosen because the data is non parametric,

with both variables (response - right/wrong; two occasions of testing) being dichotomous.

Four correlations were performed, one for the total score (vowels, consonants and word initial blends) and one for each of the subsections, vowels, consonants and word initial blends.

Results for Intratester reliability

- 1) Total score (vowels, consonants and word initial blends)
 $r = 0.880$
- 2) Vowels
 $r = 0.8000$
- 3) Consonants
 $r = 0.856$
- 4) Word initial blends
 $r = 0.939$

Discussion

The correlation for intratester reliability was high for each of the subsections and for the total score. The reliability for vowels was the lowest. This is congruent with the writer's perceptions of the greater difficulty experienced in deciding whether to score a vowel as correct

or not. Vowels are produced by modifying the shape of the mouth. By varying the position of the articulators. The range or target of variation which could be counted as correct or not would seem to be wider than that for consonants. Consonants are produced by occluding or partially occluding the voice or breath stream. The target for what is correct or incorrect is narrower. There is not as much leeway as with vowels. It is understandable then that it is relatively easier to judge these and for successive judgements to be in agreement.

Word initial blends had the highest correlation figure. Possibly this is because two opportunities for judgement are presented.

2) Intertester reliability

Differences across testers is a problem in various areas of educational and psychological testing (Vernon, 1965). Two categories of testers were investigated in this regard, class teachers and speech specialists.

a) Reliability : class teachers

Two teachers assessed the speech of three children. The data was analysed using the Tetrachoric R formula. As with the design above, a separate correlation was

computed for the total phonemes, and for each of the subsections.

Results

- 1) Total phonemes
 $r = 0.861$
- 2) Vowels
 $r = 0.887$
- 3) Consonants
 $r = 0.723$
- 4) Word initial blends
 $r = 0.928$

The lower correlation for the judgement of consonants as compared to vowels is difficult to explain.

Word initial blends have the highest correlation, as with the intratester investigation.

b) Intertester reliability : speech specialists

The same procedure was used to analyse the responses of the principal tester (the writer) and a co-tester, who co-tested 10 of the sample described in the longitudinal study (Section III).

Results

- 1) Total phonemes
r = 0.966
- 2) Vowels
r = 0.941
- 3) Consonants
r = 0.938
- 4) Word initial blends
r = 0.995

Discussion of results

The correlation for speech specialists was higher than that of teachers. This can probably be explained by the greater amount of time spent by the speech specialists defining criteria for research purposes. The same relationship of agreement that exists between teachers for the relative position vowel and consonant agreements, exists for the two speech specialists. There is greater agreement between the judgement of vowels than of consonants. The highest correlation is that for word initial blends.

B.(ii) The validity of the segmental section

The face validity established for similar tests in speech therapy to test the speech of hearing children was accepted as operating for this test as well. Tests such as the Templin Darley Test of Articulation (Templin and Darley, 1969) and the Goldman-Fristoe Test (Goldman Fristoe, 1972) are designed and used with the same operational principles. The child is stimulated to say a word in a naming task, by verbally identifying a picture he is shown. A specific sound is then listened for and assessed.

Limitations of the test

The limitations of this test fall into three areas.

1) Dependent on the listener's proficiency

The correctness of the test results is limited to the proficiency of the listener judgement. Until more objective tests are developed, for example tests that rely on spectographic analysis, it would seem that this flaw will remain.

Training teachers to assess phonemes accurately should be considered a priority because effective assessment

depends on it. The systematization of such a training procedure would be a valuable speech teaching tool. (Levitt, 1980) The test manual provides training by guiding teachers towards observing specific faults.

2) The overestimation by teachers of pupils' speech skills

By observation it was noted that teachers overestimated the speech proficiency of their pupils. This is in agreement with the findings of other writers (Markides, 1970b). Training listening skills is once again an important prerequisite.

3) Single word utterances

The value of judgements of single word utterances is subject to certain caveats (Levitt, 1980). The child may respond better using a one word response than he would for speech in context (Levitt, 1980). This flaw is inherent in the majority of published speech tests. (Levitt, 1980)

In view of the linguistic limitations and communication problems it is difficult to obviate this problem completely.

In an attempt to mitigate this flaw, and to elicit utterances as close to those found in spontaneous speech as possible, the test requires that pupils are not motivated to try to speak well. The tester presents the pictures to be named. This is in contrast to both Ling and Dale. Ling (Ling, D., 1976) reinforces correct responses in an attempt to motivate for the best speech available to the child. Dale (Dale, 1982) asks the child specifically for 'good speech' (Dale, 1982, p.69). In contrast, the test developed by the writer requires that all responses, whether correct or incorrect, are reacted to in a positive, encouraging manner.

Discussion and Conclusion

Teachers, while not diagnosing every speech fault, did diagnose a significant proportion. This would give them an immediate focus for speech teaching that they would otherwise not have had. In addition, assessing pupils trains teachers to listen more sensitively. This can be seen in the previously quoted observation that teachers' second assessments were far less lenient than their first assessments (Markides, 1970b). It is possible that teachers will train themselves in this way to greater proficiency. The teacher's ear is not an objective or foolproof analyser. It is, however, at the present time the best analyser of

human speech available (Ling, D., 1976; Pronovost, 1979). A well trained, experienced listener can provide more information than that gleaned from acoustical and/or physiological measurement alone (Pronovost, 1979). The issue of the need for such training remains pressing and unfulfilled.

The vast majority of speech tests currently available are unsatisfactory for use with the hearing impaired in terms of validity, as most rely on single word utterances. (Levitt, 1980) Another major shortcoming of virtually all the tests available is that there is little information available on test reliability. (Levitt, 1980) An attempt has been made by the writer to address these aspects.

The difficulty of objective judgement remains problematic, both in terms of the test developed in this thesis, and in tests developed by other writers.

As Levitt aptly states:

"The essential problem is that somebody either in the clinic or the classroom has to make the decision whether a given utterance has been produced correctly or incorrectly." (Levitt, 1980, p.37)

PART III : THE EXPERIMENT

CHAPTER 11MARKIDES INVESTIGATION REVIEWED

This chapter initiates the third and final section of this thesis, namely a pilot study which investigates the variable of educational environment as an influence on the speech proficiency of hearing impaired children.

It has as its starting point the results of an investigation done by Andreas Markides (1970a) of the University of Manchester. The labelling terms for an aural handicap used in this chapter are those used by Markides (1970a).

Relevant aspects of a paper entitled "The speech of deaf and partially hearing children with special reference to factors affecting intelligibility" by A Markides (1970a)

In this paper Markides describes his investigation of the speech of selected groups of junior deaf and partially hearing children.

The main purpose was to analyse the speech of these groups with a view to identifying factors affecting intelligibility, and to recommend possible improvements in speech teaching in schools.

The subjects were divided into the categories: deaf, partially hearing and hearing. 110 pupils were included:

58 deaf children

27 partially hearing children

25 hearing children

Tests

Three types of tests were administered: linguistic tests, an articulation test and a speech intelligibility test.

Summary of test methods and findings with reference to articulation and intelligibility

1) Articulation

Test: Markides constructed his own test as none was available. Twenty-four words were presented pictorially on separate charts. The words were chosen to be within the vocabulary of the children involved, and to test a representative number of vowels, diphthongs and consonants in the English language.

Summary of results: The errors Markides describes in his paper, are for the most part congruent with the predictable phonological errors described by numerous other writers. (Dodd, 1976; Monsen, 1983; Ling, D., 1976; Calvert, C.R. and Silverman, 1983)

As expected, it was found that the deaf children had made more errors, on average, than the partially hearing children. No significant differences were found with reference to age, sex or residential status.

What stands as crucially important to view for the subsequent investigation of this thesis in his observation that: "There were, however, wide variations between the average number of errors made by the

children attending different schools." (Markides, 1970a, p.132)

Markides states that in his investigation he found that: "... only one school actually planned speech lessons and also kept records of their pupils' speech progress." (Markides, 1970a, p.135)

2) Intelligibility

Test: Markides used a system designed by John and Howarth (1965). The speech intelligibility of each child was based on the average number of words understood correctly by two groups of judges, one a group of experienced listeners and the other totally naive with regard to the speech of deaf children.

The investigation was designed to determine:

- (a) whether the scores of the deaf, partially hearing and hearing pupils in each test differed significantly
- (b) whether the scores of the children in each test differed with respect to age, sex, residential status, schools and hearing loss, use of hearing

aids, pre-school training, socio-economic status and intelligence.

The variable of different schools will be given emphasis here.

Intelligibility with reference to schools

Investigating intelligibility of the deaf children attending different schools, he found: "The speech intelligibility was more or less the same except in one school where the speech intelligibility of the children was significantly better ($P < .01$)" (Markides, 1970a, p.132)

The link between articulatory proficiency and intelligibility was shown by Markides. As articulatory errors increase, intelligibility scores decrease.

Markides concludes his paper with the following paragraph in which he recognises the mutable and immutable factors operating, and especially the significant influence that educational environment has on speech proficiency.

"Finally it can be concluded that the main factors which influence the speech intelligibility of hearing impaired children as shown in this investigation, apart from those inherent in the children, i.e. age of onset of deafness, degree of hearing loss and intelligence, were the speech environment and level of educational aspiration set by each school, the degree and efficiency with

which hearing aids were used, and of course formal individual and group speech teaching." (Markides, 1970, p.130)

Markides noted the discrepancy between what is known theoretically and what happens in the classroom.

He conjectures in the light of this, that:

"Perhaps with more vigorous imaginative application of modern methods in speech teaching the number of hearing impaired children who are so-called 'oral failures' will be greatly diminished." (Markides, 1970a, p.138.)

The next chapter describes a pilot study in which the phoneme development of subjects from two similar school environments was assessed at an interval of one year and compared.

CHAPTER 12
A COMPARATIVE INVESTIGATION OF THE PHONEME
DEVELOPMENT BETWEEN SUBJECTS FROM TWO SCHOOLS
FOR THE HEARING IMPAIRED

Markides demonstrated the importance of educational environment on articulation and intelligibility. He designated certain variables as influencing speech proficiency including axiomatically "... and of course formal individual and group speech teaching". (Markides 1970a, p.137) This study attempts a closer focus on the variable of speech teaching. It utilizes the test developed and described in section 2.

Aims of the experiment

- i) To judge the efficacy of utilizing the test for an interschool investigation.
- ii) To tentatively view the results of speech curriculum and speech proficiency. This has been specified as a pressing need. (Vorce, 1974)
- iii) To view this research experientially and critically in order to make recommendations for future research designs.

Two schools were chosen, for the similarity they presented on various significant aspects, but different to each other in speech curriculum. There is a complicated interplay of factors which influences speech proficiency, and finding schools identical in all other ways and different only in speech curriculum is not possible. The factors below which they had in common were regarded as important.

1. Oral philosophy. Both schools officially follow the oral teaching method. This, as discussed in Chapter One, is a possible influence on speech proficiency.
2. Acceptance of esoteric signing among pupils. At both schools the children have evolved an esoteric signing system which they use, in varying degrees, when communicating with each other. This signing is not formally taught at either school, children teach each other informally. This may affect speech performance as the motivation for good speech is not constant throughout the day.
3. Use of hearing aids. This was judged, by discussion, as being similar.
4. In terms of South African law, both are schools for Coloured children. Socio-economic and other related issues that may occur due to segregation of children

into schools on the grounds of colour, may influence speech proficiency. These include teacher training and qualifications.

There were certain differences between the two schools, other than speech teaching, which may have been confounding variables.

1. Urban versus rural

School A is situated in an urban environment. It serves hearing impaired children from the city and from other areas. School B is situated in a rural environment and serves mainly rural children. This may affect speech performance indirectly. Rural children may be affected by certain aspects of, for example, home life expectations, medical considerations and opportunities for parent guidance differently than urban children.

2. School A caters for English and Afrikaans speaking pupils, while school B has only Afrikaans speaking pupils

There is a possibility that English and Afrikaans children attending the same school, who do not have a common language, will more likely communicate by

signing. It is possible, because of this, that there is more signing in school A, which means there is less motivation to use speech.

Comparison of the two speech teaching systems

The two speech programmes were examined in terms of commonalities and differences.

These are given below:

Points of similarity

- 1) Individual speech lessons with a speech specialist were not available

At neither school was there provision for individual help for any of the subjects selected for the experiment.

- 2) The responsibility for speech programme rests on a single individual

One individual devised, implemented and supervised the speech work.

3) Hand analogies

Hand analogies formed an integral part of both the speech systems.

4) Orthographic coding

Both schools use a system whereby the graphic form is heightened. School A uses a system of diacritical symbols superimposed on the graphic form. School B uses a system of colour coding.

Points of difference

1) Length of time

School A: The speech programme had been in operation for one year prior to testing.

School B: The speech programme had been in existence for over a decade.

2) Specific time allocated to speech

School A required that a specific period be allocated to speech training. School B taught speech as an integral part of language and other activities.

3) Method of implementation

School A used printed workbooks. These were distributed to the teachers by the speech supervisor, who gave guidance as to their usage. At School B there was no written programme. Teachers observed as the Language/Speech Supervisor taught. The class teacher was then expected to promote those principles in her daily teaching.

4) Phonetic practice

More emphasis was placed on phonetic drills in School A than in School B.

Test design

Differences between this design and that of Markides (1970a)

There are two important differences in the test design of this experiment and that of Markides' investigation.

1. Longitudinal study

A longitudinal study was selected above a single test situation. There were two reasons for this:

- (i) It was hypothesized that if a relatively small sample was viewed, speech superiority, or the converse, could be demonstrated by either group because of factors that were outside of the school's influence. These include hearing acuity, home background and prior aural rehabilitation.

A longitudinal study does not view the child's speech per se, but the improvement in speech. Therefore what happens to the child's speech at school is investigated, not how he he speaks when he arrives at school.

- (ii) A narrower focus. Markides' investigation included tests on linguistic, comprehension, vocabulary, speech intelligibility and articulation. This investigation focusses on articulation. It excludes the other factors. Suprasegmental features are only included insofar as they affect vowel and consonant production.

Subjects

Twenty-two subjects from each school were randomly selected. These subjects were drawn from the preschool (excluding first year preschoolers) and the primary school.

Method

Subjects were tested in 1985 and again in 1986. Each testing session was held at approximately the same period of the school year, i.e. after the first month of the school term. This was to prevent any possible influence that time away from school may have on speech production. (Ling, D. and Shitrit, 1982) To obviate any extra effort being expended on the experimental subjects, in terms of speech teaching, teachers were not told that the children tested in 1985 would be retested in 1986.

Five subjects from each group were tested simultaneously with a speech therapist. The same co-tester was used and the same subjects were investigated in 1985 and 1986.

Scores were analyzed using Tetrachoric correlation. (Garret and Woodworth, 1962)

This formulation was chosen because the data was non parametric, and the two variables were dichotomous.

Test instruments and procedure

The test described in Section II, was used. Accordingly, subjects were shown pictures and told, either verbally or, where this was not understood, by gesture, to name the

pictures. Where subjects could not respond they were given the word verbally to imitate. This was done without any extra visual or tactile cueing. No practice material was used. The subjects were not encouraged to speak well, all attempts were responded to in a positive, encouraging manner.

Scoring

Correct responses were given 1 point. Incorrect responses, or responses that were qualified in any way implying imperfect production, were given 0 points.

The results of the intelligibility rating and suprasegmental description were not included in this investigation. Tape recordings were made and these were used to back up the scoring decisions where there were doubts.

Results

The improvement scores, 1985 to 1986, between each school were compared. The significance of the difference between the gain scores was analysed using a two-tailed independent t test. (Ferguson, 1959)

Overall results

School A showed significantly greater gains than School B on the total test score (vowels, consonants and blends) ($t = 2.402$, $df = 42$ $p < .05$)

Vowels

Subjects from School A showed a higher score for gains than subjects from School B for vowels. This was not statistically significant

Consonants

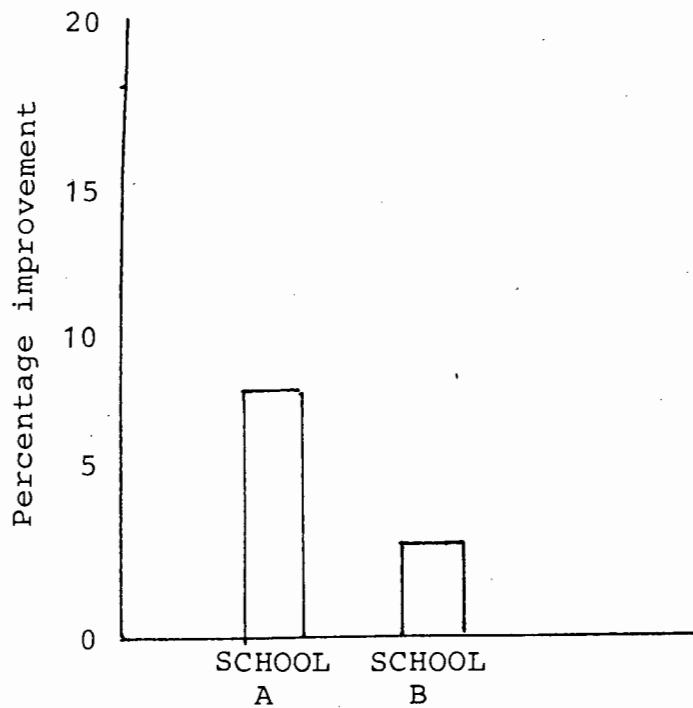
Subjects from school A showed a significantly higher score for gains than did subjects from School B ($t = 3.359$ $df = 42$ $p < .05$)

Blends

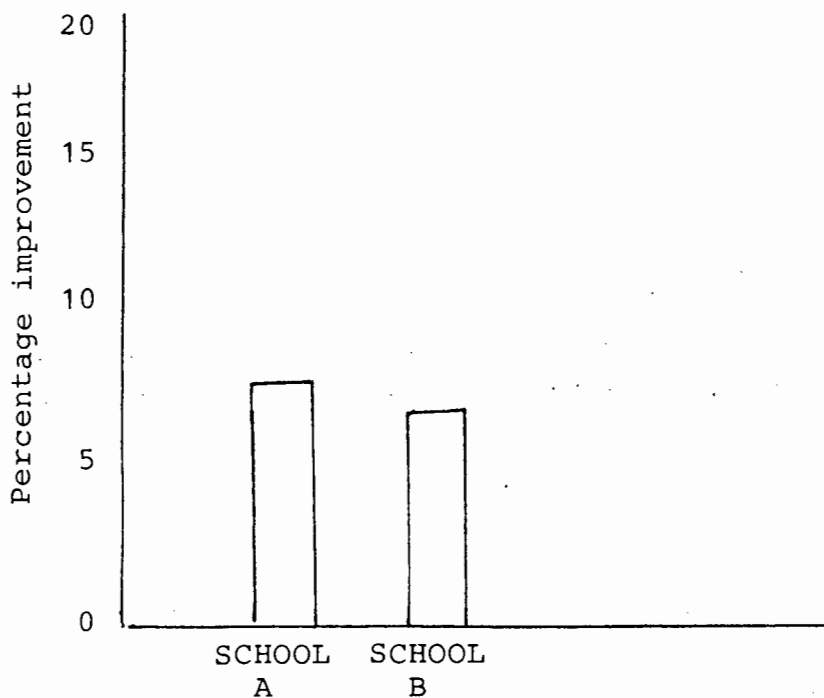
School A showed greater gains than did School B. This was not statistically significant.

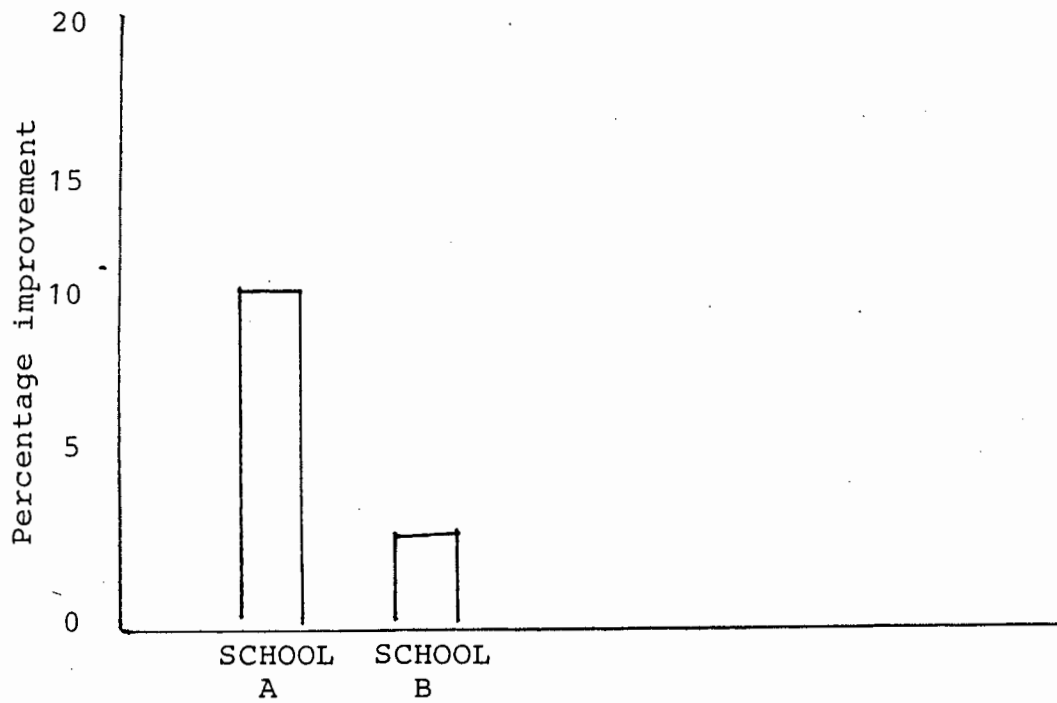
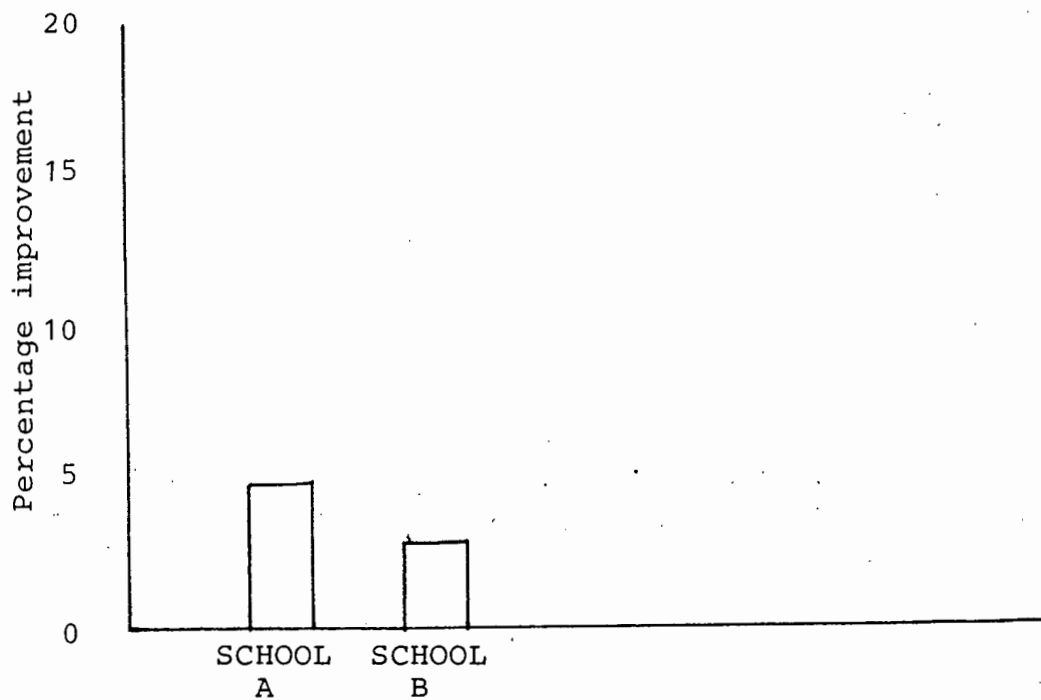
DIAGRAMMATIC PRESENTATION OF THE DIFFERENCES OF IMPROVEMENT
BETWEEN THE TWO SCHOOLS

- (a) Comparison of the difference of total gains for vowels, consonants and word initial blends



- (b) Comparison of the difference of gains for vowels



(c) Comparison of the difference in gains for consonants(d) Comparison of the differences in gains for word initial blends

Discussion of the experiment

The above results point to a situation where a set of children from one school has improved more than another, seen in terms of phoneme improvement.

The single most obvious difference between the two speech curricula in the writer's estimation is that there was specific time set aside for speech practice at School A which was not seen as part of language or any other activity.

Limitations

There are various limitations which render this result non-definitive despite the statistical significance demonstrated.

1. Nor all populations groups were considered

Owing to current political policies in South Africa, only one population group was investigated.

2. Tester bias

The writer was both principal tester and speech director of School A.

In view of the difficulty of objective judgements there is the possibility that bias could occur, though high intertester reliability suggests this is not so.

3. Length of time of speech programme

Speech programme A was introduced relatively recently, the director had been employed at the school for one year before the experiment was initiated in 1986.

Perhaps the speech faults that were easy to correct and had never been worked with previously were corrected in School A, and this showed itself in the scores. Possibly the speech faults that were stimuable to correction in School B had already been corrected previously and what was left now were entrenched speech faults.

There is a possibility that speech gains at a later period would not be as marked.

1. Word initial blends are not tested. The reasons for this include:

- (a) few children scored at the word initial blend level
- (b) the vocabulary required to tests these sounds was relatively higher than that required for simple consonants. For example the words 'snor', 'smeer', 'pleister' presented as lexical problems to many of the children
- (c) There are a relatively high number of blends as compared to vowels and consonants. There were 14 vowels, 20 consonants and 23 word initial blends. This means that the testing time was considerably increased.

It would seem generally that there are enough faulty productions in consonants and vowels on which to gauge improvement.

Recording of test results

Because of the problem of variation of tester over time the following suggestions are made:

The children should be recorded but not scored at each testing session, preferably on video (reasons are discussed below). The scoring of the results for both test situations should be done on one occasion. In this experiment it would have meant that the children's responses were video taped in 1985 and 1986. Both recordings would have been viewed in 1986 and scored in 1986. Two separate video tapes and two separate video recording machines should be used. In this way the child could be viewed giving his 1985 response and directly following this his 1986 response. In this way the tester would be responding on one occasion and the variable of variation of tester over time would be controlled for.

Additional advantages of using recorded as against live responses

1. More schools could be viewed

Using recorded samples would enable future research to test children from several schools throughout South Africa.

2. Objectivity could be maximised

The speech samples could be presented to a panel who were in no way connected to the speech training systems from any of the schools.

Change of scoring

If the aim of the investigation is to see which group improves more, then the scoring should be more sensitive than that which was used. Each phoneme should be scored to see if there has been an improvement, not merely in terms of right and wrong. For example, a child may in 1985 produce a vowel that is high in pitch and, in addition, neutralized. In 1986 he may produce the phoneme with an appropriate pitch, but still neutralized. Although the vowel is still incorrect there has been an improvement and this should be noted.

This was not reflected in the scoring of the experiment. All qualitative data were ignored.

Video recorder as against a tape recorder

A video recording would give more information about the child's performance. A child may, for example, make an /l/ that sounds correct, but is visually deviant, for example he may protrude the tongue. If he produces the /l/ without doing this the following year, he has improved. This improvement would not be noted on a tape recorder.

The experiment evaluated in terms of the aims stated at the beginning of the chapter

Three aims were stated at the beginning of the chapter. They were:

- i) To judge the efficacy of utilizing the test developed in this thesis for an interschool investigation
- ii) To tentatively view the results of speech curriculum and speech proficiency
- iii) To view the research experientially and critically in order to make recommendations for future research designs

Each aim will be reviewed.

- i) The efficacy of the test (designed in Part II) in an interschool study

Generally the test proved to be viable in terms of convenience and suitability of pictures.

ii) The results of speech curriculum and speech proficiency

A complicated interplay of factors has meant that results must be cautiously viewed.

iii) An experiential and critical view of methodology

The most pertinent criticism would seem to be in the area of scoring and recording.

Viewing the research experientially and openmindedly opened the way for a further qualitative investigation into the spelling errors of hearing impaired subjects.

This is discussed in the following chapter.

CHAPTER 13
A BRIEF INVESTIGATION OF SPELLING ERRORS
AS THEY RELATE TO THE SPEECH ERRORS
OF THE HEARING IMPAIRED

Monsen (1981) states:

"There is a certain logic to even the most deviant and unintelligible speech produced by a profoundly deaf speaker." (Monsen, 1981, p.847)

The investigation described in this chapter demonstrates this same logic as it applies to the spelling of hearing impaired children, and to discuss the implications of this.

The students who were assessed in the repeated measures control for test reliability were given pictorial and verbal representations of the word and asked to write it.

The instructions were:

"Look at the picture, it's a
cat. Write down the word
"cat".

These responses were then analysed by the writer and a remedial teacher to ascertain whether there were differences

between the spelling errors of hearing and hearing impaired children.

Results

It was found that only a small proportion of the errors were similar to those made by hearing children. The majority of the errors were qualitatively different and many could be logically explained in terms of phoneme-viseme confusion. Examples of such spelling mistakes are given below, together with an analysis of the underlying logic the mistake demonstrates.

<u>Correct form of the word</u>	<u>Subject's misspelled version</u>	<u>Analysis in terms of auditory and visual input</u>
<u>skoen</u>	stoen	The 'k' /k/ is invisible to the subject, because the mouth is rounded and the tongue cannot be seen. The subject substitutes a 't'. Auditorally the 't' phoneme is similar to the /k/ phoneme. Both are voiceless plosives, and are auditorally perceived as similar short interruptions of sound.

prop brop The viseme for /p/ and /b/ are identical. The child confuses the initial /p/ with a /b/ but is correct for the final /p/.

brood broor The tongue moves up for both the /r/ and /t/ phonemes. (The 'd' grapheme is produced as a /t/ phoneme where used word finally in Afrikaans.) The subject misperceives the movement of the tongue up in position for 't' as being a movement up for the production of 'r'.

seep (i) seem The phonemes /p/ and /m/ present as the same viseme, and the child confuses these.

(ii) see The subject assumes the word is finished after 'see', the 'p' is perceived as the tester's mouth closed, because the word is finished.

klippe (i) lem

At first sight the disparity between the correct spelling and the subject's incorrect spelling is so great that the underlying logic according to viseme-phoneme confusion is difficult to perceive. However, careful analysis reveals the underlying logic.

The /k/ phoneme is invisible because it is obscured by the movement of the tongue upwards for the co-articulation of /l/. Therefore the 'k' grapheme is omitted.

The vowel phoneme /ɪ/ represented by the 'i' grapheme is usually quite similar to the /e/ phoneme that the child has written as an 'e' grapheme. Therefore the 'i' is substituted by an 'e'.

The /p/ and the /m/ are both represented by one viseme, which the child confuses. Therefore he

substitutes a 'p' grapheme with an 'm'.

The child assumes the word is completed with the closing of the mouth, for what he has mistakenly perceived as an 'm'. He sees the final syllable as no sound, but merely the mouth parted. This is understandable because of the neutral lipshape of the /ə/ phoneme which the 'e' grapheme depicts.

Thus: k - omitted
 l - perceived
 - confused with 'e'
 pp - confused with /m/, 'm'
 e - seen as no phoneme

(ii) glap

Both /k/ and /x/ are produced by raising the back of the tongue to contact the velum.

The child has perceived this action at the back of the mouth and he demonstrates by this spelling error that he is aware of place of

production (velum and back of the tongue) but not manner. His grapheme 'g' depicts a fricative instead of the plosive 'k' /k/.

The neutral vowel /ə/ which is represented by the 'i' grapheme is substituted by the vowel /a/. As with the first misspelling of 'klippe' an 'm' is substituted for the 'p' because they present as the same viseme. The final unstressed syllable, the schwa (/ə/) is omitted as the child perceives the production of the word as being completed. He views the open mouth position for the phoneme as a mouth neutrally open in silence.

kraan laan

/kr/ is a coformulated blend. The tongue is up in the front for the production of 'r' while the 'k' is being produced. The subject does not, therefore, see the tongue in position for the production of 'k', and therefore he omits it. The

tongue tip moves up for the production of 'r', the subject confuses this with the movement of the tongue upwards for the production of /l/ and writes an 'l' grapheme.

Inability to attempt any form of spelling

In some instances children could not even begin to transcribe a word orthographically even though they had:

- (1) spoken it four times in the repeated measures test used to assess test reliability
- (2) knew what the word meant, as it was illustrated
- (3) received auditory and visual cues available for speechreading purposes

It would seem that at times the word speechread from a hearing person is as orthographically untranscribable to the hearing impaired child, as his speech is phonetically untranscribable to hearing people.

Hearing status and amount and type of error

By further analysis it was found that children with the poorest speech and most profound hearing losses had the poorest spelling and made more mistakes that were atypical of hearing children.

Discussion and implications

It is possible that hearing impaired children need to be taught spelling differently to the way hearing children are. Further, it is possible that there are opportunities available in the teaching of spelling which could aid the hearing impaired child's functioning for speech and hearing that are not being currently exploited. Some suggestions for using the spelling lesson more profitably for the hearing impaired child are given below.

1. Spelling is a familiar part of the pedagogic situation and this could be exploited

Spelling is a familiar part of the pedagogic situation, especially of the primary school. In contrast speech teaching is not. Since speech production is largely reflected by the graphic form in Afrikaans, there is the possibility that speech could be taught as part of the spelling lesson.

2. Spelling should be taught using an integrated approach

Two studies investigating the relationship between speech perception and speech production, Lieberth and Subtleny (1978), and Novelli-Olmstead and Ling, D. (1984), have shown that speech training improves speech perception. An account of the study undertaken by Novelli-Olmstead and Ling, D. (1984) will serve to illustrate the complementary nature of these two functions.

Matched pairs of profoundly deaf children were selected. Subjects were randomly assigned to one of two groups: the listening group or the speaking group. The speaking subject of each pair orally imitated and rehearsed one of the two or three given speech targets, while the listening subject of each pair was required to discriminate between those same speech targets and respond by pointing to objects or pictures representing them.

The results of the experiment showed that the speaking subjects made highly significant gains, both in speech production and in auditory discrimination of speech, whereas the listening subjects showed only slight gains in speech production and no gains in auditory training. The main implication of this study is that combined

speech and auditory training is more effective than auditory training alone. (Novelli-Olmstead and Ling, D., 1984). The same relationship between speech production and phoneme identification was described by Lieberth and Subtleny (1978).

The frame of the spelling lesson provides an opportunity for such practice. The written form of the word is readily available to be discriminated and orally imitated. Gains in speech production and speech perception may help to remediate the specific spelling errors which seem to be unique to hearing impaired children, by reaching the root cause of the problem, i.e. faulty speech perception and speech production.

3. The listening, reading, speaking method (L.R.S.) could form an integral part of the spelling lesson.

The listening, speaking, reading method utilizes the integrated approach described above. This method was originally described by the Ewings (Ewing, A. and Ewing, A.C., 1964). In this procedure residual hearing and speech are trained while reading. (McMahon and Subtleny, 1981) McMahon and Subtleny (1981) re-evaluated this method and found hearing impaired subjects demonstrated improvements in speech production when the L.R.S. method was used.

During the spelling lesson the written form of the word is readily available. The spelling lesson could therefore gainfully and conveniently exploit the L.R.S. method to the advantage of the hearing impaired child.

Conclusion

Because of the close connection between spelling and speech, and because of the presence of spelling as a conventional part of the pedagogic situation, it is possible that teaching spelling to hearing impaired children could serve a wider purpose, and should be taught differently in order to serve the unique needs of the hearing impaired child.

CHAPTER 14

CONCLUSIONS AND IMPLICATIONS

"Must so many deaf children go on year after year making minimal or no improvements in their speech?" (Smith, 1980, p.28)

The answer to this question is, yes. Deaf children must go on, year after year, attending special schools but making no improvement in speech. Such children will finish their schooling without functional speech. When they leave school and part from their deaf school friends they will be isolated in a hearing world that cannot understand them.

This pessimistic answer can only be changed if significant aspects of the pedagogic situation that the hearing impaired child is thrust into are critically reviewed.

1. Speech must be evaluated and taught

Experience, in speaking and being spoken to, is not enough (Speth, 1981). The fundamental skills underlying speech production have to be taught (Ling, D., 1976). Children who are not taught speech cannot be expected to learn these skills. The rareness of formal speech periods (Markides, 1970a) means that teachers are giving lip service to the importance of

speech teaching. This lack of speech teaching and speech evaluation is a "bizarre state of affairs" (Monsen, 1981, p.845) since the difficulty of teaching speech to the deaf is a primary reason why their educational needs are so special (Monsen, 1981).

This situation is well summarized by Ling, D. (1980). He states that current findings, indicative of the overall lack of concern with speech, and the low priority generally given to speech production skills in schools, rather than an intrinsic inability to learn to speak, are responsible for the prevailing standards (Ling, D., 1980).

2. Teachers take on the responsibility for teaching speech

This is especially true where there are insufficient specialized speech teachers. Teachers cannot take on the responsibility for teaching speech unless they are given guidance and support from the bodies that train them. The teacher of the deaf course should give teachers in-depth training and practical help in speech teaching. This would seem to be unfulfilled at the present time in this country.

In addition, regardless of professional qualifications, teachers working in special schools should have this training available to them (Pronovost, 1979).

Whatever the hearing loss, the critical component for improving the speech intelligibility of hearing impaired persons is the preparation of personnel (Pronovost, 1979).

3. Research that is oriented towards and available to teachers

There has been an accumulation of research knowledge in speech perception and speech production, yet despite this hearing impaired children have not benefitted (Ling, D., 1979). For the most part, scientific advances have not reached the hearing impaired child in the classroom. The reason for the disparity between what is known scientifically and day to day pedagogic practice may be largely explained by the unavailability of research to the teacher. The style and language of scientific papers has rendered research unavailable to classroom teachers of the hearing impaired (Mencke, 1980).

There is a need for research findings to be made available to class teachers so that they are able to

apply them. This has been asserted repeatedly (Gruwer, 1945; Moore, 1979; Mencke, 1980; Schulte, 1982).

Gruwer's statements, made in 1945, have relevance today:

"Many teachers are anxious to improve their results but do not know where to turn for help. The scientific studies that have been made as the result of research have not been interpreted to our teachers in ways they could understand and put to use in their own classrooms."

(Gruwer, 1945, p.71)

4. Co-operation and sharing by speech therapist and teacher of the deaf

Co-operation and sharing of knowledge between speech therapist and teacher of the deaf is necessary and desirable (Mencke, 1980; Pronovost, 1979; Bell, 1968). In practice such co-operation may be difficult because of the different professional training each has received.

Mencke (1980) describes aspects of this. The speech therapist is offered a great deal of theoretical knowledge but little practical experience in teaching the hearing impaired, while conversely the teacher of the deaf gains practical experience but does not have

the theoretical knowledge of the speech therapist. This has led to a relatively limited interaction and in effect promoted a kind of professional insularity between these groups (Mencke, 1980).

Because of these differences co-operation may not be easily accomplished. This is described by Bishop (1980). He notes:

"... it will require us as professionals and the organisations which represent us to set aside deeply indoctrinated parochial interests and begin to recognise the professional worth of each other, for it we are to gain significant improvements we must stop expending energy bickering amongst ourselves and channel that energy into meeting the needs of our deaf students."

(Bishop, 1980, p.419)

5. A speaking environment

Speech training is a means to an end, and not an end in itself. Tangible aspects of school involvement with speech are easier to gauge than existent covert philosophies. For example, the amount of time given to speech training is measurable. However, co-existing alongside this are the aspirations set by each school.

Is intelligible speech seen as a worthwhile goal? Are the children encouraged and expected to speak, or is a

guttural grunt accompanied by a gesture or manual sign accepted by the staff as an appropriate substitute for speech? Vorce (1974) describes this:

"Attitudes toward speech and speech quality are learned inductively from the response of listeners. A value code is unconsciously developed through experience, for while it may never be openly mentioned, children learn about speech every time they talk - they learn from the attitudes of the listeners ... Speech as a way of life requires high teacher expectations, accompanied by respect and appreciation of the child's attempts. As with all true learning, children learn what is important from the realities of the situation - speech becomes important through usage, through the results it achieves, through its "power" to manipulate the environment, not as an academic subject."

(Vorce, 1974, p.23)

The thesis reviewed in the light of the above needs

How this thesis has met these needs will be discussed below.

1. Speech must be taught

An assessment procedure, designed for teachers of the deaf, was presented as a tool to aid the teaching of speech.

2. Teachers take on the responsibility for teaching speech

Speech teaching is the subject which causes teachers of the hearing impaired to feel most inadequate (Her Majesty's Stationary Office, London, 1964, cited by Dale, 1971). This observation is congruent with the writer's experience during fourteen years of involvement with the education of the hearing impaired. Because teachers find teaching speech a fearful experience they do not teach it and consequently do not gain experience whereby they could gain expertise. This continues as a self-perpetuating negative cycle.

The presentation of the teacher's manual has attempted to meet this need by stating the negative cycle explicitly. It is hoped that teachers who are confronted with this knowledge will work towards a sense of adequacy by teaching speech. In the writer's experience, teachers avoid material that looks intimidatingly technical. The style of writing adopted was congruent with this observation.

3. Research that is oriented towards and available to teachers

The test manual contains research findings in a style of writing which is appropriate to teachers.

4. Co-operation and sharing by speech therapist and teacher of the deaf

Teachers who are given the necessary theoretical knowledge and combine this with their valuable practical experience will have much information to share with their speech therapist colleagues.

5. A speaking environment

This need was not addressed directly by this thesis. The explicit and stated emphasis was on the segmental aspects of speech.

Concluding remarks

The responsibility of educating deaf children is awesome. No other group of children are as dependent on their educators (Van Eindhoven, 1981). The gap between an uneducated deaf individual, mute and uncomprehending and unable to contribute to society, and an educated deaf person who speaks intelligibly and who can take his place in society, is wide indeed. This choice is not that of the child, it is the choice that his educators make for him.

This thesis is concluded with the words of Helen Keller who achieved so much, due to her own strengths and those of her teacher.

"Speech is the birthright of every child. It is the deaf child's one fair chance to keep in touch with his fellows."

(Helen Keller)

(Excerpt taken from an advertisement for the Tucker-Maxan Oral School. (The Volta Review, Dec 1972, p.571))

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APPENDICES

APPENDIX IRaw scores for:

- 1) Intratester reliability control
- 2) Intertester reliability control for
speech specialists
- 3) Intertester reliability control for
class teachers
- 4) 1986 and 1987 scores for correct
phonemes

(1) INTRATESTER RELIABILITY

PIL NUMBER	1		2		3		4		5		6		7		8		9		10		11		12		13		14		
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(2) INTERTESTER RELIABILITY : SPEECH SPECIALISTS

PUPIL NO.	1		2		3		4		5		6		7		8		9		ITEM	1		2		3		4		5		6		7		8		9				
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4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
5	1	1	1	1	0	0	1	0	1	1	1	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
7	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
8	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	0	1	0	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
9	1	1	1	1	0	1	1	0	0	0	0	0	1	1	0	0	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
10	1	1	1	1	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
11	0	1	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
12	1	1	1	1	0	0	1	0	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
13	1	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
14	1	1	1	1	1	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
15	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
16	1	1	1	1	1	0	0	0	0	0	0	1	0	0	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	1	1	1	1	1	1	0	0	0	1	1	1	1	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
18	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
19	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
20	1	1	0	1	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
23	1	1	1	1	0	0	0	1	0	0	0	0	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
24	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
25	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
26	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
27	1	1	1	1	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
29	1	1	1	1	1	1	0	0	1	1	0	0	1	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
30	1	1	1	1	1	0	0	0	1	1	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
32	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
33	1	1	1	0	1	0	0	0	1	1	1	1	1	0	1	0	1	0	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
34	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
35	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
36	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
37	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
38	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
39	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
40	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
41	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
42	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
43	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
44	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
45	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
46	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
47	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
48	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
49	1	1	1	1	0	0	0	0	0	0	0	1	1																											

(3) INTERTESTER RELIABILITY : TEACHERS

PUPIL NO.	1		2		3	
TEACHER NO.	1	2	1	2	1	2
<u>ITEM NO.</u>						
1	1	1	1	0	0	0
2	1	0	0	0	0	0
3	1	1	1	0	1	0
4	1	1	1	0	0	0
5	1	1	1	1	1	0
6	1	1	0	0	0	0
7	1	1	0	0	1	0
8	1	1	0	1	0	1
9	1	1	0	0	0	0
10	1	1	0	0	1	1
11	1	1	1	1	0	0
12	1	1	0	0	0	0
13	1	1	0	0	0	0
14	1	1	0	0	0	0
15	1	1	0	0	0	0
16	1	1	1	1	0	0
17	1	1	0	1	1	1
18	1	1	1	1	0	0
19	1	1	1	0	0	0
20	0	0	0	0	1	0
21	0	0	0	1	0	0
22	0	1	0	0	0	0
23	1	1	0	0	1	1
24	1	0	1	0	1	1
25	1	1	0	1	0	0
26	1	0	1	1	0	0
27	1	1	0	0	1	0
28	1	0	1	0	0	0
29	1	1	0	0	0	0
30	1	1	1	1	0	0
31	0	0	1	1	0	0
32	0	0	1	0	0	0
33	1	1	1	0	1	1
34	0	0	0	0	0	0

(3) INTESTER RELIABILITY : TEACHERS (contd.)

PUPIL NO.	1		2		3	
TEACHER NO.	1	2	1	2	1	2
<u>ITEM NO.</u>						
35	1	1	1	0	0	0
36	0	0	1	0	0	0
37	0	0	1	1	0	0
38	0	0	0	0	0	0
39	1	1	1	1	0	0
40	0	0	0	0	0	0
41	0	0	0	1	0	0
42	1	1	1	0	0	0
43	1	1	0	0	0	0
44	1	0	1	0	0	0
45	1	0	1	0	0	0
46	1	1	1	1	0	0
47	1	1	0	0	0	0
48	1	1	0	0	0	0
49	1	1	1	1	0	0
50	0	0	0	0	0	0
51	1	1	1	1	0	0
52	1	1	0	0	0	0
53	0	0	0	0	0	0
54	1	1	0	0	0	0
55	0	0	0	0	0	0
56	0	0	0	0	0	0
57	0	0	0	0	0	0

(4) 1985, 1986 AND GAIN SCORES

161

<u>SCHOOL A</u>				<u>SCHOOL B</u>			
SUBJECT NUMBER	SCORE OF CORRECT PHONEMES FOR 1985	SCORE OF CORRECT PHONEMES FOR 1986	GAIN SCORE	SUBJECT NUMBER	SCORE OF CORRECT PHONEMES FOR 1985	SCORE OF CORRECT PHONEMES FOR 1986	GAIN SCORE
<u>VOWELS</u>							
1	6	10	4	1	10	10	0
2	4	7	3	2	0	0	0
3	11	14	3	3	0	0	0
4	13	13	0	4	0	0	0
5	11	13	3	5	0	0	0
6	12	12	0	6	14	14	0
7	7	13	6	7	7	7	0
8	13	12	-1	8	13	14	1
9	11	14	3	9	7	8	1
10	13	14	1	10	12	12	0
11	14	14	0	11	4	7	3
12	14	14	0	12	14	14	0
13	12	12	0	13	6	10	4
14	14	14	0	14	6	10	4
15	10	13	3	15	1	3	2
16	10	10	0	16	6	8	2
17	14	14	0	17	5	8	3
18	1	5	4	18	13	14	1
19	14	14	0	19	14	14	0
20	4	4	2	20	14	14	0
21	13	14	1	21	5	6	1
22	10	7	-3	22	14	13	-1
		<u>TOTAL 25</u>				<u>TOTAL 21</u>	
<u>SIMPLE CONSONANTS</u>							
1	1	6	5	1	6	6	-1
2	5	8	3	2	3	1	-2
3	4	10	6	3	5	5	0
4	12	13	1	4	8	7	-1
5	7	6	-1	5	10	11	1
6	5	5	0	6	15	16	1
7	4	7	3	7	10	13	3

(4) 1985, 1986 AND GAIN SCORES

<u>SCHOOL A</u>				<u>SCHOOL B</u>			
SUBJECT NUMBER	SCORE OF CORRECT PHONEMES FOR 1985	SCORE OF CORRECT PHONEMES FOR 1986	GAIN SCORE	SUBJECT NUMBER	SCORE OF CORRECT PHONEMES FOR 1985	SCORE OF CORRECT PHONEMES FOR 1986	GAIN SCORE
<u>WORD INITIAL BLENDS (contd)</u>							
13	5	5	-2	13	0	0	0
14	4	6	2	14	0	1	1
15	0	0	0	15	0	0	0
16	1	2	1	16	4	6	2
17	17	17	0	17	0	1	1
18	2	2	0	18	1	4	3
19	4	4	0	19	1	1	0
20	0	0	0	20	12	14	2
21	20	20	0	21	2	3	1
22	0	0	0	22	3	4	1
		<u>TOTAL 27</u>				<u>TOTAL 15</u>	
			<u>GRAND TOTAL 102</u>				<u>GRAND TOTAL 49</u>

APPENDIX 2SPRAAKTOETS VIR GEHOORGESTREMDE KINDERS

AFDELING A

RESULTATE VAN DIE SPRAAKTOETS VIR GEOORGESTREMDE KINDERS

NAAM:

GEB:

TOETSDATUM EN AFNEMER

Toets 1 (T.1):

Afnemer:

Toets 2 (T.2):

Afnemer:

Toets 3 (T.3):

Afnemer:

Toets 4 (T.4):

Afnemer:

BESONDERHEDE VAN GEOORVERLIES

Oorsaak:

.....

.....

Datum en ouderdom opgedoen:

.....

.....

Voorskoolse opleiding:

.....

SPRAAKMEGANISME

Merk () indien normaal, indien nie, beskryf.

Gesig: ()

Lippe: ()

Kaak: ()

Tande: ()

Tong: ()

Harde verhemelte: ()

Sagte verhemelte: ()

Larinks: ()

OUUDIOGRAM

FREKWENSIE IN HZ

	125	250	500	1000	2000	4000	8000
-10							
0							
10							
20							
30							
40							
50							
60							
70							
80							
90							
100							
110							
120							

Afdeling a(i): Klinkers en Diftonge / Vowels and Diphthongs

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	TOTAAL
	boek	hond	aap	bal	boom	twee	ses	vier	vuur	deur	hujs	blou	swaai	vyf	
T.1															
T.2															
T.3															
T.4															

Klinkers

Diftonge

Afdeling a(ii): Eenvoudige Konsonante / Simple Consonants

	1	2	3	4	5	6	7	8	9	10	11	12	13
	baba	deur	piesang	tafel	kat	seep	kat	boek	muis	neus	tong	jas	lepel
T.1					weggelaat			weggelaat	b. mb	d. l	weggelaat		
T.2					weggelaat			weggelaat	b. mb	d. l	weggelaat		
T.3					weggelaat			weggelaat	b. mb	d. l	weggelaat		
T.4					weggelaat			weggelaat	b. mb	d. l	weggelaat		

Eksplosiewe

Eindplosiewe

Nasale

	14	15	16	17	18	19	20	TOTAAL
	rooi	huis	vyf	sjokolade	ses	water	geel	
T.1					t t			
T.2					t t			
T.3					t t			
T.4					t t			

Frikatiewe

Afdeling a(iii): Beginsamestellings /Word-initial blends

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	smeer	speel	swaai	skoen	slaap	snor	stoel	blou	brood	vliegtuig	vrugte	kwaad	pleister	prop	twee
T.1	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;
T.2	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;
T.3	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;
T.4	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;	k;
	Twee spraakorgane opeenvolgend (tong en lippe)			Een spraakorgaan opeenvolgend (tong)				Twee spraakorgane gelyktydig in een funksie gebruik							

	16	17	18	19	20	21	22	23	TOTAAL
	groen	drie	klippe	kraan	trein	skryf	spring	stryk	
T.1	k;	k;	k;	k;	k;	k;	k;	k;	
T.2	k;	k;	k;	k;	k;	k;	k;	k;	
T.3	k;	k;	k;	k;	k;	k;	k;	k;	
T.4	k;	k;	k;	k;	k;	k;	k;	k;	
	Een spraakorgaan verrig twee funksies gelyktydig					Kompleks			

Afdeling b: Stemgebruik:

Beskryf stemgebruik, o.a. toonhoogte, ritme, intensiteit, spraaktempo, stemkwaliteit en resonansie.

(i) Gesprekvoering:

(ii) Meganiese Tel :

Afdeling c: Verstaanbaarheid (Omring, en dui datum van evaluasie aan)

1. Spraak is onverstaanbaar.
2. Spraak is baie moeilik om te verstaan. Slegs geïsoleerde woorde en frases kan verstaan word.
3. Spraak is moeilik om te verstaan, tog kan die strekking van die inhoud uitgemaak word.
4. Spraak is geheel-en-al verstaanbaar.

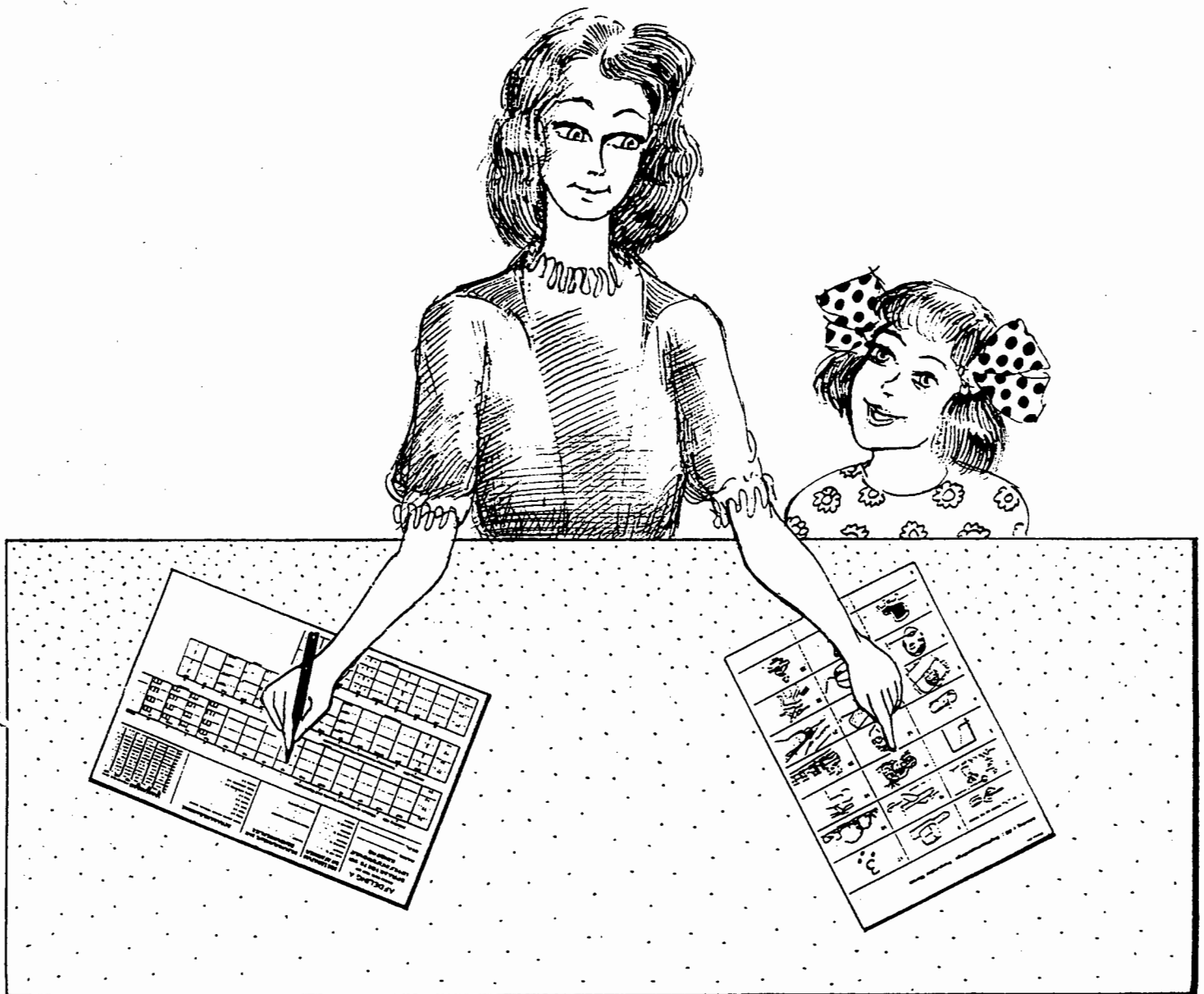
SPRAAKTOETS VIR GEHOORGESTREMDE KINDERS

INHOUD

AFDELING A : RESULTATE

AFDELING B : PRENTSTIMULI

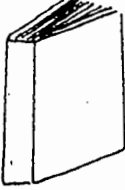
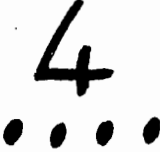



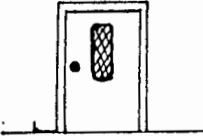
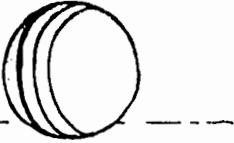






AFDELING C : ONDERWYSERSGIDS





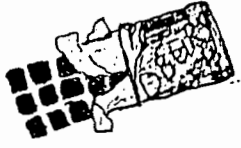
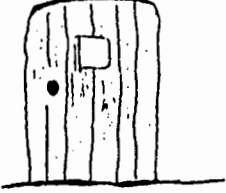
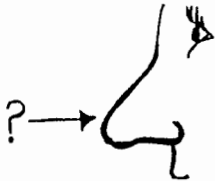



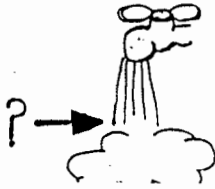


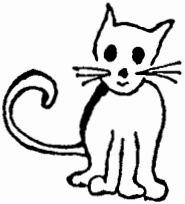
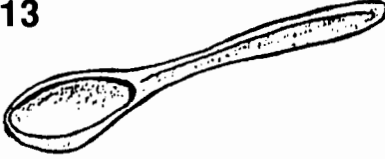





AFDELING B

SPRAAKTOETS VIR GEHOORGESTREMDE KINDERS












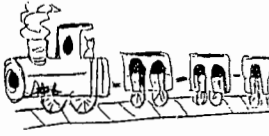

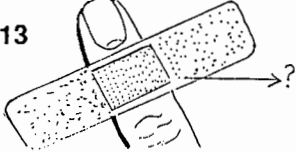
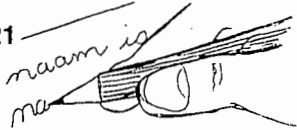
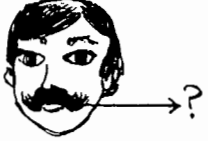
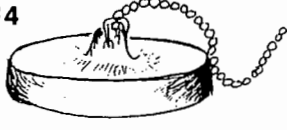




Afdeling a (i) : Klinkers en Diftonge / Vowels and Diphtongs

1		8	
2		9	
3		10	
4		11	
5		12	
6		13	
7		14	

Afdeling a (ii) : Eenvoudige Konsonante / Simple Consonants

1		9		17	
2		10		18	
3		11		19	
4		12		20	
5		13			
6		14			
7		15			
8		16			

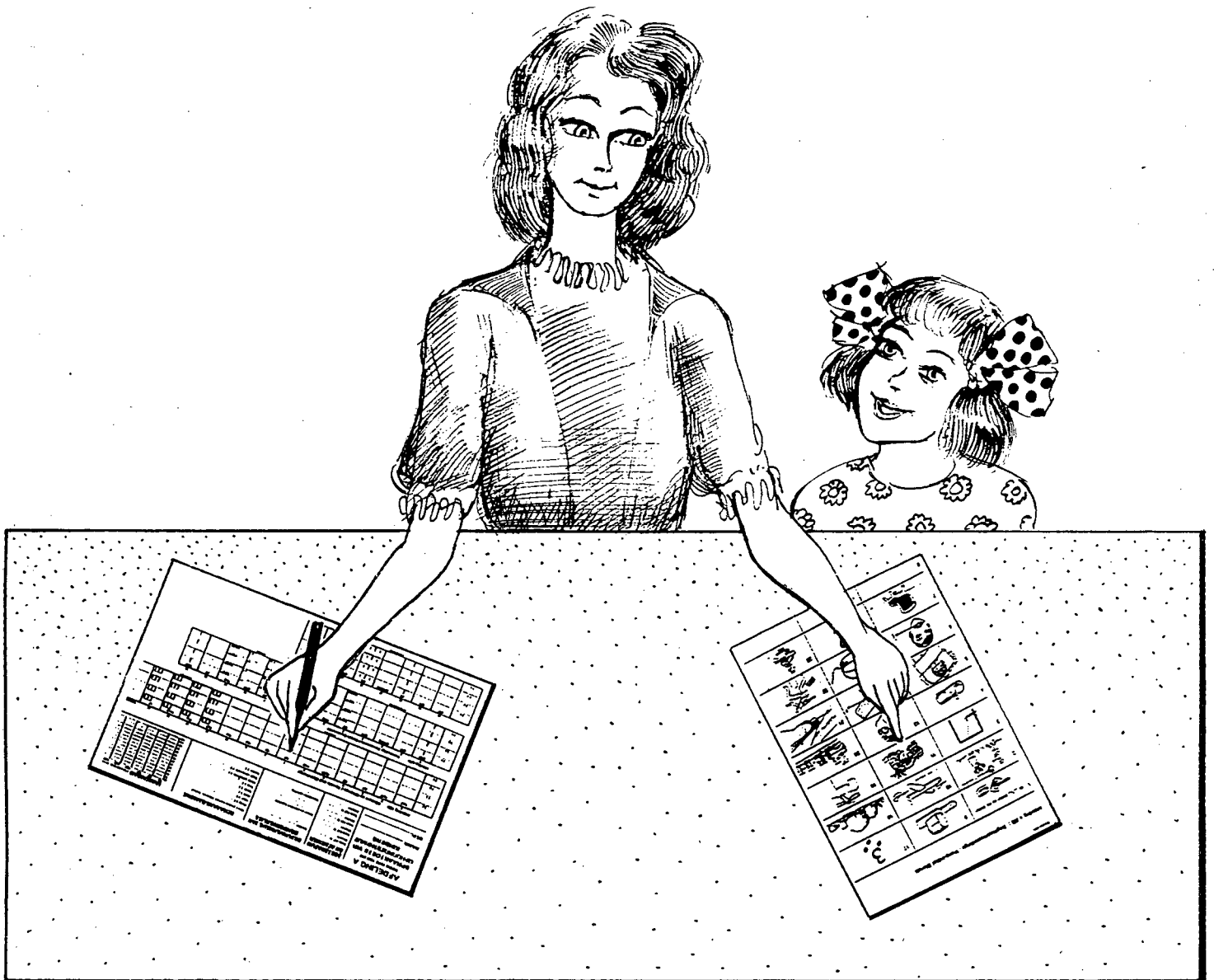
Afdeling a (iii) : Beginsamestellings / Word-initial Blends

<p>1 Ek...?... botter op my brood.</p> 	<p>9</p> 	<p>17</p> 
<p>2 Die kind ...?... met die bal.</p> 	<p>10</p> 	<p>18</p> 
<p>3</p> 	<p>11</p> 	<p>19</p> 
<p>4</p> 	<p>12</p> 	<p>20</p> 
<p>5</p> 	<p>13</p> 	<p>21</p> 
<p>6</p> 	<p>14</p> 	<p>22</p> 
<p>7</p> 	<p>15</p> 	<p>23</p> 
<p>8</p>	<p>16</p>	

AFDELING C : SPRAAKTOETS VIR GEHOORGESTREMDE KINDERS

ONDERWYSEERSGIDS

(TEST INSTRUCTIONS IN ENGLISH)



SECTION C : TEACHERS' MANUALINTRODUCTION

There is disappointment concerning the low standard of speech achieved by deaf children. Most leave school without intelligible speech.

Many deaf educators feel that this need not be the case. Current research has demonstrated the standard of speech between children attending different schools differs. This is an important piece of information because it shows how the quality of schooling influences speech performance.

Current findings also show that speech teaching is rarely given. Speech help is given as an incidental part of other activities. This is not satisfactory. One of the main reasons deaf children come to special schools for the deaf is precisely because they cannot speak intelligibly.

There are certain reasons why speech is not taught in schools.

1. Teachers lack confidence

Teachers feel that speech is a complicated subject that they cannot master. The books written on speech for deaf children are often written in technical language. This is not helpful for teachers. They may not be familiar with these terms.

2. Teachers feel that speech teaching is not their job

Many teachers feel that speech teaching should be done by the speech therapist, and that they should have no part in it. This is not true. Firstly, there are rarely enough speech therapists to cater for every child, and secondly, when a teacher teaches speech there is a greater chance that the pupil will carry over his new speech skills into his general speech. Every teacher of the deaf is also a speech teacher.

3. Teachers overestimate the speech of their pupils

When teachers first come to a school for the deaf it is usual that they do not understand the speech of their pupils. After a time, however, they find that they can understand the children relatively easily. On the one hand this is beneficial for the pupil, because it means that teachers can understand their pupils, get to know

them and learn what they are thinking. On the other hand it is detrimental to the pupil, because instead of training the child to speak better, you are rewarding him for speaking badly. Once the child leaves school, there will be fewer people who understand him and he will suffer the consequences.

4. It is difficult to diagnose specific faults without assessing speech

Teachers may hear that the speech is poor, but not know precisely what is causing the problem. Testing the child's speech, sound by sound, will help you specify which sounds are incorrect. This last point leads us to the discussion of speech evaluation.

Speech Evaluation

It is important for you to test the speech of your pupils. Testing three times in the school year will give you a broad overview of the child's development. The first test will show you how the child started the year, especially if he is a new pupil in your class and you are unfamiliar with his speech. Testing in the middle of the year will show you what progress he has made, and finally testing at the end of the year will show you what progress he has made during the year under your guidance.

Why test?

1. Testing shows which sounds he can and cannot say - This will help you provide an individual programme according to each child's needs.
2. To see if he has improved - Do not expect too much! Speech improvement is a slow process.
3. To train your ear - Learning to listen sensitively is an art. There is no substitute for experience. Evaluation and teaching are closely linked. The more skilled you become at evaluating speech, the more skilled you will be at teaching speech.

You may find that on many occasions judging whether a sound is correct or incorrect is difficult. Do not become anxious about this, it is a problem shared by everyone. Do not allow this to make you lose confidence. The more you listen, the finer your judgements will become.



The teacher's ear.
The most valuable
testing instrument
yet developed

The profession of teaching of the deaf is a demanding one. Progress is slow. Some days the amount of effort required from us seems more than we can manage. Only teachers of the deaf involved in daily teaching can fully understand. Yet, when we turn to our children we are spurred on. It is an awesome thought that these children are dependent on us for a basic function of mankind - speech.

TEST INSTRUCTIONS

There are three sections:

Section A : The test form (Resultate)

Section B : The test pictures (Prente)

Section C : The test manual (Onderwysersgids)

The first section we will discuss is Section A:

When you test for the first time, fill in the child's particulars, his name, birthdate, age that the child became deaf and the cause of deafness.

How old the child was when he became deaf is an important piece of information. This affects his speech. The earlier in his life he became deaf, the more serious the consequences for his speech.

Audiogram: There is a blank audiogram form. Fill in the most recent audiogram available. It is important to understand the audiogram because when you teach speech you should teach as much through the avenue of hearing as you can. If you have not had an opportunity to become familiar with the reading of an audiogram take this opportunity to learn. If there is a speech therapist or audiologist at your

school ask her. If not contact your local hospital and seek out a helpful person in the audiology department.

By now you have some important information. The next section is:

Oral peripheral examination

Examine the child in order to be sure that he has normal functioning speech organs.

(a) Face

Look at the child's face. Does it seem normal?

Is his smile symmetrical?



An asymmetrical smile may demonstrate:



(i) a muscular weakness that may point to problems of the muscles controlling the lips and tongue

(ii) a problem with the hard palate

(b) Lips

(i) Can the child round his lips?



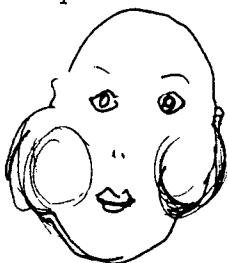
Ask him to blow out the flame of a candle and watch the lip movement

(ii) Can he spread his lips?



Ask him to imitate you, or tickle him and see him smile

(iii) Can he puff up his cheeks and hold his breath without any air escaping through the nose?



(vi) Can he open and close his lips quickly?

Let him blow several ping-pong balls one after the other, saying p-p-p, or ask him to say 'p-p-p' quickly

Speech problems affecting the lips are rare, but if you notice the child has problems with his lips be extra careful to check the tongue and palate because lip

problems may mean there are problems with the tongue or palate.

(c) Jaw

Can he open and close his mouth?

(d) Teeth

Check that the teeth are correctly positioned and that the top teeth go over the bottom teeth when he bites. If the teeth are crooked, or the child cannot bite properly, refer him to an orthodontist.

(e) Tongue

(i) Ask the child to imitate licking a lollipop

or

Let him lick a real lollipop

or

Get a tongue depressor, dip it in chocolate sauce and watch the child lick the chocolate off

(ii) Put a dot of chocolate on the corners of the mouth

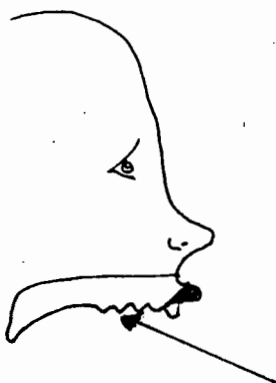
See if he can lick it off easily

Watch the side to side movement of the tongue

(iii) Give him a bit of chocolate syrup to swallow. Watch and see if he swallows normally or if his tongue is pushed out as he swallows. If the tongue is protruded as he swallows, refer him to a speech therapist

(iv) Can he hold the tongue tip behind the upper teeth for 5 seconds?

(f) Hard palate



The hard palate is on the roof of the mouth just behind the upper teeth. It is corrugated in texture.

If the child can blow out a flame it is unlikely he has problems of the palate.

(g) The soft palate

If you continue running your tongue backwards behind the top front teeth you will notice the texture changes - it is no longer hard flesh but soft flesh. This is the soft palate. The soft palate ends with the uvula ('little tongue'). The function of the soft palate is to close off the passage of air to the nose. If children cannot do this then they will have nasal sounding voices for all the voice will go through the nose and be nasalized. Research findings show that the soft palates of deaf people are shorter and thinner than the soft palates of hearing people (Calvert and Silverman, 1983, p.168). This is most probably because the soft palate is not exercised in speech by deaf people and it grows weak.

To test, do the same activities for hard palate functioning.

(h) Larynx (The voicebox)

Listen to the child's voice, especially when he is playing. If his voice sounds husky or you feel that

there is something abnormal in the voice quality that is unlike other deaf children, take note of this and refer the child to a doctor.

If there is something that worries you about the child's speech organs after this examination, discuss the matter with medical personnel.

Refer to the test form - if the organ functions normally mark it with a tick (✓), if not write a comment.

ooo000ooo

Phoneme assessment

After you have completed the oral peripheral evaluation you will test the child's phonemes (speech sounds). The pictures in Section B correspond to the words in Section A.

View the two sections together.

Section B, page 1:

Section a(i) Vowels and diphthongs

Afdeling a(i) Klinkers en diftonge

Section B, page 2:

Section a(ii) simple consonants

Afdeling a(ii) eenvoudige konsonante

Section B, page 3:

Section (a)(iii) word initial blends

Afdeling (a)(iii) beginsamestellingen

Method

Sit with the child at your left hand (if you are right-handed) with the pictures (Section B) in front of him. At your right hand place test sheet (Section A). Try not to let him see the written form of the test words in Section A. (See the illustration on the test cover.)

Point to the first picture. Ask the child to tell you what it is, then listen to the way he pronounces the sound that you are listening for, that is, the sound underlined in Section A (i), (ii) and (iii). Only listen for this sound.

If the sound is correct, mark (✓)

If the sound is incorrect, mark (X)

If the sound is omitted i.e. left out, mark —

If the child was unfamiliar with the test word and needed you to say it first, but spoke it correctly on imitation, write (S). This means he is stimulable for that sound.

If you feel that the sound is almost correct, but not quite, write - ALMOST.

Summary

	Correct
X	Incorrect
-	Omitted
S	The child can copy the sound
ALMOST	There is something not quite right

If the sound is correct give 1 mark. Add up the totals for each section.

Do not motivate the child to speak especially well. Remember you are trying to obtain a sample of his natural speech. Respond cheerfully to all his attempts. Try to make this a relaxed time for the child.

It is a good idea to tap-record the speech. State the date and name of the child and the number of each section as you proceed. If you do this you will be able to check your test

decisions and also have a permanent record of his speech, which you can replay and compare at a later date.

Now we will look at each of the sections of Section A in more detail, (A(i), A(ii) and A(iii))

Section A(i) Vowels and diphthongs

Afdeling A(i) Klinkers and diftonge

The first 10 words test vowels. These are single sounds made by shaping the mouth in different ways - oe, o aa, a, oo ee, e, ie, uu, eu.

There are some mistakes in the production of vowel sounds that are relatively common to hearing impaired children.

1. Neutralization (neu)

Some deaf children pronounce many of the vowel sounds so that they sound alike. They all sound rather like the 'e' sound in the English word 'the'. This is often the case with profoundly prelingually deaf children. Where this happens, write neu. in the scoring block.

2. Prolongation (pro)

Some deaf children draw out or prolong their sounds. If you feel that the vowel has been prolonged write pro in the scoring block.

3. Exaggeration (exag)

Some deaf children exaggerate their mouths when they speak. If you notice this with vowels write exag.

4. Nasalization (nas)

Some deaf children direct the vowels out of the nose (nasal) instead of the mouth (oral). If you feel that this is the case, write nas.

5. Diphthongization (dip)

Some deaf children break the vowel into two parts - the second part is usually the dull 'e' sound in the word 'the'. For example the child may say 'boe - ek' instead of 'boek'. This is called diphthongization. If the child does this write dip in the scoring block.

6. Substitution (sub)

You may feel that the child substituted one vowel sound for another. If so write sub in the scoring block.

7. Voice problems

You may find that the voice quality is deviant. It may be too high. If so write h.

It may be strained. If so write str.

If you feel that the child has another fault, other than those listed, describe it.

If, when you first start with speech evaluation, you find too many criteria confusing, use (✓) and (X). As you gain more experience you will find your judgements becoming finer.

Summary of vowel evaluation

The same symbols as described earlier (✓, X, —, S, ALMOST). In addition:

neu	Neutralized. The vowel has a dull sound, like the 'e' in 'the'
pro	Prolonged. The vowel sound is drawn out unnaturally
exag	The mouth movement is exaggerated
nas	The sound comes out of the nose
dip	The vowel is broken into two sounds e.g. 'boe - ek' instead of 'book'
subs	Another vowel is substituted
h	The voice is high
str	The voice is strained

The next four words are diphthongs: huis (ui), blou (ou), swaai (aai) and vyf (y). Diphthongs are two vowel sounds

produced as a blended sound. Vowels have one element. Diphthongs have two elements.

All of the faults that were described for vowels can occur with diphthongs, i.e. they can be neutralized, nasalized, prolonged, exaggerated, substituted and the voice quality may be deviant.

In addition to these there is one fault specific to diphthongs:

The second element is omitted. Only the first part of the diphthong may be produced. Instead of saying 'swaai', the deaf child may say 'swaaa'. If you turn to the scoresheet (Section A), you will find that each of the score blocks for diphthongs has two small blocks drawn in. If both elements are present tick both blocks as in Example 1:

Example 1:

" "	
huis	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

If only the first element is present tick only the first block as in Example 2:

Example 2:

huis	
<input checked="" type="checkbox"/>	<input type="checkbox"/>

In order that the sound be counted as correct both elements of the diphthong must be present and correct.

Section A(ii) - Simple consonants

Afdeling A(ii) - Eenvoudige Konsonante

Consonants are speech sounds produced when the speech organs touch, or nearly touch. They may be voiced or voiceless, oral (mouth sounds) or nasal (nose sounds).

Consonant groupings

Consonants 1 - 5: Plosives (Explosiewe)

These are short explosive sounds.

Consonants 6 - 8: Stops (Eindplosiewe)

These are plosives which occur at the end of a word. They are not produced with the same force as plosives.

Consonants 9 - 11: Nasals (Nasale)

These are produced through the nose.

Uncategorized: 12 and 13

These have not been specified further.

Consonants 14 - 20: Fricatives (Frikatiewe)

These are produced by placing the speech organs close together so friction results as the breath/voice is forced through.

How to score

Score the sounds as described earlier:

- (✓) = correct
- (X) = incorrect
- (S) = stimulable
- (Almost) = the sound is not perfect.

If the child substitutes another sound for the required sound, write in the substituted sound.

Additional details of scoring consonants

Columns 1, 13 and 16

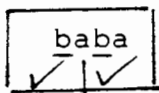
The scoring block is divided into two section. The reason for this is that these testwords present two productions of the sound under investigation.

e.g. Column 1 : baba

The sound tested is b. The word baba
contains two b sounds

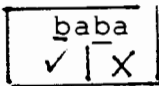
Listen to both productions. Both productions must be
correct in order for the word to qualify as correct.

Example 1:



Both 'b' sounds were produced correctly, the word is counted
as correct, it scores 1 point.

Example 2:

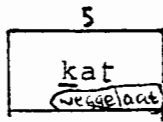


The first 'b' is correct. The second 'b' is incorrect. The
word is not counted as correct. It scores no points.

Columns 5, 8 and 11

The word 'weggelaat' appears in each scoring block. This is
because these sounds are frequently omitted by hearing
impaired children. If the child omits this sound, circle
the word 'weggelaat'.

Example 1:

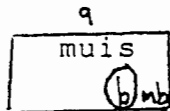


The subject has omitted the 'k' sound.

Column 9

The letters 'b.mb' appear in each block. This is because 'm' is commonly substituted for the 'b' and 'mb' sounds by hearing impaired children. If the 'm' sound is not correct, either of those sounds is substituted in its place. Circle the appropriate sound.

Example:

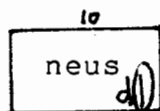


The subject's production of the 'm' sound was incorrect. He has substituted a 'b'.

Column 10

The letters 'd.l' appear on each of the scoring blocks. The reason for this is that hearing impaired children often substitute a 'd' or an 'l' sound for an 'n'. If the child produces the 'n' sound as a 'd' or an 'l', circle the appropriate one.

Example:



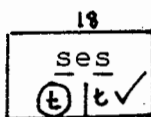
The subject has incorrectly substituted an 'l' sound.

Column 18

Each scoring block is divided into two sections, that is because there are two productions of the 's' sound. Score in the same way as described for consonants 1, 13 and 6.

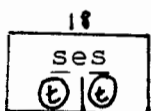
In addition to this letters 't' appear in each of the subdivisions. The reason for this is that hearing impaired children frequently substitute a 't' sound for an 's' sound. If the child makes this substitution circle the 't' sound. Listen to each 's' sound separately.

Example 1:



The child has substituted a 't' for the initial 's'. The final 's' is correct.

Example 2:



The child has substituted a 't' for both 's' sounds.

Example 3:

18	
ses	
✓ t	t ✓

Both 's' sounds are correct. The subject is awarded 1 mark.

Section A(iii) - Word initial blends

Afdeling A(iii) -

A blend is produced when two adjacent consonant sounds are blended smoothly together.

Categorization of blends

The blends are presented in order of difficulty, from the easiest to the most difficult.

1) Two organ sequential/ (twee spraakorgane opeenvolgend)

(1, 2 and 3)

Two speech organs are used in sequence, one after the other.

e.g.

sm

(1) The tongue forms the 's'

(2) Following that the lips form the 'm'

- 2) One organ sequential/(Een spraakorgaan opeenvolgend)
(4, 5, 6 and 7)

One speech organ (the tongue) is used to produce both sounds. They are produced in sequence, one after the other.

e.g. sk

- (1) The tongue moves into position for the 's' sound
- (2) Following that the back of the tongue is raised for the 'k' sound

- 3) Two organ co-formulation (Twee spraakorgane gelyktydig in een funksie gebruik) (8, 9, 10, 11, 12, 13, 14 and 15)

Two speech organs are used, but the speech organs required for the production of the second sound must be in position while the first sound is being pronounced.

e.g. bl

- 1) 'b' is made with the lips

2) 'l' is made with the tongue. While the 'b' is being produced the tongue is up, ready for the 'l' sound.

4) Single organ co-formulated (Een spraakorgaan verrig twee funksies gelyktydig) (16 - 20)

One speech organ (the tongue) must be in two positions at the same time.

e.g. gr

- 1) 'g' is made with the back of the tongue.
- 2) 'r' is made with the front of the tongue.

While the back of the tongue forms the 'g' the front of the tongue is in position for the 'r'.

Complex (Kompleks) (21, 22 and 23)

These are blends made up of three consonants.

Specific faults pertaining to blends and how to score them

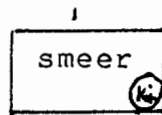
Each of the scoring blocks for blends has been marked in two ways.

1) The letters 'k.i' appear in each scoring block

Hearing impaired children frequently add a vowel sound in between the consonant sounds that make up the blend, e.g. instead of saying 'smeer' the child may say 'semeer'.

This is termed intrusive voicing. (Klank invoeging). If the child does this, circle the letters k.i. on the score sheet.

e.g.



This indicates that the blend was incorrectly produced. Intrusive voicing between two consonants was present.

2) Two vertical lines appear on each scoring block

It is possible that one of the sounds that constitutes the blend is correctly produced, but the other is incorrect. Frequently part of the blend is omitted.

e.g. Instead of saying 'smeer' the child may say 'meer'

For this reason the scoring block has been divided. Each part of the blend is scored separately.

Example 1:

smeer		
-	✓	k.i.

The 's' sound was omitted. The 'm' sound was correctly produced.

Example 2:

smeer		
✓	M	k.i.

Both sounds were correctly produced.

In order for a blend to qualify as correct, both consonants must be correctly produced and there must be no intrusive voicing.

General remarks on the assessment of phonemes (Sections A(i), (ii) and (iii))

- 1) Learning to listen sensitively takes time. Do not be discouraged because you find it difficult to judge.
- 2) Be constantly on your guard against over-estimating speech. A sound that is marked as correct should be 100% correct.

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Section b - Vocal usage (Stemgebruik)

(i) Conversation (Gesprekvoering)

Engage the child in conversation and take note of the way he uses his voice.

Pitch: Is the pitch normal?
Is it too high, or too low?

Intensity: Is the intensity appropriate? Or is the voice too loud or too soft?

Word accents: Are the words accented correctly?

Voice quality: nasality - Is the voice nasal?
tension - Does the voice sound strained?
Observe the carriage of the neck for signs of tension.

(ii) Counting (Meganiese tel)

Ask the child to count. Listen to the voice quality. Take note of the number of words he produces on one breath stream. Listen for the same things as you did during the conversation.

You may find with some children that you cannot elicit a conversation. They may have too little language, or have poor lipreading skills. In that case, you will need to rely on the counting task for all your information on voice.

When describing vocal usage use simple clear language.

Some examples:

"The voice has a normal quality and a normal rhythm."

"His voice is very strained. His neck and shoulders are held stiffly. He speaks very slowly, drawing each word out."

"His voice is high-pitched and weak."

ooo000ooo

Section C - Intelligibility (Verstaanbaarheid)

Using the information you have gathered during the conversation and the counting task, circle the appropriate number on the intelligibility rating scale.

Where to go from here

The test has been completed, and now you will begin correcting the faults you have diagnosed.

There are various books available. Two which deserve special mention are:

Speech and the Hearing Impaired Child : Theory and Practice,
Ling, D., A.G. Bell Association : Washington, D.C., 1976.

Some comments on this book:

- i) The teaching order of sounds and the way sounds are categorized are the same as the speech test you have completed.
- ii) Sounds that occur in Afrikaans but not in English are not dealt with by Ling, nor by other English writers.
- iii) There is quite a bit of technical data which you may find cumbersome.

Speech and Deafness. (Revised Edition) Calvert, R.D. and Silverman, S.R. A.G. Bell Association: Washington, D.C., 1983.

This book offers practical help on the teaching of specific sounds. Chapter VI is recommended in this connection.

If you wish to have more information on the rationale, background and development of the test, you are referred to the thesis:

"The development of an Afrikaans speech assessment procedure for hearing impaired children, and its use in comparing phoneme development under two curricular approaches"

By Zelda Derman, 1987

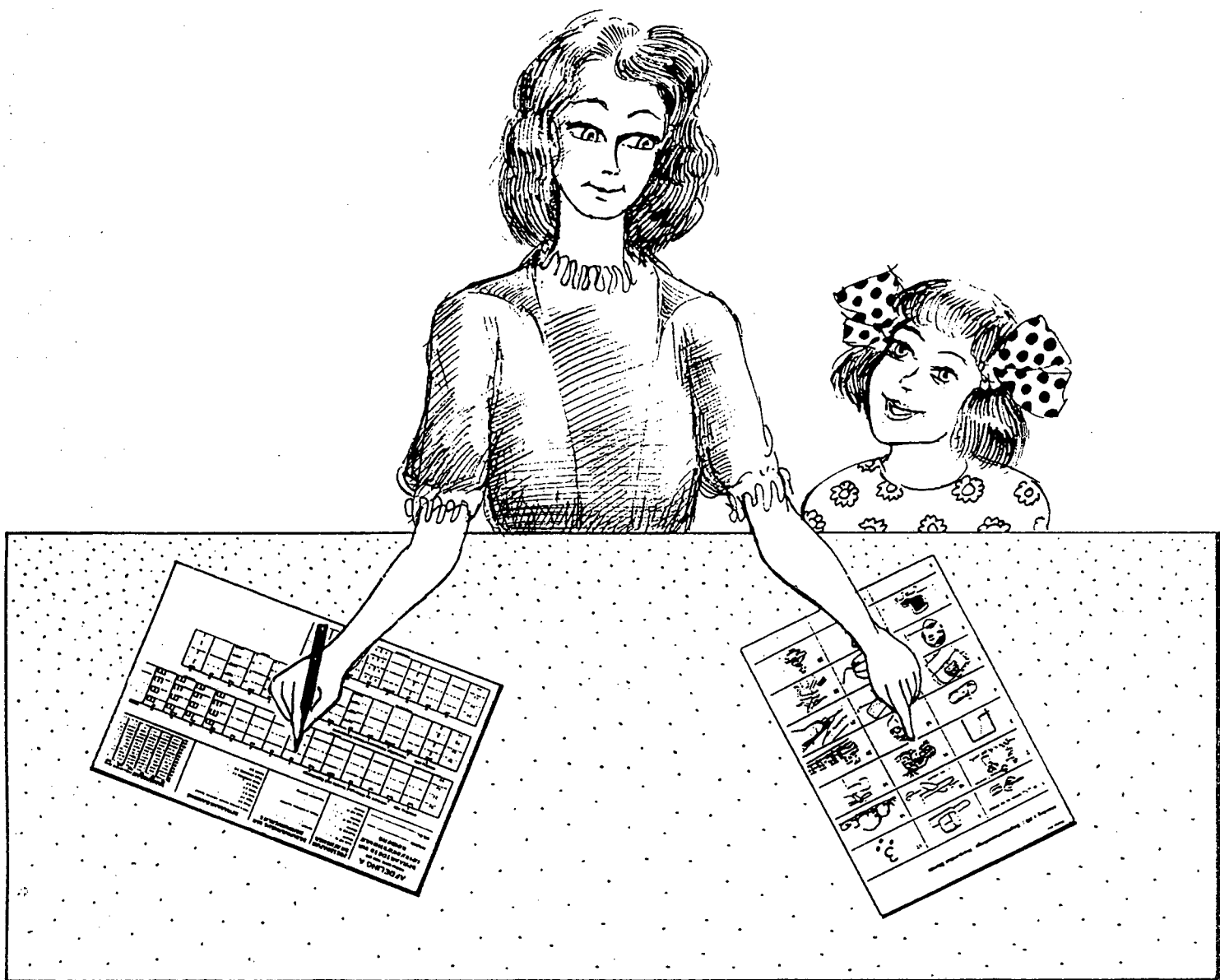
It is in the University of Cape Town Library.

Reference

Calvert, D.R. and Silverman, A.G., Speech and Deafness,
A.G. Bell Association : Washington, D.C., 1983.

AFDELING C : SPRAAKTOETS VIR GEHOORGESTREMDE KINDERS

ONDERWYSEERSGIDS



AFDELING C: GIDS VIR ONDERWYSERS

INLEIDING

Die swak spraakvermoë van gehoorgestremde kinders, wek wêreldwyd kommer. Selfs nadat hulle hul skoolloopbaan voltooi het, is baie leerlinge se spraak steeds onverstaanbaar vir horende mense. Baie opvoeders wat met gehoorgestremdes gemoeid is, is van mening dat dit nie noodwendig so hoef te wees nie.

Onlangse navorsing het getoon dat sommige skole se leerlinge 'n beter spraakstandaard handhaaf as dié van ander skole. Hierdie inligting beklemtoon die belangrikheid van kwalitatiewe skoolopleiding. Daar is bevind dat spraakopleiding slegs plaasvind as onbeplande deel van aktiwiteite. Dit is ontoereikend en onbevredigend aangesien gehoorgestremdes juis 'n spesiale skool bywoon weens die onverstaanbaarheid van hul spraak.

Daar bestaan redes waarom spraakonderrig nie in skole plaasvind nie.

1. Gebrek aan selfvertroue by onderwysers

Onderwysers vrees dat spraak 'n gekompliseerde onderwerp is wat hulle nie sal kan bemeester nie. Leesstof wat handel oor spraakopleiding vir gehoorgestremde kinders, is dikwels in tegniese taal geskryf en het min waarde vir onderwysers wat praktiese hulp soek.

2. Onderwysers voel dat spraakopleiding nie hulle
verantwoordelikheid is nie

'n Groot aantal onderwysers voel dat spraakopleiding slegs deur 'n spraakterapeut gedoen behoort te word. Dit is 'n wanopvatting, aangesien daar in die eerste plek skaars genoeg terapeute is om voorsiening te maak vir alle gehoorgestremde kinders. Tweedens is daar 'n groter moontlikheid dat nuwe spraakvermoëns na spontane spraak oorgedra word indien die onderwyser in die klas self spraak-onderrig doen. Elke onderwyser wat met gehoorgestremde kinders werk, is tegelykertyd ook 'n spraakonderwyser.

3. Onderwysers oorskat die spraak van hulle leerlinge

Dit is vir enige onderwyser wat vir die eerste keer met gehoorgestremde kinders werk, aanvanklik 'n probleem om hulle spraak te verstaan. Mettertyd vind hulle egter dat hulle die kinders redelik maklik verstaan. Enersyds is dit voordelig, want dit beteken dat onderwysers die leerlinge leer ken en verstaan en 'n hoë vlak van kommunikasie met hulle handhaaf. Andersyds is dit nadelig, want hulle word beloon vir onduidelike spraak, terwyl duidelike spraak ingeskerp en beklemtoon behoort te word. Sodra die kind die skool verlaat, sal baie min mense hom verstaan en hy sal hieronder ly.

Die onderwyser van die gehoorgestremdes, het 'n veeleisende profesie. Die werk verg baie energie en vordering is stadig. Somtyds word meer van u geverg as wat u kan behartig. Slegs onderwysers wat daaglik met gehoorgestremdes werk, kan dit ten volle verstaan. Tog is die kinders met wie u werk, 'n bron van inspirasie. Dit is 'n grootse gedagte dat hulle van u as leerkrag afhanklik is vir 'n basiese funksie van menswees - spraak.

Laat ons nie versuim om die gehoorgestremde kind die geleentheid te gee om funksioneel te leer praat nie.

TOETSINSTRUKSIES

Die toets bestaan uit drie afdelings:

Afdeling A ___: Die toetsvorm (resultate)

Afdeling B : Die toetsprente

Afdeling C : Die toetsgids (onderwysersgids)

Die eerste afdeling wat bespreek sal word is:

Afdeling A

Wanneer u die kind vir die eerste keer toets, moet alle persoonlike besonderhede ingevul word: Die naam, geboortedatum, die ouderdom waarop die kind doof geword het en die oorsaak van doofheid.

Die ouderdom waarop die kind doof geword het, is veral belangrik, omdat dit 'n groot invloed het op sy vlak van spraakontwikkeling.

As gehoorverlies op 'n baie vroeë ouderdom voorkom, word spraakaanleer ernstig beïnvloed.

Die oudiogram;

'n Oudiogram verskyn ip die toetsvorm in Afdeling A. Gebruik die jongste beskikbare resultate om die oudiogram te voltooi. Dateer die oudiogram. Omdat die oudiogram 'n duidelike beeld gee van die kind se gehoorreste, is dit belangrik dat die onderwyser instaat is om die oudiogram te interpreteer.

In spraakonderrig is dit nodig om die gehoorreste ten volle te benut. Indien die onderwyser nie instaat is om die oudiogram te interpreteer nie, is dit wenslik om die spraakterapeut/oudioloog te raadpleeg. Vergelyk die besonderhede van 'n gehoorverlies soos dit in Afdeling A van die toetsvorm verskyn. Die onderafdelings gee 'n globale beeld van die prognose vir spraak.

U het nou reeds belangrike inligting ingewin.

Die Mondondersoek:

Deur op die volgende aspekte te let kan die onderwyser vasstel of die spraakorgane normaal funksioneer.

(a) Die Gesig

Kyk na die kind se gesig en let op die volgende:

Lyk dit normaal?

Is sy glimlag simmetries?



'n Assimetriese glimlag mag die volgende openbaar:

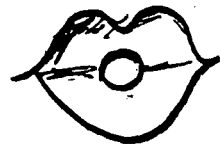


(i) 'n Spierswakheid van die mond- en tongspiere.

(ii) 'n Probleem met die harde verhemelte

(b) Die Lippe

- (i) Kan die kind sy lippe rond?



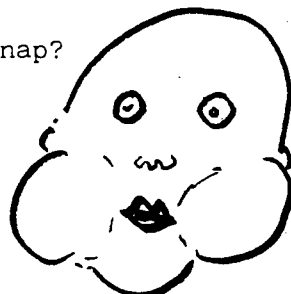
Vra hom om 'n kersvlam dood te blaas en kyk na sy mondbewegings.

- (ii) Kan hy sy lippe strek?



Vra hom om die toetsafnemer na te boots of kielie hom om hom te laat glimlag.

- (iii) Kan hy sy wange opblaas en opgeblaas hou sonder dat enige lug deur sy neus ontsnap?



- (iv) Kan hy sy lippe vinnig oop- en toemaak?

Laat hom 'n paar tafeltennisballetjies een na die ander van sy hand af blaas terwyl hy p,p,p, sê, of laat hom 'ppppp' vinnig herhaal.

Daar is weinig spraakprobleme wat deur die lippe veroorsaak word. Indien daar wel 'n probleem met die lippe is, is dit dikwels 'n aanduiding dat daar 'n probleem met die verhemelte en/of tong kan wees. Stel dus ondersoek in.

(c) Die Kakebene

Kan hy sy mond wyd oop- en toemaak?

(d) Die Tande

Ondersoek die tande. Is tande in die korrekte posisie?

Pas die botande oor die ondertande wanneer hy byt?

Indien die tande skeef is of die kind nie korrek kan byt nie, moet hy na 'n ortodont verwys word.

(e) Die Tong

Wenke om die tong te ondersoek:-

- (i) Vra die kind om te maak asof hy 'n roomys lek.
- (ii) Doop 'n tongstokkie in sjokoladesous en hou die kind dop terwyl hy dit aflek.
- (iii) Sit 'n bietjie sjokolade op elke mondhoek en kyk of die kind dit met sy tong kan aflek. Kyk na die sywaartse beweging van die tong. (Heen en weer)
- (iv) Laat hom 'n bietjie sjokoladesous sluk en kyk of die slukproses normaal is. Indien die tong na vore gedruk word wanneer hy sluk, moet die kind na 'n spraakterapeut verwys word.
- (v) Kan hy die tongpunt vir vyf sekondes agter die botande hou?

(f) Die Harde verhemelte

Die harde verhemelte is net agter die botande en as die tong na agter beweeg word kan die harde verhemelte gevoel word, Dit het 'n growwe tekstuur.

Indien die kind 'n kers kan doodblaas, is dit onwaarskynlik dat daar enige probleme met die harde verhemelte kan bestaan.

(g) Die sagte verhemelte

Indien die tong verder agtertoe beweeg word, verby die harde verhemelte, verander die tekstuur - Dit voel heelwat sagter en hierdie deel heet die sagte verhemelte. Dit eindig in die kleintongetjie (uvula).

Die funksie van die sagte verhemelte is om die lugkanaal na die neus af te sluit. As die funksie abnormaal is, is die stem hipernasaal weens die feit dat lug deur die neus ontsnap en klanke genasaliseer word. Navorsers het gevind dat die sagte verhemelte van gehoorgestremdes, korter en dunner is as dié van normaal-horendes. (Calvert and Silverman, 1983, p.168). Dit is moontlik as gevolg van die feit dat dit min oefening kry en dus verswak.

Normale funksie kan bepaal word deur die doodblaas van die kers en die opblaas van die wange, soos vir die harde verhemelte.

(h) Die Larinks (Strottehoof/stemkas)

Luister na die kind se stem, veral wanneer hy speel. Indien sy stem hees of grof klink of u voel dat die stemkwaliteit abnormaal is, en verskil van die stemkwaliteit van ander gehoor-gestremdes, is dit wenslik om die kind na 'n medikus te verwys.

Indien daar enigiets is wat kommer wek ten opsigte van die kind se spraakorgane, is dit raadsaam om dit met die mediese personeel te bespreek.

Verwys na die toetsvorm - as 'n orgaan normaal funksioneer word dit met 'n (✓) gemerk, maar indien daar 'n abnormaliteit bestaan, word 'n opmerking neergeskryf.

KLANKONDERSOEK

Nadat die mondondersoek voltooi is, word spraakklanke getoets. Die prente van Afdeling B stem ooreen met die woorde van afdeling A. Kyk gelyktydig na die twee afdelings.

Afdeling B, bladsy 1 :

Afdeling a (i) Klinkers en diftonge

Afdeling B, bladsy 2

Afdeling a (ii) Eenvoudige konsonante

Afdeling B, bladsy 3

Afdeling a (iii) woordbeginsamestellings

Toetsprosedure

Laat die kind aan jou linkerkant sit. Plaas die prente van Afdeling B voor hom. Plaas die toetsvorm (Afdeling A) aan jou regtekant.

Die kind moenie die geskrewe vorm van die toetswoorde van Afdeling A sien nie. (Sien illustrasie op die toetsomslag.)

Wys die eerste prent aan die kind. Luister dan na die uitspraak van die klank, wat op die toetsvorm onderstreep is. Luister slegs na hierdie spesifieke klank. As die klank korrek is dui dit aan met (✓) en as die klank verkeerd is dui dit aan met (X). As die klank weggelaat is, word dit met (-) aangedui.

As die kind gestimuleer kan word om die klank te sê, sal hy miskien daarin slaag om die klank na te boots, alhoewel hy dit nie spontaan sê nie. Skryf dan (S).

Indien die onderwyser voel dat die klank byna korrek is, maar nog nie heeltemal korrek nie, skryf dan (byna).

Opsomming

✓	Korrek
X	Verkeerd
-	Weggelaat
S	Stimuleerbaar
BYNA	Nie heeltemal korrek nie.

Indien die klank heeltemal korrek is, word een punt toegeken. Bereken die som van die totale van elke afdeling. Moenie die kind motiveer om besonder goed te praat nie. Die doel is om 'n voorbeeld van die kind se spontane spraak te verkry. Bemoedig die kind met elke probeerslag.

Die kind behoort gelukkig en ontspanne te voel.

Dit is raadsaam vir die onderwyser om die kind se spraak met die datum, naam van die kind, asook elke afdeling op band vas te lê. As dit op hierdie wyse gedoen word is dit moontlik om altyd die toets weer na te gaan. Die kind se spraak word op 'n permanente wyse vasgelê. Op 'n latere stadium kan vergelykings getref word.

Nou kyk ons in die besonder na elk van die afdelings.

Afdeling a(i) KLINKERS en DIFTONGE.

Die eerste tien woorde toets klinkers. Hierdie is enkelklanke wat voorkom deurdat die mond verskillende vorms aanneem, oe o aa a oo ie ee e uu eu.

Vra die kind om die woorde te sê en luister net na die klinker.

Daar is sekere algemene foute in die uitspraak van klinkers wat by gehoorgestremde kinders voorkom:-

1. Neutralisasie (neu)

Sommige gehoorgestremde kinders spreek alle klinkers op so n manier uit dat hulle dieselfde klink. Die klinkers klink dan byna soos die "e" klank in die Engelse woord "the". Dit is dikwels die geval met kinders met aangebore gehoorverlies. Waar hierdie uitspraak voorkom moet dit op die vorm aangedui word.

2. Verlenging (verl.)

Sommige gehoorgestremde kinders rek klinkers onnatuurlik lank uit.

Indien u voel dat die klinker verleng word skryf dan (verl).

3. Oordrywing (oord)

Sommige gehoorgestremdes oordryf hulle mondbewegings wanneer hulle praat. Indien u dit oplet by die uitspraak van die klinkers dui dit dan aan met oord.

4. Nasalisering (nas)

Sommige gehoorgestremdes laat die stem deur die neus in plaas van deur die mond gaan. Indien u bemerk dat die klinker genasaliseer is dui dit aan met (nas).

5. Diftongering

Die klinker word in twee dele verdeel, byvoorbeeld die kind sê "boe-ek" in plaas van "boek".

6. Vervanging

Dit kom dikwels voor dat die kind een klinker met 'n ander vervang. In so 'n geval word dit aangedui met (ver).

7. Stemprobleme

U mag vind dat die stemkwaliteit afwyk van die normale. Die stemtoon mag te hoog wees. In so 'n geval skryf dan "hoog". Dit mag geforseerd wees, en in so 'n geval skryf dan "geforseerd". Indien daar bemerk word dat die kind 'n afwykende stemkwaliteit het as wat hier genoem is, moet dit volledig beskryf word.

Wanneer daar 'n aanvang gemaak word met spraaktoetsing, mag dit makliker wees om uself te beperk tot reg (✓) en verkeerd (X), maar soos u meer ondervinding opdoen sal u ontdek dat u oordeelsvermoë skerp en fyner word.

Opsomming van klinker toets

Dieselfde simbole soos vroeër beskryf word gebruik (✓), (X),
(-), (S) plus:-

- | | |
|-------|--|
| neu | Neutralisasie. Die klinker het n dowwe klank soos die "e" in die Engelse woord " <u>the</u> ". |
| verl. | Verlenging. Die klinker word onnatuurlik lank uitgerek. |
| oord. | Oordrywing. Die mondbewegings word oordryf. |
| nas. | Nasalisering. Die stem kom deur die neus. |
| dif. | Diftongisasie. Die klinker word in twee dele verdeel byvoorbeeld "boe - ek" in plaas van "boek". |
| verv. | Vervanging. Een klinker word vervang deur n ander. |
| h. | Die stemtoon is te hoog. |
| gef. | Geforseerd. Die stem is geforseerd. |

Diftonge

In die volgende vier woorde verskyn diftonge:-

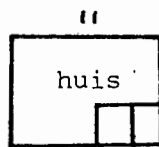
ui - huis, ou - blou, aai - swaai, y - vyf.

Diftonge bestaan uit twee klinkers wat saamsmelt om as een klank geproduseer te word. Klinkers het een element, diftonge het twee elemente. Alle foute wat vir klinkers beskryf was kan ook in diftonge voorkom. Dit wil sê hulle kan geneutraliseer, genasaliseer, gediftongeer, verleng, vervang, en oordryf word. Die stemkwaliteit mag ook afwykend wees.

Tesame met al hierdie foute is daar nog 'n spesifieke fout wat eie is aan diftonge.

Die tweede element word uitgelaat. Dit wil sê in plaas van swaai te sê, sê die dowe kind dikwels swaa.

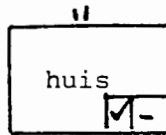
Op die toetsvorm van Afdeling A, kolomne 11 - 14, word twee kleiner blokkies in elke blok aangedui.



Voorbeeld 1:

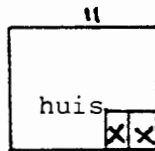
As die eerste element alleen teenwoordig is word dit

afgetik as volg:



Voorbeeld 2:

As albei elemente verkeerd is as gevolg van foute soos vroeër genoem (bv. nasalisasie, neutralisasie), word beide nommers as verkeerd afgemerkt byvoorbeeld:



AFDELING A(ii) EENVOUDIGE KONSONANTE

Vir die volgende afdeling word die prente op blasy twee van afdeling B gebruik. Dit is eenvoudige konsonante soos b, p, d, p, m, n ens. Elkeen is onderstreep.

Verskillende soorte konsonante:

Kolomme 1 - 5 : eksplosiewe konsonante : (plosives). Hulle word so genoem omdat hulle kort skerp klanke is wat met 'n plofgeluid geuiter word.

Kolomme 6 - 8 : eindplosiewes : (stops). Hierdie plosiewes kom by die einde van die woord voor. Hulle ontsnap nie met dieselfde krag as eksplosiewe klank nie.

Kolomme 9 - 11 : nasale : (m, n, ng). Hulle word gevorm deurdat

die lug deur die neus geforseer word.

/j/ en /l/ word nie gespesifiseer nie.

Kolomme 14 - 20 : frikatiewes : Hulle word gevorm deurdat die spraakorgane na aanmekaar lê en die lug dus tussen die twee deur geforseer word.

Hoe om punte toe te ken vir konsonante

Maak 'n punte toekenning op dieselfde wyse soos voorheen beskryf:

- (✓) = korrek
- (X) = verkeerd
- (S) = stimuleerbaar
- (byna) = die klank is nie perfek nie.

As die voorgeskrewe klank vervang word met 'n ander klank moet die vervanging aangedui word.

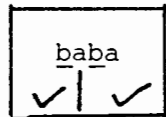
Addisionele besonderhede by die toekenning van punte by konsonante

Kolomme 1, 13 en 16:

Elke toetsblok word verdeel in twee afdelings. Die rede hiervoor is dat hierdie toetswoorde twee voorbeelde van die konsonant bied.

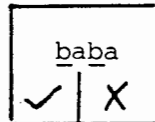
Die onderwyser moet na albei konsonante luister. Albei moet korrek uitgespreek word voordat die woord as korrek aangedui kan word.

Voorbeeld 1 :



Albei b-klanke is reg ge-uiter en die woord word as korrek beskou. 'n Toekenning van een punt word gedoen.

Voorbeeld 2 :



Die eerste "b" is korrek.

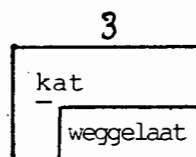
Die tweede "b" is foutief.

Die woord word as verkeerd beskou en geen punte toekenning word gemaak nie.

Kolomme 5, 8 en 11

Die woord weggelaat verskyn in elke toetsblok. Hierdie klanke word dikwels deur gehoorgestremdes weggelaat. As die kind 'n klank weglaat, word die woord omsirkel.

Voorbeeld :



In die voorbeeld hierbo aangedui, kan gesien word dat die kind die "k" weggelaat het.

Kolom 9

Die letters "b" en "mb" verskyn in elke toetsblok.

Gehoorgestremdes vervang dikwels die m-klank met n "b" of "mb".
As die b-klank foutief is en deur enige van die twee bogenoemde klanke vervang word, moet die betrokke klank omring word.

Voorbeeld :

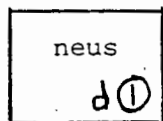


Die kind het die m-klank verkeerd uitgespreek. Die m-klank is met n b-klank vervang.

Kolom 10

Die letters "d.l" verskyn in elke toetsblok. Gehoorgestremdes vervang dikwels n n-klank met n "d", of n "l". Indien die kind die n-klank as n "d" of n "l" uitspreek, moet die betrokke klank omring word.

Voorbeeld :



Hier het die kind die n-klank met n l-klank vervang.

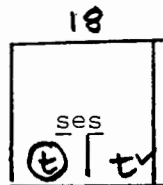
Kolom 18

Elke toetsblok word in twee dele verdeel, omdat die s-klank twee keer in die woord voorkom.

Gee punte op dieselfde wyse soos beskryf in kolomme 1, 13 en 16.

n Addisionele toevoeging is die "t/t" letters op elke toetsblok. Die rede hiervoor is dat gehoorgestremdes dikwels n s-klank soos n "t" uitspreek. As die kind die "s" met n "t" vervang moet die "t" omring word. Luister na elke s-klank afsonderlik.

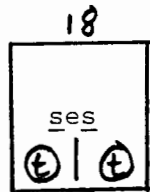
Voorbeeld 1 :



Die kind het die aanvangs-s-klank met n t-klank vervang.

Die laaste s-klank is korrek.

Voorbeeld 2 :



Die kind het albei s-klanke met n t-klank vervang.

Voorbeeld 3 :



Albei klanke is korrek.

n Punte toekenning van een punt word gemaak.

AFDELING A (iii) - BEGINSAMESTELLINGS

Twee of meer konsonante word saamgevoeg. Daar is verskillende soorte beginsamestellings :

1) Twee spraakorgane opeenvolgend : Kolomme 1 - 3

Twee spraakorgane word opeenvolgend gebruik om die klank te produseer.

Voorbeeld : sp-

Eerstens : Die tong beweeg om die s-klank te vorm.

Tweedens : Die lippe beweeg om die p-klank te vorm.

Hierdie groep is die maklikste van die samestellings.

2) Een spraakorgaan opeenvolgend : Kolomme 4 - 7

Een spraakorgaan (die tong) word gebruik om albei klanke te vorm.

Die klanke word opeenvolgend gevorm, die een na die ander.

Voorbeeld : sk-

Eerstens : Die tong neem die posisie vir die s-klank in.

Tweedens : Hierna beweeg die agterkant van die tong opwaarts vir die k-klank.

- 3) Twee spraakorgane gelyktydig in een funksie gebruik :
Kolomme 8 - 15

Die produsering van hierdie klanke berus op die volgende:-

Twee spraakorgane word gebruik maar die tweede spraakorgaan moet in gereedheid gebring word terwyl die eerste klank geproduseer word:

Voorbeeld : bl-

b - word met die lippe gevorm.

l - word met die tong gevorm.

Om die bl-klank te vorm moet die tong in posisie gebring word vir "l" terwyl die "b" geproduseer word.

- 4) Een spraakorgaan verrig twee funksies gelyktydig : Kolomme 16 - 20.

Hierdie samestellings is baie moeiliker om te produseer. Dieselfde orgaan (die tong) moet gelyktydig twee posisies inneem.

Voorbeeld : gr-

g - word gevorm deur die agterste gedeelte van die tong op te lig.

r - word gevorm deur die voorste gedeelte van die tong op te lig en te tril. Terwyl die agterkant van die tong in posisie is om die "g" te produseer, word die voorste gedeelte van die tong in gereedheid gebring vir die vorming van die "r".

Kompleks : Kolomme 21 -23

Hierdie samestellings word deur drie konsonante gevorm.

Spesifieke foute wat by samestellings voorkom en hoe om punte toe te ken

Elk van die toetsblokke vir samestellings is op twee maniere gemerk:

1) Die letters (k.i) verskyn in elke toetsblok

Gehoorgestremde kinders voeg dikwels n klinker tussen die konsonante wat die samestelling vorm in.

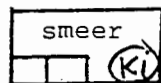
Voorbeeld :

die kind sê "se^hmeer" in plaas van "s_umeer".

Hierdie verskynsel staan bekend as klankinvoeging.

As die kind hierdie fout begaan, moet die letters k.i. omring word.

Voorbeeld :

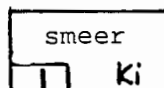


Hierdie voorbeeld dui aan dat die samestelling verkeerd uitgespreek is. Klankinvoeging het dus voorgekom.

2) Twee vertikale lyne verskyn in elke toetsblok

Dit gebeur soms dat net een van die konsonante wat die samestelling vorm, korrek uitgespreek word.

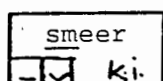
Voorbeeld :



In plaas daarvan dat die kind "smeer" sê, sê hy "meer".

Om hierdie rede word die toetsblok verdeel. Elke gedeelte van die samestelling word afsonderlik beoordeel.

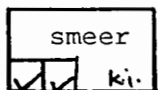
Voorbeeld 1 :



Die s-klank is weggelaat.

Die m-klank is korrek uitgespreek.

Voorbeeld 2 :



Albei klanke is reg uitgespreek.

n Samestelling word as korrek aanvaar mits albei konsonante korrek uitgespreek word en daar geen klankinvoeging is nie.

ONTHOU

- 1) Om noukeurig te kan luister neem tyd in beslag. Moenie ontmoedig word indien u dit moeilik vind om te evalueer nie.
- 2) Waak daarteen om spraak te oorskat. n Klank wat as korrek gemerk word moet volkome korrek wees. (100%)

Afdeling (b) - Gesprekvoering

Knoop n gesprek aan met die kind en luister noukeurig na sy stem.

Let op die volgende :

Toonhoogte : Is die toonhoogte normaal of is dit te hoog of te laag.

Ritme en frasiering: Is die ritme normaal?

Volume: Is die stem te hard of te sag?

Beklemtoring van woorde: Val die klem op die korrekte deel van die woord?

Spoed: Praat die kind te vinnig of te stadig?

Stemkwaliteit:

Nasaliteit: Klink die stem hiper nasaal?

Spanning: Is die stem geforseerd? Kyk of die nekspiere styf trek.

MEGANIESE TEL

Vra die kind om te tel. Luister na die stemkwaliteit. Let op die aantal woorde wat hy met een asem kan produseer. Gee aandag aan dieselfde aspekte as tydens spontane gesprekvoering.

Sommige kinders vind dit moeilik om 'n gesprek te voer weens die feit dat hulle taal gebrekkig is of hulle nie kan spraaklees nie. In so 'n geval moet die onderwysers uitsluitlik gebruik maak van die tel-metode.

Die onderwyseres noteer haar eie indrukke omtrent die kind se stem. Die wyse van notering moet heel eenvoudig wees. Gebruik eenvoudige taal.

Voorbeelde :

"Die stem het 'n normale kwaliteit en 'n normale ritme".

"Die stem is baie geforseerd. Die nek en skouerspiere trek styf. Hy praat te stadig. Elke woord word uitgerek".

"Sy stem is hoog en swak".

Afdeling C

Gebruik inligting van afdeling b, en omring die gepaste nommer in afdeling C.

DIE VOLGENDE STAP

Die toets is uitgevoer, die foute is uitgewys en nou moet die remediëring begin. Daar is verskillende boeke wat geraadpleeg kan word.

LING, D., Speech and the Hearing Impaired Child : Theory & Practice. Alexander Graham Bell Association for the Deaf : Washington, D.C. 1976.

Aangaande hierdie boek die volgende opmerkings:

- (i) Die volgorde van klanke in hierdie toets en die wyse waarop klanke gekatagoriseer is, stem op vele wyse ooreen met Ling se sisteem.

- (ii) Ongelukkig word klanke wat uitsluitlik in Afrikaans voorkom nie deur Ling of enige van die ander Engelse skrywers behandel nie.
- (iii) Daar is heelwat tegniese detail in hierdie boek wat dit vir die onervare onderwyseres ietwat moeilik sal maak om te lees.

CALVERT & SILVERMAN., Speech & Deafness. Alexander Graham Bell Association : Washington, D.C., 1983.

Hierdie boek bied praktiese hulp vir die onderrig van sekere klanke. Veral hoofstuk 6 word aanbeveel.

Indien u verdere inligting wil bekom in verband met die ontwikkeling en teoretiese agtergrond van hierdie toets, word u verwys na die verhandeling : The development of an Afrikaans speech assessment procedure for hearing impaired children and its use in comparing phoneme development under two curricular approaches. (Derman, Z., Masters Thesis, University of Cape Town. 1987).