

**TEST TRANSLATION IN A SOUTH AFRICAN CONTEXT
USING
THE PEABODY PICTURE VOCABULARY TEST-REVISED**

by

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ABSTRACT

This study explored the feasibility of using test translation to adapt a standard English vocabulary test for Zulu speakers. It was motivated by the difficulties associated with assessing speakers of the African languages, in the absence of Zulu speech-language therapists and Zulu assessment tools. The adaptation process in the present study began with a direct translation of the PPVT-R into Zulu by twenty Zulu university students. Based on the degree of consensus on translations and judgements of cultural appropriacy (using the committee approach), items were selected for the purposes of pilot testing of the translations on 107 Zulu pupils from six to eleven years, in the study area. The results of the first pilot study revealed that it was not feasible to standardise the first translated version of the test, as only seventeen percent of the items were found suitable for inclusion in a normative study. Further test development using translations from twenty educators, their judgements of cultural appropriacy of stimuli as well as application of the back translation test to determine semantic equivalence of translations resulted in the development of a revised translated version of the PPVT-R, consisting of multiple translations for some items. This was administered to 544, six to eleven year old Zulu children. The results of the second pilot study revealed that only 31.2% of the translations administered were appropriate for the purposes of developing norms, across all the age groups tested, with 80% of these translations applicable for six and seven year old Zulu children only. Therefore, the translated version of the PPVT-R, despite modifications, showed significantly reduced applicability for Zulu speakers. Using the information derived from the present study a test comprising thirty six Zulu words has been compiled for the purposes of screening the receptive vocabulary skills of six and seven year old Zulu children in the study area. The findings of the study confirmed the difficulties in using test translation as a procedural option in adapting a test for Zulu children; implications, further modifications and investigations are suggested in this regard.

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GLOSSARY OF TERMS AND ABBREVIATIONS

The following terms and abbreviations have been used in the present study:

AL1 speakers has been used to refer to speakers for whom an indigenous African language such as Zulu is the first or native language.

SE has been used to refer to Standard English, which is the dialect of English spoken by the mainstream culture in society.

Mainstream has been used in the present study to refer to the politically and socio-economically dominant sector of society, which in America may refer to the majority, but in South Africa refers to the minority population (Pahl, 1992).

Nonmainstream has been used in the present study to refer to the politically and socio-economically nondominant population, who are not first language speakers of standard English.

Item has been used to refer to the original English PPVT-R vocabulary unit, unless otherwise specified.

Option or translation has been used to refer to the Zulu

word provided by the translators.

Other abbreviations used include:

SLT, to refer to Speech-Language Therapy

SLTs, to refer to Speech-Language Therapists

nonSE, to refer to nonstandard English

SL, to refer to source language

TL, to refer to target language

ZL1, to refer to first language Zulu speakers

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CHAPTER ONE

1. INTRODUCTION

1.1 Problem statement

The translation of tests is not new to the South African speech-language therapy context, as it has been used previously from one official language to another, i.e. from English to Afrikaans. In view of criticisms levelled against translating tests, the use of test translation to adapt tests for white Afrikaans-speakers has culminated in, for example, the creation of the "Afrikaans Reseptiewe Woordeskattoets" (Buitendag, Uys & Louw, 1991). These criticisms have derived from the fact that norms developed for a specific language or cultural group (for example, standard English speakers) are not appropriate for use with another linguistic or cultural group, because the cultural, social, geographical and racial differences specific to the standardisation group, manifest themselves in the contents of the test and thus are translated (N. Miller, 1977; Vaughn-Cooke, 1986; Lahey, 1988; Jordaan, 1989).

The focus of the present study is the translation of standard English tests into the indigenous, African languages. The motivation for the study relates to its use as a procedural option (e.g. Labuschagne, Alant & Tesner, 1991) in adapting tests for use with native speakers of the

African languages (AL1), the need for which arises from the problems experienced by speech-language therapists (SLTs) concerning the assessment of linguistic skills in speakers from these culturally and linguistically diverse backgrounds in South Africa. These problems derive from the virtual absence of AL1 SLTs in the country (Pahl, 1992). There are at present only 10 qualified AL1 SLTs (personal communication, R. Beecham, September, 1993)¹ in a country where 70% (more than twenty eight million) of the population are AL1 speakers (Urban Foundation, 1990). The lack of AL1 SLTs has resulted in the need for first language English or Afrikaans speaking SLTs to provide SLT services across cultures and languages to AL1 speakers, until such time as sufficient AL1 SLTs are available.

In the South African situation the problem is compounded by the fact that the SLTs are themselves unfamiliar with the African languages and culture, and are therefore unable to provide a culturally and linguistically valid assessment of communication skills in AL1 speakers. Culturally and linguistically valid assessment and diagnosis, however, form the very basis of effective management of communication disorders, and equitable service provision. Such assessment involves the use of both formal tests and informal procedures to gather linguistic and communicative information to determine the level of development of speech and language, or the presence of communication disorders in people from a certain linguistic or cultural group (Vaughn-

Cooke, 1986). However, there is a significant lack of culturally and linguistically valid assessment tools in the indigenous languages (Jordaan, 1989). Furthermore, although many African people in South Africa have acquired English (and Afrikaans, although for the purposes of the study, the focus is on English) as a second language (Macdonald & Burroughs, 1991), the fact that AL1 speakers have generally not acquired "native" competence in the standard English (SE) language (Mashishi, 1987) precludes the use of SE assessment tools when assessing AL1 speakers. The reason for this contention is the increasing body of research criticising the use of SE tests on nonstandard English (nonSE) speakers (Edwards, 1979; Wiener, Lewnau & Erway, 1983), an issue to be discussed further in chapter two.

The problem of assessing AL1 speakers in the absence of SLTs who are competent in the African languages, and without assessment tools may be somewhat alleviated by firstly, the training of more AL1 SLTs and secondly, the development of original tests in the African languages. However, while the former can only occur gradually over a number of years (the training period for SLTs being 4 years) the latter solution is not likely to prove any shorter as it needs to be based on ethnographically based research (Heath, 1983; Taylor, 1986) around the African languages and culture. Such a research undertaking is both resource and time consuming (Jordaan, 1989), and has never

been a priority in the South African situation, with the result that there are no original African language tests which are available to SLTs. Therefore, SLTs have resorted to translating SE tests for use with nonEnglish speakers.

Test translation has been used extensively, in various fields, including psycho-educational (Diaz, Rodriguez, & Ruiz, 1986), and speech-language testing (Cox & Jones, 1985) both internationally and in South Africa (Alant & Beukes, 1986; Labuschagne, Alant and Tesner, 1991). Its use has continued despite the criticisms levelled against it in the national (Jordaan, 1989; Buitendag, Uys & Louw, 1992), and international literature (Cazden, 1972). In view of this use as a procedural option in adapting SE tests for use with speakers from culturally and linguistically diverse backgrounds, it is critical to investigate empirically the feasibility of using the procedure of test translation. If the translation of an existing SE test proves to be an acceptable way of producing culturally and linguistically unbiased assessment measures for use with speakers of languages other than English, SLTs in South Africa will at least have at their disposal potentially useful assessment tools, with which they are already familiar (Mumby, 1990). If, on the other hand, the translation of existing English tests into an AL1 language such as Zulu proves to be completely inappropriate, a strong case should be made for clinicians

and researchers to refrain from continuing this practice, and for channelling their resources to developing a data base for the creation of new assessment measures, directly relevant to the indigenous languages and cultures.

The following discussion of the South African situation provides the global context to further highlight the problem and the need for the present study.

1.2 The South African context: The global context of the problem

Socio-political developments in South Africa have had serious repercussions on the provision of health services to the millions of people in various sectors of the population. The South African situation is unique, because of its history of institutionalised socio-political inequality, and dominance of the minority over the majority. It is unique because of its adoption of the dominant minority groups' values, customs and beliefs as the standard of society, to the exclusion of all others, a phenomenon which is related to *ethnocentrism*, which, according to van Schalkwyk (1992, p. 27), means that people "think that their race, ethnic, or national groups are superior to other groups". In South Africa the governing group's languages, namely, English and Afrikaans, have been granted official status in the country (Msimang, 1992). Official languages, however, are by no means national

languages, in view of the fact that there is no one South African nation, in the political and cultural sense, and therefore no national culture and no national language (Alexander, 1992). Indeed, according to the figures provided by the Central Statistical Services (1991), only about nine million people in South Africa speak the official languages as their first languages. This figure comprises less than 30% of the total population (Central Statistical Services, 1991). The Black majority, who comprise approximately 70% of South Africa's population, and whose numbers are expected to increase significantly in the next two decades (Table 1) are first language speakers of the African languages. Because of the socio-political situation, AL1 speakers have generally felt compelled through economic necessity to acquire some English (Alexander, 1992; Makoni, 1993), (or Afrikaans) although, as implied previously, without necessarily reaching native competence (Mashishi, 1987). In contrast, speakers for whom one of the official languages is the first language have felt no economic or other imperative to acquire any competence in the indigenous African languages (Alexander, 1992), their bilingualism being generally limited to the official languages. A discussion of the circumstances in which AL1 speakers acquire English and the difficulties they experience in doing so in the present South African education system are important in the present study because of the implications concerning the degree of competence with which they acquire English. These in turn impact upon

the practice of SLT, the potential for the use of SE assessment tools, and for translation across languages and cultures.

For most AL1 children in South Africa, it would appear that the transition from home to school is a difficult and disillusioning one, largely because they are unable to meet the demands imposed upon them by the Eurocentrically based, middle class education system (Mashishi, 1987; Macdonald & Burroughs, 1991). Macdonald and her team of co-workers (1991) have revealed a "complex web of political, cultural, and poverty-related factors which underlie the difficulties faced by African children in coping with formal education" (Macdonald & Burroughs, 1991, foreword). Most African families in South Africa belong to the low socio-economic group, where concerns such as poverty, overcrowding, the lack of basic health care, shelter, electricity, water, and transport demand more urgent attention than learning to speak, read or write English. This however, does not mean that African parents do not want opportunities for educating their children as much as other parents do. Indeed, African parents have long recognised the value of competence in English, and have favoured the use of English in schools (Macdonald & Burroughs, 1991). Education for AL1 speakers, however, was formalised only in 1953 (Macdonald & Burroughs, 1991; Makoni, 1993). The State prescribed the use of the mother tongue (or another African language) for the first four years of schooling, with

English being taught as a language subject only from Sub-standard B (class two or second grade) to standard two. English, however, is then required to be the medium of instruction for as many as ten subjects from standard three onwards. This is still the practice at the Department of Education and Training Zulu community schools and the KwaZulu schools (Msimang, 1992). Macdonald and Burroughs (1991) have found that skills such as listening, speaking, reading, and writing are poorly developed in both the first (indigenous) and second (English) languages, and that the present content for the English-as-a-subject syllabus from Sub B to standard two is seriously insufficient for the use of English as the language medium for learning the ten subjects in standard three. They have estimated that the average African child exposed to English from Sub B to standard two has an average English vocabulary of 300 words, whereas the subjects' demands of standard three require that a core vocabulary of about 5000 English words are known. The African child schooling under the present circumstances simply does not know enough English to be able to meet the demands of standard three and the educational system imposed upon him/her. A further factor contributing to the difficulty AL1 children experience in learning English may relate to the fact that their English teachers are themselves not first language English speakers, but usually AL1 speakers themselves (Mashishi, 1987), and whose competence in the external language may be questionable in view of inadequacies in their own training.

It is therefore not surprising that researchers have found the highest school-failure rate and drop-out rate to be for African children at the junior primary level (e.g. Jacobs, 1990). The fact that young African children have marked difficulty in English content, as they do with form and use, has serious implications for SLTs working cross-culturally, and indeed for any use of SE tests to assess AL1 speakers. Therefore, the methods for developing tools used by the school system and SLTs working with these children need to be carefully scrutinised for socio-cultural bias, in order to provide equitable service provision.

1.2.1 The inequity of SLT service provision in South Africa

Equitable service provision necessitates the availability of services to all people in the languages of their choice (ASHA, 1985, p.30). The achievement of such a goal in the field of SLT in South Africa may have been hampered by the country's history of racial division and oppression. A brief overview of the inequities in the provision of SLT services to AL1 speakers in South Africa follows.

Presently, the people of African descent account for 70% of the population in South Africa. That there will be a significant increase in the African population is clear from the projections for the next two decades as presented

in Table 1. These figures provide the basis for the prevalence figures estimated below, and have important implications for the need, distribution, and equity of SLT services in South Africa.

Table 1: Population figures and projections for South Africa for the next two decades (Urban Foundation, 1990)

	% for 1990	Population Year 1990	Population Year 2000	Population Year 2010
Africans	70%	28,258,600	37,260,000	48,497,800
Whites	30%	5,052,100	5,427,700	5,757,300
Coloureds		3,244,400	3,782,600	4,242,500
Indians		978,300	1,122,100	1,236,400
Total	100%	37,533,400	47,592,400	59,734,000

Despite the inception of the SLT profession almost 50 years ago (Aron, 1991), there have been only a few incidence and prevalence studies in South Africa, almost all of which have been confined to the more privileged, minority sector of the population. Therefore, in the absence of prevalence figures for the large majority of South Africans who are All speakers, an estimate based on the prevalence figures provided for most Western and mainstream populations will have to suffice. Fifteen years ago, Penn (1978) in South

Africa, had estimated the prevalence of communication disorders to be between eight and ten percent. The prevalence of communication disorders that was quoted for most Western populations by the Department of Health in their reports on "The Year of the Disabled" in 1986 (Hattingh, 1987) is between six and ten percent, while the estimates of Van Riper and Emerick (1990) have concurred with those of Penn (1978) and are between eight and ten percent. From these estimates one can assume that between 2.25 and 3.75 million of all the people in South Africa have communication problems. In the absence of prevalence and incidence figures specifically for AL1 speakers, one can further infer from the racial distribution of the population figures for 1990 (Urban Foundation) that almost seventy percent, or 2.1 million people, with communication problems in South Africa are AL1 speakers. This inference is based on the report that communication disorders occur in all races (Miller, 1984, p. xi). Thus it would appear that there is a significant need for SLT services to meet the needs of the millions of communicatively impaired people in the country. The question that arises then, concerns the adequacy and equity of SLT services in South Africa.

Equity of service provision in South Africa has been profoundly limited by the critical shortage of AL1 SLTs to meet the needs of the estimated 2.1 million AL1 speakers who require SLT. Educational inequality and disadvantage

have limited the number of black South Africans admitted to tertiary educational institutions until recently, the students of SLT having been drawn from the more privileged sections of the population. From a recent unpublished survey of the universities offering the course, it was found that only ten students of African origin have graduated to date (personal communication, R. Beecham, September, 1993). Of the 930 speech therapists and audiologists registered with the South African Medical and Dental Council in 1991 (Aron, 1991), approximately 89 were located in Natal, of whom not one was an AL1 speaker (Pahl, 1992). The gravity of such a situation becomes clear when it is realized that the majority of the 8.5 million Zulu speakers in South Africa, are in Natal (Central Statistical Services, 1991). Secondly, there are very few therapists of other race groups who are competent users of African languages, or familiar with African culture, largely as a result of the country's segregation policies of separate schooling, and the Group Areas Act. Consequently, these first language English or Afrikaans SLTs are unable to provide SLT to AL1 speakers cross-culturally and in the client's own language. A further problem contributing to the inadequacy of SLT service provision to AL1 speakers has been the lack of assessment tools in the indigenous African languages (Jordaan, 1989). Therefore, the SLT profession has primarily been serving the English and Afrikaans speaking minority groups living in well developed, centralised areas, reflecting Adler's contention that

therapists tend to operate "in rather centralized geographic locations" (Adler, 1979, p. xiii). Of the estimated total of three million people who require SLT in South Africa, Aron (1991) has estimated that only 223 200 people with communication problems actually receive the services annually. Therefore, Drew's assertion (1982, p. 1) more than a decade ago that "there are vast sections of the population who do not receive even the most basic speech therapy and audiological care" is as relevant today as ever. This state of affairs appears to apply not only to SLT, but to most health and rehabilitation services in the country (Price, 1986; Donald, 1991), and not only in South Africa, but in fact in the developing world generally (Goerdts, 1989).

South Africa is at present in the midst of socio-political change, and part of the transformational process has been the emphasis on the urgent need to provide adequate and equitable services to all the people of South Africa, irrespective of race, religion, or language, and that services be provided without cultural, linguistic, racial or other bias. Currently in South Africa, efforts are being made to extend the provision of services to ALL people in outlying areas, as evidenced by the establishment of such projects as the Valley Trust in the Valley of a Thousand Hills, in Natal. As with other areas of health services, the profession of SLT is attempting to extend its services from its focus on the minority white population

group (Beckett, 1976) to areas and populations which have previously had no access to such services. In addition, increasing urbanisation and mobility of people have lead to a situation where SLTs are required to work more and more frequently with culturally and linguistically different speakers, as is occurring in America (Terrel & Hale, 1992). Such expansion of services across languages and cultures, is without doubt, necessary, but demands far reaching extension of the skills of SLTs, including the development of valid assessment tools, in recognition of the multitude of languages spoken in South Africa.

In the light of the above, the need to investigate the feasibility of using test translation as a procedural option for creating assessment tools for AL1 speakers in the present study can be seen to derive from the following:

1. the need to improve on the equity of service provision by extending services to all the people of South Africa in their native languages
2. the lack of AL1 SLTs
3. the lack of bilingual SLTs who have competence in the AL1 languages such as Zulu as a second language
4. the lack of culturally and linguistically valid assessment tools for AL1 speakers
5. the inappropriacy of current practices such as the use of SE tests in assessment across cultures and languages

6. the time and resource consuming nature of the ideal of developing ethnographically based research tools
7. the fact that despite criticisms against its use, test translation continues to be used as a procedural option in developing tests for use with people from culturally and linguistically diverse backgrounds.

1.3 Clarification of terminology

The unique socio-political nature of the South African context makes the clarification of certain terminology essential in order to avoid confusion. For the purposes of the present study, the use of the term *mainstream* warrants clarification. As the term **mainstream** is usually used to refer to the dominant group in any society, it has been used to refer to the ruling, minority in South Africa, who are also the native users of the official languages, while in America, the mainstream society refers to the majority (ASHA, 1985). The reverse holds true for **nonmainstream**, which in the South African context refers to the majority population, who are native speakers of the indigenous African languages, not the official languages. Therefore, while the need for culturally and linguistically valid assessment is a minority problem in America, it is largely a majority problem in South Africa (Pahl, 1992).

1.4 Summary and overview

The continued use of test translation as a procedural option in developing assessment tools for use with AL1 speakers in South Africa arises from a number of factors. These include the lack of AL1 SLTs, and other SLTs who have competence in the African languages and who can provide adequate assessment of communication skills of AL1 speakers, as well as the lack of appropriate assessment tools for AL1 speakers. The need to address the issues relating to assessment of linguistic skills is highlighted by the demand to provide equitable SLT services for the rapidly increasing AL1 population. Although the profession of SLT in South Africa has historically ignored vast proportions of the population, there is an urgent demand for immediate change, which implies the urgent need for the development of appropriate clinical instruments.

The issue of assessment of language across cultures is critical to the provision of equitable services, and therefore to the present study. In chapter two, the relationships between language, thought, vocabulary and socio-cultural experience are explored. In addition, both the use of SE tests for assessment of language across cultures as well as more recent advances in cross-cultural assessment are discussed. Chapter three deals with issues concerning the translation of vocabulary, while chapter four presents the methodology followed in the study. The

findings and their interpretation are presented in chapters five and six, respectively. The concluding chapter presents the implications of the study and its evaluation.

CHAPTER TWO

2. LANGUAGE TESTING ACROSS CULTURES: THEORETICAL ISSUES

A review of various theoretical issues relating to language testing across cultures follows. These include the use of standard English tests, the relationship between language, thought and culture, the central role of the word as referent in language usage, and the relevance of Taylor's model for culturally sensitive assessment.

2.1 Introduction to language testing

Tests developed for assessing language skills in English have traditionally focused on speakers of standard English (SE). Since the procedure of translation has been applied to SE tests in an attempt to adapt them for use with nonEnglish speakers, (Cox & Jones, 1985; Alant & Beukes, 1986; Labuschagne, Alant & Tesner, 1991), it is necessary to briefly consider SE tests prior to discussion of more recent advances in the assessment of linguistic skills in culturally and linguistically diverse populations. An understanding of SE tests is particularly relevant since a recurring criticism levelled against the translation of tests is that the discriminatory aspects of SE tests when used with non-SE speakers across cultures are not altered by the process of translation (Alant & Beukes, 1986).

2.2 Standard English tests

Standard English may be simply stated as "that dialect most often spoken by educated members of society" (Edwards, 1979, p. 76), while Dittmar (1976, p. 8) has described the standard as "that speech variety of a language community which is legitimized as the obligatory norm for social intercourse on the strength of the interests of dominant forces in that society". It is the variety of English which can be described according to a formal set of rules and norms of "correct usage" (Bloomfield, 1973), and which is accepted as the official language for business, mass media, officialdom and the form of language that is supposed to be used and promoted in schools. All varieties that differ from standard English are referred to as nonstandard English (Edwards, 1979). In South Africa, the English used by the politically and socio-economically dominant, white minority is generally considered to be the standard variety of English.

Almost all the language assessment tools currently used in clinical practice in South Africa have been normatised on mainstream, usually white, middle class, monolingual speakers of SE (Malan, 1981), mostly in the United States of America or the United Kingdom. The use of SE tests across cultures has important implications for the validity of the assessment results for nonSE speakers (Seymour & Miller-Jones, 1981) as well as for SE speakers from

different cultures, as found in Australia (Sharpley & Stone, 1985), and in South Africa with mainstream SE speakers (Manickum, 1985). The use of these tests with nonSE speakers is often accompanied by such modifications as arbitrary omissions and substitutions of linguistically and culturally inappropriate items, and revision of scoring procedures, which may actually invalidate the results of the test (Davis & Grunwell, 1973; Samuda & Crawford, 1980; Sharpley & Stone, 1985; Glenister, 1989). Another type of modification applied to SE tests in an attempt to make them more suitable for nonSE speakers has been restandardisation (Evard & Sabers, 1979). The major problem to this, however, is the derogatory implications of lower norms usually obtained for nonmainstream or nonSE speakers (Vaughn-Cooke, 1986).

Language tests that have been developed for SE speakers, according to Miller (1984), tend to cover areas of skills which are directly or indirectly nurtured by the mainstream culture, and tend to use middle class methods and measures of judgements as to what constitutes acceptable behaviour. Therefore, SE speaking children's favourable performance on these tests may largely reflect the cultural continuity that they experience in the move from home to school (Miller, 1984). In contrast, the use of SE language tests to assess low socio-economic, disadvantaged nonSE speaking children has consistently shown poorer performance (Stephenson & Gay, 1972; Lively-Weiss & Koller, 1973;

Miller, 1984). Various researchers have stressed the need to recognise the limitations of using SE tests on different cultural and linguistic groups (Alant & Beukes, 1986; Pahl & Kara, 1992). This practice of using SE across cultures makes the differentiation between language pathology and the more subtle language variations such as dialect, accent and variations in register a difficult task. According to Wray and Medwell (1991), *dialectal variation*, or regional variation, may occur in terms of vocabulary and the grammatical structures used, as for example the dialect of South African Indian English spoken by some Indians in South Africa (Crossley, 1984). With regard to AL1 speakers and English acquisition, there appears to be a paucity of information regarding dialectal variation of SE. *Accent* refers to variations in languages due to pronunciation, which may or may not be associated with dialectal variations, while variation in *register*, refers to the different styles of speaking, depending on the social context in which the speaker finds him- or herself, as for example, the use of slang, and ellipsis or contractions in informal contexts.

Therefore, the indiscriminate use of SE tests on nonSE speakers, without considering the authenticity of variations in language increases the risk of misdiagnosis: a *difference* could easily be perceived as a *deficit*, which could lead to unnecessary and irrelevant therapeutic intervention (Anderson, 1981). In America, this practice,

in cross-cultural studies, of assessing nonmainstream speakers, particularly speakers of a variety known as Black English, by means of tests which were designed without consideration for their cultural and linguistic background, has largely contributed to the notion that children from nonmainstream, socio-economically disadvantaged backgrounds are linguistically and cognitively inferior to middle class white children (Edwards, 1979). Black English was regarded as a corruption of SE (Muma, 1978). Nonmainstream speakers of such varieties who were tested by means of SE tests were labelled language deficient, and were thought to need remediation, and even special school placement (Wiener, Lewnau & Erway, 1983). This view was embodied in the Language Deficit approach, early proponents of which included Bernstein (1958; 1960) and Bereiter and Engelman (1966). In contrast, the view that speech and language of nonmainstream English speakers is "different" rather than deficient, emanated from such theorists as Labov (1970) and Adler (1971). Labov (1973) demonstrated the rule-governed nature of Black English, a valid dialect of SE, and emphasized the intimidating influence of a middle class interviewer with middle class testing procedures on the black child's verbal output.

It has been repeatedly asserted that the initial promotion of the deficit view of nonstandard dialects of English has largely been based upon the inadequacies of testing procedures used (Cleary, Humpreys, Kendrick & Wesman, 1975;

Miller, 1984; Vaughn-Cooke, 1986). Socio- and psycholinguistic researchers have repeatedly reported various social, cultural, and linguistic factors affecting test performance differentially under differing clinical conditions (Taylor, 1986). Miller (1984) has identified certain cultural factors, both extrinsic and intrinsic to tests, which may affect test performance. Extrinsic factors may include general aspects of the environment, child rearing and schooling differences, as well as the socio-cultural position and the role of the test population as a whole. In addition to the language of the test, other factors intrinsic to the test which are biased against certain groups relate to the use of culture-bound general knowledge, toys, and pictures used in the test situation (Adler, 1971). Hudson (1967) has demonstrated that perception of pictures is not necessarily uniform across cultures, while Hamdi, Knirk and Michael (1982) concluded from their research on pictorial depth perception of the subjects that differences in cultural backgrounds of the subjects relative to their familiarity with pictorial content of test items incorporating size and distance cues, contributed to significant differences in average level of test performance. The implications of such research findings are that clinicians need to be critical regarding the validity of interpreting test scores derived from pictorial items portraying objects specific to a given culture.

It would appear that these SE tests when applied to nonstandard English speakers, do not reflect the real level of language development, but only the person's knowledge of the SE language and culture. Even amongst speakers for whom English is the first language but who come from different countries, SE tests, standardised on one population have been found to be inappropriate for another. For example, American SE norms are not applicable to Australian English speaking children (Elkins, 1974; Teasdale & Wray, 1975; Sharpley & Stone, 1985), or to British English-speaking children, as suggested by the development of the English Picture Vocabulary test by Brimer and Dunn (1962), and later the British Picture Vocabulary Test (Dunn, Dunn, Whetton, & Pintillie, 1982). These observations illustrate further that SE tests are unlikely to be appropriate for use with children for whom English is not the first language. There has, therefore, been an increasing recognition amongst recent researchers involved in assessment of language across cultures, of the need to consider the cultural and sociolinguistic background of the speakers before any adaptation of existing tests or creation of new tests can be undertaken (N. Miller, 1977; Taylor, 1986). The link between experiences, social interaction and language has long been established (Sapir, 1921; Mead, 1934). Language has facilitated the sharing of meaning and experiences between and among people. Researchers have, in recognition of this fact, asserted that cultural and sociolinguistic data

concerning the nonmainstream speakers should be amassed through ethnographical procedures, because of the strong links among language, thought and culture (Saville-Troike, 1986).

2.3 Reflections on language, thought and socio-cultural aspects

The link between language and culture was established centuries ago (Wilhelm van Humboldt, 1767 - 1835, cited by Snell-Hornby, 1988). Language was projected by Humboldt as a dynamic activity, which is both an expression of the culture as well as the individual person who perceives the world through language. His ideas were reflected later in the Sapir-Whorf principle of linguistic relativity, which suggests that thought does not precede language, but is in fact conditioned by it (Snell-Hornby, 1988). (Extreme interpretations of the principle of linguistic relativity have implications for translation, and will be referred to later.)

Jean Piaget's view of thought also reflected the link between thought and social organisation. In a child's development, according to Piaget, the child's language is divided into two large categories of thought, namely individualistic, egocentric thought and socialising thought which is directed towards influencing others. Thus, Piaget's (1959) theory of the development of language

presupposes the existence of a polarity between two forms of thought, namely, *directed thought* and *undirected thought*. Directed thought is conscious in that it pursues the aims present in the mind of the person. It is adapted to reality and strives to influence it. It is susceptible to truth and error and, since it can be communicated through language, is therefore *social*, and influenced by culture. It is influenced by the laws of experience and logic in its development. Undirected thought or *autistic thought*, is individualistic and subconscious, not communicable, and not adaptable to external reality, and tends to gratify wishes rather than truths (Piaget, 1959).

The link between language, thought and socio-cultural experiences continued to be reiterated by **Vygotsky** (1970, p. 50 - 51) as follows:

Thought development is determined by language
i.e. by the linguistic tools of thought and by
the socio-cultural experiences of the child.

Current consensus on the interrelationship between culture, language and thought, is that these three facets coexist and cannot work independently of each other (Valdes, 1986). Language is a carrier of culture, and therefore children learning their first language are also learning their culture (Saville-Troike, 1986). The link between language, thought and sociocultural aspects has been reiterated more recently by **Nelson** (1985, 1986, 1991) who views the

language learner's underlying conceptual organisation or thoughts as being derived from his/her *experientially based knowledge of events*. These events are "always *socially and culturally meaningful*" (Nelson, 1991, p. 127). Nelson has based her argument on the fact that there is general agreement among anthropologists that the most acceptable evolutionary explanation for the emergence of language is that language developed as a communicative system (Givon, 1989, and Margolis, 1987, cited in Nelson, 1991). She has argued that if language originally emerged for the purposes of communication, then it must have been functionally oriented around using *words* to share messages about the particular social organisation, such as food gathering, and protecting and nurturing the young (Nelson, 1991). The implication is that the thoughts or underlying conceptual representations of people would have been functionally organised around goals and general event types, rather than only on objects, which are important only as they are part of the event types (as for example, food). Thus the basic structure of knowledge, and the language which is used to express that knowledge, is organised around events that have been experienced (Nelson, 1986). The "event knowledge" view when applied to the development of language functions in children, stresses the social and cultural meaningfulness of experientially based events for even very young children, without denying the dynamic role that children play in organising their own knowledge, as suggested by Piaget (Nelson, 1991). Acknowledgement that

thoughts are centred around experienced events necessitates consideration of the social, temporal and spatial contexts in which the events occur. Therefore the meaningfulness of events lies in the "social and cultural context". Thus, words, which are used to conceptualize these events, must be viewed in a social and cultural context too. The discussion that follows covers words and their referents, the development of vocabulary, and the importance of vocabulary acquisition.

2.3.1 Words

Language uses words to communicate as art uses line and colour or as dance uses movement and rhythm. The better a child's vocabulary is, the more effectively he or she can understand others and communicate ideas. (Fisher & Terry, 1982, p. 98)

It is true that people do not communicate with isolated words, but words contribute through their own semantic properties, to the meaning of more complex units (Cruse, 1986). A curious reflection is that so little importance has been given to vocabulary in modern language teaching. According to Morgan and Rinvolutri (1986) both the behaviourist/structural model and the functional or communication model of language have consistently largely underplayed the importance of vocabulary. Yet, knowledge

of a vocabulary, which is "a collection of lexical units in some natural language" is a prerequisite for thinking, speaking and understanding a language (Miller, 1981, p. 60). The word, or **lexical unit**, is usually defined as the smallest independent unit in language which has form and meaning (Cruse, 1986). Every word is essentially a concept: by understanding the concept associated with a word, we understand the meaning of the word (Fisher & Terry, 1982).

2.3.1.1 The word as a referent

Language symbols have no meanings in themselves: the real meaning of a word lies in the thing or the object to which it refers, or the event for which it stands, i.e. the **referent** (Wray & Medwell, 1991). Morgan (1970, p. 71) has implied by his definition of a word as an "arbitrary label for a concept that you have of some object, idea, action, relationship", that the idea that an individual forms of a word is something personal and may differ from person to person. The same word may, therefore, have different referents, although this applies to more abstract concepts. To illustrate, while a concept such as *chair* or *radio* each has one meaning attached to it, words such as *communication* and *freedom* may hold different views for different people. The **meaning** or **semantics** of each word is in the referent and not in the phonetic form of the word. For this reason, Wray and Medwell (1991) have stated that the meaning has

more practical value in everyday communication than phonetics has: a speaker's familiarity with aspects such as the value of correct pronunciation, intonation and stress in a language and the ability to apply this knowledge is sufficient for everyday speech, but effective communication demands that the exact meaning of a word is known and that the person is able to interpret it correctly in context.

As suggested earlier, language, of which vocabulary is a subcomponent, develops through experience and the association of these experiences with words. According to Templin (1957) and G. A. Miller (1977), by the age of six, the average child has learned as many as 14000 words, including inflected and derived words and 8000 root words. These estimates have been based on receptive vocabulary. Lexical knowledge increases with increasing chronological age (Barrett, 1986). The enormity of the task of acquiring so many words may be highlighted against the complexity of the process of acquiring a new word (Carey, 1981), as reflected in the following discussion.

According to Maley (1986), words are acquired **associatively**, rather than linearly, in that an unknown word is acquired through association with another known word. Secondly, acquisition is a **personal** process: the association that a word sets up depends on the person's past and present life experiences. It is a **social** process

in that word meanings are acquired through social interaction and sharing with others. Furthermore, it is not purely an intellectual process, but also an **experiential process**.

Some words are learnt and remembered more easily than others. The following factors have been identified as influencing the ease with which children learn words (Fisher & Terry, 1982; Morgan & Rinvoluceri, 1986), in both first and second language development:

- a. **the level of abstraction:** the more abstract words such as *innocence* and *truth* are more difficult to learn than *ball* or *run*
- b. **the level of complexity:** easier words such as *friend* and *family* are learnt before more difficult words such as *truth* and *democracy*
- c. **the frequency of the word:** more frequently used words are easier to learn
- d. **the interest factor:** the more interested a person is in learning a word the easier it is to learn it
- e. **the amount of context surrounding the word:** the greater the context surrounding the word the easier it is to learn the word. Nation & Coady (1988, p.102) have asserted that context may refer to the "morphological, syntactic and discourse information in a given text which can be classified and described in terms of general

features", or, "the general context", which is based on the reader's background knowledge concerning the subject matter of the text. Included here are the conventional associations in terms of semantic and syntactic categories to which a word is seen to belong, e.g. metaphors and collocations, literary associations as well as the personal associations the word has for a person.

Initially a child, in most cultures at least (Heath, 1983), is exposed to much concentrated repetition of relevant words such as "bye" and "mum" or "dad", but after the age of two the child has only the linguistic context in which the word occurs and the situation in which it is used. The child uses his/her already existing linguistic and conceptual system to acquire the new word. He/she must learn its syntactic properties, its relation to other words, its semantic properties and its referential properties (Carey, 1981, p. 264).

2.3.1.2 The importance of vocabulary

Vocabulary is an important subcomponent of language content, a domain of language which encompasses meaning, and which is frequently assessed by SLTs (Bloom & Lahey, 1978), and educators (Morgan & Rinvoluceri, 1986). Vocabulary is essential to language because effective

communication depends upon the retrieval of lexical items or words coding one's knowledge in stored memory. A child's underlying knowledge of word meanings is reflected in the behavioural process of comprehension and expression (Nation & Aram, 1984; Lahey, 1988). Researchers have indicated that, vocabulary, as a basic aspect of language content, is related to several other aspects of a child's total development such as socialization, cognition and symbolic development, syntactic development, discourse and text comprehension, creativity and metalinguistic development (Rice, 1980; Bryen, 1982; Anisfield, 1984), and should therefore be a part of the child's overall assessment.

Knowing a vocabulary is a prerequisite for **thinking, speaking and understanding a language** (Miller, 1981), since words contain the finest nuances of **meaning** (Newmark, 1988). Lexical knowledge correlates positively with intellectual capacity and scholastic achievement (Madge, 1981; Anderson & Freebody, 1985). There has been a resurgence of interest in **vocabulary teaching** in the 1980s (Carter & McCarthy, 1988). The period from 1945 to the 1970s saw the swing of focus away from vocabulary to syntax and phonology against the background of American structural linguistics. The 1970s saw the first signs of revival for vocabulary teaching by such authors as Wilkins (1972, p. 111) who pointed out that "without grammar very little can be conveyed, without vocabulary *nothing* can be conveyed".

The importance of vocabulary is also reflected in the fact that vocabulary has also become a focus in second language teaching and learning, with Morgan and Rinvoluceri (1986) having written one of the first books on vocabulary for teachers of English as a foreign language. They considered the process of vocabulary learning, and proposed practical classroom activities to help learners acquire vocabulary. Such renewed interests in the field of vocabulary testing accentuate the need for tools for vocabulary assessment in all languages.

Vocabulary development appears to be crucial to the process of **learning to read** (Smith, 1955; Fisher & Terry, 1982). Reading ability is affected by the number of different words and the number of different meanings a person knows. Fisher and Terry (1982, p. 98) have asserted that the more words a person knows the more easily he/she can recognise a word in print by means of word analysis skills. Of importance is their assertion that despite well developed word analysis skills, many children still have difficulty getting meaning from what they read because of their limited knowledge of words and their meanings. According to Anderson and Freebody (1981) there are three theories as to why vocabulary knowledge is such an important factor in reading ability. The **Instrumentalist view** maintains that people who score high on a vocabulary test simply know more of the words, and that this knowledge directly facilitates

comprehension. The **Verbal Aptitude position**, however, is based on the hypothesis that people who score high on vocabulary tests possess greater language aptitude, and because of their "superior mental agility", comprehend better (Anderson & Freebody, 1981, p.81). The link between language and culture is reflected in the view of the **Knowledge Theory**: people with higher vocabulary test scores are seen as possessing a "deeper and broader knowledge of culture" (Anderson & Freebody, 1981, p. 81). The association between higher vocabulary scores and reading skills is an important consideration for those involved in assessing young school going children. This finding has special relevance for the assessment of those socioeconomically deprived and disadvantaged children, who researchers have found, seem to know fewer words (Lesser, Fifer & Clark, 1965, in Bee, 1981, p. 192). There is, according to Meek (1991) irrefutable evidence that in primary school, poor children tend to be less successful at reading. Kilbride, Johnson & Streissguth (1977, in Bee, 1981), amongst others, have suggested that socioeconomically deprived children's poorer performance may be due to the possibility that they are spoken to less frequently than middle class children in the first few years of life. More recently, cultural differences have been recognised and associated with the amount of talk children are exposed to in different cultures (Heath, 1983; Van Kleeck, 1992). Because vocabulary depends so much on experience, children who have significantly different

backgrounds from each other are likely to know very different words. Some of the words they know will not be useful at school, and many of the words that are required by the middle class school system would be unfamiliar to the child who is socioeconomically disadvantaged. This has particular relevance with reference to English for AL1 children in South Africa who may be tested with SE vocabulary measures such as the Peabody Picture Vocabulary Test-Revised (Dunn & Dunn, 1981).

The need for the consideration of language in a social and cultural context has been repeatedly reiterated in the rapidly increasing literature on the assessment of communication skills in culturally and linguistically diverse populations. This necessitates a brief reference to the concept of culture before presentation of a framework for culturally and linguistically valid assessment.

Culture refers to a way of life developed and shared by a group of people over generations. Culture in the broader anthropological sense refers to all socially conditioned aspects of human life (Hymes, 1964). According to Van Schalkwyk (1992, p. 25) "culture is often regarded as the *sum total of beliefs, rites, ceremonies, art, language, science, religious and scientific behaviour, political systems, habits, customs and relationships, etc. [sic], which distinguish one community from another*". Culture is

what people have to know to be functional members of a community. Since knowledge, perception and behaviour are influenced by culture, people from different cultures can never conceptualise the "real" world, its objects and events in the same way (Saville-Troike, 1986). A person's view of the world is culturally conditioned, and therefore, a member of a particular culture will be guided by that culture's unwritten codes of conduct regarding a variety of issues such as child rearing practices, patterns of social interaction, the value placed on individual choice, teaching and education, the value of verbal and nonverbal skills, the development of language, and what constitutes effective communication and communication breakdown (Heath, 1983; Taylor, 1986). It has been asserted that even our concept of normality is culturally defined and may differ from culture to culture (Saville-Troike, 1986).

In the determination of the presence or absence of communication pathology in a nonmainstream child in a multilingual and multicultural context such as South Africa, the question that arises is: what should be the norm to which this child is compared? According to Byrne (1978), a child may have a communication deficit when he/she has consistent difficulty in understanding or expressing ideas to others, as judged by criteria set by the environment or social group to which the child belongs. Therefore, when carrying out these assessments, it is necessary to consider the culture to which the individual

belongs and the language with which he/she is most familiar. Group comparisons are valid only if made according to standards or norms derived from comparable subjects from the same cultural or linguistic group as the person being assessed. As Miller (1984) has noted:

Groups not only speak different languages... but through their view of the world and their social and psychological preferences they have different ways of meaning, of verbally conceptualising feelings and events, and different patterns of usage (Miller, 1984, p. 110).

Therefore the assessment of the child's language ability should be both culturally and linguistically fair and accurate.

2.4 A conceptual framework for the assessment of communication in culturally and linguistically diverse populations

A conceptual framework which could best illustrate the socio-cultural context to communication and assessment in a multilingualistic and multicultural setting such as South Africa is that suggested by Taylor (1986) for investigating and treating communication disorders in culturally and linguistically diverse people. Taylor (1986) has based his conceptual framework on the assertion that culture is a central issue in the development of communication and communication pathology. Thus the framework is culturally

oriented. He has identified four basic issues, namely, developmental processes, precursors of communication pathology, assessment and treatment. Taylor's view is schematically represented in Figure 1, and is discussed hereafter.

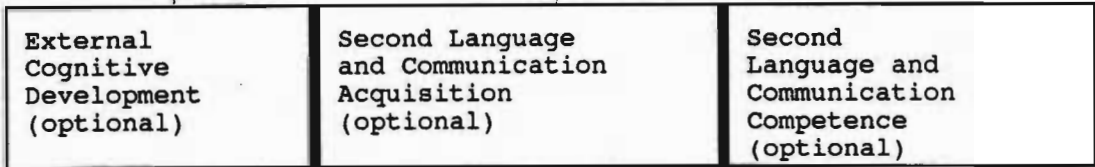
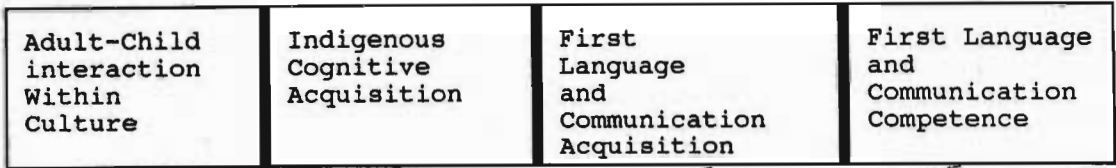
2.4.1 Developmental processes in Taylor's cultural framework

Developmental processes, according to Taylor (1986), are basic to the understanding of both the nature and the treatment of communication in any linguistic or cultural group. Developmental processes may occur on two different levels, namely, development within the indigenous culture, (as for example, Zulu in South Africa), and development associated with exposure to a second language and culture (such as English in South Africa).

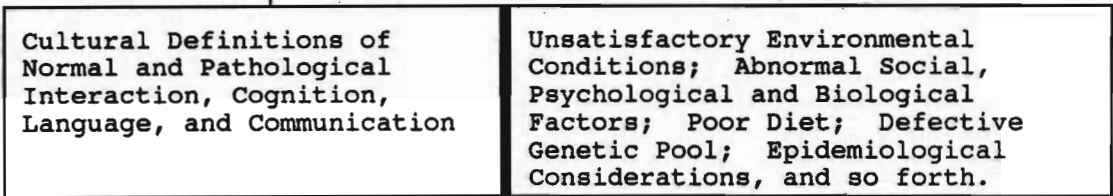
Development within the indigenous culture is based on the *adult-child interaction* that takes place within the sociocultural context of a particular group and which forms the basis on which the developing child acquires experiences (Nelson, 1991), and thus acceptable linguistic, cognitive and communicative behaviours (Taylor, 1986). This early socialization helps the child to develop a set of culturally and socially based concepts and thoughts (Vygotsky, 1962), which Taylor has referred to as the *indigenous cognitive acquisition* outcome, and eventually

CULTURE

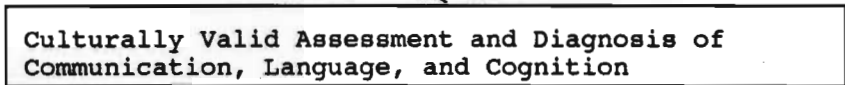
1. Process: Developmental



2. Process: Precursors of Pathology



3. Process: Assessment



4. Process: Treatment

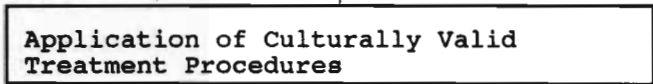


Figure 1: Schematic representation of a culturally based conceptual framework for studying and treating communication disorders in culturally and linguistically diverse populations (Taylor, 1986, p. 12).

a system of verbal and nonverbal language skills to be used according to the rules of that culture (*indigenous language and communication*). *Adult language and communication competence* is expected to be achieved as a developmental process as the person is socialized over the years within the indigenous group.

The second level of the developmental process, *external cultural interactions*, is particularly relevant for the AL1 speaker in South Africa, and refers to a second cognitive, language and communication acquisition. AL1 speakers in South Africa are, to a degree, exposed to a second language (and culture), usually English, although under biased and disadvantaged conditions, from school age through adulthood (Mashishi, 1987; MacDonald & Burroughs, 1991). They have felt a compulsion to acquire a degree of competency in it, based on socioeconomic and political dominance of the language (Alexander, 1992). It is noteworthy that although any cognitive acquisition in the second culture will lead to a degree of language and communication acquisition in the second culture (Taylor, 1986; Saville-Troike, 1986) because language is intimately linked with thought, adult second language and communication competence may not automatically follow, as it would depend on sociopolitical and psychological factors as age and degree of exposure to the second language, attitudes towards the external language and culture, and method of acquiring the external language and culture (Taylor, 1986). This point relating

to the degree of competence in the English language acquired by AL1 speakers has critical implications for SLTs who may want to use SE tests to assess the AL1 speaker. The general sociopolitical situation of deprivation and inequality, together with the inadequacies in the education system to which AL1 speakers have been exposed are contributing factors to the lack of competence in the English language by AL1 speakers (Macdonald & Burroughs, 1991).

2.4.2 Precursors of pathology

The second conceptual notion of Taylor's model in Figure 1, concerns etiological issues and is referred to as the "precursors of pathology". He has identified two possible precursors to the occurrence of pathology in communication. The first relates to the fact that cultures define what is normal or pathological, and the second to the fact that there are various inappropriate social, psychological, nutritional factors which have been linked as contributory factors to communication pathology. The extent to which these factors may affect the emergence of communication pathology may differ from culture to culture. Of importance here is that the culture determines the boundaries of normality and pathology, and therefore "a communication disorder in any society can only be defined from the vantage point of the speech community of which a given speaker is a member" (Taylor, 1986, p.14).

Taylor has further suggested the following revision to Van Riper's traditional definition of communication disorders. Such a revision has important implications both for practising SLTs and researchers involved in test development.

Communication behaviour by an individual can only be considered defective if it deviates sufficiently from the norms, expectations, and definitions of his or her indigenous culture (or language group); that is, if it is

- (a) considered to be defective by the indigenous culture or language group;
- (b) operates outside the minimal norms of acceptability of that culture or language group;
- (c) interferes with communication *within* the indigenous culture or language group;
- (d) calls attention to itself within the indigenous culture or language group, or
- (e) causes the user to be "maladjusted" as defined by the indigenous culture" (Taylor, 1986, p. 15).

2.4.3 Assessment

Taylor's third process relates to the need for culturally

and linguistically valid assessment procedures for identifying communication pathology in individuals from different cultural and linguistic groups. Culturally and linguistically valid assessment involves the use of both formal test instruments and informal procedures to gather linguistic and communicative information to determine the level of development of, or the presence of, communication problems in people from a certain language or culture (Taylor, 1986). Any comparisons that might be necessary should be made against norms derived from the same group as the individual. Taylor has reiterated that culturally valid assessment measures need to account for the fact that individuals' cultural and linguistic backgrounds may cause them to perform differently under varying clinical conditions. Furthermore, ethnographic techniques should be used for evaluating communicative behaviour and establishing cultural norms for identifying communication disorders.

The use of such ethnographic techniques has been recommended by researchers (Heath, 1983; Taylor, 1986) as the most appropriate way of studying the language variations of differing cultural groups. This methodology demands that researchers spend time living in the environment of the specific linguistic group, systematically observing in the natural contexts, such aspects as their daily routines and rituals, the role and functions of language and the values they place on talking

and listening, methods of informal teaching and role relationships, over a period of time. Ideally, in assessing a child one needs to know details regarding the daily existence of the subject, the boundaries and the characteristic features of the physical and social environment in which communication occurs, the choices that the users of the language make and the importance of these choices to the user's physical and social activity, the current environmental condition and the history of the community (Heath, 1983). These details of the sociolinguistic environment should be carefully considered by both therapists, and researchers involved in developing appropriate language assessment procedures and tools. Tools thus developed would be based on what that particular group values and would therefore be relevant for members of that group. Thus a data-base could be established for that specific language which would help in developing culturally valid assessment tools and procedures for evaluating communication, as well as in developing culturally relevant norms for determining communication deficits within individuals speaking that language (Pahl, 1992). In South Africa, where there is very little information concerning delay or deviance in the language development of children who speak the African languages, this ideal solution to the problem of a lack of language assessment tools for nonmainstream language groups would appear to be the path to follow. However, in the South African situation the practical difficulties which this ideal poses include:

- a. the relatively large variety of subcultural and linguistic groups, of which there are twelve (Central Statistical Services, 1991), who comprise the historically disadvantaged, nonmainstream population and who require culturally and linguistically valid assessment tools
- b. the absence of suitably qualified research personnel who are fluent in the indigenous languages (where the need for assessment tools is greatest)
- c. the constraints of time, as ethnographic research is time-consuming and usually long term
- d. the lack of funds and resources for such research generally.

2.4.4 Treatment

Taylor has suggested that the ethnological approach should also be applied to the treatment process, which should be socially acceptable in the context of the indigenous cultural and linguistic group. Thus it would seem that SLTs need to take full cognisance of cultural forces in all clinical encounters with individuals from diverse linguistic and cultural groups, as well as in any modification of tests or creation of new tests for use with these groups (N. Miller, 1977; Taylor, 1986; Van Kleeck, 1992). The need for such an approach may be highlighted by Finlayson's observations concerning the cultural forces on

language:

The evolution of language forms is influenced by internal social and cultural forces. Such forces being exerted on a language and its identity are perhaps far more powerful and more frequently exerted today than in the past as we are confronted by the increasing pace of urbanisation and industrialization. (Finlayson, 1987, p. 56)

2.5 Summary and conclusion

In this chapter, the inappropriacy of using SE tests for assessing the communicative skills of nonmainstream speakers was discussed by consideration of the manner in which these tests have been developed. The recognition of the link between language, thought and culture as established by Vygotsky (1970) and Nelson (1991), amongst others, implies that the assessment of linguistic skills in culturally and linguistically diverse groups needs to be made in full cognisance of cultural and linguistic factors specific to that group. In this regard, the cultural framework suggested by Taylor (1986) for the assessment and treatment of communication disorders in nonmainstream groups was described. The fact that a language and culture are linked also has implications for the use of translation, since translation involves language. The translation of words is central to the present study and is discussed in chapter three.

CHAPTER THREE

3. THE TRANSLATION OF WORDS

The process of translation of words from one language into another is central to the present study, because of its use in providing tests for assessing linguistic skills of nonmainstream speakers. This chapter addresses the various issues concerning translation, as they relate to the present study.

3.1 Translation

Translation is the general term used to transfer meaning from one language (the source language) to another (the target language), according to House (1981) and Newmark (1988). The process involves the linguistic decoding of the message in the source language, the cognitive processing of the message to extract meaning, and the encoding of the meaning into the target language. People have probably used translation since the onset of the written word, but it has been only in the last four or five decades that the field of translation has gained momentum, become a source of employment and an academic discipline at tertiary institutions in many countries, and thus stimulated research and evaluation (Newmark, 1987). Operationally, translation is based on the existence of universals and cultural overlaps, which facilitate the

sharing of meaning, the lack of which would make any translation impossible.

3.1.1 The functions of translation

Translation, according to Newmark (1988), may be used for a number of different purposes. The first obvious function of translation, is that of facilitating communication, understanding and tolerance, and transmitting knowledge and literature among speakers of different languages. This function, according to Fourie (1993), may include general, literary and special information translation, such as multilingual public notices, newspapers, official documents, reports, biblical and children's texts, and special technical language as used in law, medicine, science, the economy and education. Its importance has been emphasised with the increasing awareness of the needs of linguistic minorities or speakers of politically nondominant languages. Secondly, translation has acted as a means of transmitting culture ever since languages and cultures have been in contact with each other. For example, the translation of Shakespeare's work into other languages such as German has lead to the transmission of certain aspects of English culture into Germany (Newmark, 1988). The translation of the Bible into many languages has facilitated the transmission of the Christian beliefs to other groups, religious beliefs being a component of culture (Van Schalkwyk, 1992). Thirdly, translation may be

used as a technique in foreign language teaching and learning. It serves to demonstrate the learners's knowledge of the foreign language.

3.1.2 The types of translation

There are four types of translation, according to Brislin (1976), based on Casagrande's (1954) classification. *Pragmatic* translation is the translation of a message with the focus on accuracy of the message that was meant to be conveyed in the source language. An example of this type would be the translation of technical documents such as how to repair a machine. The second type involves *aesthetic-poetic* translation, where the translator considers the feelings and emotions of an original language version, the aesthetic form used by the original author (for example, dramatic dialogue) and the content of the message. *Ethnographic* translation is the third type of translation according to Brislin (1976). The purpose of this type of translation is to explicate the cultural context of both source and the target languages. This type of translation is used especially where the social situation is critical to the meaning. The fourth type of translation is referred to as *linguistic* translation, and is particularly relevant to the present study. It focuses on semantic equivalents, of the second language morphemes and grammatical form (Casagrande, 1954, cited in Brislin, 1976).

The fact that translation has diverse functions and that there are different types of translation with different foci emphasises the complexity of the process of translation. The various issues contributing to this complexity are discussed below.

3.2 The complexities of translation

As asserted by Newmark (1988), although translation is an old practice, it is a new profession, and the body of knowledge, with its assumptions, that exists about translation, is tentative and fluctuating. The complexity of the process of translating has been extensively documented (e.g. Brislin, 1976, Newmark, 1988), but many of the controversies are still unresolved. These relate to the unit of language in which translation occurs, the preservation of meaning during the process, the cultural context of translation, the theoretical issues in translation, and the degree of equivalence achieved. While the various theoretical approaches to translation are only briefly presented, more extensive discussion of issues in translation that are pertinent to the present study follow.

3.2.1 Issues in the theory of translation

As translation into an African language is the focus of the present study, it would be pertinent to consider specifically theories of translating relating to the

African language. However, although translation into and out of African languages has been common practice for years, there have been very few attempts to develop a proper theory of translating into and out of these languages (Fourie, 1993), hence the reliance on the general theories of translation, of which there are many. Nida (1976) has suggested that the diversified natures of the purposes of translation, the texts to be translated and the readership, may account for the existence of the many different theoretical proposals on the principles and practices of translation.

Newmark (1988, p. 9) has asserted that translation theory is the "body of knowledge that we have about translating, extending from general principles to guidelines, suggestions and hints", and concerns generalities as well as specific details. Translation theory has the function of identifying and defining a translation problem, and the factors to be considered in solving the problem. Moreover, a translation theory must reveal all the possible translation procedures, and must recommend the most suitable one for the task at hand (Newmark, 1988). Translation theory therefore, according to Newmark (1988), in a narrow sense relates to the method to be used for a particular type of text.

The general theories of translation tend to focus on the text as the unit of translation (an issue discussed below),

and therefore are not discussed in detail in view of their limited applicability to the present study. Since translation involves language, all theories are based on linguistics (Nida, 1976). The principles and procedures of translation have, however, been formulated in different ways, depending on their foci. They fall into the following main groups, which relate to their diverse purposes:

- a. *Philological* approaches focus on particular texts, primarily *literary* texts and stylistic features, and may date back to the 1930s and beyond (e.g. Belloc, 1931, cited in Nida, 1976)
- b. *Linguistic* theories have emerged since the 1950s and have focused on the linguistic structures of source and target languages at text level; the focus is on the correspondences in language form and content (e.g. Catford, 1965; Nida & Taber, 1974)
- c. *Sociolinguistic* theories of translation, which use a communication model rather than a linguistic one, though without disregarding that aspect, have emerged more recently, and emphasize the ethnographic type of translation (Nida, 1976). The linguistic structures are viewed in terms of their function in communication, and the extralinguistic, sociocultural context of the utterance.

It would appear that the diversified natures of the purposes of translation, the texts to be translated and the readership may have contributed to the existence of the many different theoretical proposals on the principles and practices of translation (Nida, 1976). A review of the literature reveals a cycle of repetition in thinking, with only a variation in terminology used - the historical, controversial dichotomies concerning the main problems of translating appear to have revolved around the concepts of free versus faithful (or literal), the word versus the sense, the message versus the form, or source-oriented versus target-oriented (Newmark 1988; Snell-Hornby, 1988). According to Snell-Hornby (1988), theorists, particularly the literary and linguistically-oriented ones, have formulated theories for their own areas of translation, with little attempt to integrate and consider translation in its entirety. Socio-linguistic approaches emerged with the increasing realization that, in addition to the importance of linguistic theories (concerned with phonology, syntax, semantics and pragmatics), extralinguistic aspects (relating to the associated backgrounds, the environments, culture and beliefs associated with the source and target languages) also needed to be considered in the investigation of translation.

3.2.2 Methods and procedures in translation

As suggested by Newmark (1988) translation theory should

relate to *methods or procedures* that may be used for different translation tasks. This has been a deficit in almost all the literal and linguistic theories of translation (Newmark, 1987). Ladmiral (1979, cited in Newmark, 1988) has asserted that translation requires a "theory in action" in that the criteria for selection of a procedure to be used for a particular type of translation activity or text needs to be constantly reviewed by the translator. Various methods of translation for whole texts, and procedures used for translating sentences and the smaller units of language, have been suggested over the years. These methods and procedures, which reflect the controversial concepts referred to above, include word-for-word, literal, faithful, free, idiomatic, semantic and communicative translation, cultural, functional and descriptive equivalents, and componential analysis. Brislin (1976) has suggested that the nature and purpose of the text determine the type of approach used and the effect to be achieved. Newmark (1988) has suggested that literal translation is the basic underlying translation procedure, as translation starts at this level. For the purposes of the present study the procedures of literal translation and componential analysis have relevance, in view of the fact that they are most suitable for translating words rather than texts. Componential analysis is particularly useful in translating culture-related words, and is discussed under that section.

Literal translation involves the conversion of SL words into their TL equivalents with the words being translated singly by their most common meanings. According to Newmark (1988), literal translation is correct and should not be avoided as long as it reflects referential and pragmatic equivalence to the original. Literal translation can apply to various levels of translation, from one word to one word, group to group, collocation to collocation, clause to clause and sentence to sentence, but it becomes more difficult above the word level. The validity of literal translation may be established by application of the **back-translation test** (Newmark, 1988), a concept which is discussed later in the section on assessment of translation quality. Any lexical gaps between the SL and the TL will limit the extent to which an utterance may be literally translated as well as back-translated.

Above the level of the word, literal translation becomes an accurate procedure when the SL and the TL meaning correspond, or, in other words, when there is referential and pragmatic equivalence (Newmark, 1988). According to Newmark (1988), the current stress on discourse and the text as the only unit of translation has detracted from the potential importance of the literal method of translation. The decision making process in translation therefore, also has to take into account the conceptualisation concerning the unit of translation in a task.

3.2.3 The unit of translation

In the present study the unit of translation has been the word. Vinay and Darbelnet (1965, cited in Newmark 1988, p. 54) have defined the unit of translation as the "smallest segment of an utterance whose cohesions of signs are such that they must not be separately translated". Newmark (1988) has asserted that the controversy surrounding the length of the utterance reflects the long-standing conflict between free and literal translation. Free translation has always supported the sentence or the longer unit of translation, while literal translation has favoured the shorter unit, namely the word. With the emergence of discourse analysis or text linguistics in translation almost twenty years ago, free translation has evolved from the sentence level to the entire text (Newmark, 1988).

For Newmark (1988), the sentence is the "natural" unit of translation just as the unit of thought and understanding is the sentence. However, he has recognised that since the *meaning* of the sentence or thought is expressed in words, the words need to be considered first of all. The controversy surrounding the issue of the unit of translation may continue, but of importance should be the realization that all lengths of utterances can, simultaneously and at different times, be used as the units of translation depending on the type of translation task at hand. Newmark (1988) has defined five possible sub-units

of translation within the sentence. The relevance of the smallest sub-unit, the **morpheme**, which is the smallest unit of meaning (Mandell & Gold, 1984), lies mainly in prefixes and suffixes when they have no direct translation equivalence in the word sense, such as *dis-* and *-ion*. The two lexical sub-units are the **collocation** (such as the idiom) and the **word**, while the remaining two subunits are **grammatical** in nature. Newmark has pointed out that one sub-unit cannot be given priority over the other, and that they all need to be attended to, where they occur. According to Newmark (1988), grammar always offers a choice when translating - it is more flexible and allows the use of alternative forms. The choice of lexical equivalents, however, may be more restricted. For example, with lexis, general words such as *thing* have more synonyms than do more specific words such as a *penguin*. Hence, the major difficulties in translation are lexical, not grammatical, the difficulties lying with words, collocations, fixed phrases or idioms. Newmark (1988) has asserted that difficult words are of two kinds - those that a translator does not understand (referring to meaning) and those that are hard to translate (culture-specific words).

The field of study concerned with word meanings or sense-relations has been referred to as *lexical semantics* (Cruse, 1986). Cruse has suggested that there is no formal theory of lexical semantics which has been able to provide a conceptual framework expansive enough to cover all the

facts concerning word meanings. According to Wilkins (1972), there are three main functions of the study of lexical semantics or sense-relations. Firstly, lexical semantics helps in understanding the organisation of the lexical items within the lexicon, as words are not learnt in isolation. Secondly, the study of lexical semantics facilitates the retrieval of the full meaning of words, according to Wilkins. Thirdly, the study of lexical semantics helps in the understanding of the process of translation. To illustrate the application of lexical semantics, the *Field Theory*, advocated initially by linguists such as Trier in the 1930s (Lyons, 1977) is briefly discussed. Field Theory proposes that "the words of a language can be classified into sets which are related to conceptual fields and divide up the semantic space or the semantic domain in certain ways" (Lehrer, 1974, p. 15). It views the totality of meaning in a compartmentalised way: the lexicon of a language is seen as comprising various conceptual fields or subdomains of meaning. Knowledge of a conceptual field and association of a lexical item with the field will facilitate retrieval of the full meaning of the word, which is a prerequisite for accurate translation. Similarly, *componential analysis*, a frequently cited approach in lexical semantics, is based on the theoretical assumption that a word may be analysed and its meanings discussed in terms of a set of semantic features extracted from the properties of the field (Carter & McCarthy, 1988; Newmark, 1988). This procedure is

discussed further with specific reference to its use in translation.

3.2.4 Meaning and translation

Translation, as described by (Marsh, 1987), is a **"bi-partite exercise involving comprehension and expression"**. While expression, according to Marsh (1987), involves the ability to recreate in the target language (TL) what has been understood in the source language (SL) as accurately and as faithfully as possible and in a style which is close to that of the source language, comprehension requires a profound knowledge of the source language to enable one to perceive the different levels of meaning. These levels of meaning according to Marsh (1987), include:

- a. linguistic meaning, including lexico-morphological, syntactic, stylistic and contextual meaning
- b. conceptual meaning, i.e. the extra-linguistic meaning, knowledge of a discipline or topic in the real world
- c. pragmatic and rhetorical meaning, such as the communicative or illocutionary act and the perlocutionary force the writer wishes to convey
- d. sociocultural meaning, i.e. elements within the text related specifically to the ethnography of the speech community.

House (1981) has reiterated that the essence of translation is the preservation of **meaning** across two different languages. She has provided a definition of translation based on her description of three views of meaning. She defines translation as "the replacement of a text in the source language by a semantically and pragmatically equivalent text in the target language" (House, 1981, p. 29). The three views of meaning include *semantics*, *pragmatics* and *textual* meaning. As suggested by House (1981), the **pragmatic view of meaning** relates to the relationship between linguistic units and the user(s) of these units in a given communicative situation, and is particularly applicable to translating a body of discourse, while the **textual view of meaning** aims to keep the meaning of the text equivalent in translation.

The **semantic view of meaning**, has particular relevance to the present study because of its focus on words rather than the translation of a text, which refers to a combination of related sentences into a large unit (House, 1981). According to House (1981), the semantic view consists of the relationship of reference, that is, the relationship of linguistic units or symbols to their referents in the universe. This view encompasses the fact that semantically meaningful utterances occur even though the terms of that utterance have no referents in the real world (for example, science fiction terms). The nature of the universe (which is the subjective interpretation of possible worlds,

according to House, 1981) is common to most language communities. Therefore, the referential or semantic aspect of meaning is the one which is the most readily accessible, and for which *equivalence* (discussed in more detail later) in translation can be seen to be present or absent most easily. To illustrate, the word *stool* may be more easily distinguished from *chair* in English than *death* from *demise*, which have the same basic meaning, but different pragmatic uses. Thus the accessibility of semantic meaning has been one of the reasons for its focus in the literature of translation (House, 1981).

Meaning is therefore a central issue in translation since the basic purpose of translation is to transfer the meaning of an utterance from the SL into the TL. Since the perception of meaning is strongly influenced by culture (Saville-Troike, 1986), the translation from one language into another must involve consideration of cultural influences.

3.2.5 Translation as a cross-cultural event

An aspect of language particularly stressed in recent translation literature has been the need to consider language translation within a cultural context (Vermeer, 1983, cited by Snell-Hornby, 1988). The vital connection between language and culture was established by Humboldt centuries ago, and later reiterated by Sapir and Whorf

(Snell-Hornby, 1988). The Sapir-Whorf principle of linguistic relativity, which suggests that thought is conditioned by language, when interpreted extremely, has significant implications for translation. On the one hand, since language conditions thought and since both are inextricably linked with the culture of the community that speaks the specific language, translation would be ultimately impossible. On the other hand, the view that everything is translatable, also stems from Humboldt, but also relates to Chomsky's principle of language universals. Chomsky's principles of deep and surface structures correspond to Humboldt's theory of "inner" and "outer" form of language. According to Snell-Hornby (1988), translation is seen in this view as a transformation of the language-specific, surface structure into the universal, underlying deep structure. Snell-Hornby has asserted, however, that rather than choosing either of these extreme views of all-or-none, the translator needs to determine a point on the continuum between these extremes, for each translation task. The extent to which a task is translatable depends on the degree to which the text is embedded in the specific culture associated with the language, and the physical and chronological distance between the cultural background of the source language and the target language.

The recognition that translation is linked with culture necessitates consideration of the distinction between two terms used in the translation literature, namely, *cultural*,

and universal language. **Universal words** are referred to as **etic concepts** (Triandis, 1976). Universal words include words such as *table* or *die*, which are found in any language, and which present no difficulty in translating. There may be other universal words such as *breakfast*, which may pose a problem in translating because they cover the universal function but not the cultural description of the referent, unless there is cultural overlap between SL and TL. **Cultural words, or emic concepts** are those which are specific to a particular cultural group (Triandis, 1976), such as *dhoti* which is a form of dress in India. Usually, where there is cultural focus, there is difficulty in translation due to the cultural gap or distance between SL and TL. The more specific a cultural concept becomes the greater the difficulty in translating. Triandis (1976) has asserted that it is impossible to translate an emic concept perfectly, because of the very nature of such a term, particularly when the emic concept is a quality word and involves a value judgement. Most cultural words cannot be literally translated, but where literal translation would distort the meaning of a term, the term may be translated by using the procedure of *componential analysis* to provide descriptive-functional equivalent, although a perfect equivalent may not be achieved (Newmark, 1988).

Componential analysis is a popular translation procedure used in translating words that denote combinations of qualities or actions and qualities that seem to indicate a

lexical gap in the TL. It involves comparing a SL word with a TL word that has a similar meaning, but without a one to one equivalent, by indicating first their common and then their varying sense components or semantic features. It is based on finding a component common to the SL and the TL to which the translator adds the extra distinguishing components e.g. *residence* is a house but associated with the wealthy. Usually the SL word has a more specific meaning than the TL word, necessitating the addition of one, two, three or even four sense components by the translator in the TL. The sense component of a lexical unit may be referential as in *chair*, or pragmatically loaded, for example, *sleazy*. The pragmatic component of many words consists primarily in their positive or negative connotations. The context in which a word is used is therefore important in this respect. Componential analysis excludes the culture and highlights the message, and is therefore used in the translation of cultural words. Newmark has recommended that in applying this procedure at least one descriptive and one functional component should be included. The degree of detail included is determined by the text type, the importance of the specific cultural word in the text, and the requirements of the readership of the translation. Thus the use of componential analysis is not very economical, nor does it have the same pragmatic impact in the TL as in the SL.

It is inevitable that when there is cultural and linguistic

contact between different groups of people, as is the case in South Africa, various facets of one culture and language will be accommodated within another. The phenomenon of semantic change which results from cultural contact may help to bridge the cultural gap between SL and TL. This issue is discussed below.

3.2.5.1 Semantic change with cultural contact

The process of incorporation involves the assimilation of new cultural/linguistic elements from one group to the other when there is linguistic or cultural contact between two different groups of people. Words may be simply taken over, though not without change. They may undergo different linguistic adaptation with regard to phonology, morphology, and semantics. This contact between languages may result in a natural process referred to as **linguistic borrowing**. Louwrens' definition of linguistic borrowing (1993, p. 8), as it relates to the South African context, suggests that this process is the **"adoption of loan- or foreign words from languages such as Afrikaans and English into the lexicon of, for example, a Bantu language"**. In South Africa, however, linguistic borrowing may also occur among the African languages themselves.

Loan words or adoptives, are words which have been borrowed and have undergone complete adaptation to the borrowing language system, on semantic, syntactic, morphological,

phonological and tonological levels (Louwrens, 1993). Because of this complete adaptation, these words are not easily recognised as having foreign origins. **Foreign words**, however, are words which have been borrowed and have undergone little or no adaptation (Louwrens, 1993). For example, in Zulu, *isikwele* (square) may be an adoptive, while *ipyramida* (pyramid) may represent a foreign word. Another distinction in borrowed words is *direct* as opposed to *indirect* borrowing. Louwrens (1993) has asserted that in direct borrowing, the loan word is taken over *with* the meaning it has in the foreign language, for e.g. *ihelikophutha* (*helicopter*). Indirect borrowing involves the attachment of the "borrowed" meaning to an indigenous word in the borrowing language, that is, neologism. Such attachment of meaning is not done in an haphazard way, but has to have referential, cognitive and sociolinguistic consensus amongst the people in the group (Ungerer, 1991, in Louwrens, 1993, p. 9). Change of meaning involves change in the referent, and may occur as a result of foreign word borrowing, as well as social, historical, linguistic or psychological factors (Louwrens, 1993). To illustrate the psychological influence on the coinage of a referent, the borrowing of the *Checkers* name is evident in the use of the coined word *ushekazi* in Zulu with reference to a *plastic packet used when shopping*. Louwrens (1993) cites Ullman's (1970) example of the attachment of the label *imeloyelo* in Zulu and Xhosa to the armoured *Casspir* vehicles used in unrest areas based on the bright

yellow colour of these vehicles.

According to Hughes (1988) and Louwrens (1993), there are three basic consequences to semantic changes, or meaning shifts; namely, meaning change, lexical change and change in register.

a. Meaning change: A change of meaning that a word undergoes during the course of time may include the following:

- i. **generalizations**, where a word takes on a broader range of meanings
- ii. **specializations**, or meaning restriction, where the meaning of a word undergoes narrowing and becomes more specific
- iii. **amelioration**, where a word takes on a favourable connotation
- iv. **deterioration**, or **perjoration**, where the word assumes a negative connotation
- v. **emotive intensification**, where words are used emotively and emphatically
- vi. **euphemism**, where there is lessening of the degree of offensiveness of the corresponding taboo term; it reflect shifts in the emotive content of loan words, and is a linguistic indicator of different kinds of social and cultural taboos, including sensitive issues such

as race and sex (Louwrens, 1993)

vii. **shift to opposite**, which accounts for another form of gradual change of meaning within speech communities, as reflected in Hughe's example of *fast*, which originally meant *fixed* or *firmly*, and now means *rapidly*.

b. **Lexical change:** Lexical change may apply when words become *obsolete and archaic*; or new words are added, via borrowing, invasion or technical innovation, as for example, the acquisition of terms or words by the Zulu language which were unknown to the speakers, such as *ibhulukwe* meaning *broek* (*trousers*, in Afrikaans). The meaning of existing words can also be expanded to include new concepts, such as the word *idilamu* for *drum*. Lexical change is particularly important for the present study.

c. **Change in register:** Hughes (1988, p. 9) has described the register as a "special word choice appropriate to a given situation or literary context". This type of semantic change relates to semantic fields and involves shifts in social connotations of the use of words (and grammatical form). It refers to the formal and informal use of language in varying social situations. For

example with reference to the word *mad*, words such as *cuckoo*, *nuts*, and *crazy* may be used in an informal situation, while *insane*, *maladjusted* or *neurotic* may be used in more formal situations.

Such semantic changes necessitate translator familiarity with both the language and the social context in which it is used, the connotations of lexical items and their semantic contexts, the variant forms of words which may be used in different levels of discourse or registers, as well as syntactic features (Bill, 1982). Since language contains various kinds of cultural input, which are not universals, both in the lexicon and the grammar, the translator needs not only to be proficient in two languages, but in the two cultures as well (Snell-Hornby, 1988). As indicated by Bill (1982, p. 109):

The successful translator stands firmly upon two legs, the first being his [*sic*] knowledge of and sensitivity to the languages with which he is dealing; and the second leg being his knowledge and experiences of the cultures which these express (Bill, 1982, p. 109).

Bilingualism and biculturalism, however, are attributes not commonly found together, particularly in a country such as South Africa where people of different linguistic and cultural backgrounds have for so long been forcefully kept apart. The acknowledgement that translation needs to be

viewed against the socio-cultural backgrounds of the languages concerned has not always been a feature of theoretical perspectives on translation, it has more recently been incorporated into the socio-linguistic approaches to translation.

3.2.6 The assessment of translation quality

The assessment of translation, like other aspects of translation has been fraught with controversy (Brislin, 1976; House, 1981; Mason, 1987). Central to this issue, and indeed to the definitions of translation themselves, as presented by Catford (1965), House (1981), and many others (Snell-Hornby, 1988), is the critical concept of equivalence, which is discussed below.

3.2.6.1 The concept of equivalence

The concept of **equivalence**, which refers to the equivalence of meaning between SL and TL, has for long been regarded as a fundamental concept in the field of translation, as well as a criterion of translation quality. This concept stems from Nida's concept of "Dynamic Equivalence of a translation" (Nida, 1964), and is particularly evident in a number of definitions of translations based on linguistic approaches to translation (Catford, 1965; Nida & Taber, 1969). Newmark (1988, p. 48) has referred to the equivalent effect as an attempt to "produce the same effect

(or one as close as possible) on the readership of the translation as was obtained on the readership of the original". It was the concept of translation equivalence that was responsible for the shift of focus away from the traditional dichotomy of "faithful" or "free" translation (Snell-Hornby, 1988). Translation equivalence, however, appears to be elusive when there is a cultural gap between the source language and the target language (Newmark, 1988). Snell-Hornby (1988, p. 22) has suggested that Kade's idea (1968) of finding an "optimal equivalent" from the variety of "potential equivalents" appears to be plausible but is based on the assumption that a symmetry exists between languages, and that the concept of equivalence in translation is a mere fallacy.

With the realization in the literature that translation equivalence cannot be viewed in terms of absolute symmetry or congruence, attempts have been made to qualify and classify equivalence types. Kade (1968, cited in Snell-Hornby) defined four **equivalence types**. The first referred to a **total equivalence** between languages, as when there are completely identical terms as in standardised terminology. The second type referred to **one-to-many** correspondence between translations, where one word in a source language had more than one equivalent in the target language. The third type of equivalence relates to approximate or **one-to-part-of-one** correspondence, as for example with the Afrikaans word *hemel* as opposed to *heaven/sky* in English. The final type is where there is **no equivalence** as in the

case of culture-bound items. Kade's classification has been criticised in that his system of equivalence types is inadequate for the complexities of general language translation (Snell-Hornby, 1988), largely because it was directed at the level of the individual word. Such a criticism stems from the fact that most translation tasks involve texts rather than single word translation. Such a classification however is relevant to the present study, because of its focus on the word level.

A review of later literature on the concept of equivalence in translation indicates that much subsequent research consisted mainly of modifying and recategorizing these types of equivalences (Snell-Hornby, 1988), with much of the controversy in translation still revolving around the use of this term. House (1981) has asserted that an adequate translation text is a **semantically and pragmatically equivalent** one. She has suggested that for semantic-pragmatic equivalence, the translation text must have a "function" equivalent to that of the source text. Newmark (1988) has described three types of equivalents, namely, cultural, functional and descriptive equivalents. A **cultural equivalent** is an approximate translation where a source language cultural word is replaced by a target language cultural word. Culturally equivalent words have a greater pragmatic impact than culturally neutral terms. **Functionally equivalent** words refer to those culture-free words into which cultural words are translated. Newmark

(1988) has asserted that the procedure of "deculturalizing" or applying culture-free words to cultural words is the most accurate way of translating, because it transcends cultural specificity (which makes translation impossible). **Descriptive equivalents** are often used in translation, as for example in translation from English to Zulu. Description and function are critical elements of explanation, and are therefore essential for translation. Both involve cultural componential analysis.

A survey of the literature suggests, that translation adequacy is a relative concept, (Kelly, 1979; Fawcett, 1987; Newmark, 1988), and despite the conflicting views concerning its significance, and the inconclusive debate of the merits of the term *equivalence* itself, the term continues to be used in the literature (e.g. Fourie, 1993). It is used in the present study, with cautionary reservation, in the absence of a more accurate term. In the present study the term is used mainly in the sense of relative equivalence rather than perfect equivalence or "one to one correspondence" as suggested by Kade (1968, cited in Snell-Hornby, 1988). Of importance is the acknowledgment that equivalence "is an important translation concept which has a degree of application to any type of text, but not the same degree of importance" (Newmark, 1988, p. 49).

While the equivalence of individual lexical items may be

considered too restricted a viewpoint for assessing whole text types, the assessment of the translation of words may be viewed differently. Researchers have indicated that "the semantic transfer of individual lexical...units may be judged at the level of the items themselves" (Mason, 1987, p. 84). The technique for making this judgement is known as **back-translation**, which is particularly appropriate for literal translations of words (Newmark, 1988).

3.2.6.2 Back-translation

This approach, according to Brislin (1976) involves one bilingual translating from a SL to a TL and another bilingual individual translating back from TL to the SL. The advantage of such a procedure is that a person unfamiliar with the TL can compare the two versions of SL to gain insight into the quality of the translation. Brislin (1976) has suggested the use of another strategy in conjunction with back-translation to act as another quality check. He has suggested the use of the "committee approach", in that "the mistakes of one member can be caught by others on the committee" (Brislin, 1976, p. 21). However, he has noted that a disadvantage of this approach is the unwillingness of committee members to criticise each other.

3.3 The use of translation as a procedural option in developing tests

In the absence of culturally and linguistically valid assessment tools for nonmainstream speakers, researchers have attempted to translate SE tests into other languages. These efforts have centred around both the translation of entire tests and the use of interpreters to permit administration or responses in different languages (Miller, 1984). Many of the criticisms relating to the use of test translation have related to the fact that it has been applied to SE tests, which in themselves are inappropriate for assessing speakers of different cultural and linguistic backgrounds, as indicated in chapter two.

3.4 Summary

This chapter has provided an overview of the phenomenon of translation, with specific reference to issues pertinent to the present study such as the unit of translation, meaning, the concept of equivalence and the cultural focus that is necessary in translation. It appears that the essence of translation is the transmission of meaning from the source language to the target language, and the extent to which equivalence is achieved depends on the efficacy of this transmission. Some words are easier to translate than others, and there are various methods and procedures to do so, depending on the unit of translation, the type and

function of the translation task, and the degree to which the contents of the task are culture specific. For the translation of universal words, literal translation is an appropriate procedure, while more culture-related words may be translated by means of descriptive and functional equivalents using componential analytic procedures, although perfect translation cannot be achieved for culture-specific concepts.

The chapter that follows provides a description of the methodology used in the study.

CHAPTER FOUR

4. RESEARCH METHODOLOGY

4.1 Aim of the study

To investigate the feasibility of using test translation as a procedural option in adapting an assessment tool for use in the multilinguistic, multicultural South African context, by:

- a. developing a Zulu translation of the Peabody Picture Vocabulary Test - Revised (PPVT-R, Dunn, 1981)
- b. investigating the applicability of the translations for a group of 6 to 11 year old Zulu children, for standardisation purposes

4.2 Objectives of the study

Development of Zulu translation

1. to obtain a Zulu translation for each of the vocabulary items in Form L of the PPVT-R from twenty, Zulu-speaking university students, for application to 6 to 11 year old Zulu children

2. to obtain judgements from a team of two Zulu lecturers regarding the cultural and conceptual appropriacy of the items and the picture plates
3. to reject inappropriate items based on the lecturers' judgements of cultural and conceptual inappropriacy of items and picture stimulus plate
4. to select and translate parallel items from Form M to substitute for rejected items from Form L, with the help of the team of two lecturers
5. to prepare the test materials, namely, the list of Zulu translations developed from Forms L and M, the relevant picture plates, and the pre-recording of the translated test instructions and the translated test items, for administration to the pupils

Testing translations by pupil performance

6. to determine criteria for the acceptance or rejection of translations based on pupil performance on translations
7. to undertake a pilot study to investigate appropriacy of translations for pupils

8. to evaluate pupil performance using predetermined criteria to determine the need to standardise the translations, or, the need for further test development

Further test development

9. to identify additional objectives and procedures to produce an appropriate translation
10. to implement the procedures identified to produce an appropriate translation of the test
11. to select or reject Zulu translations of items for administration to 6 to 11 year old Zulu children, using pre-determined criteria
12. to prepare the revised test materials as for first pilot study on pupils

Testing the revised translations by pupils' performance for standardisation purposes

13. to determine the criteria for the acceptance or rejection of translations based on pupils' performance in the second pilot study, for normative purposes

14. to administer the selected translations to the pupils in a second pilot study
15. to analyse the results of the pupils' performance on the Zulu translations applied
16. to apply the predetermined criteria to determine item candidacy for inclusion in standardisation study
17. to determine the feasibility of developing norms, or rejecting the use of test translation.
18. to develop norms if feasible.

4.3. The scope of the study

4.3.1 Test adaptation via translation into Zulu

This study focuses on the translation of a vocabulary test into Zulu, the most commonly spoken first language in South Africa (Central Statistical Service, 1991). Speech-language therapists and other professionals are encountering with increasing frequency the challenge of providing speech and language services for Zulu speakers in Natal, particularly as attempts are being made to break down the barriers of elitism in making services accessible

to underserved communities. The Zulu language appears to present a particularly great need for developing assessment measures in view of its widespread use in the country, the absence of AL1 SLTs, and the current paucity of Zulu speech and language assessment measures. In addition, the lack of suitably qualified SLTs who are competent in the African languages to provide adequate assessment services, has made the adaptation of currently available language assessment tools via translation, appear to be a plausible option, as evidenced by the attempts at test translation in the literature (e.g. Labuschagne, Alant & Tesner, 1991). By adapting an existing test, the derived test is still familiar to therapists and may therefore be more likely to be used (Mumby, 1990). In addition, the use of an adaptation may allow for comparisons to be readily drawn between the child's performance in the two languages.

A further impetus for the development of a test in an indigenous language has related to the move towards mother-tongue education in African countries (Alexander, 1992), as well as the mounting evidence that L1 development promotes L2 development. There has been a trend in many countries in Africa towards education in the dominant indigenous language. Macdonald and Burroughs (1991) have cited the United Nations Educational, Science, Cultural Council (UNESCO) figures for 1990 which reflect that 41 out of 47 African countries have, or are about to accord full teaching status to mother-tongue languages in their

educational systems. They have also found evidence in their own Threshold Project, which began in 1985 and concerned the learning experiences of African children when they are in standard three, to support the contention that children should begin their education in the language that they know best. It is believed that starting children off in schools using their own languages bridges the gap between the child's home and the demands of the new environment of the school; helps to develop their creative skills; and affords them with a "foundation on which their thinking skills and their ability to acquire and use other languages will develop" (Macdonald & Burroughs, 1991, pp. 29-30). In addition, once reading and writing have been acquired in the first language, it is easier to apply them in another context and to another language. Success in a second language appears to depend on the child's first language, as demonstrated by Schiff-Myers (1992) and by the Molteno Project (initiated by Rhodes University, and cited in Macdonald & Burroughs, 1991, p. 31), which has developed Breakthrough to Literacy Programmes in nine African languages.

From the above discussion, it emerges that the trend toward early education in the mother-tongue, and the link between first language and second language acquisition emphasise the need for service providers such as SLTs and educators to have assessment tools and procedures in the indigenous languages. The use of such assessment tools will help to

detect problems in the development of the first language, and thus the need for therapeutic intervention to help prevent later scholastic difficulties and problems with the learning of a second language such as English.

4.3.2 The need for assessing children from 6 to 11 years

According to Msimang (1992), children between 6 and 11 years are usually in sub-standard A to standard 2 in the Department of Education and Training Zulu community schools, and the KwaZulu schools. Zulu is the medium of education during these junior primary years at all these schools. The facts that more than half the black pupils in the KwaZulu/Natal region are in the junior primary phase and that the school drop-out rate is also highest among black schoolchildren in this phase (Jacobs, 1990), illustrate the importance of aiming assessment and intervention measures at this age group. English is usually introduced as the medium of teaching at the standard three level. Since it has been suggested that a strongly developed first language promotes second language development (Schiff-Myers, 1992), an assessment of the first language (in this case, Zulu) can provide useful information in the management of present language problems and the prevention of future problems in second language development.

4.3.3 A receptive vocabulary test

The study has been limited to a receptive vocabulary test for the following reasons:

- a. although expressive vocabulary lends itself to a number of assessment procedures, the evaluation of receptive vocabulary is more obscure, in that the latter cannot be effectively evaluated in a natural communication setting, because comprehension is, by its nature, not directly perceivable and is influenced by situational clues - it is therefore necessary to use standardised tests to assess receptive vocabulary (Rice, 1980)
- b. the strong link between vocabulary and reading ability (Nation & Coady, 1988) suggests that receptive vocabulary testing may be a worthwhile task for teachers as a screening measure of reading ability in the classroom
- c. the recent resurgence of interest in setting time aside in the classroom for vocabulary teaching (Morgan & Rinvoluceri, 1986; Maley, 1986) makes it necessary to reconsider assessment measures of vocabulary
- d. responses to a receptive vocabulary test are

nonverbal, requiring no Zulu linguistic analyses, as would other types of language tests which involve syntactic analysis of a corpus of language. To illustrate, in order to transfer the assessment technique of, for example, LARSP (Language Assessment, Remediation and Screening Procedure, Crystal, et al., 1976) or Lee's Developmental Scoring Procedures (Lee, 1977), devised for monolingual English speakers to another language, such as Zulu, one would require an understanding of the order and nature of acquisition of morphological and syntactic features of the target language. There is still a dearth of information concerning normal language development within the different linguistic contexts, particularly the African languages (Jordaan, 1989).

4.3.4 The PPVT-R

The PPVT, a measure of single word comprehension, was originally devised by Dunn in 1959 to provide an estimate of 2 to 18 year old white American subjects' receptive vocabulary (Dunn, 1971). From a pool of 3885 illustrable open-class words, approximately 2055 were illustrated and presented to subjects ranging in ages from 2 to 18 years. According to Dunn (1971) each of the items was placed at the age group at which 40 to 60 percent of the age group

passed it. Through various stages of administration and deletion of items, a final test battery of 150 plates was derived for each of two alternate forms (A and B) and arranged in empirically determined order of difficulty. The two forms may be used alternatively, and are particularly useful for such purposes as retesting after a short period of therapy, or in research involving pre- and post-testing. The original test was widely used and remained unchanged for almost 22 years, despite criticisms. These criticisms which relate to standardisation procedures, cultural specificity, and the use of Intelligence Quotient (I.Q.) scores as a predictor of general intelligence (Dilorenzo & Brady, 1968; Weiner & Hooek, 1973; Osicka, 1976; Emerick & Hatten, 1979), led to the revision of the original test in 1981. The revised version, which comprises 175 items in each of Forms L and M, included changes in both the standardisation procedure and the instrument itself to reduce cultural and socio-economic bias (see Dunn & Dunn, 1981). The revision was standardised on approximately 5000 subjects between 2.6 and 40 years (Dunn & Dunn, 1981). In the revised version the 1970 United States Census information was used in the sample to identify subjects from different sized communities of different socio-economic status and ethnic groupings. The raw score obtained is converted to an age equivalent (instead of "mental age"); to a standard score equivalent (in place of the original "intelligence quotient"; and to a percentile rank and a stanine score

(Dunn & Dunn, 1981). The PPVT-R continues to be the most widely cited and studied vocabulary measure (Channel & Peek, 1989).

The PPVT-R was chosen as the test to be translated for use in this study for the following reasons:

- a. it may be used as a measure of receptive vocabulary which provides the therapist with a guide to the child's development
- b. it has clear, bold line drawings (the understanding of word meanings can be determined by picture presentation according to Madge (1981), while Cazden (1972) has indicated that all children have the same basic capacity for interpretation of picture presentation)
- c. it has a short administration time
- d. as a receptive vocabulary test it does not require the tester to be competent in the language concerned as pre-recorded stimuli may be used
- e. the test does not require subjects to read, or provide an oral or written response - nonverbal responses are acceptable, according to Dunn and Dunn (1981)

- f. the PPVT-R has been widely used in white English schools as well as in Indian schools in South Africa as an indicator of development and progress in children. In practice, it appears to reflect changes in performance that correlate with changes in verbal performance in I.Q. tests such as the Junior South African Intelligence Scale (JSAIS) (personal communication, G.W. Jager, July 1992)². It is also useful as a screening instrument for identification of pupils with academic problems (Bracken & Prasse, 1981; Breen & Siewert, 1983; Beck, Black & Doles, 1985). Others, however, have cautioned that it can neither be used as a satisfactory predictor of general intelligence because it measures only one aspect of cognitive functioning - namely, receptive vocabulary - (Altpeter & Handel, 1986; Bates, Bretherton & Snyder, 1988), nor as a quick substitute for academic achievement tests (Beck, Black & Doles, 1985)
- g. this test has had considerable exposure in research and translation, abroad (Cox & Jones, 1985) and in South Africa (Alant & Beukes, 1986; Labuschagne, et al., 1991). Wei-Lin Lei was responsible for developing the Chinese version of the PPVT-R (Cole & Snope, 1981). In Australia Sharpley and Stone (1985) investigated cross-cultural differences in performance of school children, and found that some stimulus words were not commonly used in Australia. Similar findings

were obtained by two independent researchers, Manickum (1985) and Vagar(1985), for South African Indian speakers in Natal. Also in South Africa, Alant and Beukes (1986) made a provisional translation into standard Afrikaans and applied it to a group of 77 Afrikaans speaking coloured children between the ages of 5.5 and 6.5 years. Their results have indicated that "direct translation of test items is problematic because of the different ways in which experience is conceptualised in different cultures and expressed in different dialects/languages" (Alant & Beukes, 1986, p. 10). However, they did recommend that it was feasible to standardise this test for the population concerned. Labuschagne, Alant and Tesner (1991) obtained a direct translation from a single lecturer in the North-Sotho Department at the University of Pretoria, and applied the test to a sample of 20 pre-school North-Sotho speaking children. They found that further modifications in translations were needed before the test could be considered suitable for the targeted community. Indeed, the procedure of test translation continues to be used despite misgivings, because the translation and adaptation of a pre-existing test appears to offer a simpler solution than to create a brand new test for a specific linguistic and cultural population, particularly in view of the severe financial, personnel and research limitations experienced in South Africa. However, it should be

noted that researchers who have used test translation have tended to obtain translations from only one translator, the validity of which may be questioned in view of the variety of personal and socio-cultural factors influencing words and their translations.

The English version of the PPVT-R test is presented in Appendix 1, together with sample picture plates.

4.3.5 The study area: Kwa Dedangendlale in the Valley of a Thousand Hills

The geographical setting for the main study is an area occupied mainly by people of Zulu descent and commonly known as the Valley of a Thousand Hills (see Figure 2). It is an area well known for its beauty, and its ruggedness: many of its winding precarious roads become impassable in inclement weather. It is situated approximately 40 kilometres inland from the east coast of South Africa, and lies almost halfway between Durban and Pietermaritzburg. The entire valley falls within the self-governing Zulu homeland of KwaZulu, and has an area of approximately 1550 square kilometres (Stott, 1972). There are approximately 120 000 people living in the region. The people belong to tribal clans, namely, the Qadi (Emaqadini), Nyuswa, Ngcolosi, Emolweni and Embo (Stott, 1972; Friedman, 1983). These tribal clans originated from areas further north around the Tugela River in Zululand until they were forced

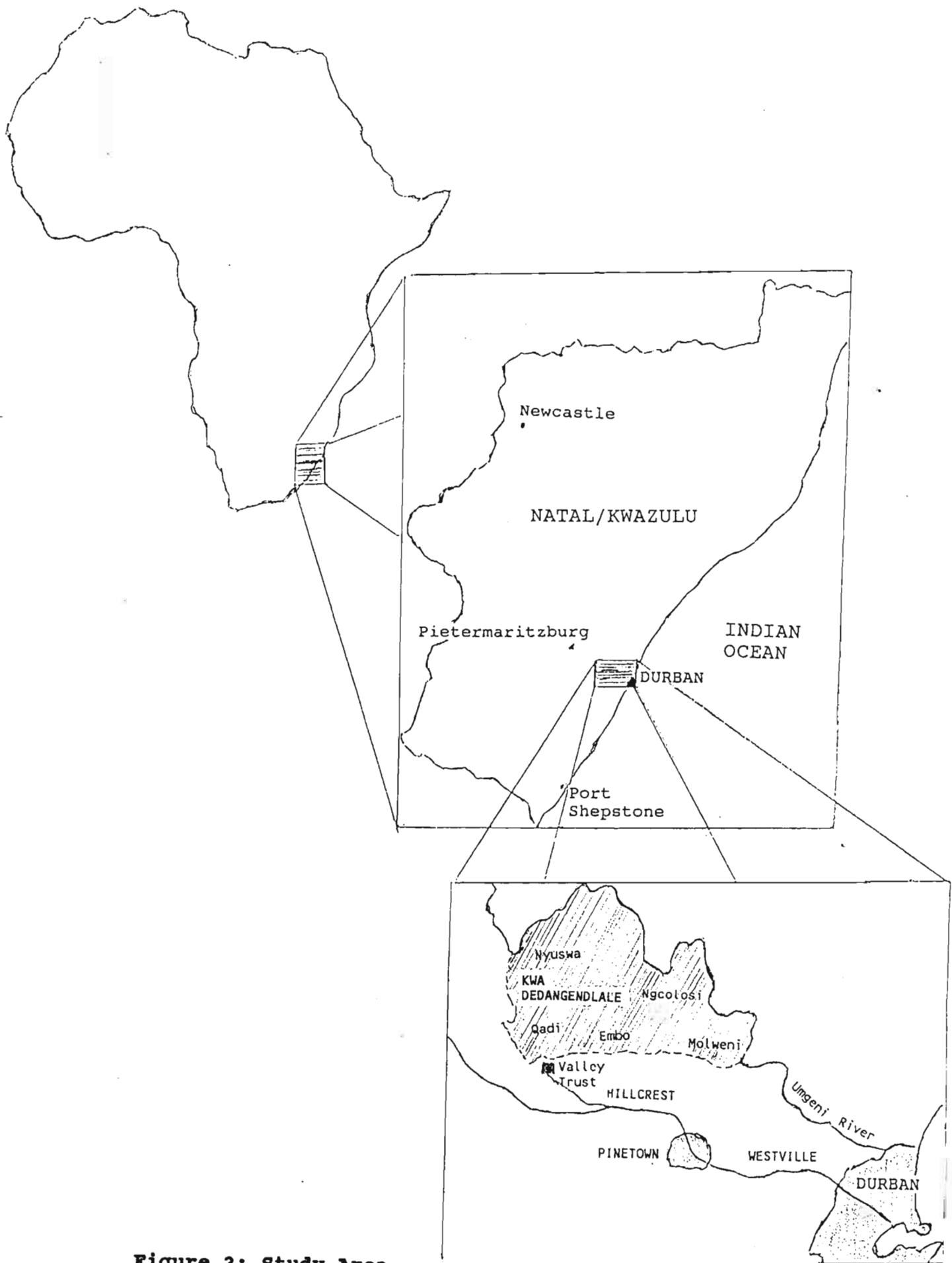


Figure 2: Study Area

to flee from Shaka's reign in 1825 (Stott, 1972). Although they conform to the rules of their separate tribal authorities, they share a common language, culture and political climate (Friedman, 1983). Existing differences may be attributed largely to varying degrees of the influences of migrant labour, urbanisation and the spread of Christianity, as suggested by Friedman (1983). Although the effects of modernisation are becoming increasingly evident, traditional Zulu customs and ties still appear to form the basis of life for most people in the area.

A significant part of this semi-rural area has been the focus of inter-disciplinary attention as a result of a socio-medical Primary Health Care Project, The Valley Trust, which was founded in 1953 (The Valley Trust Trainee Booklet). The Valley Trust has adopted a holistic approach and has facilitated the provision of safe water, sanitation, improved housing, education, training, agriculture, ecology education, economic upliftment and relevant technology. The Education and Training section has undertaken a number of formal and informal projects relating to the training of teachers and workers at pre-schools and creches, educational resources, youth programmes, adult literacy and development skills training. An important feature of the project is that it is community-based and strives to identify educational needs and to match these needs with appropriate educational

resources. There are about sixty schools in the area, of which twenty four are for preschoolers (The Valley Trust Trainee Booklet). Of the twenty five primary schools in the Kwa Dedangendlale area, twenty are lower primary (sub A to standard two) or combined primary schools (sub A to standard five). Seven lower primary or combined primary schools are located in the tribal area of Nyuswa, five in Emolweni, four in Embo, three in Ngcolozi and one in Amaqadi (personal communication, Ruth Myeni, July 1993)³. Four schools, representing 20% of the primary/lower primary schools in the entire Kwa Dedangendlale area, were included in the study.

The area is the focus of increasing multidisciplinary attention and intervention because of the involvement of various academic departments involved in community based student training. This is a major initiative of the newly formed National Institute for Community Health Education (NICHE) which involves four tertiary academic institutes, service organisations and the community in a tripartite partnership to transform health personnel education in the region.

4.4 Research design

The need to pursue an open and flexible research strategy is an essential research design consideration applicable to exploratory studies (Mouton & Marais, 1990). An

exploratory approach was essential in the present study because of the nature of the study. It was difficult to predict what the responses to the request for translations would be. The exploratory approach was particularly relevant because of the controversial nature of test translation as a procedural option, as well as the paucity in the literature regarding the exact procedures used by previous researchers in developing the translations that were used. It was therefore important to have available further objectives and procedures in order to fully explore the appropriacy of using test translation.

The inclusion of multiple sources of data collection in a research project is likely to increase the reliability of the findings. (Mouton & Marais, 1990; Brislin, 1976), and therefore a number of subjects were recruited to provide the translations in the present study, as opposed to previous studies in translation, where translations were obtained from, for example, a single lecturer. In addition, two pilot studies were carried out to test the applicability of the translated items, as suggested by Mouton and Marais (1990).

The investigative protocol used to achieve the aims in the present study involved:

- a. an initial development of translations for the PPVT-R items
- b. testing of these translations on the pupils in a

- first pilot study
- c. the identification of the need for further test development
 - d. further development of the translations
 - e. testing of the revised translations (second pilot study) to determine appropriacy of the translations for standardisation purposes, or rejection of the use of translation as a procedural option
 - f. development of norms, if feasible.

The exploratory nature of the study made both qualitative and quantitative analyses necessary. Qualitative analyses comprised the back-translations to assess the semantic appropriacy of the translations suggested by the translators for each item, as well as the predictions or judgements of cultural and conceptual appropriacy of the English words and the visual stimuli (the picture plates). Simple frequency counts, percentages, the two sample proportion test, the Chi-square test, means, ranges and standard deviations constituted the quantitative analyses (personal communications, Ryan; Hargreaves; Bhagwanjee; Lazarus, July 1993)⁴.

4.5 Subjects

The subjects involved in the various phases of the study, and the motivations for their involvement are described

below. In the initial test translation phase of the study the subjects included 20 Zulu university students and a team of 2 Zulu lecturers. The first pilot study involved 107 pupils between 6 and 11 years from the study area. Further test development involved 20 educators, while 544 pupils from the study area comprised the sample for the second pilot study. Three postgraduate Zulu speakers were also included in the study to provide the back-translations.

4.5.1 Subjects involved in the initial translation of the test

Twenty randomly selected first language Zulu speakers from the Department of Zulu, University of Durban-Westville, were involved in the initial development of translations. More than one translator was considered necessary in order to verify translation responses obtained. They were Zulu III and Zulu Honours students, and were native Zulu speakers. The university students were chosen as subjects because of the fact that they have been exposed to translation practice as part of their university training. Bilingualism being a prerequisite for translators (Nida, 1976; Snell-Hornby, 1988), it was assumed that the students were reasonably proficient in the English language, as they attended an English-medium university where all other subjects would be conducted in English. Furthermore, the assertion that translation into the

language of habitual use is the only way that one "can translate naturally, accurately and with maximum effectiveness" (Newmark, 1988, p. 3) made the students an obvious, accessible choice. Anonymity was assured to the students in order to encourage participation in the study, as suggested by Mouton and Marais (1990).

The committee approach, as suggested by Brislin (1976) was used to obtain judgements of cultural and conceptual appropriacy of the test stimuli. Two lecturers in the Department of Zulu, University of Durban-Westville, volunteered to work together to provide judgements on cultural and conceptual appropriacy of items, as well as to provide translations for parallel substitute items from Form M of the PPVT-R. One lecturer also translated and pre-recorded the test instructions and the translations for presentation to the pupils in the study. Both lecturers were native Zulu speakers, also proficient in English and resided in the greater Durban area.

4.5.2 Subjects in the first pilot study

The pupils to whom the first set of translations was presented were one hundred and seven randomly selected pupils from the Mnamatha, Silendele and Inkazimulu schools in the Nyuswa area of Kwa Dedangendlale in the Valley of a Thousand Hills in Natal. They were all considered by their teachers to be of "normal" intelligence, had not failed any

year at school, and had no apparent difficulties in hearing and seeing. They ranged in age from 6 to 11 years, the age distribution as reflected in Table 1. There were fifty four boys and fifty three girls in the sample.

Table 1 : The age distribution of pupils in the first pilot study

AGE GROUP	NUMBER OF SUBJECTS
6.0 to 6.11	22
7.0 to 7.11	24
8.0 to 8.11	24
9.0 to 9.11	20
10.0 to 10.11	17

4.5.3 Subjects involved in further test development

Further test development involved the educators from the study area. Educators were recruited in the hope that their familiarity with the language of the pupils on account of their frequent interaction with them, and their involvement in the study area, would limit the variability in translations that was found with the students, thus facilitating item selection for use with the pupils.

Twenty educators (principals and teachers) were recruited from a randomly selected group of primary school educators to participate in the study. They were recruited from three schools, namely Mnamatha, Nyuswa and Silindele primary schools, in the Nyuswa area of Kwa Dedangendlale in the Valley of a Thousand Hills in Natal. All the subjects had either been living in the area and/or had been teaching in the schools there for at least four years, and were considered to be familiar with the language of the children in the area. These subjects were also native speakers of Zulu, and proficient in English.

4.5.4 Subjects in the second pilot study

A larger sample of pupils was involved in testing the applicability of the revised set of translations. Five hundred and forty four randomly selected Zulu-speaking children, aged from 6 to 11 years, and attending the Mnamatha, Inkazimulu, St. Lawrence and Silindele schools comprised the sample of pupils in the study. Approximately 25% of the children in the junior primary phase, that is, from sub A to standard two, in each of the schools comprised the sample. Between 10 and 15 children were drawn per class. The fact that age did not necessarily correspond with educational standard is reflected in the unequal distribution of subjects according to age. There were almost as many boys as girls in the sample. The age and sex distributions of subjects are reflected in Table 2.

They were considered by their teachers as having normal hearing and vision, and to be of "average intelligence", in the absence of appropriate intelligence tests for Zulu children, and were all required to have passed every previous year at school.

Table 2 : The Age and Sex Distributions of the Pupils in the second pilot study

AGE	BOYS	GIRLS
6.0 - 6.11 years	54	52
7.0 - 7.11 years	70	74
8.0 - 8.11 years	43	49
9.0 - 9.11 years	63	59
10.0 - 10.11 years	39	41
Total	269	275

4.5.5 The back-translators

Three graduates, employed in the Departments of Zulu, and Social and Educational Research at the University of Durban-Westville, assisted with the back-translations in the study. They were all first language Zulu speakers, and considered to be proficient in English.

4.6 The use of research assistants

The large numbers of subjects and the time taken for individual administration of the test to the pupils necessitated the employment of research assistants in the study. In the first pilot study twelve final year speech-language-hearing therapy students, from the University of Durban-Westville were recruited to administer the pre-recorded test stimuli and to record the responses of the pupils. These students were familiar with the general testing procedure of the PPVT-R as prescribed by Dunn and Dunn (1981), because of their university training. They were, however, South African Indian and White English-speakers, with little competence in Zulu. Important aspects of their orientation programme for the present study, therefore, included the need for establishing rapport with the subjects, training in the use of Zulu greetings and introductory phrases (translated by the lecturers in the first phase of the study), and the use of appropriate verbal and nonverbal reinforcement to encourage pupil participation in the study. In order to minimize the effect of foreign tester pronunciation of test items, these research assistants were trained to use tape recorders to present the pre-recorded Zulu stimuli (pre-recorded by one of the native Zulu lecturers) together with the relevant picture plates.

In the second pilot study an effort was made to avoid the effect of foreign testers, by employing eight Zulu-speakers from the study area as research assistants. These assistants were recruited according to the following criteria:

1. they had to be native Zulu speakers residing in the Valley of a Thousand Hills
2. the minimum standard of education required was standard nine level, to ensure the ability of the assistants to follow meticulously, the research instructions with regard to administration and recording of the pupils' responses, to allow for use of data gathered for standardisation purposes, if necessary
3. the assistants had to be sufficiently competent in English to be able to follow the instructions of the researcher with the minimum risk of misinterpretation of instructions.

Training of the research assistants in the study involved intensive training relating to familiarising them to the goals of the study, the general administration of the test and recording of the responses as suggested by Dunn and Dunn (1981). Training occurred over a three hour simulated testing period prior to the onset of formal pupil-testing. Pre-recorded test instructions and stimuli were used to train the assistants in the test procedure and scoring of responses until inter-tester reliability between the

research assistant and the researcher was total. Two pupils were tested by each assistant under the direct supervision of the researcher during the training session.

4.7 Apparatus

The main apparatus used in the study consisted of the standardised L and M Forms of the PPVT-R (Dunn & Dunn, 1981).

4.7.1 Selection of items

Only the first 115 items and picture plates for Form L of the PPVT-R (Appendix 12) were considered necessary to be included in the study primarily because the ultimate aim in the study was to develop a translated vocabulary test specifically for Zulu children from 6 to 11 years. In the original PPVT-R item 110 is the suggested basal age for 16 year old English speakers. Since the PPVT-R test items were originally arranged in increasing order of complexity (Dunn & Dunn 1981), item 115 was considered to be a sufficiently high ceiling for 11 year old children. For this reason, items beyond this point were considered unsuitable for the target age group because of the increasing level of complexity. The translators were not asked to provide translations for items beyond item number 115. Previous researchers (e.g. Manickum, 1985) had found

that other South Africans (Indians) performed lower than the American norms for the specific age groups. Since English is the first language for most South African Indians, who nevertheless performed below the American norms, according to Manickum (1985), it may be assumed that South Africans whose first language is an African language such as Zulu would also perform below the American norms provided by Dunn and Dunn (1981). Three independent Zulu teachers were consulted prior to the study to verify the unsuitability of items because of their reflection of higher complexity levels. In addition, a precedence has been set by other researchers such as Labuschagne, et al. (1991) who had limited the number of items considered for translation to 50 in their study on children from 4 to 6 years of age. The use of only 115 items for the purposes of the present study was therefore justified.

4.7.2 Apparatus used in administering the test

The test instructions and the translations used in each of the pilot studies and in training the research assistants, were pre-recorded by the Zulu lecturer and presented to the pupils via TDK C 90 cassettes and high fidelity, super bass, stereo sound, cassette recorders, made by International (Japan), model number MK.37.

4.8 Procedures

4.8.1 General procedure

The study involved two major procedures, namely the development of the translations for the PPVT-R, and the testing of these translations by the performance of the pupils. The exploratory nature of the study necessitated the cyclical application of these procedures, in order to investigate fully the appropriacy of using test translation as a procedural option for developing a test for Zulu speakers. The steps undertaken in the study are schematically represented as follows in Figure 3.

4.8.2 Development of test translation

4.8.2.1 Instructions to the translators

The twenty Zulu speaking university students were presented with and asked to provide translations for the English test items 1 to 115 (and the picture plates) from Form L of the PPVT-R. They were asked to keep the Zulu word as close as possible to the original English word, in terms of semantic features, related to the pictorial stimuli provided, and the level of complexity or difficulty.

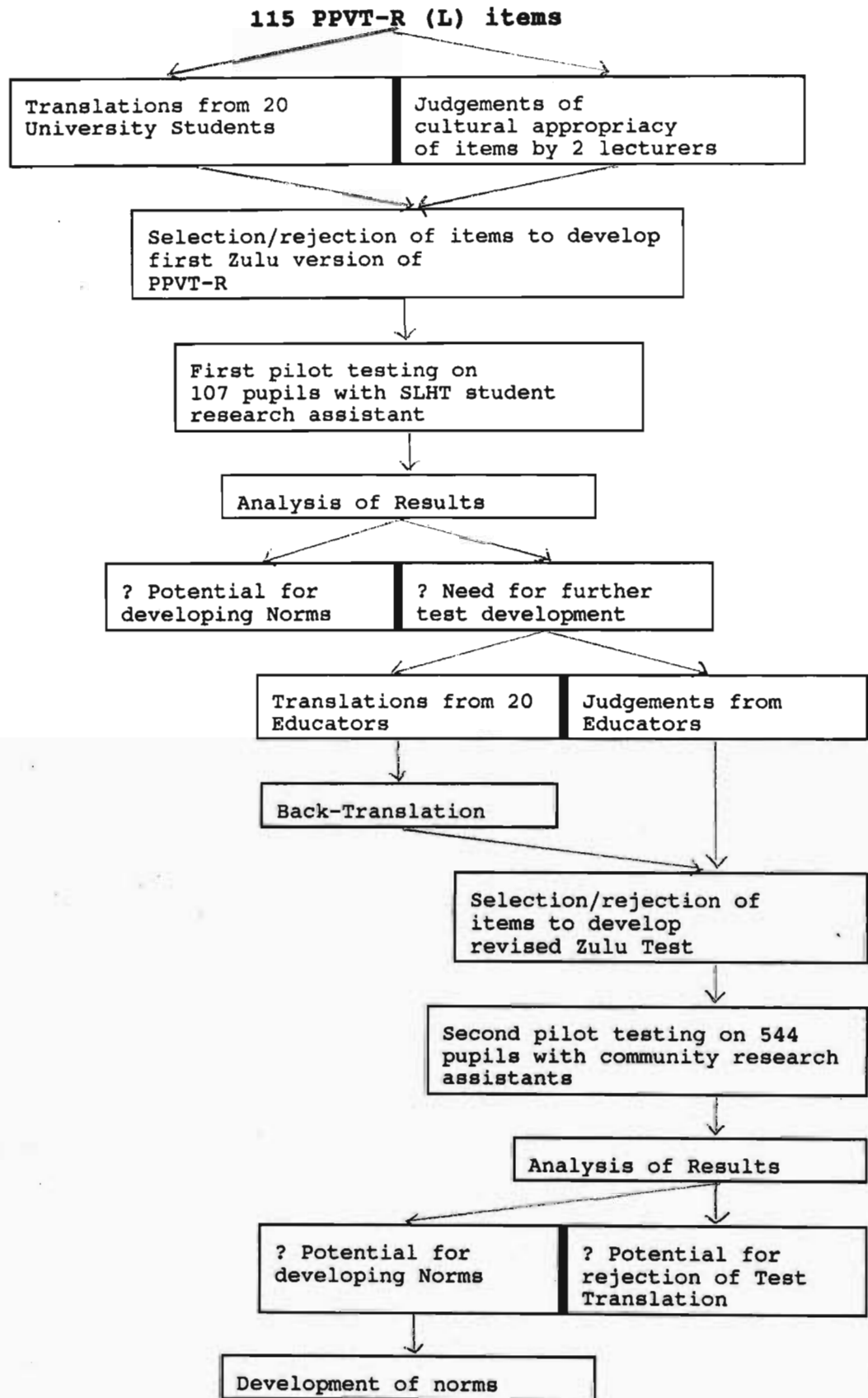


FIGURE 3: Schematic Representation of Procedure followed.

4.8.2.2 Analysis of students' translations

The students' responses were analysed in terms of the number of different translations provided per item, and the frequency with which the alternative translations were suggested. The Chi-square Test was used for each item to determine which, if any, translations were more popular with the students than other translations for the item. A significant difference in frequency of suggestion was found when the probability value was less than 0,05. The most commonly suggested translations were selected for inclusion in the test used in pilot study one.

4.8.2.3 Preparation of material for pilot study

The team of two lecturers was asked to comment on the cultural and conceptual appropriacy of the PPVT-R items for 6 to 11 year old Zulu children. For items for which they had indicated cultural or conceptual inappropriacy, they were asked to choose parallel items from similar levels from Form M, and to provide translations for these. Substitute items were also chosen by the lecturers from Form M for those Form L items for which there were no Zulu equivalents, according to the students' responses. The latter substitutions were necessary to allow for the determination of raw scores for the pupils. Total omission of the items found to be "untranslatable" or culturally or

conceptually inappropriate would invalidate the scoring procedure recommended by Dunn and Dunn (1981).

Judgements from subjects have been widely used in psychosocial research generally, and in translation studies in particular (for example, judgements regarding the basic unit of translation in a text, or judgement of pragmatic equivalence, Mason, 1987; Newmark, 1988). The use of judgements was also considered a necessary procedure in the present study in order to obtain information about the cultural and conceptual appropriacy of the test items.

A list of translated Zulu items was compiled into a test form (Appendix 4), based on the lecturers' judgements of cultural and conceptual appropriacy of items for Zulu children and the degree of consensus on translations by the students. The list of items was used to arrange the appropriate picture plates into a booklet to allow for ease of administration. Multiple copies of both the translated test form, and the sets of picture plates for the research assistants were prepared for the pilot study with the 107 pupils. The selected translations were presented and tape-recorded by one of the Zulu lecturers under noise-controlled conditions in the Language Laboratory at the University of Durban-Westville. Each Zulu word was presented twice, with a time lag of about 10 to 15 seconds between presentations.

4.8.3 The first pilot study

4.8.3.1 Administration of translated items

The translated test was administered to the 107 pupils in the first pupil pilot study by the researcher and the twelve final year Speech and Hearing Therapy students who were recruited as research assistants. The instructions (Appendix 2) and the test stimuli were presented via high fidelity stereo cassette recorders to the pupils in classrooms in their schools. The tester was allowed to delay the presentations whenever necessary by manual operation of the pause control knob on the tape recorder. This time delay was allowed because the PPVT-R is a test of understanding of the stimulus word rather than a test of speed (Dunn & Dunn, 1981). A modification of the original PPVT-R procedure was to present all the translated items to all the pupils in order to evaluate the suitability of the translated items, as opposed to commencing at the recommended starting point based on chronological age. Pupils were tested individually and the testers were required to record the responses of the individual pupils by writing the number of the picture plate to which the pupil pointed.

4.8.3.2 Criteria for determining appropriacy of translated test

The following criteria were developed to determine the feasibility of restandardisation of the translated test on the population targeted, or the need for further test development.

Criteria suggesting potential for restandardisation

1. The difference between chronological age and age equivalent, as derived from comparison of the average raw scores for each age group with the American norms, should be less than 2.6 years.
- ii. The proportion of subjects passing each item should increase with age, which would suggest appropriacy of item (because the PPVT-R plates have been arranged in an empirically determined order of difficulty, Dunn & Dunn, 1981).
- iii. There should be between 40 - 60% correct response per age group for an item to be included in the normative study.

Criteria suggesting need for further test development

- i. A difference between chronological age and age

equivalent for any age group greater than 2.6 years, would suggest that restandardisation alone may not be sufficient and that further exploration and modification of the test items would be necessary (Pahl and Kara, 1992).

- ii. Erratic numbers of correct responses across the age groups would suggest need for further investigation.
- iii. Discrepancies between actual and expected performance, as derived from judgements of cultural appropriacy and perceived level of complexity based on age band within which item is positioned in original test, would suggest need for further test development.

4.8.3.3 Analysis of pupils' responses

The responses of the pupils were analysed according to the prescribed procedure (Dunn & Dunn, 1981). A ceiling level (6 out of 8 consecutive responses incorrect) for each child was determined, and the number of errors subtracted to calculate the raw score. The average raw scores for each age group was determined and compared to the norms established for the American population. An item analysis was also carried out to establish appropriacy of translated items, and to determine the next step in the study.

4.8.4 Further test development

4.8.4.1 Instructions to educators

Based on the results obtained from the students and the first pilot study, the twenty educators from the schools in the study area were presented with the same pictures and English word stimuli from Form L, and given the same instructions as were the students who provided the first set of translations. The items selected from Form M by the lecturers as substitutes for inclusion in the first pilot study were also presented to the educators for translation. In addition, the educators were asked to comment on the cultural and conceptual appropriacy of the PPVT-R items for 6 to 11 year old Zulu children in the study area, because of their predicted familiarity with the children.

4.8.4.2 Analysis of educators' translations

The responses of the educators were analysed in the same way as were those of the student translators. In addition, back-translations of the educators' Zulu responses into English, as suggested by Newmark (1988), were analysed to determine whether the Zulu words had the same meanings as the English words. The translations of the educators were then compared with those of the students to determine whether the variability in translations occurred in both

groups of translators, which would suggest that the source of the variability lies in the translation process itself, or, whether it is a feature of one group more than the other. The two-sample proportion test was used to determine the significance of any differences in responses of the two groups of translators (personal communication, Bhagwanjee, July, 1993)⁵.

4.8.4.3 Preparation of material for second pilot study

The criteria for selection of translations for administration to pupils were:

- i. cultural and conceptual appropriacy of items as judged by at least 80% of the educators
- ii. semantic equivalence, based on the back-translations
- iii. rejection of items for which no Zulu words were suggested.

Thus, a Zulu vocabulary list was compiled, with English items being represented by one, two, three, or more Zulu options in the list (Appendix 9). Where there were two or more translations for a single item, the same picture plate was used for all the translations for the particular item, but the order of presentation of these translation options was random, that is, two translations for the same item were not presented consecutively.

The translated test instructions and test stimuli as derived above were pre-recorded, as for the first pilot study, by a native Zulu speaker. Multiple copies of the list of translation options were prepared and the booklet of picture plates modified to accommodate the changes in the list of translation options.

4.8.5 Pilot study 2

4.8.5.1 The administration of the Zulu translations to the pupils:

The compiled list of the relevant translations of the chosen items of the PPVT-R was administered by the researcher and the eight community research assistants to 544 pupils who comprised the sample for the pupil study. The test administration procedure followed for the second pilot study was the same as for the first.

4.8.5.2 Analysis of data obtained from pupils

An item by item analysis was carried out and the number of pupils responding correctly for each Zulu word was represented in percentages, in order to determine appropriacy of translations. The following steps were taken:

1. the proportion of subjects passing each Zulu option for a particular English item at each age

level was examined to identify any increase or decrease in the number of correct responses per item with age

2. the chi-square test was used to indicate whether the pupils, on an average across all age groups tested, responded differently to each of the options suggested for a particular item
3. pupils' incorrect responses were analysed according to the proportion of subjects selecting each of the three distracter pictures on a plate. According to the procedure identified in the original PPVT-R (Dunn & Dunn, 1981), the picture plates in the test could be used in a final test form if some pupils selected the distracter pictures on the plates, and if these proportions were less than the proportion of subjects choosing the target picture (Dunn, 1981).

4.8.5.3 Selection of items after second pilot study for developing norms

To determine the items that could be used in the standardization stage of the study, and therefore the potential for standardisation, the following criteria were used.

- i. The number of items/options from the PPVT-R Test that were applicable to each age group was determined, using a pass criterion of 40 to 60% as was done for

the development of the PPVT-R (Dunn & Dunn, 1981), and Dunn, Dunn, Whetton & Pintillie, 1982) for the British version of the test. An item which received between 40 and 60% correct responses from the pupils in a particular age group was considered appropriate for use with that age group. Thus the number of items/options from the PPVT-R Test that were applicable to each age group was determined.

- ii. The proportion of subjects passing each item should increase with age.
- iii. The three distractor pictures for each item should attract some subjects at each age group tested, but be negatively correlated with the total score.
- iv. The educators consulted should have agreed on the cultural appropriacy of the item and the pictorial stimuli.
- v. There should be semantic equivalence between the source language item (English) and the target language item (Zulu), as reflected in the back-translations.
- vi. The target language option used should correspond with the pictorial stimuli, as judged by the educators.

4.8.5.4 Developing the normative data:

Using the above criteria, the items chosen for inclusion in the final Zulu version of the test, for which normative data could be established, were identified. The number of items applicable for each age group was established, thereby determining the age groups for which norms could be established. The performance of the pupils for each of the items was analysed and the number of correct responses was calculated for each child, this number representing the raw score for that child. A mean raw score for each relevant age group was determined. The raw scores for each group were treated statistically and converted to normative data using means, ranges and standard deviations. The items were arranged in order of increasing complexity as determined by the number of children responding correctly per age group. This constituted the translated Zulu version of the PPVT-R as developed in the present study.

The results obtained in the present study are presented in chapter 5.

CHAPTER FIVE

5. RESULTS

5.1 Introduction to results

The results of this study are presented under the following headings in order to address the aims of the study, and to facilitate accessibility of information:

1. the initial development of translations for the study
2. the testing of these translations on the pupils
in the first pilot study
3. further test development
4. the testing of the revised translations on the
pupils in the second pilot study
5. the development of normative data.

5.2 Initial development of translations

The variety of translations provided by the university students for each of the English test items used in the study are tabulated, together with frequency of suggestion for each in percentages, in a composite table in Appendix 3. The responses of the educators as obtained in the "further test development" stage and the back-translations are also presented on this table to facilitate integration and accessibility of information.

5.2.1 Degree of consensus on translations by students

The responses of the students were analysed to determine the degree of consensus on translations provided. Three categories of consensus were identified, based on the percentage of agreement, namely:

- i. items with total or 100% consensus on translation
- ii. items with 50% or more consensus on translation
- iii. items with less than 50% consensus on translation.

Only 24 of the 115 items presented for translations to the students had a hundred percent agreement on translation. This represents 20.9% of the items. There were 46 items observed to have at least 50% consensus on translations, comprising 40%, and 45 items with less than 50% consensus on translation, comprising 39.1% of the items presented to the students for translation. These are listed in Table 1.

5.2.2 Items with two or more translations

Analysis of the students' responses revealed that there were as many as 6 translations provided for a single item. Seventy seven of the items had two or more translations. Table 2 reflects the items which were allocated 2, 3, 4, 5, or 6 different translations by the students.

Table 1: Distribution of items across three categories of consensus on translations

CONSENSUS	ITEMS
100%	bus; hand; bed; tractor; snake; boat; knee; net; elbow; bandage; feather; accident; vehicle; nest; square; envelope; hook; sewing; shoulder; island; human; nostril; coast; forest. <p style="text-align: right;">(24 items) 20.9%</p>
> or = 50%	tyre; cow; lamp; drum; fence; tearing; peeling; sail; tool; stretching; arrow; tying; pasting; patting; parachute; furry; dripping; claw; stem; decorated; faucet; vase; pedal; surprised; bark; mechanic; awarding; reptile; exhausted; filing; clamp; cooperation; trunk; twig; balcony; tusk; solemn; utensil; carpenter; appliance; blazing; solemn; lecturing; contemplating; dissecting; bolt; vine. <p style="text-align: right;">(46 items) 40%</p>
< 50%	closet; helicopter; empty; measuring; capsule; penguin; delivering; diving; vegetable; pitcher; group; tambourine; cage; frame; disappointment; casserole; signal; disagreement; ceremony; globe; spatula; tubular; weasel; demolishing; locket; amazed; communication; isolation; reel; inflated; adjustable; fragile; assaulting; husk; pyramid; hoisting; arch; dilapidated; canister; link; archery; transparent; citrus; pedestrian. scalp <p style="text-align: right;">(45 items) 39.1%</p>

Table 2: Distribution of items according to number of translations suggested by students

NUMBER	ITEMS
2	tyre; cow; lamp; fence; sail; peeling; arrow; tying; pasting; furry; claw; decorated; frame; vase; reel; pitcher; exhausted; casserole; globe; clamp; bolt; balcony; carpenter; lecturing; archery; transparent; citrus. 27 items
3	closet; drum; empty; cage; tool; stretching; trunk; parachute; vegetable; dripping; surprised; filing; disappointment; ceremony; cooperation; tusk; husk; appliance; blazing; dissecting; tearing. 21 items
4	helicopter; measuring; patting; penguin; diving; stem; pedal; mechanic; twig; demolishing; amazed; tubular; communication; hoisting; contemplating; solemn 16 items
5	delivering; group; awarding; signal; isolation; scalp; fragile; assaulting; dilapidated. 9 items
6	disagreement; inflated; adjustable; link. 4 items

The chi square results were used to determine whether the difference in frequencies with which the various translations were suggested for each item were significant or not. A significant difference would suggest the more popular translation/s for each item. The results suggested that one/some translations were significantly more frequently suggested than others for 85 items. No significant differences in the frequencies with which the translations were suggested by the students were found for 6 items. The chi square values are presented in Appendix 4.

5.2.3 Items for which 50% or more students provided no translation

Items for which 50% or more of the translators either did not provide any translation, or had indicated that they knew of no equivalent Zulu word included the following words:

faucet (50%); *utensil* (50%); *pedestrian* (50%) *pitcher* (50%); *vine* (50%); *casserole* (60%); *pyramid* (60%); *canister* (60%); *capsule* (60%); *locket* (60%) *globe* (70%); *transparent* (70%); *tambourine* (70%); *reel* (85%); *spatula* (90%); *weasel* (90%); *arch* (90%).

5.2.4 Preparation of test material for first pilot study

Of the 11 items for which 50% or more translators had provided no translation, the first 7 listed above were also considered to be culturally inappropriate, and were therefore omitted from the list used in pilot study one, while *utensil*, *pedestrian*, *arch*, and *locket* were included on the basis of the lecturers' judgement that these items were not unfamiliar to Zulu children. The translation suggested by the students for each of these 4 items was used in the pilot study test, even though less than 50% had suggested the option. Other items considered by the team of two lecturers to be culturally inappropriate and therefore excluded, were: *closet*, *cage*, *penguin*, *reel*,

clamp, and transparent.

All these items, coincidentally, had less than 50% consensus on any one translation for the item, for example *closet* was translated as *indluencane, ikamelwane, and ikhabethe* by 5, 20 and 45% of the students, respectively, while 30% either made no response or indicated that they knew of no Zulu word. Therefore these items were omitted from the test, on the grounds of lack of consensus on translation as well as cultural inappropriacy. Substitute items were then selected by the lecturers from comparable age bands in Form M of the PPVT-R. The basal age levels suggested by Dunn and Dunn (1981) were used as guidelines for determining age bands. For example *ambulance*, which is item number 26 on Form M lies in the 4.6 to 5.0 year age band, and was selected to replace item number 25, *cage* which lies in the 4.6 to 5.0 year age band in Form L. Similarly, item number 35 in Form M, *track*, was selected to replace item number 36, *penguin*, both of which lie in the 5.6 age band. The substitute items thus selected from Form M for inclusion in the Zulu version of the PPVT-R for the first pilot study included *bee, ambulance, track, liquid, wrist, root, swamp, funnel, musician, greeting, harvesting, pod, and compass.*

The list of Zulu words for the first pilot study (Appendix 5) comprised the following:

- a. all 24 of the Zulu words with 100% consensus on

- translation by the students, as reflected in Table 1
- b. the 13 substitute items from Form M, selected by the team of lecturers to replace the items rejected on account of the lack of consensus on translation and/or the judgements of the lecturers
 - c. the most commonly occurring translation for each of the 46 items which had more than 50% consensus on a translation (for example, as reflected in Appendix 2, 70% of the subjects suggested *ithaya*, and 30% suggested *isondo* for *tyre*; *ithaya* was therefore selected for inclusion in the test)
 - d. the most frequently occurring translation for each item of the remaining 32 items, which had less than 50% agreement on translations, but which the team of lecturers had considered appropriate for inclusion in the Zulu test (for example, *disappointment* was translated into *ukuphoxeka* by 30% of the students, into *ukudumala* by 45%, and into *ukujabha* by 25% of the students; *ukudumala* was selected for inclusion because the chi square probability value (p) of 0.008 (Appendix 12) suggested that the *ukudumala* was significantly more frequently suggested ($p < 0.05$). Where the chi square probability value indicated that there was no significant difference between the frequencies with which translations were suggested for an item ($p > 0.05$), the lecturers were asked to select the more appropriate translation for the item. To illustrate, for the item *cow*, the two translations,

inkomo and *inkomazi*, were suggested with equal frequency by the students. The team of lecturers selected *inkomo*.

This list of Zulu words was applied to the subjects in the first pilot study in order to test the appropriacy of the translations. The results are presented in section 5.3.

Summary of development and selection of translations for first pilot study:

There was 50% or more agreement on translations amongst the students for 70 items. Of the remaining items with less than 50% agreement, the most popular translation was selected for each of the 32 items considered to be culturally appropriate, while 13 items were rejected. Therefore, 102 items of the L form were retained, together with 13 substitute items selected from the M form of the PPVT-R, for administration to the pupils in the first pilot study.

5.3 THE FIRST PILOT STUDY

5.3.1 Analysis of average raw scores obtained per age group

Raw scores for the pupils in the sample were determined by using the procedure suggested by Dunn and Dunn (1981). A ceiling level for each child was determined, from which the number of errors was subtracted, to determine the raw scores. The raw scores obtained by the pupils are presented in Appendix 6. The average raw score obtained for each age group was compared with the American norms to determine age equivalence of performance. The average raw score obtained was also compared with the range of expected raw scores for each age group as suggested by the American norms. These findings are presented in Table 3. It can be seen that the difference between chronological age (CA) and the age equivalent (AE) derived for the average raw score from the PPVT-R norms ranged from 2.3 to 4.7 years (CA - AE). Therefore the subjects in the present study using the translated version of the PPVT-R performed below the American norms, a finding that was not unexpected.

Table 3: Comparison of obtained average raw scores per age group with American norm

(CA) AGE GROUP	AVERAGE RAW SCORE	(AE) AGE EQUIVALENT	EXPECTED RAW SCORE	CA - AE (years)
6.0 - 6.11	38	3.9	70 - 81	2.3 - 3.2
7.0 - 7.11	41	3.11	81 - 91	3.1 - 4.0
8.0 - 8.11	63	5.6	92 - 100	2.6 - 3.5
9.0 - 9.11	76	6.6	100 - 106	2.6 - 3.5
10.0 - 10.11	74	6.4	107 - 113	3.8 - 4.7

The responses of the pupils for each item were examined to identify any patterns of responses that may exist. The results for the item by item analysis is presented in Appendix 7. Items which displayed either less than 40% correct responses across all age groups tested or more than 60% correct responses across all age groups were identified. Responses to these items were analysed to identify the existence of discrepancy between the expected performance and the actual performance. Expected performance was based upon the position of the word on the original test and the judgements of the lecturers regarding appropriacy of the items. To illustrate, *fence* was considered by the lecturers consulted to be a familiar concept for Zulu children. Moreover, it is located at number 18 on the original test, thereby representing a low complexity word (Dunn & Dunn, 1981), but the pupils in the

present study performed poorly across all age groups (Appendix 7), suggesting that the translation of this word may be inappropriate and may require further investigation.

The items displaying discrepancies were identified as:

- a. *helicopter, fence, measuring, diving, vegetable, group, pedal, surprised, signal, ceremony, amazed, fragile*, based on the observation of unexpectedly low performance across all age groups
- b. *pitcher, casserole, vehicle, reptile, scalp, tubular, link, solemn, husk, citrus, utensil, pedestrian, and appliance*, based on the trend of unexpectedly high performance across all age groups.

For the purposes of establishing whether or not it was viable to develop norms based on the results obtained in the first pilot study, the following criteria were used:

- i. increasing number of correct responses with age
- ii. 40 to 60% correct responses for an age group

If an item demonstrated these characteristics, it would be accepted for the normative study.

Using the above criteria, the items applicable for each age group were determined. As reflected in Table 4, a total of only 20 items was found to be appropriate for inclusion in a normative study for Zulu children between 6 and 11 years, although there was some overlap across age groups. Only 9

items were found to be appropriate for 6 year olds; 8 for 7 year olds, including 3 that had been included for 6 year olds; 3 for 8 year olds, including 1 item that was found to be suitable for 7 year olds; 7 for 9 year olds, including 3 which had been included for 8 years olds; and 4 items, of which 3 had been included for 9 year olds, for the 10 to 11 year old children. The items are listed in Table 4, where the numbers in parenthesis indicate the items which were also found to be appropriate for a lower age group in the study.

Table 4: Age groups to which items are applicable

6 YEARS	7 YEARS	8 YEARS	9 YEARS	10 YEARS
accident	tool	(frame)	sail	claw
ambulance	(square)	liquid	pasting	(liquid)
square	(track)	swamp	(frame)	(stem)
envelope	shoulder		(liquid)	(vase)
hook	frame		stem	
track	(mechanic)		vase	
forest	root		(swamp)	
mechanic	awarding			
disagreement				
n items = 9	5 + (3)	2 + (1)	4 + (3)	1 + (3)

Findings suggesting the need for further test development included the following:

- i. only 20 (17.4%) of items applied to the pupils in the first pilot study were found to be appropriate for inclusion in a normative study: more than 80% of the

Zulu translations used in the study were found to be inappropriate because the pupils showed extreme performance for these items i.e. too many or too few subjects performed well enough on these items to warrant inclusion of these items in a normative study (other test developers such as Dunn and Dunn (1981) have also used the 40 to 60% correct response criterion because this represents the middle range of normalcy)

- ii. the low average age equivalent scores obtained on the test when compared to the American norms suggested a need for further investigation of translated items (the difference ranged from 2.3 to 4.7 years)
- iii. the discrepancies found between expected performance and actual performance suggested that further investigation of the translation might be necessary, particularly in view of the fact that multiple translations had been suggested by the students for many items, but only one for each item was applied in the pilot study
- iv. it was recognised from the responses of the pupils that the most frequently suggested option might not necessarily be the Zulu word with which the children are most familiar, and that other translations provided could just as easily be more appropriate for the children for whom the test was being developed.

It was thus determined that further test development was

necessary, before a conclusion could be reached regarding the appropriacy or inappropriacy of the PPVT-R for the Zulu children.

Summary of results of first pilot study: The subjects in the present study performed between 2.3 and 4.7 years below their age levels when compared to the American norms. Item analysis revealed discrepancies between expected performance and actual performance for 25 items. Moreover, only 20 of the 115 items were found to be appropriate for inclusion in a normative study. These findings lead to the identification of the need for further test development.

5.4 FURTHER TEST DEVELOPMENT

The translations, and the frequencies with which they were provided by the educators are presented in Appendix 3. Back-translations to determine semantic equivalence have also been included in the composite table in Appendix 3. Both horizontal and vertical analyses of the data presented in this table were undertaken. The vertical analysis involved the determination of the significance of any differences in the frequencies with which the various translations for an item were suggested, using the chi square statistical measure, the results of which are reflected in Appendix 8. The horizontal analysis involved the use of the two sample proportion test to determine whether the two groups of adult subjects responded

significantly differently or not. The results of the two sample proportion tests have been summarised, with the statistical cross-reference in parenthesis, in Appendix 3. Based on the analysis of the responses using the above procedures relevant trends were identified and are presented below.

5.4.1 Items with 100 % agreement on translation

Amongst the educators, 31 items, representing 27% of the items, had a 100% agreement on translations. This was slightly more than for the students (20.9%), but the results of the two sample proportion test indicated no statistically significant difference between the students and the educators in terms of the number of items with complete consensus on translation ($p > 0.05$, Appendix 16, calculation number 1). The items on which the educators had full consensus included the 24 items on which the students had shown consensus and which are listed in Table 1, as well as *drum, stretching, arrow, tying, bark, mechanic and lecturing*. In addition, 3 of the 13 items selected from Form M by the lecturers for presentation to the pupils in the first pilot study, had complete consensus on translation by the educators. These were *bee, ambulance, and wrist*. Therefore, of the 128 English words (115 from Form L and 13 from Form M) presented to the educators for translation, only 34 (28.8%) of items

displayed 100% consensus on translation.

5.4.2 Items with less than 50% consensus on translation

Thirty items were identified as having less than 50% consensus on translations amongst the educators as compared to 45 items amongst the students in the first phase of test translation. The 30 items were *closet, helicopter, penguin, capsule, cage, tambourine, reel, vine, casserole, globe, clamp, reptile, spatula, scalp, weasel, balcony, locket, tubular, appliance, pyramid, arch, canister, transparent, husk, citrus, pedestrian, inflated, adjustable, assaulting, and hoisting.*

5.4.3 Items with 50% or more consensus on translation

The fifty four remaining items of the original 115 items of the L Form all had 50% or more consensus on translations. In addition, the remaining 10 items from Form M which were included in the first pilot study and also presented to the educators for translation, had 50% or more consensus on translation.

5.4.4 Items with two or more translations

As with the students, the translations of the educators

were examined to reveal the variability in translations provided. For the educators, too, there were up to 5 and 6 translations for a single item, although for fewer items, i.e. 61 items, as compared to the students, who had 77 items with two or more translations (Table 2). For the educators, of the Form M items used, only *root* and *harvesting* had two options each. The Form L items, and the number of translations suggested for each, are reflected in Table 5.

Table 5: Distribution of items according to number of translations suggested by educators

NUMBER	ITEMS
2	closet; tyre; cow; lamp; helicopter; fence; tearing; sail; peeling; pasting; penguin; diving; furry; claw; decorated; vase; pedal; exhausted; filing; cooperation; twig; amazed; bolt; communication; carpenter; fragile; dissecting; archery; husk; citrus. 30 items
3	empty; cage; tool; patting; delivering; vegetable; dripping; group; stem; surprised; awarding; trunk; tubular; tusk; blazing; hoisting; dilapidated; contemplating; demolishing; solemn. 20 items
4	measuring; disappointment; signal; ceremony; isolation; scalp; assaulting; link. 8 items
5	disagreement; inflated. 2 items
6	adjustable. 1 item

5.4.5 Items for which 50% or more educators provided no translation

There were 20 items for which 50% or more translators indicated that they knew of no equivalent Zulu word or did not respond at all. These are listed below with the percentage of "no response" or "no Zulu word" listed in parenthesis:

penguin (50%); closet (50%); faucet (55%); balcony (50%); appliance (55%); capsule (60%); canister (60%); pedestrian (65%); clamp (65%); pitcher (65%); pyramid (70%); transparent (75%); casserole (75%); vine (80%); tambourine (85%); globe (85%); weasel (90%); reel (90%); spatula (100%); arch (100%).

More often, more educators indicated specifically that they knew of no Zulu words, than simply not responding, than the students. To illustrate, for items such as *pyramid*, 55% of educators stated that they knew of no Zulu words and only 15% did not respond at all, as compared to the students, of whom only 10% stated that they knew of no Zulu word, while 50% simply did not respond at all.

5.4.6 Comparison of educators' and students' responses

In order to determine whether the educators had responded differently from the students with respect to the translations that they provided, the two sample proportion

test was conducted for each translation that was commonly suggested by both groups though with varying frequencies. The two sample proportion tests comparing the responses of the educators and students are found in Appendix 16. A summary statement regarding the significance or non-significance of the difference for each translation is given in Appendix 2, with a cross reference for the relevant calculation in Appendix 16.

With regard to the variety of translations suggested, although the students and educators had similar numbers of items with 2 and 3 translations, the student group tended to have more items with 4, 5, and 6 translations, reflecting greater variation in responses. With regard to inter-group differences, there were no significant differences in the frequency with which 86 translations were suggested, while 51 translations were suggested with equal frequencies by both groups. Significant differences in the frequency of suggestion was found for seventy seven translations, while 72 translations were suggested by only one group, although with minimal frequencies. These latter translations were suggested mostly by only about 5 to 10% of the subjects from the one adult group; *isiveveve* for *helicopter* was the only item suggested by 45% of one group (students), with no educators giving this translation for *helicopter*. Thus, variability in translations was found within the groups as well as between the two groups of translators.

5.4.7 Preparation of material for second pilot study

The degree of consensus on the translation of items, the semantic equivalence of the translations as reflected in the back-translations, and the educators' subjective evaluations of the cultural appropriacy of the items for Zulu children were considered to identify the words that could be included in the second pilot study. Such analyses led to the exclusion of 27 of the 115 items from the PPVT-R L Form before administration to the pupils in this study. The lack of consensus on translation was the reason for the exclusion of 19 items. The lack of semantic equivalence as suggested by the back-translations was the cause for exclusion of 15 items, while educator judgements indicated that 17 items were inappropriate. Some of the items were excluded on account of all three criteria, for example, *capsule, reel, casserole, globe and spatula*, while others were excluded on one or two of the criteria. Table 6 reflects the distribution of reasons for exclusion of items in preparation for pilot study two.

Table 6: Reasons for rejection of items

ITEM	LACK OF CONSENSUS	NO SEMANTIC EQUIVALENCE	EDUCATORS' JUDGEMENTS
penguin	*		*
faucet	*		*
capsule	*	*	*
tambourine	*		*
reel	*	*	*
vine	*		*
casserole	*	*	*
globe	*	*	*
clamp	*		*
spatula	*	*	*
weasel	*		*
balcony			*
appliance	*	*	
pyramid	*		*
arch	*		*
canister	*		*
pedestrian	*		
transparent	*	*	
citrus	*	*	
closet		*	*
utensil		*	
cage			*
reptile		*	
scalp		*	
tubular	*	*	
locket		*	
husk		*	

The remaining 88 items from the L Form and the 13 items from the M Form, were included in the Zulu version of the test, although they varied in the number of Zulu alternatives each item had as follows:

- 69 items were represented by one Zulu word each,
- 24 items by two Zulu options each,
- 5 items by three Zulu options each,
- 2 items by four options each, and
- 1 item by five options.

These English items are listed according to the number of translations used in Appendix 9. To illustrate the selection of options that were included in the Zulu word list presented to the 544 pupils in the second pilot study, examples in each category will be briefly presented. The test form used in the second pilot study is presented in Appendix 10.

5.4.7.1 Items where only one Zulu word was used

In addition to the items with a 100% agreement on translations, there were other items where the decision to include only one option was relatively easily made. These decisions were made on the basis of the significantly greater frequency with which the option was suggested by the educators, as well as the semantic equivalence of the option in relation to the target item. Examples of items where this procedure was used included items such as *tyre*, *lamp*, *drum*, *peeling*, *tool* and *dripping*. In the case of the

item tyre, for example, two options were suggested, namely *ithaya*, which was back-translated as *tyre*, and *isondo*, which back-translated as *tyre* or *wheel* (Appendix 3). Eighty percent of the educators suggested *ithaya*, and only 20% suggested *isondo*. The chi square value for the item tyre ($p < 0.05$, Appendix 8) confirmed that *ithaya* was significantly more popular amongst the translators than was *isondo*. Therefore, for the purposes of the present study, *ithaya* was accepted as the more suitable option. A similar procedure of analysis was undertaken for each Zulu word suggested, to determine its acceptance or rejection.

5.4.7.2 Items where two or more Zulu options were included in the list of words for pilot study two

Generally, two or more Zulu options for an item were included when both words displayed semantic equivalence. Examples of such items were *vegetable*, *measuring*, *pedal*, *awarding* and *demolishing*. To illustrate, for the item *vegetable*, there were three options suggested by the translators, two of which displayed equivalence in semantics, in that the meaning of their back-translations matched the meaning of the original English items. Both these alternative translations, namely, *imifino* and *isilimo*, were included in the test, because of the semantic equivalence, although one was suggested by 65% of the educators, and the other by 25 % of the educators (Appendix

3). In the case of other items, other factors such as the comments of previous researchers were also taken into consideration in the determination of which Zulu translation/s to use in the test. For example, for the item *cow*, Labuschagne, Alant and Tesner (1992) had suggested that the more general term, *cattle*, had been more familiar to their young subjects than the gender-specific word meaning *cow*. Therefore both translations were included in the test, to investigate the applicability of this finding in Zulu, and to older children.

A total of 145 Zulu translations were administered to the 544 pupils in the second pilot study, as indicated in Appendix 10.

Summary of analysis of educators' translations and selection of translations for use in second pilot study :
Analysis of the educators' responses also revealed variation in translation of individual items. Although there was slightly more items with 100% consensus, there was no statistically significant difference between the educators and the students in this regard. The application of the criteria of consensus on translation, judgements of appropriacy and semantic equivalence resulted in the rejection of 27 items. A total of 145 Zulu words covering the remaining 101 items comprised the test that was administered to the 544 pupils in the second pilot study.

5.5 THE SECOND PILOT STUDY

The results of the analyses of pupil performance in the second pilot study are reflected in Appendix 11. The number of pupils in each age group choosing each of the 4 picture plates in each item is reflected in percentages, to determine the suitability of the decoy pictures. An average percentage across all age groups was calculated for the target picture,. This average percentage was used in the chi square test to determine the significance of the difference, if any, in the pupils' responses to the different Zulu translations used for a specific item. The result of the chi square test for each item is presented in Appendix 12, although Appendix 11 includes the interpretation of the chi square results for specific items. The individual presentation of the results of every one of the 145 items presented to the pupils in the second pilot study would become a cumbersome and ineffective task in the context of the present text. To illustrate the process followed in the analysis of the pupils' performance for the purposes of the present study, an example is presented. For the item *root*, two translations were administered to the pupils, namely, *impande* and *ingxabo*. The analysis of the pupils' responses to each option are presented in Tables 7 and 8. The pupils' responses indicate that *impande* is a more appropriate Zulu word for these children than *ingxabo*, because firstly, there is a consistent increase in the number of correct responses to the target picture (in

bold print). Secondly, there is a consistent decline in the number of children choosing the decoy pictures, but with some children continuing to choose a decoy picture, thereby indicating the effectiveness of the decoy pictures. Thirdly, the average percentage of correct responses for *impande* (46.76%) reflects a better overall performance than does the average percentage of correct responses (only 13%) for *ingxabo*. Furthermore, the results indicate that *impande* is a suitable word to include in the normative stage at the 8 and 9 year levels, according to the criterion of 40 to 60% correct responses. Finally, the significant difference in the chi-square value ($p < 0.000$) confirmed the appropriacy of *impande*. Every item presented to the pupils in the second pilot study was examined using the predetermined selection criteria, as indicated above. Relevant trends observed in the results are presented below.

5.5.1 Pupils' performance according to age

Examination of the results presented in Appendix 11 suggests that there was generally a trend towards an increase in performance with age for most items, supporting the contention that the original PPVT-R test is based on an increasing level of complexity (Dunn, 1981) for the sample on which it was standardized, and which was maintained for most items even after translation.

Table 7: Number and percentage of responses to each of 4 pictures for root using the translation *impande*

AGE	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
6	(34) 32.1%	(12) 11.3%	(30) 28.3%	(30) 28.3%
7	(26) 18.1%	(48) 33.3%	(35) 24.3%	(35) 24.3%
8	(10) 6.9%	(50) 54.3%	(18) 19.6%	(14) 15.2%
9	(16) 13.1%	(70) 57.4%	(18) 14.8%	(18) 14.8%
10	(4) 5%	(62) 77.5%	(12) 15%	(2) 2.5%
		Av. = 46.76%		

Table 8: Number and percentage of responses to each of the 4 pictures for root using the Zulu translation *ingxabo*

AGE	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
6	(22) 20.8%	(18) 17.0%	(22) 20.8%	(44) 41.5%
7	(46) 31.9%	(22) 15.3%	(38) 26.4%	(38) 26.4%
8	(24) 26.1%	(8) 8.7%	(28) 30.4%	(22) 23.9%
9	(56) 45.9%	(14) 11.5	(24) 19.7%	(28) 23%
10	(14) 17.5%	(10) 12.5%	(16) 20%	(40) 50%
		Av. = 13%		

Thirty six items for which there appeared to be no discernable pattern of general increase in performance were identified. These were therefore excluded from the

normative study. These items are reflected by an asterisk (*) in the column headed (1) of Table 9, together with the items that were rejected on account of inappropriacy of decoy pictures [column headed (2)].

5.5.2 Pupils' responses to the Decoy Plates

The criterion for inclusion of items in the standardization phase was that the decoy plates for an item should attract some subjects, but that this proportion should be clearly less than the proportion of subjects who chose the target picture (Dunn, 1981). It can be seen from Appendix 11 that most items in the Zulu version of this test do fulfil this criterion. The 31 items which were rejected on account of the pupils' having choice of a decoy picture as much as or more often than the target picture are reflected by an asterisk (*) in the column headed (2) of Table 9. Some items were rejected on account of both criteria, as reflected in Table 9.

In addition to the above mentioned criteria for rejection of items, the results of the chi square tests indicating the significance or nonsignificance of the difference in the pupils' response to the various translations used for a particular item, were considered to determine suitability of items for normative purposes.

Table 9: Items rejected on account of: (1) lack of discernable pattern of increase in number of correct responses with increasing age, and (2) inappropriacy of decoy pictures

ENGLISH ITEMS	ZULU TRANSLATIONS	(1)	(2)
sail	useyili	*	*
vegetable	imifino	*	*
claw	isidladla	*	*
group	idlanzana	*	*
	isigejana	*	*
pedal	isishovo	*	*
	iphedali	*	*
disappointment	ukudumala	*	
	ukujabha	*	*
	ukuphoxeka	*	*
	indumala	*	
awarding	ukugomela	*	
exhausted	ukhandlekile	*	*
ceremony	umgidi	*	
disagreement	impikiswano	*	
filing	ukufayela	*	*
fragile	ukwephukayo	*	*
assaulting	ukusukela	*	*
solemn	odabukile	*	
	okulisizi		*
signal	isayini	*	*
surprised	ukwethusa	*	
amazed	ukushaqeka	*	*
	ukumangalisa	*	*
track	umunqa	*	
musician	umculi	*	
liquid	uketshezi	*	

ENGLISH ITEMS	ZULU TRANSLATIONS	(1)	(2)
root	ingxabo	*	*
funnel	isetho	*	*
harvesting	ukufula	*	
	okuvuna	*	
stem	isiqu		*
carpenter	umbazi		*
isolation	ukuzihlukanisa		*
coast	ugu	*	*
adjustable	okungalinganiseka		*
hoisting	ukufukula	*	*
	ukuqukula		*
contemplating	ukuninga	*	*
link	ikhongco	*	*
trunk	isiqu		*
bolt	umshudo	*	*
swamp	ixhapozi	*	*

**5.5.3 Pupils responses to different options
for specific items:**

Significant differences in the pupils performances were found between/amongst the options for 21 items of the 32 items to which the chi square measure (Appendix 12) was applicable, suggesting that certain options were more familiar to the pupils, on the whole, than others for specific items.

Significant difference in pupils' responses were found for the following items: *assaulting, awarding, bolt, ceremony,*

contemplating, delivering, disagreement, dissecting, empty, exhausted, fragile, group, harvesting, hoisting, inflated, link, root, signal, solemn, trunk, vegetable.

No significant differences were found for: *amazed, communication, cow, decorated, demolishing, dilapidated, disappointment, measuring, pedal, surprised and tearing.*

For items for which there were significant differences between the number of correct responses obtained by the pupils for the different options used in the test, the decision to include one option rather than another would be less problematic than for options where the performance was similar. For example, for the item *exhausted*, two options suggested by the adult subjects in the study were administered to the pupils, namely, *ukukhathala* and *ukhandlekile*. The average percentage of pupils who responded correctly to each option was 51.98 and 22.34 respectively. The former option was obviously the choice for inclusion in the normative study because of the significant difference between the two, (and because it fulfils the criterion of 40 to 60 % correct response). An example of an item where the options presented no significant differences in the responses of the pupils was *measuring*, where both options tested on the pupils proved to be appropriate for inclusion in the final test for normative purposes. Therefore, for an item where 40 to 60%

of the pupils performed equally well in response to the different translations presented, both or all the relevant translations were selected for the normative study.

The list of items found to be suitable for inclusion in the Zulu Test for normative purposes as determined by the selection criteria is presented in Appendix 13. Of a total of 145 Zulu words, only 45 or 31.2% were found to be suitable for normative purposes. These items were placed in the age group for which they were found to be applicable in the study, using the 40 to 60% correct response criterion. Of these 45 items, 27 items were found to be applicable to age 6.0 to 6.11, of which 7 were also applicable to age 7.0 to 7.11 years. In addition, 9 other items were found to be specifically relevant to the 7.0 to 7.11 year age level. Although the higher age levels did share a few words with the lower age levels, i.e. there was some overlap of appropriacy of translation, there were too few words which were relevant for the older age groups to warrant inclusion for normative purposes. To illustrate, for the eight year olds, only 4 words were found to be specifically suitable, while 11 others were found to be commonly appropriate for both 7 and 8 year olds. Only 1 item was found to be appropriate for 9 year olds, with 7 words being applicable to both 8 and 9 year olds. Four of the 45 words were found to be suitable for 10 year olds, with three others applicable to both 9 and 10 year olds.

Thus it was found that the test items found to be applicable to the Zulu children were relevant mainly to 6 year old children, but could be extended to 7 year olds as well. Thus, 36 items constituted the final Zulu test for which basic normative data was established. These 36 Zulu translations had been derived from 30 English items, 5 of which were represented by more than one translation in the final Zulu test. The 36 Zulu words were considered to be an acceptable number for assessing 6 and 7 year old children, on the basis that in the English Picture Vocabulary Test, Brimer and Dunn had 40 items in the test designed for 5.0 to 8.11 year old children (Wheldall & Jeffree, 1974). Therefore, the Zulu version of the PPVT-R Test, as developed in this study, consists of 36 items and is applicable only to 6 and 7 year old Zulu children. The 30 English items for which translations proved to be appropriate in the present study for the purposes of deriving norms that may be used for screening the vocabulary skills of 6 and 7 year old Zulu children in the study area are:

fragile; dilapidated (2); blazing; empty; surprised; exhausted; signal; cow; shoulder; frame; twig; human; disagreement (3); vegetable; ceremony; link; fence; accident; vase; diving; patting; contemplating; assaulting (2); awarding; tying; hoisting (2); stretching; measuring (2); pasting; dripping

The numbers in parenthesis reflect the number of trans-

lations found to be appropriate for the item.

5.6 Developing the norms

The decision to develop basic normative data in the present study for the purposes of screening Zulu vocabulary, was made despite the low percentage of translations found to be suitable for normative purposes, in view of the fact that there are, at present no vocabulary tests for Zulu children. Furthermore, as asserted by N. Miller (1977, p. 23):

a score derived from a translated test, without restandardisation, offers an even poorer than usual indication of level of language functioning, but hopefully it should be accurate enough to justify claiming that at least some quasi-objective indication is better than none...

Of critical importance is the finding that the translation of the PPVT-R, as developed in the present study, has significantly reduced application in terms of the age group for which it was originally intended. The responses of the 6 and 7 year old children to the 36 items listed in Appendix 14, were analysed, and the number of correct responses obtained by the 6 and 7 year old children are represented as raw scores in Appendix 15. The distribution of raw scores are presented in graphical form in Figures 4 and 5 for ages six and seven years.

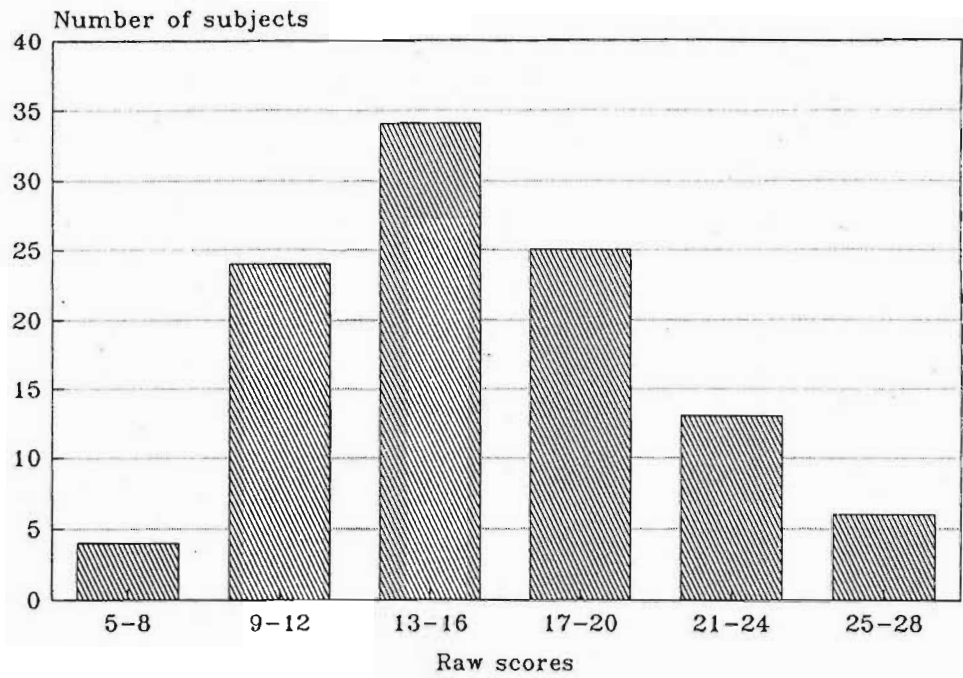


Figure 4 : Distribution of raw scores for 6 year old subjects

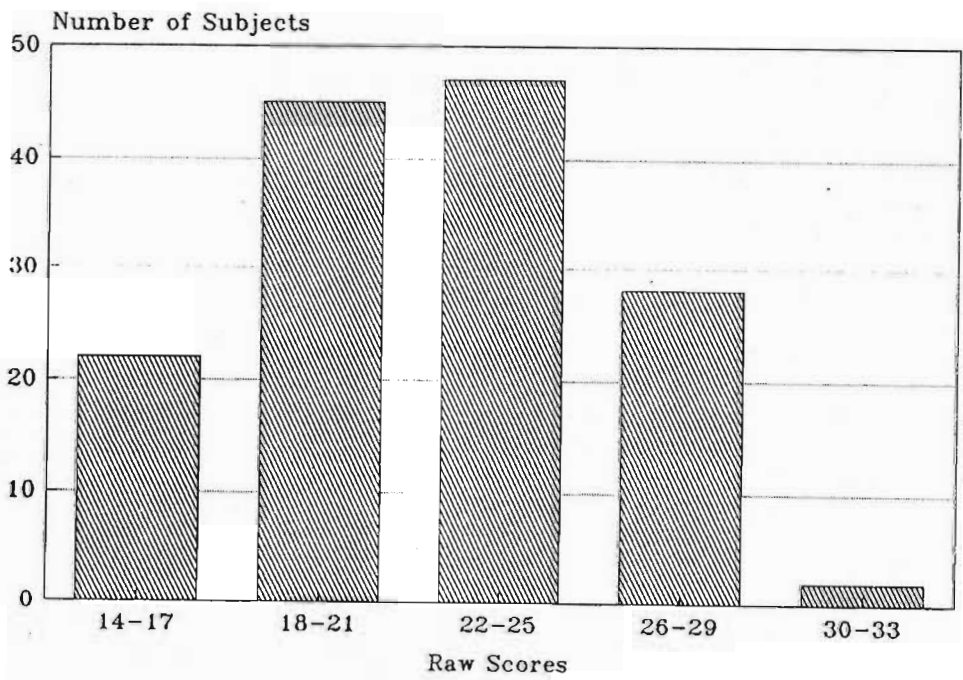


Figure 5 : Distribution of raw scores for 7 year old subjects

A wider range of scores was found for 6 year olds than for 7 year olds. The scores ranged from 5 to 28 for the 6 year olds and from 14 to 31 for the 7 year olds. The mean (m) and standard deviation (s) for 6 and 7 year olds were as follows:

Age 6.0 to 6.11: mean = 15.88

standard deviation = 5.048

The standard variance indicates that 70.75% of the raw scores are within the range of 10.832 - 20.928, that is within one standard deviation from the mean.

Age 7.0 to 7.11: mean = 21.78

standard deviation = 4.155

The standard variance indicates that 63.89% of all the raw scores for the 7 year olds are within the range 17.625 - 25.935, that is, within one standard deviation from the mean.

Summary of results of pilot study two: Of the 145 Zulu translations administered to the pupils in pilot study two, only 45 met the predetermined criteria for item selection for normative purposes for all the groups tested. It was found that while 36 of these were applicable to 6 and 7 year old children, there were too few Zulu items applicable to the older age groups to warrant normatization. The 36 Zulu words were derived from 30 English items. Therefore,

of 128 English words translated, only 30 were finally found to be appropriate for inclusion, on translation, in a normative study for Zulu children.

The results obtained in the various stages of the present study are discussed in chapter 6.

CHAPTER SIX

6. DISCUSSION OF RESULTS

In this chapter, the results of the study are discussed in order to address the aim of the study, namely, to determine the feasibility of using translation for developing tests, with specific reference to a vocabulary test for Zulu children. The adaptation process in the present study began with a direct translation of an existing test into Zulu by twenty university students, followed by item selection based on judgements of cultural appropriacy by a team of two lecturers and consensus on translations, and pilot testing of the translations on 107 pupils. This was followed by a phase of further test development comprising further test translation by educators from the study area, their judgements of cultural appropriacy of items, and back-translations, with subsequent item selection for the purposes of re-piloting, to determine the appropriacy of the translations of the PPVT-R for developing norms for Zulu children.

Discussion of the results will be presented in terms of:

1. the development of translations
2. pupil performance in the two pilot studies

6.1 The development of translations

6.1.1 Translation consensus

Overall, the results of this study have suggested that there is much difficulty in obtaining total consensus on translation of lexical items for the purposes of vocabulary testing in Zulu. Less than 30% of the English words from the PPVT-R presented to the adult subjects involved in both the initial and further development of translation phases of the study, could be translated into **single Zulu equivalents**. Only these items were conceptualised and expressed in the same way by the 40 first language Zulu speakers (ZL1). This finding has important implications for the use of translation as a procedural option in adapting a test for use with AL1 speakers in South Africa. It would appear that if the above findings are to be used in an adaptation of the PPVT-R for Zulu speakers, then, at the most, less than 30% of the items translated in the study may be readily considered for inclusion in the Zulu version of the test because only this proportion of items appears to exhibit complete consensus on translation as well as semantic equivalence. There would be little doubt as to what Zulu words to use for these items in the adapted version of the test. However, closer inspection of the translations on which there was 100% consensus suggests that they are largely simple nouns and a few simple verbs,

and will therefore obviously have limited applicability in a vocabulary test. The inclusion of more abstract or complex words may therefore be limited by the apparent difficulty in obtaining consensus on single translations for more complex words. Such words may be perceived differently by different individuals, and therefore have different referents, as suggested by Morgan (1970).

6.1.2 Variability in translation

Multiple translations for single English items, was a common finding in the study. Analysis of the translations and the frequency with which different translations were provided for each item revealed that there were as many as six alternative translations given by the translators for certain items. Variations in responses were found both among the students and the educators. Researchers have asserted that even native speakers often disagree on lexical issues and may use a variety of words for a particular concept (Newmark, 1988; Jacobson & Traill, 1986). It is, however, possible, that the variation in lexis may be an inherent facet of the process of translating words itself. This variability contributes to the complexity of selecting translations of items from SE tests for testing Zulu vocabulary. In the present study, a number of potential reasons, relating to the process of translating itself, have been identified to account for the

3. difficulties in encoding the SE lexical items into Zulu lexical items.

These three facets of the process of translation are by no means linear, nor are they independent of each other. Difficulties encountered in one aspect can affect the extent to which the other/s may be achieved, and therefore difficulties in translation may easily arise in one, two or all aspects, depending on the point at which the difficulty arises. To illustrate the relationship, the difficulty in obtaining consensus on translation of an item such as *pyramid* may derive from any or all of the process components:

- i. the linguistic difficulties experienced by the translator in decoding this SE term
- ii. the unfamiliarity of this term in the translator's personal and cultural experience to facilitate cognitive processing (the translator's lack of exposure to the external culture may have contributed to this unfamiliarity, since Zulu culture apparently favours the round shape, as exemplified in the traditional circularity of their huts, personal communication, Makhatini, March 1993)⁶
- iii. the difficulty in encoding the concept into the Zulu language may relate to the translator's lack of knowledge about a suitable lexical item in Zulu for this concept, or to the possibility that no original Zulu word for this concept may exist, as it is not relevant to the culture.

The three facets are described individually below.

6.1.2.1 Difficulties in source language decoding

Difficulties in translating arising in the first component in the process of translating, may relate to the fact that for accurate translation, a translator needs to have a high degree of linguistic competence in both SL and TL. Source language competence will facilitate accurate decoding of the English stimulus, and therefore is more likely to facilitate accurate encoding of the stimulus word into the target language, in order to achieve equivalence of meaning. Many researchers have described the profound knowledge of the SL needed to decode the different levels of meaning when translating (House, 1981; Marsh, 1987). In the present study, competence of the AL1 translators in the English language was assumed on the basis of their attendance at an English-speaking university in the case of the student translators, and on the basis of their occupations in the case of the educators. They were, moreover, selected as translators, in view of Newmark's (1988, p. 3) assertion that translation into one's language of habitual use is the only way one "can translate naturally, accurately and with maximum effectiveness". However, the possibility exists that despite their apparent ability to use the English language for general communication when necessary (according to Mashishi, 1987, AL1 speakers generally tend to use their native languages

rather than English when conversing with each other), these AL1 speakers may not have acquired sufficient competence in the second language, (the external language, according to Taylor's model, 1986) and therefore, may still have had difficulty in processing certain SE lexical items. This observation is based not only on the lack of consensus on translations, but also on the **lack of translations** for certain items. There was a number of items for which the AL1 translators either indicated that they knew of no Zulu word, or simply did not respond (e.g. *tambourine* and *spatula* are examples which may have posed difficulty in decoding for the AL1 translators). As suggested in Taylor's conceptual framework (1986) relating to communication disorders in diverse cultures and languages, adult competence in the external language is optional, depending on such factors as extent of exposure. This suggests that the extent of competence needs to be specifically assessed, and not assumed. In the case of AL1 speakers, difficulty with SE is not surprising in view of the difficulty that most AL1 speakers encounter when acquiring English. Factors such as the lack of experience with and exposure to SE through the media (radio, television) as a result of socioeconomic limitations, the historical segregation of the races, and therefore of the languages (and cultures), as well as the poor quality of teacher training, particularly with regard to English (Mashishi, 1987; Macdonald & Burroughs, 1991) may have contributed to difficulties that may have been experienced

by the translators in coping with the English items in the PPVT-R.

The fact that even first language English speakers have also found some of the PPVT-R items difficult (Manickum, 1985; Sharpley & Stone, 1985) lends support to the contention that the AL1 translators may have experienced difficulty in decoding some of the English items because of their unfamiliarity with certain SE items developed in America. The very nature of the vocabulary test used in the present study is likely to have contributed to the difficulty experienced in processing certain SE lexical items: the PPVT-R is a graded vocabulary test, and the items were originally selected for their increasing complexity levels in order to develop a sensitive assessment of vocabulary development in the American population; it was designed to exclude people with different SE vocabulary competence levels. This acknowledgement may raise the question as to why, then, such a test was used in the present translation study. The reason for this is that this test, amongst others, has been translated into other languages in South Africa (for example, North Sotho). Although there has been a lack of information in the literature regarding the translator/s used in previous studies in terms of their linguistic competence in the source language and in terms of the process of translation, it appears that single translators were used. In the present study, in order to maintain the

procedure as close as possible to that used previously in test translation studies, the linguistic competence levels of the translators was not empirically controlled. Every effort was, however, made to explore fully the potential for using test translation by modifications such as using multiple sources of obtaining translations and the committee approach to obtain judgements.

In addition to decoding the SL stimuli, the lack of translations for certain items may also be attributable to the difficulty in cognitive processing of each item, or the understanding of the conceptual field to which an item may belong in the external language. As asserted by Newmark (1988) both accessibility of meaning and cultural familiarity are necessary for translation to occur. This is discussed in the following section.

6.1.2.2 Difficulties in cognitive processing

A second possible source of difficulty contributing to the variations in translations provided, may relate to difficulty in extracting semantic and conceptual understanding of the SL item because of cultural distance between SL and TL (Taylor, 1986). Since language and meaning are acquired through personal and social experience, in sociocultural contexts, and since the SE test used was derived from a mainstream, middle class American culture reflecting American middle class concepts

and values, it is not surprising that the nonmainstream speakers may have difficulty in understanding the meanings of certain SE concepts. The perception of experiences and meaning may differ both within a culture and among cultures (Saville-Troike, 1986). The cultural distance between SL and TL may hinder semantic, conceptual processing since experiences may be conceptualised differently in different cultures (i.e. there may be no parallel conceptualisation). In the present study, culture specific items such as *closet*, used to mean *cupboard*, and *faucet*, used as any kind of *tap* in the United States, both defined as such by the Concise Oxford Dictionary, posed considerable difficulty to the subjects involved in translation in this study, largely because these are words which are not commonly encountered in the local context. The cultural unfamiliarity of the visual presentation (the pictures) of a stimulus item may also have contributed to the inability of the AL1 translators to agree on accurate translations. To illustrate, *closet* is represented as a walk-in storage room type rather than the cupboard or wardrobe that is popular amongst AL1 speakers. *Faucet* is represented by a modern mixer type bathroom tap, not commonly found in homes of AL1 speakers. Other examples of culturally inappropriate items are *frame* and *casserole*, as these items, as reflected in the picture stimuli, are rarely found in the homes of semi-rural Zulu people (personal communication, Makhatini, March, 1993). Zulu people do not appear to differentiate between *pills* and *capsules*, possibly because,

traditionally, they have been treated for their ailments with their own traditional medicines which usually are not in the form of capsules, but in the form of potions and extracts (personal communication, Makhatini, March 1993). As no Zulu word exists for such culturally foreign items, lexical borrowing and adaptation have occurred, as for example, with *iphilisi* for *pills*. On the other hand, they did not appear to use cultural or **pragmatic** equivalents very consistently, possibly in recognition that these are not accurate, and that there are conceptual differences between semantic and pragmatic equivalents, as asserted by Newmark (1988). For example, *indishi* for *casserole* was used by no more than 30% of translators which although it may be pragmatically more effective than a culturally neutral term such as *container*, is not a semantically accurate equivalent. Therefore, the use of culture specific words in a vocabulary test reduces the efficacy and accuracy with which it may be translated; the variability of translations for an item may relate to the **difficulty in finding equivalent words across different languages and cultures**, which relates to the difficulty in encoding the concept understood from the SE lexical unit into a Zulu lexical unit.

6.1.2.3 Difficulties in target language encoding

The possibility exists that while translators may be able

to decode an SE lexical unit, and to extract semantic and conceptual meaning via cognitive processing, difficulties in finding an equivalent word with which to encode the concept in the TL may be encountered. The problems with encoding the SE lexical items into Zulu vocabulary are concerned with such issues as the difficulty in finding equivalents, the lack of a register of standard Zulu vocabulary, the use of adoptives, the descriptive nature of the Zulu language and the use of compound words in Zulu, and linguistic reduction resulting from translation. These are discussed below.

i. The lack of semantic equivalents

The possibility exists that there simply might not be semantic equivalents in the Zulu language for some SE concepts: for example, in the present study, at least half the translators provided no applicable translation for items such as *spatula* and *globe*. Other researchers have noted a similar difficulty in translating for specific technical purposes (e.g. Fourie, 1993). The lack of Zulu words with which to encode certain concepts however, may not reflect any general deficiency in the indigenous languages or the cultures they reflect, but may more likely be a result of the socio-politically motivated underdevelopment of terminology, that marks the modernisation of the socio-linguistically dominant, official languages, in the indigenous languages. Therefore some SE items may have

no equivalent terms in the target language. The question that arises then is: what do Zulu speakers do when translating, in the absence of equivalent Zulu words with which to encode SE lexical items? The use of pragmatic equivalents, as indicated previously, is not as effective. An interesting observation in the present study was that pragmatic equivalents may reflect regional specificity. For example, the item *helicopter* was translated by the university students into *isiveveve*, a word which was later found to be area-specific. This Zulu word is apparently specifically used as a warning of an approaching aircraft, that is used for aerial searches and raids on "dagga" (marijuana) plantations, and is only used in areas where the plant is grown. This translation was not suggested by the educators from the study area, which is itself not a known dagga-growing region (personal communication, Ruth Myeni, July, 1993). Therefore, the use of that specific word for *helicopter* is a pragmatic equivalent, and generalised from use in a particular context, although it is area-specific. An implication here is the possibility of variation in Zulu vocabulary as a function of region or dialect, which is an important consideration in test development. Although other researchers have concurred that such variation may exist, there is a paucity of information in this regard (Kubeka, 1979). **The lack of a register of standard Zulu vocabulary** further complicates the problem of obtaining translations for use in testing, although the debate on the need for developing such a Zulu

register continues (Alexander, 1989).

ii. The use of adoptives

From the results of the present study it would appear that loan words (or adoptives) may be adopted from a foreign or external language to encode concepts for which no Zulu words are available. Examples of loan words or adoptives in the present study, according to the definitions of these terms provided by Louwrens (1993) include *ifulemu* (*frame*), and *isikwele* (*square*), while *ipyramida* (*pyramid*) and *ipharashuta* (*parachute*) may be considered to be partially adapted foreign words, as many of the SL features are still recognisable. Some **adoptives (loan words) or foreign words** are more commonly used than others. For the inclusion of adoptives in vocabulary testing, an issue that warrants consideration, therefore, is the extent to which they are accepted for use in the general community. It seems that adoptive words are not necessarily commonly used in the wider community, because they were not consistently suggested by all the translators. The possibility exists that the extent of a *translator's* personal and social experience with the external culture will influence the extent to which he/she uses linguistic borrowing. Moreover, the extent to which the *readership* of a translation understands the use of the adoptives will be determined by the extent of exposure to the external language and culture. In the case of a vocabulary test,

the use of such loan or foreign words in a vocabulary test, will in turn impact on the pupils' performance on the test, as inclusion of borrowed words in a vocabulary test may merely be testing the child's exposure to foreign concepts. As Jacobson and Traill (1986, p. 18) have noted, "the familiarity of borrowed words to the range of speakers of the relevant languages would be inestimable". For this reason, it may be argued on the one hand that only the more commonly used and culturally relevant adoptives may be appropriate for use in a vocabulary test. On the other hand, it could also be argued that in view of the objective of vocabulary testing to identify levels of vocabulary development, borrowed words could be used in a Zulu vocabulary test, as they would be tapping a progressive expansion in vocabulary related to increased exposure to new concepts. As suggested by Louwrens (1993), the absorption of new concepts into a linguistic system is a natural process when there is mutual intercultural influence. The education system should, therefore, be preparing and exposing children to learning about aspects of the world that are not part of their daily lives. Exposure and experience cannot be limited to the restricted world that current educational practices have to offer ALL children, in view of the fact that language and thought develop through experiences and exposure to events (Vygotsky, 1970; Nelson, 1991). In translation, therefore, the use of adoptives may occur in the absence of equivalent

Zulu translations, but their appropriacy will be determined by general familiarity in the target community.

iii. The use of descriptive phrases

In the absence of original Zulu words for foreign concepts, descriptive phrases or compound words, was a common feature in the responses of the translators. This has been referred to previously as descriptive equivalents (Newmark, 1988), the use of which has implications in the present study for **the unit of translation**. Examples include the translations *isivalela*, a description of being closed in, for cage; *into elekelelayo emsebenzi*, which is a description of *something electrical with which to do work*, provided for the concept of appliance; and all the translations provided for *empty*, which were descriptive compound words, as indicated by the back-translators. The occurrence of these compound words in Zulu poses a problem in test translation relating to single words because they tend to be descriptive and relate to a line of thought rather than a single word. Bryant (1905, p. 86) suggested that these compound words are formed by stringing together various separate, usually monosyllabic elements of speech which have no definite meaning, and are never used in isolation, but which by virtue of being placed in a certain relationship with other parts of speech, gain meaning and facilitate the expression of a single completed thought. Hence translation may need to target a more linguistically-

complex unit rather than an isolated word, an observation which has negative implications for the feasibility of translating a vocabulary test. Many translators over the years have stressed that words are not translated, but ideas or sentences or messages are. Thus the controversy surrounding **the unit of translation** can be seen to be reflected in the present study, the findings of which tend to support the contention that words in isolation are difficult to translate (Newmark, 1988).

iv. Linguistic reduction resulting from translation

A feature of the Zulu language which suggests the inappropriacy of translating SE vocabulary tests for the purposes of assessing Zulu children relates to the fact that the translated words do not reflect a representative sample of the potentially appropriate Zulu words that may be included for vocabulary testing if an original Zulu test were to be developed. An interesting observation in the present study has been that the Zulu language has a certain richness in its vocabulary not always found in, for example, English, and which is not tapped when a SE test is translated. To illustrate, while English uses the word *peeling* for the action of "stripping the peel, rind,...." (The Concise Oxford Dictionary) without specifying the manner of doing so, the Zulu language uses different words to describe the act of peeling with the fingers and the act of using a knife to peel. Another example would be the use

of different Zulu words to describe varying degrees of *dripping/leaking*, as reflected for the item *dripping* in Appendix 3. Therefore, translating an English vocabulary test may not reflect the diversity of words which may be used to express a particular concept in the Zulu language; if an original Zulu test were being developed, items could be selected to reflect the subtle variations in the Zulu vocabulary. A further feature of the translation process which suggests the inappropriacy of translating from SE into Zulu relates to the phenomenon of reduction of English words, which was also evident in the responses of the translators. It was found that some adult subjects tended to suggest semantically related, though not necessarily equivalent words, which reflected a reduction in the complexity level of the stimulus: for example, the word for *aeroplane*, *ibhanoyi*, was used for *helicopter*; *reptile* was translated as *crocodile* and *vehicle* was translated as *car*; *citrus* as *orange*; and *appliance* as *iron*. (It is however, acknowledged that these translations may have been in direct response to the picture stimuli used in the PPVT-R.)

Summary of the development of translations: A number of possible factors, arising from the process of translation, were identified as contributing to the difficulty in obtaining consensus on translations. The variability in translation could arise from factors affecting the decoding of the SL, or the external language, the cognitive

processing of the meaning of the translation unit, as well as factors affecting the encoding of the SL lexical item into an equivalent TL lexical item. These difficulties contribute to the lack of consensus in translations obtained, which impact on the use of the translations for assessing Zulu children' vocabulary.

6.2 Introduction: Pupils' responses to translations in pilot studies

The purpose of obtaining translations in the present study was to determine the translations that could be used for the SE vocabulary items in the PPVT-R for Zulu children. The occurrence of items with multiple translations, however, created a need to determine criteria for accepting or rejecting translations for inclusion in the pupil study. This observation has important implications for the use of test translation in South Africa: it is not always a simple matter to predict without pilot testing, whether the translation that has been chosen for use in the pupil study is in fact the most appropriate one with which to test the pupils. A number of factors relating to the appropriacy of the translations and the picture stimuli were identified as potentially contributing to the inappropriacies of many of the translated PPVT-R items for the Zulu children.

6.2.1 Pupils' performance

The test developed for the first pilot study was limited to the most commonly suggested translation for each item, in an attempt, as far as was possible, to keep the Zulu version of the PPVT-R as close as possible in format to the original test in order to facilitate comparison of performance of the Zulu sample to that of the American sample on whom the test was standardised. Moreover, previous researchers who had the PPVT-R translated, also used single translations for each item, as they had obtained the translations from an individual translator. An important finding that emerged from the first pilot study was that the translation suggested most frequently by the adults was not always the most appropriate one for testing the children, or the one with which they were most familiar, as illustrated in the pupils' response to the stimulus *imifino* for *vegetable*. Although this translation was the most popular one among the educators, the pupils performed better when the less popular, though **semantically equivalent** translation, *isilimo*, was used in the second pilot study. In the case of *imifino/vegetable*, it appears that this translation is simply not a word to which the Zulu children have been exposed, despite the greater consensus amongst the educators that it was a more suitable translation of *vegetable*. Hence it was necessary to use other criteria for item selection than only frequency analysis. In the second pilot study, with the recognition

that inappropriate translations may have been included for the first pilot study, an attempt was made to include as many translations which complied with the predetermined criteria of semantic equivalence and cultural appropriacy of stimuli, as possible. This procedure facilitated the testing of appropriacy of all "possible" equivalents (Snell-Hornby, 1988) suggested by the translators, and therefore the selection of the most appropriate translation/s for the purposes of testing the pupils. To illustrate, the pupils' performance in the two options for the item *exhausted* clearly indicates that one translation is more appropriate for the children than the other. The children performed consistently better for the option *ukukhathala* than *ukhandlekile*, as determined by the chi-square analysis.

The raw scores obtained by the pupils in the first pilot study were compared to the American norms provided, which served to highlight the inadequacies of directly translating and using a SE test across cultures and languages. Although the PPVT-R has been investigated for relevance to nonmainstream cultures elsewhere, there have been no known attempts to do so for Zulu speakers. **The marked differences between the chronological age of the pupils in the study and the age equivalents derived from the American norms across all the age groups tested, clearly illustrate the inappropriacy of merely translating a vocabulary test and applying it cross-culturally. It was**

a clear demonstration of the fact that test translation only alters the language, which confirms the contentions of other researchers (N. Miller, 1977; Buitendag et al., 1991), that translation can not change the content of the test. Moreover, as the results of the first pilot study revealed that the subjects performed between 2.3 and 4.7 years below the American norms, had they been used to develop norms, it is likely that considerably lower norms for the local population would have arisen. Such a situation could have had similar negative connotations of inferiority and deficiency to those associated with such practice elsewhere, as for example, with Black English speakers in America (Baratz, 1969).

The discrepancies found between the actual and expected performance, (as derived from comparing pupils' performance on specific items to the age level at which the item is located in the original test, as well as to the adult subjects' judgements of cultural appropriacy of the items) in the first pilot study also suggested that the problem may lie in the translations used. This contention was supported by the difficulties in obtaining accurate translation as revealed by application of the back-translation procedure, which indicated that there was often a lack of equivalence, and evidence of linguistic reduction in the translations used in the first pilot study. For example, the translation used for *reptile* was back-translated as *crocodile*, which is more concrete and

commonly used than the former superordinate or class name, and which may therefore represent a different **level of complexity** for the pupils. Similarly, *vehicle* was translated as *car*, *pitcher* as *jug*, *scalp* as *bald*, *citrus* as *orange*, and *appliance* as *iron*, all of which are commonly known at a much earlier age, and on which the subjects showed maximal performance. By this process many of the more difficult items in the original PPVT-R test may therefore become the easiest items in the translated test. Therefore, the findings of the present study confirm the contention that translation may affect the complexity level of the item as observed by N. Miller (1977), Cazden (1972) and Buitendag, Uys and Louw (1991).

A further factor contributing to inappropriate performance of the pupils in the present study to the translated version of the PPVT-R is the potential inappropriacy of the **target and decoy pictures**. To illustrate, in the case of an item such as *lecturing* (the picture plate, for which is included in Appendix 1), there was perfect consensus on the translation of this item into Zulu amongst the educators, and the back translation test also revealed appropriacy of the translation in view of the equivalence of meaning obtained. A possible explanation for the poor performance in the pupil study was derived from analysis of the pattern of pupils' responses to the decoy pictures. There was a consistent trend for more pupils to choose a decoy picture rather than the target picture across all the age groups

tested. A possible explanation for this trend may be that the decoy pictures or the target picture itself for this item may have been inappropriate for the Zulu children. The target picture depicts a lecturer addressing a *small* group of only four pupils, an occurrence which may be unfamiliar to Zulu pupils in their overcrowded classrooms in a peri rural school. Furthermore, in the original PPVT-R the decoy picture plates were obtained from a similar complexity level as the target picture for the item (Dunn & Dunn, 1981). The decoy pictures might not necessarily represent a similar level of complexity for the local population as they did for the population on which it was originally standardised. Therefore, merely translating a SE test for cross-cultural testing purposes does little to validate the contents of the test if factors such as the manner in which the test was developed are not considered and also adapted for the local population.

A further factor contributing to the poor performance of the pupils for certain items may relate to the lack of context in the picture stimuli. For example, the stimulus picture for *pedal* reflect a bicycle pedal in isolation. There is the possibility that the subjects may have difficulty in perceiving a pictorial representation of only a part of a bicycle in isolation; this may also relate to a lack of experience with bicycles in general; which would therefore mean that identifying an isolated part without the global context is a more complex task than it was for

the original standardisation sample. Although researchers (e.g. Cazden, 1972) have indicated that all children have a similar capacity for picture perception, such research has not pertained directly to peri rural children in Africa. Specific information in this regard may help in the development of future vocabulary tests for Zulu speakers.

6.3 The potential for developing norms

The purpose of developing the translations, and testing and retesting of these translations in the pilot studies was to determine the feasibility of standardising the translated PPVT-R items for Zulu children between the ages of 6 and 11 years in the study area. An important finding in the present study was that of the 145 translations, derived from the 101 selected PPVT-R items, that were tested on the pupils, **only 45 Zulu words were found to be suitable for the purposes of standardisation across all the age groups tested.** This resulted in the development of basic normative data for **only 36 Zulu words which are applicable only to 6 and 7 year old Zulu children.** These 36 Zulu words were derived from 30 of the original items (some items were represented by more than one translation). Therefore, the 128 items of the PPVT-R (L and M) that were initially selected for translation, were reduced in applicability to **30 items** (Appendix 13). These findings contribute to the contention that it may not be feasible to

merely translate and maintain the validity of a SE test such as the PPVT-R for nonmainstream speakers, and emphasise the need for adapted tests to be restandardised on the target population. It is clear that merely translating vocabulary items, is inadequate in making them applicable cross-culturally. The contents of a test are thus crucial since "a test is no better than the worth of the items of which it is comprised" (Arnolt, 1977, p. 319).

An important consideration in the present study is that although some items were identified as being appropriate for developing basic normative data, such norms as derived from the present study should be used for the purposes of screening only, rather than for diagnostic purposes. The reason for this is that the translated items are derived from SE words which were originally compiled for the purposes of assessing the vocabulary skills of a foreign population abroad: these words are by no means representative of the vocabulary skills of Zulu children in South Africa. They may not constitute a sensitive, representative and meaningful assessment of the salient vocabulary of the AL1 group. Such vocabulary may not indicate levels of cognitive, linguistic, lexical or semantic maturation in these AL1 speakers.

The final chapter in this dissertation summarizes the main conclusions of the study, its clinical and theoretical implications and evaluation.

CHAPTER SEVEN

7. SUMMARY, CONCLUSIONS AND EVALUATION

7.1 SUMMARY

The motivation for this exploratory study arose from the need to address the problems encountered by SLTs in assessing AL1 speakers linguistic skills, in the absence of AL1 SLTs, and in the absence of original indigenous language assessment tools. In order to address the aim of investigating the feasibility of translating the PPVT-R for Zulu speakers, the objectives of the present study were the following:

1. to develop a Zulu translation of a SE vocabulary test
2. to modify it in terms of cultural appropriacy of items
3. to pilot test it on a sample of 6 to 11 year old Zulu children to determine feasibility of developing norms for the translated version, or the need for further test modification
4. to develop the test further to improve quality of translations used in pilot testing, by means of educator translations of lexical items, judgements of cultural appropriacy of items, and back-translation
5. to test the modified list of Zulu words on a larger sample of children to determine feasibility of standardisation

6. to develop basic normative data for the relevant age groups.

The findings of the various phases of the study are summarised below.

The results of the **initial development of translation phase** suggested much variability in translations for the majority of items, with 100% consensus only on 20.9% of the items, and 50% or more consensus on 40% of the items. Thirteen items were rejected outright because they were judged as culturally inappropriate or as having no usable translation. In the **first pilot study**, the test comprising 115 items, including 13 substitute items from Form M, was applied individually to 107 Zulu children between 6 and 11 years of age. From this study only 20 of the 115 items were found to be appropriate for standardisation purposes for Zulu children. The subjects performed from 2.3 years to 4.7 years below their chronological age when compared with the American norms, thus suggesting the need for further test development rather than standardisation without further modification. In addition, the discrepancies found between actual and expected performance based on judgements of cultural appropriacy of items and perceived level of complexity, further supported the need for further investigation of translations. The results also suggested the possibility that the most frequently occurring translation might not necessarily be the one most

appropriate for the purposes of testing the children. **Further translations** by the educators, however, also revealed variation in translation of individual items. Using the predetermined criteria, namely, consensus on translation, judgements of appropriacy and semantic equivalence as determined from the back-translation test, 27 items were rejected in this phase of the study, and the suitable translation/s were selected for each of the remaining 101 items. Thus 145 Zulu words comprised the test that was applied to the 544 children in **the second pilot study**. From this study only 45 of the 145 (31%) Zulu translations were found to be suitable for normatization purposes across all the age groups tested. Of these, 36 words were applicable to 6 and 7 year old. There were too few Zulu items applicable to the older age groups to warrant normatization. Therefore, despite the relatively restricted number of words normative data were derived for Zulu children between 6 and 7 years of age only, in the present study. These 36 Zulu words were derived from 30 English items, 5 of which were represented by more than one Zulu word in the final Zulu test. Thus, the translated version of the PPVT-R was significantly reduced in applicability to Zulu children despite attempts at test modification, but the decision to develop norms was made, despite the restricted applicability in terms of age, as there are no Zulu vocabulary tests available for assessing 6 and 7 year old Zulu children. It was recommended that these norms should be used for the purposes of screening

rather than for diagnostic purposes, particularly in view of the fact that the Zulu test comprising the 36 Zulu words, derived from the 30 SE words, does not constitute a sensitive or representative assessment of vocabulary development in first language Zulu speaking children.

7.2 Integration of results

The findings of the present study confirm the difficulties experienced in the modification of existing SE tests in order to make them more appropriate for use with nonmainstream speakers. A number of potential reasons for the difficulty in obtaining consensus on translations for use in a vocabulary test for Zulu children have been identified. These include difficulties in decoding the source language, in cognitive processing to extract conceptual understanding of the concept, and in encoding the concept into the target language, particularly relating to determining semantic equivalents across cultures. The results support the contentions of other researchers (Cazden, 1972; N. Miller, 1977; Alant & Beukes, 1986; Buitendag, Uys & Louw, 1991) that test translation, by itself only changes the language of a test and not the culturally weighted nature of the content of the test: it continues to represent the cultural experience of the original standardisation group. Despite a concerted effort to find ways of making the modification process successful, by the development of the test in a second translation

phase, by the adjustments derived from pilot testing, judgements of cultural appropriacy, and restandardisation, many items were found to be inappropriate. The translated version of the SE test was found to be limited in achieving its purpose of assessing the functional vocabulary of the Zulu children in any representative way because it was merely testing the child's knowledge of lexical items that could be translated from SE words, and not of a representative vocabulary of Zulu lexical items. Moreover, the final normatization data suggested that, although the initial goal was to produce a test for 6 to 11 year old Zulu children from these words, norms could only be derived for 6 and 7 year old children. Therefore, tests such as the PPVT-R which were derived from SE speakers performance to SE items, appear to have limited applicability for Zulu children, and do not appear to have the potential for a sensitive and relevant instrument for assessing their real vocabulary status.

Ideally, therefore, a vocabulary test should be derived from the words used by the people belonging to the culture and the linguistic group for which it will be used, for it to be **culture fair**. Therefore, in view of the fact that despite attempts to make the translating process successful, the test was reduced in applicability for the Zulu subjects, it would appear to be more prudent to invest time, expertise and other resources in developing original tests that will be representative of the vocabulary used by

All speakers. The large variety of African languages may pose a realistic problem to such an endeavour, as there are no standardised dialects of African languages at present (Alexander, 1989; Msimang, 1992)); and indeed, Msimang (1992) has implied that the standardisation of vocabulary is not recommended, as some dialects are too distinct to prescribe to people what vocabulary to use and what to discard without triggering negative attitudes towards a change in their cultural values or identities. However, the present researcher is of the opinion that careful item selection could alleviate the problem of having to develop separate tests for each language or language dialect. Based on the findings of the present study, and with regard to developing a vocabulary test which may have wider application, the present researcher is of the opinion that a more appropriate solution would be the derivation of a vocabulary test from **a corpus of universal or etic concepts** for it to be **culture free**, and therefore have wider applicability in terms of potential for more accurate translation into all the indigenous languages of South Africa. The similarities within the subgroups of African cultures might be found to be such that this is feasible. The selection of items based on etic or universal concepts would facilitate easier and more accurate translation, and would thus enable researchers to develop the test for a wider variety of language groups, with less resource expenditure in the long term. Obviously, such an undertaking will depend on both anthropological and

linguistic research into the indigenous languages and cultures to identify what constitutes universals amongst these groups.

The main conclusions of the investigation may be summarised as follows:

1. the results of the study suggest that it may not be feasible to use test translation as a procedural option to develop an assessment tool for use in the South African context investigated, without radical modification in test structure in order to apply it
2. many of the PPVT-R items are inappropriate for 6 - 11 year old Zulu children for normative purposes in the study area. Only 30 English items tested were finally included in the normative phase, which resulted in a test that was applicable only for 6 and 7 year old Zulu children.

7.3 Evaluation and implications of the study

This exploratory study has suggested a number of sources of difficulty when using test translation, which may have important implications for both clinicians and researchers. Before presentation of these issues, aspects of the present study that are considered to be its limitations are discussed.

7.3.1 Limitations of the study

i. Test development by translation

1. **Generalizability to other tests.** The application of translation to a *vocabulary* test may limit the extent to which the results and their implications may be applied to the translation of other types of tests, the nature of which may be different.
2. **The sample size.** Translations were obtained from only 20 translators in each phase, a total of 40, in addition to input from the team of two lecturers - the sample size was limited because of the difficulty in finding subjects in the translation phase; the time consuming nature of the translation process contributed to this difficulty.
3. **Translator selection.** The English vocabulary skills of the translators should have been tested prior to obtaining translations to ensure their ability to understand all the English concepts which derive from a middle class white American context.
4. **Translator training.** The possibility exists that more extensive training of the translators in the process of translating and an interactive approach to obtaining the translations may have altered the nature of the responses.
5. **Translation of PPVT-R items.** Translations for all the items on both Forms should have been obtained to check

appropriacy of all the items of the PPVT-R on translation (but the fact that the test was intended to be developed for children between the ages of 6 and 11 years only did not necessitate the translation of all the items).

ii. Pupil performance

6. **Sample size.** The relatively small sample of pupils involved in the pilot tests precludes the generalizability of the findings to the population in general, and restricts the use of the final Zulu test for screening rather than diagnostic purposes.
7. **Study area.** The focus on the study area in the piloting stages limits the generalizability of the results and the application of the final Zulu test to other areas, but this was necessary because of the lack of a standard Zulu register, and the variability of words in different regions, an aspect which has not been fully investigated and about which little is known; moreover, in view of the fact that there may be differences between the vocabulary of urban and rural Zulu speakers, the results of the study may not be generalised.
8. **Test-retest reliability.** The norms obtained should have been tested for test-retest reliability; however, the time limitations and subject availability contributed to this limitation.

The apparent difficulty inherent in applying the procedure of translation to adapt a vocabulary test for nonmainstream speakers as identified in the present exploratory study suggests a number of potential implications, sources of query and scope for future investigations.

7.3.2 General implications of the study

The facts that less than 30% of the items had complete consensus on translation, and that only 31% of translations were applicable for normative purposes across all the age groups tested, confirm that the use of SE tests, despite modifications such as test translation as applied in the study, is inappropriate for use with nonmainstream speakers. Modifications such as item omission and substitution, and judgements of appropriacy of items, do not guarantee relevance of the content of SE tests for nonmainstream speakers. Even restandardisation does not make a test particularly appropriate for nonmainstream speakers: the potential for lower norms could easily be interpreted as lending support to the "Deficit Theory" of language in nonmainstream groups, depending on the theoretical perspective of individual SLTs. Therefore, the main clinical implication of the study is that ideally, clinicians should refrain from using such procedures to assess nonmainstream, AL1 speakers' vocabulary skills. This suggests a critical need for the development of vocabulary assessment tools in the indigenous languages.

Since the process of translation is influenced by the translator's ability to decode the SL structure, to extract meaning from it and to encode the meaning into an equivalent TL lexical item, the translator's knowledge in both the SL and TL, as well as their respective cultures will influence the accuracy of translation. Moreover, the perception of meaning is also influenced by personal factors, and therefore the perceived meaning of the translation task will influence the translation provided by the individual translator. The implications of the present findings in this regard are that:

1. a more searching *selection* procedure may be necessary when using translators in the discipline, particularly with regard to bilingual competence levels: the SLT profession will most probably continue to need the help of translators even in the development of original indigenous language tests until there are sufficient numbers of AL1 SLTs
2. a more extensive *training* programme for translators may contribute to more accurate translation of test items (for example, instructions such as were used in the present study regarding the maintenance of semantic equivalence and complexity levels may not have been sufficient)
3. it may be necessary to consider the acceptability of descriptive phrases, and linguistic borrowings

in the translation of tests

4. the selection and use of single translations for SE items may be inadequate for testing AL1 vocabulary, as revealed by the first pilot study results (single translations appear to have also been used in other test translation studies)
5. the present study has raised questions which have potential for further investigation; these are presented below.

7.3.3 Implications for future research

Potential modifications and developments of the present study and implications for future research are presented below. These relate to the selection of translators, the unit of translation, broad-based anthropological research concerning representative conceptual domains and norms, and vocabulary needs in a scholastic context.

1. A modification of the procedure followed in the present study could be to investigate the extent to which the translators are in fact bilingual. A potential reason for the lack of consensus on translations as well as the lack of translations for some items, may be that the translators did not understand or were unfamiliar with the SL lexical items and/or the concepts represented by them. Testing of the translators' English receptive

vocabulary skills, may therefore be a worthwhile endeavour in selection of translators prior to obtaining translations. In the present study it was assumed that the translators had a reasonable competence in the English language merely from conversing with them, and on the basis of their occupations, which may not have been sufficient to detect difficulties in encoding SE vocabulary items.

2. As the Zulu language is so rich in descriptive terms a further consideration suggested by the results of the present study is the potential for developing a Zulu descriptive phrase test instead of a vocabulary test, or a combination of the two. Further research may concern the investigation of the units of translation above the word level, with a focus on the role of descriptive phrases in representing lexical semantic concepts.
3. If the suggestion of developing tests based on universal lexical units is adopted, then there is a need to investigate what constitutes these universal concepts amongst the indigenous languages of South Africa. Such an investigation may necessitate a socio-linguistically based, participatory-ethnographic type of research procedure, using such means as focus interview and participant observation.

4. Such procedures may be used to investigate the type of language stimulation and parent-child interaction that occurs in the Zulu culture in order to gain insight into the types of words to which children are exposed; this would provide input into the words that may be included in a vocabulary test.
5. Since translation of SE lexical items alone has proved to be inappropriate, a combination of translated items (potentially useful ones may be extracted from the Zulu words found to be suitable for normative purposes in the present study) and original Zulu items which are "universal" among the indigenous cultures may be used in a Zulu vocabulary test.
6. A further focus of investigation may relate to exploring the manner in which the language of Zulu children is assessed at school, in terms of such aspects as essay writing, which may contribute to the understanding of how to develop a vocabulary test for Zulu children.
7. Another possible method for selecting vocabulary items may relate to the pre-testing of all the pictorially representable Zulu words from a Zulu dictionary (as was done in the development of the American English

PPVT-R (Dunn & Dunn, 1981) and the Afrikaans Reseptiewe Woordeskattoets (Buitendag, Uys & Louw, 1991).

8. Zulu children's graded reading books and language exercises may also be a source of potential vocabulary items for test purposes such as analysis of reading skills.
9. Test-retest reliability of the Zulu test derived from the present study is necessary in order to determine appropriacy of norms obtained.
10. An important need in the efforts to develop vocabulary tests for AL1 speakers appears to be multidisciplinary input, with educators, SLTs and linguists contributing their skills and knowledge in a joint effort.
11. Picture perception amongst rural, peri rural and urban AL1 children may also constitute further research, although previous researchers have suggested that there is a similar capacity for picture perception among all children.

7.4 Conclusion

The importance of research into vocabulary testing for AL1 speakers cannot be underestimated in view of the fact that

a good grounding in the first language is necessary for second language development (Macdonald & Burroughs, 1991; Schiff-Myers, 1992). Schiff-Myers' (1992) assertion that it can take up to 7 years, at least, for a nonEnglish speaking child to become fully proficient in English during the school years, precludes the use of SE tests on these children. Furthermore, given the importance of vocabulary knowledge to intellectual and scholastic achievements (Madge, 1981; Anderson & Freebody, 1985), and the current trends toward mothertongue education in the early years (Macdonald & Burroughs, 1991; Alexander, 1992), vocabulary assessment in the indigenous languages, as a component of language content, is critical, and therefore warrants further investigation. However, it is evident that a sociolinguistic, ethnographically based approach (Heath, 1983; Taylor, 1986) is needed to improve the content of vocabulary tests for people from diverse groups. Although the potential for accurate translation may be improved by the use of bilingual and bicultural translators, rather than continuing the translation of pre-existing SE tests, the present researcher is of the opinion that future research would contribute more effectively towards alleviating the current inequity of service provision in South Africa, by focusing on ethnographically based research to shed light on such issues as developmental processes and norms in communication and communication pathology, and assessment thereof, with specific reference to the indigenous linguistic groups. The development of

appropriate norms is a critical issue, because the lack of them precludes the use of such assessment procedures as language sample analysis and criterion referenced measures which can contribute significantly to the assessment process for nonmainstream speakers (Leonard & Weiss, 1983; Taylor & Payne, 1983).

In conclusion, the words of Vaughn-Cooke (1983, p. 33) are particularly relevant for the South African situation:

It is not an overstatement to say that a crisis exists in the area of assessment for non-mainstream speakers. Researcher, clinicians and test developers must intensify their efforts to overcome this crisis and meet the need of diagnosticians. Diagnosticians do not need more evaluations of the assessment problem nor do they need more "interim" solutions. They need valid, reliable assessment tools.

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APPENDIX 1

PEABODY PICTURE VOCABULARY TEST - REVISED

FORM L

PLATE NO.	WORD	KEY	RESPONSE
001	bus	(4)	
002	hand	(1)	
003	bed	(3)	
004	tractor	(2)	
005	closet	(1)	
006	snake	(4)	
007	boat	(2)	
008	tyre	(3)	
009	cow	(1)	
010	lamp	(4)	
011	drum	(3)	
012	knee	(4)	
013	helicopter	(2)	
014	elbow	(4)	
015	bandage	(4)	
016	feather	(1)	
017	empty	(3)	
018	fence	(4)	
019	accident	(2)	
020	net	(2)	
021	tearing	(4)	
022	sail	(1)	
023	measuring	(2)	
024	peeling	(3)	
025	cage	(1)	
026	tool	(4)	
027	square	(4)	

PLATE NO.	WORD	KEY	RESPONSE
028	stretching	(1)	
029	arrow	(2)	
030	tying	(2)	
031	nest	(1)	
032	envelope	(2)	
033	hook	(3)	
034	pasting	(4)	
035	patting	(1)	
036	penguin	(1)	
037	sewing	(2)	
038	delivering	(1)	
039	diving	(2)	
040	parachute	(3)	
041	furry	(4)	
042	vegetable	(4)	
043	shoulder	(3)	
044	dripping	(2)	
045	claw	(4)	
046	decorated	(3)	
047	frame	(1)	
048	forest	(3)	
049	faucet	(2)	
050	group	(3)	
051	stem	(3)	
052	vase	(3)	
053	pedal	(1)	
054	capsule	(2)	
055	surprised	(4)	
056	bark	(2)	
057	mechanic	(2)	

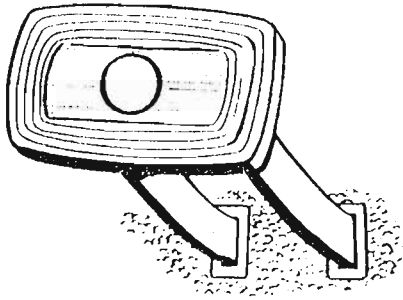
PLATE NO.	WORD	KEY	RESPONSE
058	tambourine	(1)	
059	disappointment	(4)	
060	awarding	(3)	
061	pitcher	(3)	
062	reel	(1)	
063	signal	(1)	
064	trunk	(2)	
065	human	(2)	
066	nostril	(1)	
067	disagreement	(1)	
068	exhausted	(2)	
069	vine	(4)	
070	ceremony	(4)	
071	casserole	(2)	
072	vehicle	(4)	
073	globe	(3)	
074	filing	(3)	
075	clamp	(2)	
076	reptile	(2)	
077	island	(1)	
078	spatula	(3)	
079	cooperation	(4)	
080	scalp	(4)	
081	twig	(2)	
082	weasel	(2)	
083	demolishing	(4)	
084	balcony	(1)	
085	locket	(1)	
086	amazed	(3)	
087	tubular	(1)	

PLATE NO.	WORD	KEY	RESPONSE
088	tusk	(1)	
089	bolt	(3)	
090	communication	(4)	
091	carpenter	(2)	
092	isolation	(1)	
093	inflated	(3)	
094	coast	(3)	
095	adjustable	(2)	
096	fragile	(3)	
097	assaulting	(1)	
098	appliance	(1)	
099	pyramid	(4)	
100	blazing	(1)	
101	hoisting	(1)	
102	arch	(4)	
103	lecturing	(4)	
104	dilapidated	(4)	
105	contemplating	(2)	
106	canister	(1)	
107	dissecting	(3)	
108	link	(4)	
109	solemn	(3)	
110	archery	(2)	
111	transparent	(3)	
112	husk	(1)	
113	utensil	(2)	
114	citrus	(3)	
115	pedestrian	(2)	
116	parallelogram	(1)	
117	slumbering	(3)	

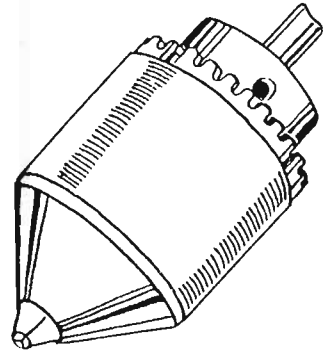
PLATE NO.	WORD	KEY	RESPONSE
118	peninsula	(4)	
119	upholstery	(2)	
120	barricade	(4)	
121	quartet	(4)	
122	tranquil	(3)	
123	abrasive	(1)	
124	fatigued	(3)	
125	spherical	(2)	
126	syringe	(2)	
127	feline	(2)	
128	arid	(4)	
129	exterior	(1)	
130	constellation	(4)	
131	cornea	(2)	
132	mercantile	(1)	
133	ascending	(3)	
134	filtration	(1)	
135	consuming	(4)	
136	cascade	(4)	
137	perpendicular	(3)	
138	replenishing	(1)	
139	emission	(3)	
140	talon	(3)	
141	wrath	(3)	
142	incandescent	(4)	
143	arrogant	(2)	
144	confiding	(3)	
145	rhombus	(3)	
146	nautical	(3)	
147	tangent	(1)	

PLATE NO.	WORD	KEY	RESPONSE
148	inclement	(4)	
149	trajectory	(1)	
150	fettered	(1)	
151	waif	(3)	
152	jubilant	(2)	
153	pilfering	(4)	
154	repose	(2)	
155	carrion	(3)	
156	indigent	(2)	
157	convex	(1)	
158	emaciated	(2)	
159	divergence	(4)	
160	dromedary	(2)	
161	embellishing	(2)	
162	entomologist	(3)	
163	constrain	(1)	
164	infirm	(1)	
165	anthropoid	(3)	
166	specter	(4)	
167	incertitude	(2)	
168	vitreous	(1)	
169	obelisk	(1)	
170	embossed	(4)	
171	ambulation	(2)	
172	calyx	(2)	
173	osculation	(3)	
174	cupola	(4)	
175	homunclus	(4)	

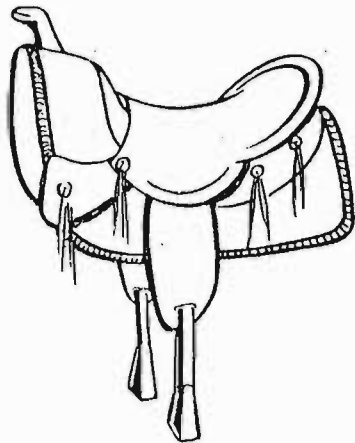
Sample picture plate: item number 53 - pedal



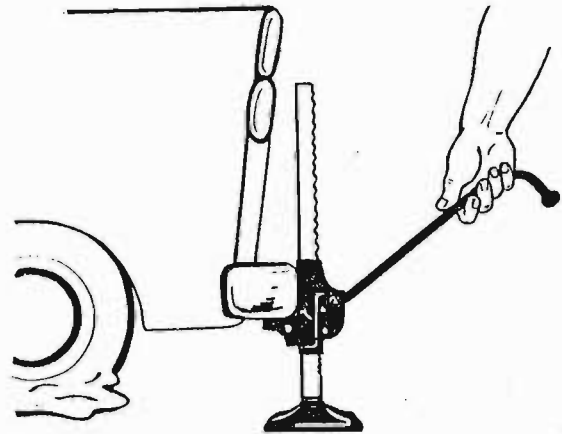
1



2



3



4

Sample picture plate: item number 103 - lecturing



1



2



3



4

APPENDIX 2

INSTRUCTIONS TO PUPILS

The following instructions were translated into Zulu as follows by the team of two lecturers in the study:

I want you to look carefully at some pictures with me. See all the picture on this page. I will say a word, then I want you to put your finger on the picture of the word I have said. Let's try one. Put your finger on....

Ngicela ubukisise kahle lezizithombe kanye nami. Buka zonke lezizithombe ezikuleliphepha. Ngobiza igama bese wena ukhomba isithombe engisibizile. Akesizame. Beka umunwe makho esithombeni

The following were translated for the benefit of the research assistants who were not familiar with Zulu:

My name is...

Igama lami ngu...

What is your name?

Ungubani igama lakho?

Let us look at some pictures

Ake sibuka izithombe

Listen carefully to the tape. Look at all the pictures and point to the right picture.

Lalelisisa kahle le tape, ubuye ubuka zonke izithombe bese uknomba okuyisona

Thank you

Ngiyabonga

You are doing well

Wenza kahle

Good boy

Mufana omuhle

Good girl

Ntombazana enhle

Look at each picture

Bheka isithombe ngasinye

APPENDIX 3

Table 1: Qualitative and Quantitative analysis of responses of translators from student and educator samples

Key: Fs = Frequency with which option was suggested by the student sample (n = 20), represented as a percentage.

Fe = Frequency with which option was suggested by the educator sample (n = 20), represented as a percentage.

(D) = descriptive term

(B) = adoptive, or borrowed word

(G) = general term

The results of the Two Sample Proportion Test are represented, where applicable, as follows in the second column: If the difference between the two samples of adult subjects was significant with at least 95 % confidence, then it is represented as S, with the corresponding number of the calculation from Appendix 16 written after the symbol /, for example, *ikamelwane S/2*. Nonsignificance of the difference between the two groups is reflected as NS, for example, *ikhabethe NS/3*, with the number 3 referring to the relevant calculation in Appendix 16.

English	Zulu options	Fs	Fe	Back Translation
bus	ibhasi	100	100	bus
hand	isandla	100	100	hand
bed	umbhede	100	100	bed
tractor	ugandaganda	100	100	tractor
closet	indluencane	5		toilet
	ikamelwane S/2	20	10	small room
	ikhabethe NS/3	45	40	cupboard
	no response	15	10	
	no Zulu word	15	40	
snake	inyoka	100	100	snake
boat	isikebhe	100	100	boat
tyre	ithaya NS/4	70	80	tyre

English	Zulu options	Fs	Fe	Back Translation
	isondo NS/5	30	20	tyre/wheel
cow	inkomo S/6	50	35	cattle
	inkomazi S/7	50	65	cow (gender specific)
lamp	ilambu S/8	65	80	lamp
	isibanu S/9	35	20	light (G)
drum	isigubhu S/10	90	100	musical drum
	idilamu	5		container e.g oil drum
	umgqomo	5		container
knee	idolo	100	100	knee
helicopter	ibhanoyi	15	15	aeroplane
	ihelikhoputha	35	35	helicopter (B)
	isiveveve	45		word used to warn that a helicopter is approaching to destroy dagga crops - used in areas where dagga is grown.
	indizamshini	5		a machine
	no Zulu word		50	
elbow	indololwane	100	100	elbow
bandage	ibhandeshi	100	100	bandage
feather	uphaphe	100	100	feather
empty	akukholutho NS/11	35	40	(D) empty
	ngenalutho S/12	25	10	(D) empty
	isiceke NS/13	40	50	something not full
fence	ucingo S/14	85	15	wire fence
	uthango S/14	15	85	fence
accident	ingozi	100	100	accident
net	inethi	100	100	net (B)

English	Zulu options	Fs	Fe	Back Translation
tearing	ukudabula S/7	50	65	tearing
	xebula	10		detach or strip off
	ukuklebula NS/15	40	35	tearing
sail	useyili NS/16	85	90	sail (noun)
	ukuntanta NS/17	15	10	float (verb)
measuring	ukukala NS/11	35	40	any use of a scale too weigh or measure
	ukulinganisa S/18	30	50	measuring
	isilinganiso	5	5	a scale
	ukumeja S/19	30	5	measuring (B)
peeling	ukucwecwa NS/16	85	90	peeling with a knife
	ukuhluba NS/17	15	10	peeling with fingers
cage	ihoko NS/20	20	15	fowl run
	isivalela NS/21	40	30	(D) to be closed in
	ikhegi S/22	40	25	(B) cage
	No Zulu word		30	
tool	ithuluzi S/23	70	85	tool
	into yokusebenza NS/24	10	5	(D) something to work with
	isipanela S/2	20	10	spanner
square	isikwele	100	100	square (B)
stretching	ukuzelula S/25	85	100	stretching
	yelula	10		stretch
	yethwithshila	5		? used when stretching one's legs

English	Zulu options	Fs	Fe	Back Translation
arrow	umcibisholo S/10	90	100	arrow
	umukhonto	10		spear
tying	ukubopha S/10	90	100	tying
	ukufasa	10		(B) to fasten
nest	isidleke	100	100	nest
envelope	imvilophu	100	100	(B) envelope
hook	ihuku	100	100	hook
pasting	ukunamethi- sela S/26	85	95	pasting
	ukunameka S/27	15	5	seal; plaster
patting	ukumpansa	10		the act of patting a woman's back
	ukumbambatha S/28	60	80	patting
	ukudlalisa NS/24	10	5	playing with
	ukuthinta NS/20	20	15	touching
penguin	iphengwini S/29	10	35	(B)penguin
	ihlengethwa	10		porpoise
	inyoni S/30	30	15	bird
	ijuba	10		dove
	no response	30	25	
	no Zulu word	10	25	
sewing	ukuthunga	100	100	sewing
delivering	ukuletha S/31	35	55	bringing
	fakela	15		to supply; put back in place
	ukunikeza S/32	20	35	passing on; handing over
	ukwethula	10		to offload
	ukudiliva S/2	20	10	(B) delivering

English	Zulu options	Fs	Fe	Back Translation
diving	ukutshuza S/33	40	65	diving
	ukubhukuda	10		swimming
	ukuntweza	5		gliding on surface of water
	ukudeiyiva NS/34	45	35	(B) diving
parachute	ipharashuta S/35	60	85	(B) parachute
	isambulela	5		umbrella
	ebhanoyini	10		aeroplane
	no Zulu word	5	15	
	no response	20		
furry	uboya	80	80	animal hair; body hair; wool
	isikhumbo esinoboya S/36	20	5	(D) hairy skin
	no Zulu word		15	
vegetable	izitshalo S/2	20	10	any plant sown in garden
	imifino S/33	40	65	vegetable
	isilimo S/22	40	25	vegetable
shoulder	ihlombe	100	100	shoulder
dripping	ukuconsa NS/37	60	70	dripping
	ukuvuza NS/20	20	15	leaking
	ukugxaza NS/20	20	15	leaking extensively
claw	isidladla NS/38	80	85	paw of animal
	izipho NS/20	20	15	nail
decorated	hlotshisiwe S/39	20	45	decorated

English	Zulu options	Fs	Fe	Back Translation
	ukuhlobisa S/40	80	55	decorated
frame	ifulemu S/41	40	55	(B) frame
	uhlaka	10		something makeshift
	no Zulu word	30	45	
	no response	20		
forest	ihlathi	100	100	forest
faucet	umpompi NS/42	50	45	tap
	no response	50	30	
	no Zulu word		25	
group	idlanzana S/31	35	55	a few
	isigejana NS/43	30	35	a small group
	iviyo	10		a group, in a military sense
	iqoqo	10		a group of things, not people
	isixuku NS/17	15	10	a crowd or a group
stem	isiqu NS/38	80	85	stem
	iganthsha NS/24	10	5	branch
	uhlanga	5		reed
	uthi NS/44	5	10	stick; stalk
vase	ivasi NS/45	90	95	vase
	isitcha sezimbali NS/24	10	5	a plant pot or flower container
pedal	iphedali NS/46	55	60	(B) pedal
	isishovo NS/47	15	20	bicycle pedal
	isitibili	5		stirrup

English	Zulu options	Fs	Fe	Back Translation
	no Zulu word	20	20	
	isinyathelo	5		something to stamp on
capsule	iphilisi	40	40	pill
	no Zulu word	30	60	
	no response	30		
surprised	ukumangala NS/48	60	65	be surprised
	ukwethusa NS/43	30	35	causing wonder
	ukuzuma	10		to take by surprise
bark	igxolo S/10	90	100	bark
	no response	10		
mechanic	umkhandi wezimoto	15		(D) someone who repairs cars
	ukukhanda	5		to repair
	umkhandi wemishini	5		(D) someone who repairs machines
	umakhanika S/49	75	100	(B) mechanic
tambourine	ithambolini S/30	30	15	(B) tambourine
	No response	40	5	
	No zulu word	30	80	
disappointment	ukuphoxeka NS/50	30	25	disappointment
	ukudumala NS/51	45	50	disappointment
	indumalo		10	disappointment
	ukujabha NS/52	25	15	disappointment
awarding	isipho	5		a gift (noun)
	umklomelo	10		a prize

English	Zulu options	Fs	Fe	Back Translation
	ukuklomelisa S/53	50	70	awarding
	ukugomela	20	20	
	klomela NS/17	15	10	giving prize; rewarding
pitcher	ujeke NS/43	30	35	jug
	isitsha samanzi	20		water container
	no Zulu word	10	35	
	no response	40	30	
reel	into ethandelekayo	5		(D) something to pull
	isipoli	10	10	cotton reel
	no response	50	30	
	no Zulu word	35	60	
signal	uphawu NS/20	20	15	sign
	isayini NS/54	35	30	sign
	inkombisa	5		(D) to show
	isiyaleli NS/24	10	5	(D) to show
	irobhothi S/18	30	50	(B) robot
trunk	isiqu S/7	50	65	tree trunk
	isigodo NS/21	40	30	tree trunk or log
	ithilanki NS/24	10	5	(B) kist or chest
human	umuntu	100	100	human
nostril	ikhala	100	100	nostril
disagreement	ukungezwani	10	10	disagreement
	ukuphikiswano NS/55	15	25	arguement
	impikiswano S/36	20	5	arguement
	ukungavume- lani S/56	35	50	disagreement

English	Zulu options	Fs	Fe	Back Translation
	ukuphika	10		to argue
	ukuxabana	10	10	quarrel
exhausted	ukukhathala NS/48	60	65	be exhausted
	ukhandlekile NS/15	40	35	be overstrained
vine	isivina S/57	50	20	(B) vine
	no response	20	30	
	no Zulu word	30	50	the Zulu Bible uses the Xhosa word for vineyard
ceremony	umcimbi		5	engagement
	umgidi NS/51	45	50	ceremony
	umkhosi NS/50	30	25	ceremony
	umshado	20	20	referring to marriage ceremony
casserole	indishi NS/50	30	25	dish
	ukudla	10		food
	no response	30	20	
	no Zulu word	30	55	
vehicle	imoto	100	100	car; vehicle
globe	imbulunga NS/58	10	15	(D) the shape - round
	iglobhu	20		light bulb
	no response	40	35	
	no Zulu word	30	50	
filing	bekangonanina S/30	30	15	(D) storing in order
	ukuqogo	10		collecting
	ukufayela NS/48	60	65	(B) filing
	no Zulu word		20	
clamp	ikilempu NS/34	45	35	(B) clamp

English	Zulu options	Fs	Fe	Back Translation
	okukubopha	10		(D) something to tie with
	no Zulu word	45	65	
reptile	ingwenya S/59	60	45	crocodile
	no Zulu word	40	55	
island	isiqhingqi	100	100	island
spatula	isipunu	10		spoon
	no Zulu word	60	75	
	no response	30	25	
cooperation	ukusizana NS/5	30	20	helping
	ukubambisana S/28	60	80	cooperation
	ukubambiswano	10		with reference to political alliance
scalp	ugebhezi	10	10	skull
	ukhakhayi	10		(D) top part of scalp
	isikhumba sekhanda NS/58	10	15	(D) skin of the head
	ikhanda S/2	20	10	head
	impandla NS/15	40	35	bald
	no Zulu word	10	30	
twig	igatshana S/60	70	90	small branch
	igatsha	10	10	branch
	ihlamvu	10		small branch which may be used for sweeping; a leaf leaf
	amaqabunga	10		leaves
weasel	uchakide	10	10	mongoose; weasel

English	Zulu options	Fs	Fe	Back Translation
	no Zulu word	20	30	
	no response	70	60	
demolishing	ukubhidliza S/41	40	55	demolising
	ukubulala	5		to kill; hurt
	ukuhlakaza S/2	20	10	dismantle
	ukudiliza	35	35	demolishing
balcony	ibhalikhoni S/61	70	50	(B) balcony
	no Zulu word	20	50	
	uvulame ophezulu	10		(D) place on top
locket	umgexo S/33	40	65	necklace
	no response	40		
	no Zulu word	20	35	
amazed	jabula	10		be happy
	ukushaqeka NS/13	40	50	be astonished
	ukumangalisa NS/13	40	50	be surprised
	ukwethuka	10		be frightened or startled
tubular	ishubhu NS/15	40	35	tube
	ingilazi eyithubhu	10		glass cylinder
	umbhobho NS/58	10	15	hole or tunnel
	umlithumbu NS/58	10	15	a pipe
	no Zulu word	30	35	
tusk	izinyo elide S/30	30	15	long tooth
	uphondo wendlovu S/36	20	5	(D) beast with horns

English	Zulu options	Fs	Fe	Back Translation
	izenyo lendlovu S/62	50	80	(D) tooth of an elephant
bolt	umshudo NS/20	20	15	bolt; latch
	ibhawoti Ns/38	80	85	bolt
communication	ukuxhumana	10		join together; be in touch
	ukukhuluma	30		talking
	ukuxoxa S/18	30	50	conversation
	ukukhulumi- sana S/18	30	50	communication
carpenter	umakhi	15		builder
	umbazi NS/16	85	90	carpenter
	osebenza ngamapulangwe		10	(D) one who works with wood
isolation	ohlahla uyedwa NS/24	10	5	(D) sitting alone
	ukuhlukanisa NS/43	30	35	to be separate
	khupela	5		that only
	ukuzihluka- nisa NS/51	45	50	to isolate oneself
	isizungu NS/24	10	5	feeling of being alone; loneliness
inflated	ukuqumbisa	10	10	to fill up; inflate
	ukukhukhu malisiwe	10		relates to dough rising
	ukufutha NS/43	30	35	to blow; inflate
	okukhukhumeza	30	30	inflated
	futiwe NS/58	10	15	inflated
	okufuthekile	10	10	inflated
coast	ugu	100	100	coast
adjustable	okungalingani -seka	25	25	fit properly; be measured

English	Zulu options	Fs	Fe	Back Translation
	linganisa		10	measure; fit; compare; try on
	ukuqandanisa	5		
	lungiseka	10	10	can be fixed
	okuhlehlisekayo	10	10	reversible
	eshintsekayo	10	10	changeable
	okungashintshika	10	10	change
	no response	30	25	
fragile	okufayo S/18	30	50	perishable; breakable
	ukuxhuniyiwe	10		something that is attached to another
	aphukayo	10		a fracture (leg)
	elichoboka	10		frail, delicate person
	ukwephukayo NS/13	40	50	breakable
assaulting	ukushaya NS/5	30	20	to hit
	ukusukela	10		to attack without reason
	ukuhlasela S/63	30	45	to attack
	ukwethusa	10		to frighten; intimidate
	ukulimaza S/32	20	35	to hurt
appliance	iayina NS/42	50	45	iron
	into osebenza ngayo	10		(D) something to work with
	into elekelelayo emsebenzi	10		(D) something electrical
	no Zulu word	30	55	

English	Zulu options	Fs	Fe	Back Translation
pyramid	ipyramida NS/21	40	30	(B) pyramid
	no Zulu word	10	55	
	no response	50	15	
blazing	amalangabi S/2	20	10	flames
	ukugqamuka S/55	20	5	burst into flames
	ukuvutha S/35	60	85	blazing
hoisting	ukukhuphula NS/21	40	30	raise or lift up
	ukuqukula NS/58	10	15	lifting up
	ukuphakamisa S/64	15	30	lifting; raise up
	ukufukula NS/65	35	25	lifting up
arch	igobela	10		hook; arch
	no response	60	30	
	no Zulu word	30	70	
lecturing	ukufundisa S/10	90	100	lecturing; teaching
	umfundisi	10		lecturer
dilapidated	ukuguga	10		to get old
	ukudilikile S/18	30	50	falling down
	ukuphukile	20	20	broken down
	ukuhlakaza	10		scattered; pulled apart
	ebhidlikile	30	30	collapsing (house)
contemplating	ukucabanga S/53	50	70	thinking
	ukuninga S/30	30	15	thinking
	ukuceba NS/24	10	5	planning; plotting

English	Zulu options	Fs	Fe	Back Translation
	ukubuka	10		looking; watching
canister	no response	60	40	
	isitsha	40	40	any container
	no Zulu word		20	
dissecting	ukuhlinza NS/66	50	55	dissecting
	ukucwiya NS/67	40	45	cut off small pieces, referring to traditional healers cutting body parts to use for medicines
	ukuklaya	10		to cut something hard, e.g. wood
link	ukuxhumana NS/17	15	10	joined together; link
	xhumaniso S/41	40	55	link
	ukugaxa	5		tie around
	isilinganiso	5		that which connects, grammatical links
	ikhongco	25	25	buckle; chain link
	ikitanga	10	10	chain
solemn	ukudumala	10		be dejected; disappointed
	odabukile S/7	50	65	sad
	okulisizi NS/50	30	25	miserable; sad; grief stricken
	okunyinyi- phele	10	10	become gloomy
archery	no Zulu word	20	20	
	umcibisholo NS/15	40	35	arrow

English	Zulu options	Fs	Fe	Back Translation
	umnsalo nemicibisholo NS/67	40	45	bow and arrow
transparent	no Zulu word	30	35	
	okubonisa ngale NS/68	20	25	(D) that which enables you to see on that side
	okukhanyayo	10		(D) that which gives light
	no response	40	40	
husk	isikhwebu NS/67	40	45	mealie cob
	uphepha	10		pepper; chillie; husk
	no response	35	35	
	ihleza NS/47	15	20	(D) mealie cob without grain
citrus	no Zulu word	30	60	
	isitrasi S/69	30	10	(B) citrus
	iwolintshi NS/21	40	30	
utensil	isitsha S/7	50	65	utensil; dish
	no response	50	35	
pedestrian	ohambangezin- yawo S/6	50	35	(D) to be on foot
	no Zulu word	40	65	
	no response	10		
FORM M ITEMS				
bee	inyosi		100	bee
ambulance	iambulensi		100	ambulance
track	umunqa		55	track
	no response		45	
liquid	uketshezi		75	liquid
	no response		25	
wrist	isihlakala		100	wrist

English	Zulu options	Fs	Fe	Back Translation
root	impande		55	root
	ingxabo		45	root
swamp	ixhapozi		70	swamp
	no response		30	
musician	umculi		65	musician
	no response		35	
harvesting	ukufula		55	harvesting
	okuvuna		45	harvesting
greeting	isibingelelo		90	greeting
	no response		10	
pod	umdumba		85	bean/pea pod
	no response		15	
funnel	isetho		80	funnel
	no response		20	
compass	ikhompasi		50	compass (B)
	no Zulu word		50	

APPENDIX 4

**SUMMARY RESULTS OF PEARSON CHI-SQUARE TESTS
FOR STUDENTS' RESPONSES**

KEY : S = Significant difference between frequencies with which options were suggested
NS = No significant difference between frequencies with which options suggested

ITEM	VALUE	D.F.	PROB	S / NS
adjustable	42.583	6	0.000	S
amazed	48.000	3	0.000	S
appliance	58.667	3	0.000	S
arch	57.000	2	0.000	S
archery	12.000	2	0.002	S
arrow	128.000	1	0.000	S
assaulting	25.000	4	0.000	S
awarding	78.125	4	0.000	S
balcony	93.000	2	0.000	S
bark	128.000	1	0.000	S
blazing	48.000	2	0.000	S
bolt	72.000	1	0.000	S
cage	12.000	2	0.002	S
cannister	8.000	1	0.005	S
capsule	3.000	2	0.223	NS
carpenter	98.000	1	0.000	S
casserole	16.000	3	0.001	S
ceremony	14.250	2	0.001	S
citrus	3.000	2	0.223	NS
clamp	39.000	2	0.000	S
claw	72.000	1	0.000	S
closet	56.250	4	0.000	S
communication	16.000	3	0.001	S
contemplating	58.667	3	0.000	S

ITEM	VALUE	D.F.	PROB	S / NS
cooperation	57.000	2	0.000	S
cow	0.000	1	1.000	NS
decorated	72.000	1	0.000	S
delivering	37.500	4	0.000	S
demolishing	40.000	3	0.000	S
dilapidated	25.000	4	0.000	S
disagreement	34.800	5	0.000	S
disappointment	9.750	2	0.008	S
dissecting	39.000	2	0.000	S
diving	90.667	3	0.000	S
dripping	48.000	2	0.000	S
drum	216.750	2	0.000	S
empty	23.250	2	0.000	S
exhausted	8.000	1	0.005	S
faucet	0.000	1	1.000	NS
fence	98.000	1	0.000	S
filing	57.000	2	0.000	S
fragile	50.000	4	0.000	S
frame	26.667	3	0.000	S
furry	72.000	1	0.000	S
globe	26.667	3	0.0000	S
group	34.375	4	0.000	S
helicopter	53.333	3	0.000	S
hoisting	34.667	3	0.000	S
husk	34.667	3	0.000	S
inflated	38.400	5	0.000	S
isolation	71.875	4	0.000	S
lamp	18.000	1	0.000	S
lecturing	128.000	1	0.000	S
link	67.200	5	0.000	S

ITEM	VALUE	D.F.	PROB	S / NS
locket	12.000	2	0.002	S
measuring	29.333	3	0.000	S
mechanic	181.333	3	0.000	S
parachute	134.375	4	0.000	S
pasting	98.000	1	0.000	S
patting	90.667	3	0.000	S
pedal	106.250	4	0.000	S
pedestrian	39.000	2	0.000	S
peeling	98.000	1	0.000	S
penguin	38.400	5	0.000	S
pitcher	26.087	2	0.000	S
pyramid	39.000	2	0.000	S
reel	72.000	3	0.000	S
reptile	8.000	1	0.005	S
sail	18.000	1	0.000	S
scalp	52.800	5	0.000	S
signal	40.625	4	0.000	S
solemn	58.667	3	0.000	S
spatula	57.000	2	0.000	S
stem	216.000	3	0.000	S
stretching	180.750	2	0.000	S
surprised	57.000	2	0.000	S
tambourine	3.000	2	0.223	NS
tearing	39.000	2	0.000	S
tool	93.000	2	0.000	S
transparent	26.667	3	0.000	S
trunk	39.000	2	0.000	S
tubular	50.000	4	0.000	S
tusk	21.000	2	0.000	S
twig	144.000	6	0.000	S

ITEM	VALUE	D.F.	PROB	S / NS
typing	128.000	1	0.000	S
tyre	32.000	1	0.000	S
utensil	0.000	1	1.000	NS
vase	128.000	1	0.000	S
vegetable	12.000	2	0.002	S
vine	21.000	2	0.000	S
weasel	93.000	2	0.000	S

APPENDIX 5

TEST FORM USED IN PILOT STUDY ONE

ENGLISH	ZULU	KEY	RESPONSE
bus	ibhasi	4	
hand	isandla	1	
bed	umbhede	3	
tractor	ugandaganda	2	
bee	inyosi	3	
snake	inyoka	4	
boat	isikebhe	2	
tyre	ithayi	3	
cow	inkomo	1	
lamp	ilambu	4	
drum	isigubu	3	
knee	idolo	4	
helicopter	isiveveve	2	
elbow	indololwane	4	
bandage	ibhandishi	4	
feather	uphaphe	1	
empty	isiceke	3	
fence	ucingo	4	
accident	ingozi	2	
net	inethi	2	
tearing	ukudabula	4	
sail	useyili	1	
measuring	ukumeja	2	
peeling	ukucwecwa	2	
ambulance	iambulanse	1	
tool	ithuluzi	4	
square	isikwele	4	

ENGLISH	ZULU	KEY	RESPONSE
stretching	ukuzelula	1	
arrow	umcibisholo	2	
tying	ukubopha	2	
nest	isidleke	1	
envelope	imvulophu	2	
hook	ihuku	3	
pasting	ukunamathisela	4	
patting	ukumbambatha	1	
track	umunqa	1	
sewing	ukuthunga	2	
delivering	ukuletha	1	
diving	ukudeiyiva	2	
parachute	ipharashuta	3	
furry	uboya	4	
vegetable	imifino	4	
shoulder	ihlombe	3	
dripping	ukuconsa	2	
claw	isidladla	4	
decorated	hlobisa	3	
frame	ifulemu	1	
forest	ihlathi	3	
liquid	uketshezi	4	
group	idlanzana	3	
stem	isiqu	3	
vase	ivazi	3	
pedal	iphedali	1	
wrist	isihlakala	2	
surprised	ukumangala	4	
bark	igxolo	2	
mechanic	umakhenika	2	

ENGLISH	ZULU	KEY	RESPONSE
root	impande	2	
disappointment	ukudumala	4	
awarding	umklomelo	3	
picture	ujeke	3	
swamp	ixhaphozi	1	
signal	isayini	1	
trunk	isiqu	2	
human	umuntu	2	
nostril	ikhala	1	
disagreement	ukungavumelani	1	
exhausted	khathala	2	
vine	isivina	4	
ceremony	umgidi	4	
casserole	indishi	2	
vehicle	imoto	2	
globe	igilobu	3	
filing	ukufayela	3	
funnel	isetho	3	
reptile	ingwenya	2	
island	isiqhingqi	1	
co-operation	ukubambisana	4	
scalp	inpandla	4	
twig	igatshana	2	
musician	umculi	2	
balcony	ibhalikhoni	1	
demolishing	ukubhidliza	4	
greeting	isibingelelo	3	
locket	umgexo	1	
amazed	ukwethuka	3	
tabular	umbhobho	1	

ENGLISH	ZULU	KEY	RESPONSE
tusk	izinyo lendlovu	1	
bolt	ibhawodi	3	
communication	ukukhuluma	4	
carpenter	umbazi	2	
isolation	ukuzihlukanisa	1	
inflated	ukufutha	3	
coast	ugu	3	
adjustable	okungalinganiseka	2	
fragile	ukwephukayo	3	
assaulting	ukulimiza	1	
harvesting	okuvuna	1	
appliance	layina	1	
blazing	ukuvutha	1	
hoisting	ukukhuphula	1	
arch	igobela	4	
lecturing	ukufundisa	4	
dilapidated	ukudilikile	4	
contemplating	ukucabanga	2	
dissecting	ukucwiya	3	
pod	umdumba	3	
link	ikitanga	4	
compass	ikhompasi	2	
solemn	okulisizi	3	
husk	isikhwebu	1	
citrus	iwolintshi	3	
utensil	indishi	2	
pedestrian	ohambangezinyawo	2	
archery	umnsalo nemicibisholo	2	

APPENDIX 6

RAW SCORES FOR PILOT STUDY 1

6 YEARS	7 YEARS	8 YEARS	9 YEARS	10 YEARS
n = 22 subjects	n = 24 subjects	n = 24 subjects	n = 20 subjects	n = 17 subjects
30	41	44	80	62
34	43	44	76	75
40	58	69	72	75
41	45	61	82	80
32	38	69	76	74
32	40	61	70	76
41	41	64	73	71
40	38	47	79	79
35	42	71	75	73
38	42	68	77	77
35	49	70	81	72
37	52	58	73	78
38	39	63	77	74
36	39	66	73	81
35	35	48	78	67
36	36	52	74	70
31	48	60	67	74
35	48	69	70	
38	40	58	90	
43	41	68	77	
36	42	59		
37	41	67		
	41	63		
	43	63		
MEAN = 38	M = 41	M = 63	M = 76	M = 74

APPENDIX 7

ITEM ANALYSIS FOR PILOT STUDY ONE : PERCENTAGE OF CORRECT RESPONSES PER ITEM ACROSS AGE GROUPS

ITEM	6 YEARS	7 YEARS	8 YEARS	9 YEARS	10 YEARS
bus	100	100	100	100	100
hand	100	100	100	100	100
bed	100	100	100	100	100
tractor	100	100	100	100	100
bee	72,7	100	100	100	100
snake	90,9	100	100	100	100
boat	81	100	100	100	100
tyre	100	95,8	100	100	100
cow	100	100	100	100	100
lamp	100	95,8	100	100	100
drum	100	100	100	100	100
knee	63,4	100	100	100	100
helicopter	27,3	20,8	20,8	35	29,4
elbow	81,8	100	100	100	100
bandage	72,7	67	83,3	100	94,1
feather	90	95,8	100	100	100
empty	50	87,5	83,3	90	100
fence	36	37,5	29,1	30	29,4
accident	45,4	95,8	87,5	90	94,1
net	81,8	87,5	100	100	100
tearing	90,9	87,5	100	100	100
sail	18	37,5	33	40	70,6
measuring	27,3	29,1	33	40	35,3
peeling	81,8	100	100	100	100
ambulance	50	83,3	75	85	88,2
tool	36,3	50	67	75	76,5
square	50	50	67	70	76,5

ITEM	6 YEARS	7 YEARS	8 YEARS	9 YEARS	10 YEARS
stretching	54,5	70,8	75	90	100
snow	100	100	100	100	100
tying	63,4	67	100	100	100
nest	81,8	91,6	100	100	100
envelope	54,5	91,6	87,5	100	100
hook	45,4	83,3	91,6	100	100
pasting	22,5	25	33	50	60
patting	63,4	70,8	67	80	100
track	45,4	54,1	83,3	100	91,6
sewing	90,9	95,8	100	95	100
delivering	63,4	100	100	100	100
diving	18	29,1	33	30	35,3
parachute	45,4	62,5	67	65	76,5
furry	90,9	100	100	95	100
vegetable	36,3	37,5	33	40	35,3
shoulder	36,3	50	67	85	88,2
dripping	9	33	45	80	76,5
claw	27,3	16,6	16,6	25	47
decorated	63,4	83,3	91,6	85	100
frame	27,3	41,6	54,1	55	64,7
forest	54,5	91,6	100	90	100
liquid	4,5	0	41,6	50	58,8
group	18	25	20,8	35	35,3
stem	27,3	12,5	33	50	58,8
vase	36,3	29,13	37,5	55	47
pedal	13,5	29,1	16,6	35	35,3
wrist	27,3	50	37,5	65	70,6
surprised	36,3	41,6	37,5	40	35,3
bark	36,3	58,3	91,6	85	88,2
mechanic	50	50	67	70	64,7
root	18	41,6	67	80	82,3

ITEM	6 YEARS	7 YEARS	8 YEARS	9 YEARS	10 YEARS
disappointment	36,3	33	62,5	54,1	52,9
awarding	36,3	45,8	70,8	75	82,3
pitcher	90,9	87,5	91,6	95	100
swamp	22,7	16,6	50	50	47
signal	27,3	20,8	25	30	29,4
trunk	18	29,1	58,3	80	58,8
human	81,8	95,8	87,5	100	94,1
nostril	72	83,3	95,8	95	94,1
disagreement	58,5	62,5	83,3	100	94,1
exhausted	81,8	67	83,3	100	94,1
vine	40,5	12,5	16,6	45	35,3
ceremony	31,8	41,6	20,8	45	41,2
casserole	100	100	100	100	100
vehicle	100	100	100	100	100
globe	13,5	33	0	25	29,4
filing	40,5	41,6	33	30	50
funnel	18	33	33	30	41,2
reptile	86,4	83,3	100	100	100
island	13,5	16,6	16,6	15	47
cooperation	68,1	83,3	83,3	100	100
scalp	72,7	100	100	100	100
twig	63,4	41,6	50	100	94,1
musician	31,8	33	50	50	47
demolishing	63,4	67	83,3	100	94,1
greeting	68,1	79,1	67	85	94,1
locket	4,5	0	16,6	35	41,2
amazed	4,5	25	16,6	15	29,4
tubular	81,8	90	100	100	94,1
tusk	31,8	62,5	100	95,9	94,1
bolt	31,8	70,8	67	70	90
communication	72,7	75	100	100	100

ITEM	6 YEARS	7 YEARS	8 YEARS	9 YEARS	10 YEARS
carpenter	27,3	33	50	29,1	33
isolation	0	0	18	31,5	27
inflated	72,7	58,5	33	85,5	
coast	13,6	33	33	45	35,3
adjustable	13,6	37,5	33	50	35,3
fragile	0	0	16,6	33	11,7
assaulting	63,4	75	67	90	88,2
compass	9	12,5	8,3	25	41,2
blazing	27,3	62,5	67	70	76,5
hoisting	67,5	75	95,8	90	94,1
arch	18	33	33	40	35,3
lecturing	13,5	41,6	41,6	70,8	64,7
dilapidated	40,9	62,5	67	70	64,7
contemplating	13,6	0	33	20	41,2
dissecting	0	29,1	25	20	47
pod	0	25	33	30	52,9
link	77,3	70,8	75	80	70,6
solemn	72,7	75	82,3	75	82,3
husk	63,4	79,1	83,3	85	94,1
citrus	81,8	83,3	87,5	100	100
utensil	54,5	58,3	67	64,7	52,9
pedestrian	63,4	70,8	70,8	75	82,3
appliance	90,9	95,8	100	100	100
balcony	13,6	16,6	16,6	20	23,5
archery	27,3	41,6	50	70	76,5
harvesting	27,3	33	50	45	64,7

APPENDIX 8

RESULTS OF PEARSON CHI SQUARE TESTS FOR EDUCATORS' RESPONSES

KEY: S = Significant difference between frequencies with which options were suggested
 NS = No significant difference between frequencies with which options were suggested

ITEM	VALUE	D.F.	PROB	S / NS
adjustable	26.250	6	0.000	S
amazed	0.000	1	1.000	NS
appliance	2.000	1	0.157	NS
arch	32.000	1	0.000	S
archery	14.250	2	0.001	S
assaulting	53.333	3	0.000	S
awarding	93.000	2	0.000	S
balcony	0.000	1	1.000	NS
blazing	180.750	2	0.000	S
bolt	98.000	1	0.000	S
cage	8.000	3	0.046	S
cannister	120.000	1	0.002	S
capsule	8.000	1	0.005	S
carpenter	128.000	1	0.000	S
casserole	32.250	2	0.000	S
ceremony	56.000	3	0.000	S
citrus	57.000	2	0.000	S
clamp	18.000	1	0.000	S
claw	98.000	1	0.000	S
closet	48.000	3	0.000	S
communication	0.000	1	1.000	NS
contemplating	116.667	2	0.000	S
cooperation	72.000	1	0.000	S
cow	18.000	1	0.000	S
decorated	2.000	1	0.157	NS
delivering	45.750	2	0.000	S

ITEM	VALUE	D.F.	PROB	S / NS
demolishing	45.750	2	0.000	S
dilapidated	21.000	2	0.000	S
disagreement	84.375	4	0.000	S
disappointment	74.667	3	0.000	S
dissecting	2.000	1	0.157	NS
diving	72.000	1	0.000	S
dripping	90.750	2	0.000	S
empty	39.000	2	0.000	S
exhausted	18.000	1	0.000	S
faucet	9.750	2	0.000	S
fence	98.000	1	0.000	S
filing	68.250	2	0.000	S
fragile	0.000	1	1.000	NS
frame	2.000	1	0.157	NS
furry	149.250	2	0.000	S
globe	27.750	2	0.0001	S
group	45.750	2	0.000	S
harvesting	2.000	1	0.157	NS
helicopter	27.750	2	0.000	S
hoisting	8.000	3	0.046	S
husk	14.250	2	0.001	S
inflated	34.375	4	0.000	S
isolation	83.865	3	0.000	S
lamp	72.000	1	0.000	S
link	72.000	3	0.000	S
locket	25.802	1	0.000	S
measuring	88.000	3	0.000	S
parachute	98.000	1	0.000	S
pasting	162.000	1	0.000	S
patting	149.250	2	0.000	S

ITEM	VALUE	D.F.	PROB	S / NS
pedal	48.000	2	0.000	S
pedestrian	18.000	1	0.000	S
peeling	128.000	1	0.000	S
penguin	10.667	3	0.014	S
pitcher	18.000	1	0.000	S
pyramid	36.750	2	0.000	S
root	2.00	1	0.157	NS
reel	57.000	2	0.000	S
reptile	2.000	1	0.157	NS
sail	128.000	1	0.000	S
scalp	34.375	4	0.000	S
signal	61.333	3	0.000	S
solemn	72.750	2	0.000	S
spatula	50.000	1	0.000	S
stem	180.750	2	0.000	S
surprised	81.750	2	0.000	S
tambourine	149.250	2	0.000	S
tearing	18.000	1	0.000	S
tool	180.750	2	0.000	S
transparent	5.250	2	0.072	NS
trunk	81.750	2	0.000	S
tubular	21.333	3	0.000	S
tusk	149.250	2	0.000	S
twig	128.000	1	0.000	S
tyre	72.000	1	0.000	S
utensil	18.000	1	0.000	S
vase	162.000	1	0.000	S
vegetable	72.750	2	0.000	S
vine	21.000	2	0.000	S
weasel	57.000	2	0.000	S

APPENDIX 9

TRANSLATIONS SELECTED FOR INCLUSION IN PILOT STUDY TWO

ENGLISH ITEMS WITH ONLY ONE APPLICABLE ZULU TRANSLATION:

bus	ibhasi	bee	inyosi	shoulder	ihlombe
tractor	ugandaganda	ambulance	iambulense	patting	ukumbambatha
bed	umbhede	tyre	ithaya	sewing	ukuthunga
hand	isandla	track	umunqa	diving	ukutshuza
snake	inyoka	swamp	ixhapozi	claw	isidladla
boat	isikebhe	musician	umculi	furry	uboya
wrist	isihlakala	greeting	isibingelelo	pasting	ukunamethisela
lamp	ilambu	funnel	isetho	dripping	ukuconsa
elbow	indololwane	compass	ikhompasi	parachute	ipharashuti
knee	idolo	drum	isighubu	frame	ifulemu
helicopter	ihelikhoputha	pod	umdumba	forest	ihlathi
liquid	uketshezi	pitcher	ujeke	stem	isiqu
square	isikwele	vehicle	imoto	vase	ivasi
feather	uphaphe	bark	igxolo	fence	uthango
peeling	ukucwecwa	accident	ingozi	human	umuntu
net	inethi	nostril	ikhala	sail	useyili
filing	ukufayela	hook	ihuku	island	isiqhingi
stretching	ukuzelula	cooperation	ukubambisana	bandage	ibhandishi
twig	igatshana	tool	ithuluzi	carpenter	imbazi
arrow	umcibisholo	isolation	ukuzihlukanisa	adjustable	okungalin-ganiseka
coast	ugu	nest	isidleke	envelope	imvilophu
blazing	ukuvutha	tying	ukubopha	lecturing	ukufundisa
mechanic	umakhanika	tusk	izenyo lendlovu	archery	umnsalo nemicibi-sholo

TWENTY FOUR ENGLISH ITEMS WITH TWO APPLICABLE ZULU OPTIONS:

cow	inkomo / inkomazi	amazed	ukumangalisa / ukushaqeka
empty	akukholutho / isiceke	bolt	umshudo / ibhawoti
tearing	ukudabula / ukuklebula	communication	ukuxoxa / ukukhulumi- sana
measuring	ukukala / ukulinganisa	inflated	ukufutha / okukhukhumeza
delivering	ukuletha / ukunikeza	fragile	okufayo / ukwephukayo
vegetable	imifino / isilimo	dilapidated	ukudilikile / ebhidlikile
decorated	hlotshisiwe / ukuhlobisa	contemplating	ukucabanga / ukuninga
pedal	iphedali / isishovo	dissecting	ukuhlinza / ukucwiya
awarding	ukuklomelisa / ukugomela	link	xhumaniso / ikhongco
trunk	isiqu / isigodo	solemn	odabukele / okulizi
exhausted	ukukhathala / ukhandlekile	demolishing	ukubhidliza / ukudiliza
root	impande / ingxabo	harvesting	okuvuna / ukufula

FIVE ENGLISH ITEMS WITH THREE APPLICABLE ZULU OPTIONS :

group	idlanzana / isigejana / isixuku
surprised	ukumangala / ukwethusa / ukuzuma
assaulting	ukuhlasela / ukulimaza / ukusukela
signal	irobhothi / isayini / uphawe
ceremony	umgidi / umkhosi / umshado

TWO ENGLISH ITEMS WITH FOUR APPLICABLE ZULU OPTIONS :

disappointment	ukuphoxeka /ukudumala /indumalo/ ukujabha
hoisting	ukukhuphula / ukuphakamisa / ukufukula / ukuqukula

ONE ENGLISH ITEM WITH FIVE APPLICABLE ZULU OPTIONS :

	ukungezwani
	ukuphikiswano
disagreement	impikiswano
	ukungavumelani
	ukuxabana

TWENTY SEVEN ENGLISH ITEMS OMITTED :

closet	scalp
penguin	weasel
faucet	balcony
capsule	locket
cage	tubular
appliance	transparent
pyramid	tambourine
reel	arch
vine	cannister
casserole	globe
clamp	utensil
reptile	citrus
spatula	pedestrian
husk	

APPENDIX 10

TEST FORM FOR PILOT STUDY TWO

Child's name:
 Sex of child:
 Date of birth:
 Normal hearing and normal sight:
 School:.....

Plate Number	English	Zulu	Response
Training	car	imoto	
Training	baby	ingane	
Training	shoe	isicathulo	
1.	bus	ibhasi	
2.	hand	isandla	
3.	bed	umbhede	
4.	tractor	ugandaganda	
5.	bee	inyosi	
6.	snake	inyoka	
7.	boat	isikebhe	
8.	tyre	ithaya	
9.	cow	inkomo	
10.	lamp	ilambu	
11.	drum	isigubhu	
12.	knee	idolo	
13	helicopter	ihelikophutha	
14.	cow	inkomazi	
15.	elbow	indololwane	
16.	bandage	ibhandeshi	
17.	feather	uphaphe	
18.	empty	isiceke	
19.	fence	uthango	
20.	accident	ingozi	
21.	net	inetha	
22.	tearing	ukudabula	

Plate Number	English	Zulu	Response
23.	sail	useyili	
24.	empty	akukholutho	
25.	measuring	ukulinganisa	
26.	peeling	ukucwecwa	
27.	ambulance	iambulense	
28.	tearing	ukuklebhula	
29.	tool	ithuluzi	
30.	square	isikwele	
31.	stretching	ukuzelula	
32.	arrow	umcibisholo	
33.	measuring	ukukala	
34.	tying	ukubopha	
35.	nest	isidleke	
36.	envelope	imvilophi	
37.	hook	ihuku	
38.	pasting	ukunamethisela	
39.	patting	ukumbambatha	
40.	track	umunqa	
41.	sewing	ukuthunga	
42.	delivering	ukuletha	
43.	diving	ukutshuza	
44.	trunk	isigodo	
45.	parachute	ipharashuti	
46.	furry	uboya	
47.	vegetable	imifino	
48.	shoulder	ihlombe	
49.	delivering	ukunikeza	
50.	dripping	ukuconsa	
51.	claw	isidladla	
52.	vegetable	isilimo	
53.	decorated	hlotshisiwe	

Plate Number	English	Zulu	Response
54.	frame	ifulemu	
55.	forest	ihlathi	
56.	liquid	uketshezi	
57.	group	idlanzana	
58.	stem	isiqu	
59.	vase	ivasi	
60.	decorated	ukuhlobisa	
61.	group	isixuku	
62.	pedal	isishovo	
63.	wrist	isihlakala	
64.	surprised	ukumangala	
65.	group	isigejana	
66.	pedal	iphedali	
67.	mechanic	umakhanika	
68.	root	impande	
69.	bark	igxolo	
70.	disappointment	ukudumala	
71.	awarding	ukuklomelisa	
72.	pitcher	ujeke	
73.	swamp	ixhaphozi	
74.	signal	uphawe	
75.	trunk	isiqu	
76.	human	umuntu	
77.	awarding	ukugomela	
78.	disappointment	ukujabha	
79.	nostril	ikhala	
80.	disagreement	ukungezwani	
81.	exhausted	ukukhathala	
82.	disappointment	ukuphoxeka	
83.	disagreement	ukuphikiswano	
84.	exhausted	ukhandlekile	

Plate Number	English	Zulu	Response
85.	ceremony	umgidi	
86.	disappointment	indumalo	
87.	disagreement	imphikiswano	
88.	ceremony	umkhosi	
89.	island	isiqhingi	
90.	disagreement	ukungavumelani	
91.	cooperation	ukubambisana	
92.	disagreement	ukuxabana	
93.	filing	ukufayela	
94.	funnel	isetho	
95.	ceremony	umshado	
96.	twig	igatshana	
97.	musician	umculi	
98.	demolishing	ukubhidliza	
99.	greeting	isibingelelo	
100.	bolt	ibhawoti	
101.	amazed	ukumangalisa	
102.	tusk	izenyo lendlovu	
103.	communication	ukukhulimisana	
104.	carpenter	umbazi	
105.	bolt	umshudo	
106.	demolishing	ukudiliza	
107.	isolation	ukuzihlukanisa	
108.	inflated	okukhukhumeza	
109.	coast	ugu	
110.	adjustable	okungalinganiseka	
111.	inflated	ukufutha	
112.	fragile	ukwephukayo	
113.	assaulting	ukuhlasela	
114.	blazing	ukuvutha	
115.	assaulting	ukusukela	

Plate Number	English	Zulu	Response
116.	fragile	okufayo	
117.	assaulting	ukulimaza	
118.	hoisting	ukufukula	
119.	lecturing	ukufundisa	
120.	dilapidated	ukudilekile	
121.	hoisting	ukuphakamisa	
122.	dilapidated	ebhidlikile	
123.	hoisting	ukukhuphula	
124.	contemplating	ukucabanga	
125.	hoisting	ukuqukula	
126.	dissecting	ukuhlinza	
127.	contemplating	ukuninga	
128.	pod	umdumbu	
129.	link	xhumaniso	
130.	solemn	odabukile	
131.	dissecting	ukucwiya	
132.	signal	isayini	
133.	surprised	ukuzuma	
134.	communication	ukuxoxa	
135.	link	ikhongco	
136.	amazed	ukushaqeka	
137.	vehicle	imoto	
138.	solemn	okulusizi	
139.	surprised	ukwethusa	
140.	signal	irobhothi	
141.	harvesting	okuvuna	
142.	root	ingxabo	
143.	harvesting	ukufula	
144.	compass	ikhompasi	
145.	archery	umnsalo nemicibisholo	

APPENDIX 11

RESULTS OF ITEM ANALYSIS FOR PILOT STUDY TWO

Key: 1. (N)% = Number in parenthesis, followed by percentage
 2. **BOLD PRINT** = Target picture

AGE	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	tyre/	ithaya		
6	(2) 1.9	(0)	(98) 92.5	(6) 5.7
7	(2) 1.4	(0)	(138) 95.8	(4) 2.8
8	(0)	(0)	(92) 100	(0)
9	(4) 3.3	(0)	(114) 93.4	(4) 3.3
10	(1) 1.25	(0)	(79) 98.75	(0)
			AV% =96.09	
item	cow/	inkomo		
6	(78) 73.6	(18) 17	(2) 1.9	(8) 7.5
7	(136) 94.4	(4) 2.8	(4) 2.8	(0)
8	(86) 93.5	(2) 2.2	(4) 4.3	(0)
9	(116) 95.1	(2) 1.6	(2) 1.6	(2) 1.6
10	(79) 98.75	(1) 1.25	(0)	(0)
	AV% =91.07			
item	cow/	inkomazi		
6	(58) 54.7	(14) 13.2	(10) 9.4	(24) 22.6
7	(126) 87.5	(6) 4.2	(8) 5.5	(4) 2.8
8	(76) 82.6	(2) 2.2	(6) 6.5	(8) 8.7
9	(112) 91.8	(2) 1.6	(6) 4.9	(2) 1.6
10	(79) 98.75	(0)	(1) 1.25	(0)
	AV% =83.07			
item	lamp/	ilambu		
6	(4) 3.8	(6) 5.7	(6) 5.7	(90) 84.9
7	(0)	(2) 1.4	(0)	(142) 98.6
8	(2) 2.2	(2) 2.2	(0)	(88) 95.7
9	(2) 1.6	(0)	(4) 3.3	(116) 95.1
10	(0)	(1) 1.25	(0)	(79) 98.75
				AV%=94.61

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	drum/	isigubhu		
6	(0)	(6) 5.7	(96) 90.6	(4) 3.8
7	(0)	(0)	(144) 100	(0)
8	(0)	(0)	(84) 91.3	(8) 8.7
9	(2) 1.6	(0)	(116) 95.1	(4) 3.3
10	(0)	(0)	(80) 100	(0)
			AV% =95.4	
item	knee/	idolo		
6	(2) 1.9	(2) 1.9	(16) 15.1	(86) 81.1
7	(0)	(6) 4.2	(14) 9.7	(124) 86.1
8	(2) 2.2	(2) 2.2	(6) 6.5	(82) 89.1
9	(2) 1.6	(2) 1.6	(6) 4.9	(112) 91.8
10	(0)	(1) 1.25	(0)	(79) 98.75
				AV. =89.37
item	elbow/	indololwane		
6	(8) 7.5	(2) 1.9	(12) 11.3	(84) 79.2
7	(0)	(6) 4.2	(4) 2.8	(134) 93.1
8	(4) 4.3	(0)	(2) 2.2	(86) 93.5
9	(0)	(0)	(0)	(122) 100
10	(0)	(1)	(1) 1.25	(78) 97.5
				AV. =92.6
item	bandage/	ibhandishi		
6	(4) 3.8	(2) 1.9	(2) 1.9	(98) 92.5
7	(2) 1.4	(2) 1.4	(4) 2.8	(136) 94.4
8	(6) 6.5	(0)	(0)	(86) 93.5
9	(2) 1.6	(2) 1.6	(0)	(118) 96.7
10	(0)	(0)	(0)	(80) 100
				AV = 95.4

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	feather	uphaphe		
6	(72) 67.9	(10) 9.4	(10) 9.4	(14) 13.2
7	(126) 87.5	(12) 8.3	(4) 2.8	(2) 1.4
8	(88) 95.7	(2) 2.2	(0)	(2) 2.2
9	(110) 90.2	(6) 4.9	(4) 3.3	(2) 1.6
10	(80) 100	(0)	(0)	(0)
	AV. =88.26			
item	empty	akukholutho		
6	(12) 11.3	(18) 17.0	(66) 62.3	(10) 9.4
7	(8) 5.6	(9) 6.3	(120) 83.3	(7) 4.9
8	(3) 3.3	(4) 4.4	(82) 89.1	(3) 3.3
9	(4) 3.3	(1) 0.8	(114) 93.4	(3) 2.2
10	(0)	(0)	(78) 97.5	(2) 2.5
			AV = 82.8	
item	empty	isiceke		
6	(16) 15.1	(28) 26.4	(44) 41.5	(18) 17.0
7	(10) 6.9	(14) 9.7	(86) 59.7	(34) 23.6
8	(20) 21.7	(4) 4.3	(52) 56.5	(16) 17.4
9	(10) 8.2	(2) 1.6	(102) 83.6	(8) 6.6
10	(2) 2.5		(70) 87.5	(8) 10.0
			AV = 65.76	
item	fence	uthango		
6	(10) 9.4	(10) 9.4	(42) 39.6	(44) 41.5
7	(2) 1.4	(10) 6.9	(44) 30.5	(88) 61.1
8	(2) 2.2	(12) 13.0	(36) 39.1	(42) 45.7
9	(6) 4.9	(12) 9.8	(22) 18.0	(82) 67.2
10	(2) 2.5	(4) 5	(16) 20.0	(58) 72.5
				AV = 57.6

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	accident	ingozi		
6	(14) 13.2	(44) 41.5	(20) 18.9	(28) 26.4
7	(6) 4.2	(92) 63.9	(12) 8.3	(34) 61.1
8	(6) 6.5	(72) 78.3	(2) 2.2	(12) 13.0
9	(0)	(116) 95.1	(2) 1.6	(4) 3.3
10	(0)	(76) 95.0	(2) 2.5	(2) 2.5
		AV. = 74.76		
item	net	inetha		
6	(18) 17.0	(66) 62.3	(10) 9.4	(12) 11.3
7	(12) 8.3	(120) 83.3	(0)	(12) 8.3
8	(4) 4.3	(82) 89.1	(0)	(6) 6.5
9	(4) 3.3	(114) 93.4	(2) 1.6	(2) 1.6
10	(2) 2.5	(76) 95	(0)	(2) 2.5
		AV = 84.62		
item	tearing	ukudabula		
6	(16) 15.1	(10) 9.4	(2) 1.9	(78) 73.6
7	(6) 4.2	(6) 4.2	(12) 8.3	(120) 83.3
8	(16) 17.4	(2) 2.2	(2) 2.2	(72) 78.3
9	(4) 3.3	(2) 1.6	(2) 1.6	(114) 93.4
10	(2) 2.5	(0)	(0)	(78) 97.25
				AV = 85.17
item	tearing	ukuklebhula		
6	(2) 1.9	(4) 3.8	(6) 5.7	(94) 88.7
7	(2) 1.4	(4) 2.8	(6) 4.2	132) 91.6
8	(2) 2.2	(2) 2.2	(0)	(88) 95.7
9	(4) 3.3	(2) 1.6	(4) 3.3	(112) 1.8
10	(0)	(0)	(0)	(80) 100
				AV = 93.56

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	sail	useyili		
6	(24) 22.6	(18) 17.0	(10) 9.4	(54) 50.9
7	(20) 13.9	(16) 11.1	(4) 2.8	(104) 72.2
8	(18) 19.6	(12) 13.0	(2) 2.2	(60) 65.2
9	(12) 9.8	(8) 6.6	(0)	(102) 83.6
10	(16) 20	(2) 2.5	(2) 2.5	(60) 75
	AV% 17.18			
item	measuring	uklulinga-nisa		
6	(12) 11.3	(42) 39.6	(22) 20.7	(30) 28.3
7	(16) 11.1	(80) 55.5	(24) 16.6	(24) 16.6
8	(6) 6.5	(60) 65.2	(12) 13.0	(14) 15.2
9	(16) 13.1	(94) 77.0	(6) 4.9	(6) 4.9
10	(2) 2.5	(66) 82.5	(10) 12.5	(2) 2.5
		AV% 63.96		
item	measuring	ukukala		
6	(8) 7.5	(46) 43.4	(22) 20.7	(30) 28.3
7	(10) 6.9	(96) 66.7	(13) 9.0	(25) 17.4
8	(4) 4.3	(72) 78.3	(4) 4.3	(12) 13.0
9	(10) 8.2	(106) 86.9	(4) 3.3	(2) 1.6
10	(0)	(74) 92.5	(4) 5.0	(2) 2.5
		AV% 73.56		
item	peeling	ukucwecwa		
6	(4) 3.8	(4) 3.8	(92) 86.8	(6) 5.7
7	(6) 4.2	(4) 2.8	(130) 90.3	(4) 2.8
8	(2) 2.2	(2) 2.2	(86) 93.5	(2) 2.2
9	(4) 4.3	(2) 1.6	(116) 95.1	(0)
10	(2) 2.5	(0)	(78) 97.5	(0)
			AV% 92.64	

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	tool	ithuluzi		
6	(10) 9.4	(10) 9.4	(14) 13.2	(72) 67.9
7	(4) 1.4	(20) 13.9	(12) 8.3	(108) 75.0
8	(4) 4.3	(10) 10.9	(4) 4.3	(74) 80.4
9	(4) 3.3	(2) 1.6	(4) 3.3	(112) 91.8
10	(0)	(12) 15	(6) 7.5	(62) 77.5
				AV% 78.52
item	square	isikwele		
6	(36) 34	(0)	(2) 1.9	(68) 64.1
7	(40) 27.8	(4) 2.8	(2) 1.4	(98) 68.1
8	(26) 28.3	(2) 2.2	(0)	(64) 69.6
9	(36) 29.5	(2) 1.6	(0)	(84) 68.9
10	(26) 32.5	(2) 2.5	(0)	(52) 65
				AV% 7.14
item	stretching	ukuzelula		
6	(52) 49.0	(18) 17.0	(6) 5.7	(30) 28.3
7	(104) 72.2	(10) 6.9	(10) 6.9	(20) 13.9
8	(64) 69.6	(12) 13.0	(4) 4.3	(12) 13.0
9	(106) 86.9	(2) 1.6	(0)	(14) 11.5
10	(72) 90.0	(0)	(2) 2.5	(6) 7.5
	AV% 73.54			
item	arrow	umcibisholo		
6	(10) 9.4	(84) 79.2	(4) 3.8	(8) 7.5
7	(8) 5.5	(130) 90.3	(4) 2.8	(2) 1.4
8	(2) 2.2	(86) 93.5	(4) 4.3	(0)
9	(2) 1.6	(120) 98.4	(0)	(0)
10	(0)	(80) 100	(0)	(0)
		AV% 92.28		

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	tying	ukubopha		
6	(20) 18.9	(54) 50.9	(18) 17.0	(14) 13.2
7	(10) 6.9	(96) 66.7	(16) 11.0	(22) 15.3
8	(6) 6.5	(72) 78.3	(8) 8.7	(6) 6.5
9	(6) 3.3	(106) 86.9	(4) 3.3	(6) 4.9
10	(0)	(80) 100	(0)	(0)
		AV% 76.56		
item	nest	isidleke		
6	(88) 83.0	(4) 3.8	(10) 9.4	(4) 3.8
7	(126) 87.5	(6) 4.2	(6) 4.2	(6) 4.2
8	(90) 97.8	(2) 2.2	(0)	(0)
9	(120) 98.4	(2) 1.6	(0)	(0)
10	(77) 96.25	(0)	(2) 2.5	(1) 1.25
	AV% 92.59			
item	envelope	imvilophi		
6	(6) 5.7	(76) 71.7	(4) 3.8	(20) 18.9
7	(16) 11.1	(116) 80.5	(2) 1.4	(10) 6.9
8	(2) 2.2	(90) 97.8	(0)	(0)
9	(2) 1.6	(120) 98.4	(0)	(0)
10	(0)	(80) 100	(0)	(0)
		AV% 89.68		
item	hook	ihuku		
6	(20) 18.9	(8) 7.5	(68) 64.1	(10) 9.4
7	(4) 2.8	(12) 8.3	(116) 80.5	(12) 8.3
8	(0)	(0)	(82) 89.1	(10) 10.9
9	(2) 1.6	(0)	(110) 90.2	(10) 8.2
10	(2) 2.5	(4) 5.0	(72) 9.0	(2) 2.5
			AV% 82.78	

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	pasting	ukunamath- isela		
6	(4) 3.8	(8) 7.5	(48) 45.3	(46) 43.4
7	(2) 1.4	(12) 8.3	(56) 38.9	(74) 51.4
8	(4) 4.3	(12) 13.0	(36) 39.1	(40) 43.5
9	(2) 1.6	(6) 4.9	(24) 19.7	(90) 73.8
10	(4) 5	(2) 2.5	(14) 17.5	(60) 75
				AV% 57.42
item	patting	ukumbam- batha		
6	(60) 56.6	(10) 9.4	(26) 24.5	(10) 9.4
7	(107) 74.3	(16) 11.1	(13) 9	(8) 5.5
8	(60) 65.2	(10) 10.9	(14) 15.2	(8) 8.7
9	(72) 59	(2) 1.6	(34) 27.9	(14) 11.5
10	(60) 75	(0)	(14) 17.5	(6) 7.5
	AV% 66.02			
item	sewing	ukuthunga		
6	(0)	(66) 62.3	(30) 28.3	(10) 9.4
7	(0)	(106) 73.6	(34) 23.6	(4) 2.8
8	(2) 2.2	(76) 82.6	(14) 15.2	(0)
9	(0)	(100) 82	(21) 17.2	(1) 0.8
10	(0)	(70) 87.5	(10) 12.5	
		AV% 77.6		
item	delivering	ukuletha		
6	(64) 60.4	(8) 7.5	(14) 13.2	(20) 18.9
7	(112) 77.8	(2) 1.4	(12) 8.3	(18) 12.5
8	(74) 80.4	(6) 6.5	(6) 6.5	(6) 6.5
9	(102) 83.6	(8) 6.6	(6) 4.9	(6) 4.9
10	(74) 92.5	(0)	(4) 5	(2) 2.5
	AV% 78.94			

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	diving	ukutshuza		
6	(22) 20.8	(26) 24.5	(38) 35.8	(20) 18.9
7	(24) 16.6	(58) 40.3	(30) 20.8	(32) 20.2
8	(18) 19.6	(54) 58.7	(14) 15.2	(6) 6.5
9	(12) 9.8	(98) 80	(6) 4.9	(6) 4.9
10	(14) 17.5	(54) 67.5	(2) 2.5	(10) 12.5
		AV% 54.2		
item	trunk	isigodo		
6	(2) 1.9	(92) 86.8	(0)	(12) 11.3
7	(6) 4.2	(130) 90.3	(6) 4.2	(2) 1.4
8	(2) 2.2	(82) 89.1	(4) 4.3	(4) 4.3
9	(0)	(116) 95.1	(0)	(6) 4.9
10	(0)	(78) 97.5	(0)	(2) 2.5
		AV% 67.02		
item	parachute	iparashuti		
6	(14) 13.2	(4) 3.8	(64) 60.4	(24) 22.6
7	(28) 19.4	(8) 5.5	(90) 62.5	(18) 12.5
8	(8) 8.7	(0)	(66) 71.7	(18) 19.6
9	(16) 13.1	(6) 4.9	(86) 70.5	(14) 11.5
10	(6) 7.5	(6) 7.5	(56) 70	(12) 15
			AV% 67.02	
item	vegetable	imifino		
6	(8) 7.5	(44) 41.5	(12) 11.3	(42) 39.6
7	(6) 4.2	(94) 65.3	(2) 1.4	(42) 29.2
8	(6) 6.5	(58) 63	(2) 2.2	(26) 28.3
9	(0)	(68) 55.7	(0)	(54) 44.3
10	(0)	(56) 70	(2) 2.5	(22) 27.5
				AV% 33.78

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	shoulder	ihlombe		
6	(16) 15.0	(4) 3.8	(58) 54.7	(28) 26.4
7	(14) 9.7	(2) 1.4	(86) 59.7	(42) 29.2
8	(6) 6.5	(2) 2.2	(72) 78.3	(12) 13.0
9	(0)	(0)	(112) 91.8	(10) 8.2
10	(0)	(0)	(80) 100	(0)
			AV% 76.9	
item	delivering	ukunikeza		
6	(88) 83.0	(0)	(6) 5.7	(12) 11.3
7	(130) 90.3	(0)	(8) 5.5	(6) 4.2
8	(92) 100	(0)	(0)	(0)
9	(112) 91.8	(4) 3.3	(2) 1.6	(4) 3.3
10	(80) 100	(0)	(0)	(0)
	AV% 93.02			
item	dripping	ukuconsa		
6	(20) 18.9	(32) 30.2	(10) 9.4	(44) 41.5
7	(22) 15.3	(78) 54.2	(8) 5.5	(36) 25
8	(10) 10.9	(66) 71.7	(4) 4.3	(12) 13
9	(8) 6.6	(110) 90.2	(0)	(4) 3.3
10	(10) 4.5	(74) 92.5	(2) 2.5	(0)
		AV % 67.76		
item	claw	isidladla		
6	(48) 45.3	(2) 1.9	(14) 13.2	(42) 39.6
7	(90) 62.5	(8) 5.5	(22) 15.3	(24) 16.6
8	(66) 71.7	(4) 4.3	(18) 19.6	(4) 4.3
9	(72) 59	(18) 14.8	(28) 23	(4) 3.3
10	(48) 60	(18) 22.2	(4) 5	(10) 12.5
				AV% 15.26

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	vegetable	isilimo		
6	(12) 11.3	(20) 18.9	(24) 22.6	(50) 47.2
7	(22) 15.3	(28) 19.4	(24) 16.6	(70) 48.6
8	(14) 15.2	(24) 26.1	(12) 13.0	(42) 47.8
9	(24) 19.7	(28) 23	(10) 8.2	(60) 49.2
10	(10) 12.5	(14) 17.5	(4) 5.0	(52) 65.0
				AV% 51.5
item	decorated	hlotshisiwe		
6	(10) 9.4	(0)	(94) 88.7	(2) 1.9
7	(10) 6.9	(6) 4.2	(124) 86.1	(4) 2.8
8	(2) 2.2	(6) 6.5	(84) 94.3	(0)
9	(4) 3.3	(6) 4.9	(110) 90.2	(2) 1.6
10	(2) 2.5	(2) 2.5	(76) 95	(0)
			AV% 90.26	
item	frame	ifulemu		
6	(54) 50.9	(12) 11.3	(28) 26.4	(12) 11.3
7	(100) 69.4	(10) 6.9	(26) 18.1	(8) 5.5
8	(58) 63	(8) 8.7	(22) 23.9	(4) 4.3
9	(78) 63.9	(28) 23	(14) 11.2	(2) 1.6
10	(64) 80	(12) 15	(4) 5	(0)
	AV% 65.44			
item	forest	ihlathi		
6	(0)	(6) 5.7	(100) 94.3	(4) 2.8
7	(2) 1.4	(4) 2.8	(134) 93	(0)
8	(0)	(0)	(92) 100	(0)
9	(2) 1.6	(0)	(120) 98.4	(0)
10	(0)	(0)	(80) 100	(0)
			AV% 97.14	

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	group	idlanzana		
6	(26) 24.5	(10) 9.4	(58) 54.7	(12) 11.3
7	(32) 22.2	(24) 16.6	(74) 51.4	(14) 9.7
8	(28) 30.4	(20) 21.7	(30) 32.6	(14) 15.2
9	(60) 49.2	(16) 13.1	(24) 19.7	(22) 18.0
10	(18) 22.5	(20) 25	(34) 42.5	(8) 10
			AV% 40.18	
item	stem	isiqu		
6	(24) 22.6	(26) 24.5	(34) 32.1	(22) 20.8
7	(30) 20.8	(40) 27.8	(50) 34.7	(24) 16.6
8	(22) 23.9	(36) 39.1	(28) 30.4	(6) 6.5
9	(20) 16.4	(48) 39.3	(48) 39.3	(6) 4.9
10	(0)	(32) 40	(44) 55	(4) 5
			AV% 38.3	
item	vase	ivasi		
6	(10) 9.4	(8) 7.5	(44) 41.5	(44) 41.5
7	(12) 8.3	(16) 11.1	(80) 55.5	(36) 25
8	(2) 2.2	(12) 13.0	(48) 52.2	(30) 32.6
9	(4) 3.3	(12) 9.8	(80) 65.6	(26) 21.3
10	(0)	(4) 5	(54) 67.5	(22) 27.5
			AV% 56.46	
item	decorated	ukuhlobisa		
6	(2) 1.9	(2) 1.9	(98) 92.5	(4) 3.8
7	(0)	(10) 6.9	(132) 91.6	(2) 1.4
8	(2) 2.2	(0)	(90) 97.8	(0)
9	(10) 8.2	(0)	(112) 91.8	(0)
10	(0)	(4) 5	(76) 95	(0)
			AV% 93.74	

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	group	isixuku		
6	(16) 15	(6) 5.7	(68) 64.2	(16) 15.0
7	(16) 11.1	(10) 6.9	(104) 72.2	(14) 9.7
8	(12) 13.0	(0)	(78) 84.8	(2) 2.2
9	(2) 1.6	(4) 3.3	(114) 93.4	(2) 1.6
10	(0)	(0)	(80) 100	(0)
			AV% 82.92	
item	pedal	isishovo		
6	(18) 17.0	(2) 1.9	(44) 41.5	(42) 39.6
7	(26) 18.1	(2) 1.4	(18) 12.5	(98) 68.1
8	(20) 21.7	(6) 6.5	(20) 21.7	(46) 50
9	(48) 39.3	(4) 3.3	(14) 11.5	(56) 45
10	(20) 25	(0)	(24) 30	(36) 45
	AV% 24.22			
item	surprised	ukumangala		
6	(8) 7.5	(28) 26.4	(28) 26.4	(42) 39.6
7	(28) 19.4	(34) 23.6	(32) 22.2	(50) 34.7
8	(20) 21.7	(8) 8.7	(22) 23.9	(42) 45.7
9	(36) 29.5	(16) 13.1	(20) 16.4	(56) 45.9
10	(30) 37.5	(0)	(10) 12.5	(40) 50
				AV% 43.12
item	group	isigejana		
6	(30) 28.3	(16) 15.0	(30) 28.3	(30) 28.3
7	(44) 30.5	(26) 18.1	(30) 20.8	(44) 30.4
8	(34) 37	(20) 21.7	(12) 13.0	(26) 28.3
9	(30) 24.6	(56) 45.9	(12) 9.8	(24) 19.7
10	(38) 47.5	(30) 37.5	(6) 7.5	(6) 7.5
			AV% 15.88	

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	pedal	iphedali		
6	(16) 15.0	(28) 26.4	(44) 41.5	(18) 17
7	(30) 20.8	(36) 25	(48) 33.3	(30) 20.8
8	(18) 19.6	(24) 26.1	(30) 32.6	(20) 21.7
9	(22) 18.0	(46) 37.7	(40) 32.8	(14) 11.5
10	(16) 20	(26) 32.5	(18) 22.5	(20) 25
	AV% 18.68			
item	mechanic	umakhanika		
6	(4) 3.8	(22) 20.8	(52) 49.0	(28) 26.4
7	(6) 4.2	(46) 31.9	(46) 31.9	(46) 31.9
8	(0)	(34) 45.7	(34) 37	(16) 17.4
9	(4) 3.3	(78) 63.9	(24) 19.7	(16) 13.1
10	(0)	(62) 77.5	(10) 12.5	(8) 10
		AV% 47.96		
item	bark	igxolo		
6	(2) 1.9	(64) 60.4	(16) 15.0	(22) 20.8
7	(8) 5.5	(92) 63.9	(24) 16.6	(20) 13.9
8	(6) 6.5	(60) 65.2	(14) 15.2	(12) 13.0
9	(0)	(108) 88.5	(4) 3.3	(10) 8.2
10	(2) 2.5	(68) 85	(10) 12.5	(0)
		AV% 72.6		
item	disappoint- ment	ukudumala		
6	(10) 9.4	(10) 9.4	(40) 37.7	(46) 43.4
7	(10) 6.9	(24) 16.6	(56) 38.9	(54) 37.5
8	(6) 6.5	(16) 17.4	(28) 30.4	(42) 45.7
9	(6) 4.9	(18) 14.8	(56) 45.9	(42) 34.4
10	(10) 12.5	(6) 7.5	(38) 47.5	(26) 32.5
				AV% 38.7

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	awarding	ukuklomelisa		
6	(12) 11.3	(8) 7.5	(56) 52.8	(30) 28.3
7	(6) 4.2	(4) 2.8	(120) 83.3	(14) 9.7
8	(8) 8.7	(2) 2.2	(72) 78.3	(10) 10.9
9	(4) 3.3	(12) 9.8	(96) 78.7	(10) 8.2
10	(2) 2.5	(2) 2.5	(66) 82.5	(10) 12.5
			AV% 75.12	
item	signal	uphawe		
6	(36) 34	(28) 26.4	(26) 24.5	(16) 15.0
7	(60) 41.7	(40) 27.8	(30) 20.8	(14) 9.7
8	(42) 45.7	(10) 10.9	(30) 32.6	(10) 10.9
9	(70) 57.4	(26) 21.3	(18) 14.8	(8) 6.6
10	(60) 75	(18) 22.5	(2) 2.50	(0)
	AV% 50.76			
item	trunk	isiqu		
6	(30) 28.3	(28) 26.4	(10) 9.4	(38) 35.8
7	(36) 25	(38) 26.4	(14) 9.7	(56) 38.9
8	(30) 32.6	(22) 23.9	(18) 19.6	(22) 28.9
9	(36) 29.5	(34) 27.9	(8) 6.6	(44) 36.0
10	(32) 40	(28) 35	(0)	(20) 25
		AV%=27.92		
item	human	umuntu		
6	(0)	(50) 47.2	(6) 5.7	(50) 47.2
7	(1) 0.7	(100) 69.4	(9) 6.25	(34) 23.6
8	(0)	(60) 65.2	(4) 4.3	(28) 30.4
9	(0)	(80) 65.6	(2) 1.6	(40) 32.8
10	(0)	(60) 75	(2) 2.5	(18) 22.5
		AV% 64.48		

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	awarding	ukugomela		
6	(26) 24.5	(28) 26.4	(38) 35.8	(14) 13.2
7	(14) 9.7	(36) 25	(62) 43.1	(32) 22.2
8	(18) 19.6	(16) 17.4	(36) 39.1	(22) 23.9
9	(34) 27.9	(20) 16.4	(44) 36.1	(24) 19.7
10	(22) 27.5	(6) 7.5	(28) 35	(24) 30
			AV% 37.82	
item	disappoin- tment	ukujabha		
6	(26) 24.5	(14) 13.2	(16) 15.0	(50) 47.2
7	(24) 16.6	(22) 15.3	(38) 26.4	(60) 41.7
8	(28) 30.4	(18) 19.6	(14) 15.2	(32) 34.8
9	(26) 21.3	(24) 19.7	(32) 26.2	(40) 32.8
10	(16) 20	(6) 7.5	(34) 42.5	(24) 30
				AV% 37.3
item	nostril	ikhala		
6	(78) 73.6	(0)	(22) 20.8	(6) 5.7
7	(120) 83.3	(4) 2.8	(18) 12.5	(2) 1.4
8	(84) 91.3	(0)	(8) 8.7	(0)
9	(118) 96.7	(0)	(4) 3.3	(0)
10	(79) 98.75	(0)	(1) 1.25	(0)
	AV% 88.73			
item	disagree- ment	ukungezwani		
6	(50) 47.2	(10) 9.4	(23) 21.7	(23) 21.7
7	(112) 77.8	(6) 4.2	(10) 6.9	(16) 11.1
8	(74) 80.4	(2) 2.2	(12) 13.0	(4) 4.3
9	(104) 85.2	(4) 3.3	(3) 1.6	(12) 9.8
10	(74) 92.5	(0)	(6) 7.5	(0)
	AV% 76.62			

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	exhausted	ukukhathala		
6	(12) 11.3	(32) 30.2	(12) 11.3	(50) 47.2
7	(32) 22.2	(68) 47.2	(8) 5.5	(36) 25
8	(20) 21.7	(44) 47.8	(2) 2.2	(26) 28.3
9	(10) 8.2	(82) 67.2	(0)	(30) 24.6
10	(4) 5	(54) 67.5	(2) 2.5	(20) 25
		AV% 51.98		
item	disappoin- tment	ukuphoxeka		
6	(18) 17	(14) 13.2	(30) 28.3	(44) 41.5
7	(30) 20.8	(22) 15.3	(38) 26.4	(54) 37.5
8	(12) 13.0	(8) 8.7	(20) 21.7	(52) 56.5
9	(18) 14.8	(12) 9.8	(50) 41	(42) 34.4
10	(14) 17.5	(6) 7.5	(30) 37.5	(30) 37.5
				AV% 41.48
item	disagree- ment	ukuphiki- swana		
6	(48) 45.3	(24) 22.6	(12) 11.3	(22) 20.8
7	(88) 61.1	(26) 18.1	(10) 6.9	(20) 13.9
8	(60) 65.2	(14) 15.2	(4) 4.3	(14) 15.2
9	(80) 65.6	(24) 19.7	(10) 8.2	(8) 6.6
10	(56) 70	(20) 25	(2) 2.5	(2) 2.5
	AV% 61.44			
item	exhausted	ukhandlekile		
6	(24) 22.6	(18) 17.0	(38) 35.8	(26) 24.5
7	(46) 31.9	(22) 15.3	(36) 25	(38) 26.4
8	(34) 37	(32) 34.8	(6) 6.5	(20) 21.7
9	(66) 54.1	(30) 24.6	(6) 4.9	20) 16.4
10	(52) 65	(16) 20	(6) 7.5	(6) 7.5
		AV% 22.34		

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	ceremony	umgidi		
6	(28) 26.4	(6) 5.7	(28) 26.4	(44) 41.5
7	(5) 34.7	(2) 1.4	(22) 15.3	(70) 48.6
8	(38) 41.3	(61) 6.5	(12) 13.0	(36) 39.1
9	(36) 29.5	(14) 11.5	(26) 21.3	(46) 37.7
10	(8) 10	(4) 5	(8) 10	(60) 75
				AV% 48.38
item	disappoin- tment	indumalo		
6	(28) 26.4	(8) 7.5	(42) 39.6	(28) 26.4
7	(24) 16.6	(26) 18.1	(44) 30.5	(46) 31.9
8	(10) 10.9	(10) 10.9	(16) 17.4	(56) 60.9
9	(10) 8.2	(18) 14.8	(38) 31	(56) 45.9
10	(20) 25	(12) 15	(26) 32.5	(22) 27.5
				AV% 38.52
item	disagree- ment	impikiswano		
6	(60) 56.6	(20) 18.9	(10) 9.4	(16) 15.0
7	(108) 75	(16) 11.1	(6) 4.2	(14) 9.7
8	(56) 60.9	(18) 19.6	(4) 4.3	(14) 15.2
9	(24) 19.7	(24) 19.7	(22) 18.0	(52) 42.6
10	(70) 87.5	(2)	(0)	(8)
	AV% 59.94			
item	ceremony	umkhosi		
6	(28) 26.4	(12) 11.3	(18) 17.0	(48) 45.3
7	(38) 26.4	(28) 19.4	(16) 11.1	(62) 43.1
8	(20) 21.7	(18) 19.6	(4) 4.3	(50) 54.3
9	(24) 19.7	(10) 8.2	(22) 18.0	(66) 54.3
10	(4) 5	(10) 12.5	(4) 5.0	(62) 77.5
				AV% 55.06

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	island	isiqhingi		
6	(6) 5.7	(8) 7.5	(38) 35.8	(54) 50.9
7	(12) 8.3	(24) 16.6	(38) 26.4	(70) 43.6
8	(10) 10.9	(6) 6.5	(16) 17.4	(50) 54.3
9	(30) 24.6	(28) 23	(10) 8.2	(54) 44.3
10	(20) 25	(12) 15	(22) 27.5	(26) 32.5
	AV% 14.9			
item	disagree- ment	ukungavume- lani		
6	(42) 39.6	(18) 17.0	(20) 18.9	(46) 43.4
7	(86) 59.7	(28) 19.4	(10) 6.9	(18) 12.5
8	(54) 58.7	(10) 10.9	(0)	(28) 30.4
9	(72) 59	(28) 23	(4) 3.3	(18) 14.8
10	(69) 86.25	(5) 6.25	(4) 5	(20) 2.5
	AV% 60.52			
item	co-operation	ukubambisana		
6	(10) 9.4	(0)	(10) 9.4	(36) 81.1
7	(6) 4.2	(5) 3.5	(5) 3.5	(128) 88.9
8	(4) 4.3	(0)	(8) 8.7	(80) 87
9	(2) 1.6	(0)	(4) 3.3	(116) 95.1
10	(0)	(2) 2.5	(2) 2.5	(76) 95
				AV% 89.42
item	disagree- ment	ukuxabana		
6	(82) 77.4	(4) 3.8	(10) 9.4	(10) 28.3
7	(128) 88.9	(6) 4.2	(5) 3.5	(5) 3.5
8	(82) 89.1	(6) 6.5	(2) 2.2	(2) 28.3
9	(110) 90.2	(4) 3.3	(4) 3.3	(4) 39.3
10	(76) 95	(2) 2.5	(2) 2.5	(0)
	AV% 88.12			

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	filing	ukufayela		
6	(12) 11.3	(34) 32.1	(30) 28.3	(30) 28.3
7	(12) 8.3	(56) 38.9	(32) 22.2	(44) 30.5
8	(18) 19.6	(22) 23.9	(26) 28.3	(26) 28.3
9	(6) 4.9	(50) 41	(18) 14.8	(48) 39.3
10	(14) 17.5	(46) 57.5	(4) 5.0	(16) 20
			AV% 19.72	
item	ceremony	umshudo		
6	(6) 5.7	(8) 7.5	(6) 5.7	(86) 81.1
7	(1) 0.7	(2) 1.4	(1) 0.7	(140) 97.2
8	(2) 2.2	(0)	(0)	(90) 97.8
9	(2) 1.6	(0)	(6) 4.9	(114) 93.4
10	(4) 5.0	(0)	(0)	(76) 95
				AV% 92.9
item	twig	igatshana		
6	8) 7.5	(52) 49.1	(30) 28.3	(16) 15.0
7	(6) 4.2	(92) 63.9	(26) 18.1	(20) 13.9
8	(2) 2.2	(80) 87	(6) 6.5	(4) 4.3
9	(8) 6.6	(98) 80.3	(8) 6.6	(8) 6.6
10	(0)	(72) 90	(6) 7.5	(20) 2.5
		AV% 74.06		
item	demolishing	ukubhidliza		
6	(6) 5.7	(0)	(22) 20.8	(78) 73.6
7	(4) 2.8	(4) 2.8	(28) 19.4	(108) 75
8	(0)	(2) 2.2	(14) 15.2	(76) 82.6
9	(8) 6.6	(4) 3.3	(10) 8.2	(100) 82
10	(2) 2.5	(4) 5	(2) 2.5	(72) 90

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	bolt	ibhawoti		
6	(6) 5.7	(20) 18.9	(76) 71.7	(4) 3.8
7	(6) 4.2	(12) 8.3	(114) 79.2	(12) 8.3
8	(0)	(12) 13.0	(74) 80.4	(6) 6.5
9	(4) 3.3	(16) 13.1	(100) 82	(2) 1.6
10	(0)	(22) 27.5	(58) 72.5	(0)
			AV% 77.16	
item	communica- tion	ukukhulumi- sana		
6	(8) 7.5	(10) 9.4	(8) 7.5	(80) 75.5
7	(6) 4.2	(8) 5.5	(6) 4.2	(124) 86.1
8	(2) 2.2	(6) 6.5	(6) 6.5	(78) 84.8
9	(2) 1.6	(2) 1.6	(2) 1.6	(116) 95.1
10	(2) 2.5	(0)	(12) 15	(66) 82.5
				AV% 84.8
item	carpenter	umbazi		
6	(20) 18.9	(12) 11.3	(34) 32.1	(40) 37.7
7	(16) 11.1	(18) 12.5	(46) 31.9	(64) 44.4
8	(18) 19.6	(18) 19.6	(20) 21.7	(36) 39.1
9	(24) 19.7	(26) 21.3	(12) 9.8	(60) 49.2
10	(26) 32.5	(16) 20	(10) 12.5	(28) 35
		AV% 16.94		
item	bolt	umshudo		
6	(16) 15.0	(40) 37.7	(30) 28.3	(20) 18.9
7	(20) 13.9	(70) 48.6	(26) 18.1	(28) 19.4
8	(16) 17.4	(48) 52.2	(8) 8.7	(20) 21.7
9	(46) 37.7	(42) 34.4	(22) 18.0	(12) 9.8
10	(26) 32.5	(18) 22.5	(26) 32.5	(10) 12.5
			AV% 77.16	

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	demolishing	ukudiliza		
6	(10) 9.4	(6) 5.7	(12) 11.3	(78) 73.6
7	(4) 2.8	(4) 2.8	(12) 8.3	(124) 86.1
8	(2) 2.2	(4) 4.3	(12) 13.0	(74) 80.4
9	(8) 6.6	(6) 4.9	(2) 1.6	(106) 86.9
10	(4) 5	(2) 2.5	(4) 5	(70) 87.5
				AV% 82.9
item	isolation	ukuzihluka-nisa		
6	(8) 7.5	(20) 18.9	(18) 17.0	(60) 56.6
7	(4) 2.8	(30) 20.8	(16) 11.1	(94) 65.3
8	(4) 4.3	(18) 19.6	(10) 10.9	(60) 65.2
9	(8) 6.6	(28) 23	(12) 9.8	(74) 60.6
10	(8) 10	(22) 27.5	(6) 7.5	(44) 55
	AV% 6.24			
item	inflated	okukhukhu-meza		
6	(2) 1.9	(14) 13.2	(70) 66.0	(20) 18.9
7	(4) 2.8	(6) 4.2	(94) 65.3	(40) 27.8
8	(4) 4.3	(8) 8.7	(56) 60.9	(24) 26.1
9	(2) 1.6	(24) 19.7	(80) 65.6	(16) 13.1
10	(0)	(10) 12.5	(60) 75	(10) 12.5
			AV% 66.56	
item	coast	ugu		
6	(12) 11.3	(22) 20.8	(24) 22.6	(48) 45.3
7	(10) 6.9	(40) 27.8	(36) 26.4	(58) 40.3
8	(2) 2.2	(20) 21.7	(32) 34.8	(38) 41.3
9	(6) 4.9	(58) 47.5	(22) 18.0	(36) 29.5
10	(4) 5	(32) 40	(22) 27.5	(22) 27.5
			AV% 25.86	

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	adjustable	okunglinga-niseka		
6	(4) 3.8	(24) 22.6	(42) 39.6	(36) 33.96
7	(16) 11.1	(40) 27.8	(4) 27.3	(43) 33.3
8	(12) 13.0	(30) 32.6	(20) 21.7	(30) 32.6
9	(16) 13.1	(48) 39.3	(32) 26.2	(26) 21.3
10	(6) 7.5	(36) 45	(30) 37.5	(8) 10
		AV% 33.46		
item	inflated	ukufutha		
6	(10) 9.4	(0)	(88) 83.0	(8) 7.5
7	(4) 2.8	(2) 1.4	(118) 81.9	(20) 13.9
8	(2) 2.2	(0)	(80) 87	(10) 10.9
9	(4) 3.3	(0)	(110) 90.2	(8) 6.6
10	(2) 2.5	(4) 5	(74) 92.5	(0)
			AV% 86.92	
item	fragile	ukwephukayo		
6	(32) 30.2	(22) 20.8	(32) 30.2	(20) 18.9
7	(42) 29.2	(32) 22.2	(30) 20.8	(40) 27.8
8	(25) 27.2	(26) 28.3	(25) 27.2	(16) 17.4
9	(20) 16.4	(50) 41	(18) 14.8	(34) 27.9
10	(18) 22.5	(20) 25	(28) 35	(14) 17.5
			AV% 25.6	
item	assaulting	ukuhlasela		
6	(40) 37.7	(10) 9.4	(30) 28.3	(26) 24,5
7	(86) 59.7	(16) 11.1	(32) 22.2	(10) 6.9
8	(60) 65.2	(16) 17.4	(16) 17.4	(0)
9	(96) 78.7	(10) 8.8	(14) 11.5	(2) 1.6
10	(52) 65	(16) 20	(12) 15	(0)
	AV% 61.26			

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	blazing	ukuvutha		
6	(10) 9.4	(84) 32.1	(48) 45.3	(14) 13.2
7	(18) 12.5	(44) 30.5	(72) 50.3	(10) 6.9
8	(10) 10.9	(20) 21.7	(60) 50.2	(2) 2.2
9	(30) 24.6	(24) 19.7	(66) 54.3	(2) 1.6
10	(8) 10	(2) 25	(44) 55	(8) 10
			AV% 51.36	
item	assaulting	ukusukela		
6	(42) 39.6	(26) 24.5	(24) 22.6	(14) 13.2
7	(72) 50	(44) 30.5	(12) 8.3	(16) 11.1
8	(40) 43.5	(36) 39.1	(2) 2.2	(14) 15.2
9	(44) 36.1	(62) 50.2	(8) 6.6	(8) 6.6
10	(24) 30	(48) 60	(6) 7.5	(2) 2.5
	AV% 39.84			
item	fragile	okufayo		
6	(32) 30.2	(6) 5.7	(62) 58.5	(6) 5.7
7	(32) 22.2	(4) 2.8	(100) 69.4	(8) 5.5
8	(8) 8.7	(10) 10.9	(70) 76.1	(4) 4.3
9	(16) 13.1	(6) 4.9	(88) 72.1	(12) 9.8
10	(8) 10	(2) 2.5	(68) 85	(2) 2.5
			AV% 72.22	
item	assaulting	ukulimaza		
6	(58) 54.7	(18) 17.0	(20) 18.9	(10) 9.4
7	(98) 68.1	(10) 6.9	(22) 15.3	(14) 9.7
8	(70) 76.1	(18) 19.6	(10) 10.9	(4) 4.3
9	(100) 82	(12) 9.8	(8) 6.6	(2) 1.6
10	(58) 72.5	(14) 17.5	(4) 5	(4) 5
	AV% 70.68			

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	hoisting	ukufukula		
6	(26) 24.5	(4) 3.9	(20) 18.9	(56) 52.3
7	(30) 20.8	(10) 6.9	(20) 13.9	(84) 58.3
8	(16) 17.4	(4) 4.3	(6) 6.5	(6) 71.7
9	(20) 16.4	(6) 4.9	(0)	(96) 78.7
10	(14) 17.5	(0)	(4) 5	(62) 77.5
	AV% 19.32			
item	lecturing	ukufundisa		
6	(36) 34	(6) 5.7	(32) 30.2	(32) 30.2
7	(52) 36.1	(12) 8.3	(44) 30.5	(36) 25
8	(42) 45.7	(10) 10.9	(14) 15.2	(26) 28.3
9	(60) 49.2	(8) 6.6	(26) 21.3	(28) 23
10	(26) 32.5	(6) 7.5	(12) 15	(36) 45
				AV% 30.3
item	dilapidated	ukudilikile		
6	(26) 24.5	(12) 11.3	(18) 17.0	(5) 47.2
7	(26) 18.1	(16) 11.1	(22) 15.3	(80) 55.5
8	(16) 17.4	(4) 4.3	(14) 15.2	(58) 63
9	(8) 6.6	(6) 4.9	(4) 3.3	(104) 85.2
10	(12) 15	(0)	(0)	(68) 85
				AV% 67.18
item	hoisting	ukuphakamisa		
6	(32) 30.2	(8) 7.5	(18) 17.0	(48) 45.3
7	(74) 51.4	(10) 6.9	(4) 2.8	(56) 38.9
8	(52) 56.5	(4) 4.3	(4) 4.3	(32) 34.8
9	(96) 78.7	(0)	(8) 6.6	(18) 14.8
10	(42) 52.5	(0)	(2) 2.5	(36) 45
	AV% 53.86			

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	dilapidated	ebhidlikile		
6	(18) 17.0	(10) 9.4	(24) 22.6	(54) 50.1
7	(17) 11.8	(7) 4.9	(18) 12.5	(102) 70.8
8	(16) 17.4	(0)	(10) 10.9	(60) 71.7
9	(8) 6.6	(120) 9.8	(8) 6.6	(94) 77
10	(8) 10	(4) 5	(8) 10	(60) 75
				AV% 68.92
item	hoisting	ukukhuphula		
6	(52) 49.1	(10) 9.4	(18) 17.0	(26) 24.5
7	(90) 62.5	(14) 9.7	(16) 4.2	(24) 16.6
8	(62) 67.4	(10) 10.9	(4) 4.3	(16) 17.4
9	(82) 67.2	(8) 6.6	(22) 18.0	(10) 8.2
10	(68) 85	(4) 5	(4) 5	(4) 5
	AV% 66.24			
item	contemplating	ukucabanga		
6	(10) 9.4	(60) 56.6	(18) 17.0	(18) 17.0
7	(10) 6.9	(108) 75	(10) 6.9	(16) 11.1
8	(6) 6.5	(80) 87	(4) 4.3	(2) 2.2
9	(12) 1.6	(108) 88.5	(6) 4.9	(6) 4.9
10	(0)	(80) 100	(0)	(0)
		AV% 81.42		
item	hoisting	ukuqukula		
6	(24) 22.6	(4) 3.8	(12) 11.3	(66) 62.3
7	(40) 27.8	(10) 6.9	(22) 15.3	(12) 50
8	(22) 23.9	(8) 8.7	(10) 10.9	(52) 56.5
9	(30) 24.6	(2) 1.6	(16) 13.1	(74) 60.7
10	(22) 27.5	(2) 2.5	(2) 2.5	(54) 67.5
	AV% 25.28			

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	dissecting	ukuhlinza		
6	(8) 7.5	(6) 5.7	(84) 79.2	(8) 7.5
7	(12) 8.3	(3) 5.5	(104) 72.2	(20) 13.9
8	(4) 4.3	(4) 4.3	(80) 87	(4) 4.3
9	(10) 8.2	(2) 1.6	(100) 82	(10) 8.2
10	(2) 2.5	(2) 2.5	(74) 92.5	(2) 2.5
			AV% 82.58	
item	contemplating	ukuninga		
6	(18) 17.0	(20) 18.9	(33) 35.8	(30) 28.3
7	(36) 25	(34) 23.6	(36) 25	(38) 26.4
8	(28) 30.4	(14) 15.2	(20) 21.7	(30) 32.6
9	(30) 24.6	(30) 24.6	(22) 18.0	(40) 32.8
10	(22) 27.5	(18) 22.5	(24) 30	(16) 20
		AV% 20.96		
item	link	xhumaniso		
6	(22) 20.8	(14) 13.2	(24) 22.6	(46) 43.4
7	(22) 15.3	(10) 6.9	(28) 19.4	(84) 58.3
8	(12) 13.0	(12) 13.0	(14) 15.2	(54) 58.7
9	(18) 14.8	(16) 13.1	(16) 13.1	(72) 59.0
10	(6) 7.5	(2) 2.5	(12) 15	(60) 75
				AV% 58.78
item	solemn	odabukile		
6	(24) 22.6	(17) 16.0	(49) 46.2	(17) 16.0
7	(34) 23.6	(18) 12.5	(72) 50	(20) 13.9
8	(20) 21.7	(20) 21.7	(44) 47.8	(8) 8.7
9	(40) 32.8	(22) 18.0	(50) 41.4	(10) 8.2
10	(20) 25	(14) 17.5	(36) 45	(20) 25
			AV% 46.3	

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	dissecting	ukucwiya		
6	(16) 15.0	(46) 43.4	(30) 28.3	(14) 13.2
7	(30) 20.8	(52) 36.1	(36) 25	(26) 18.1
8	(22) 23.9	(24) 26.1	(24) 26.1	(22) 23.9
9	(36) 29.5	(32) 26.2	(38) 31	(16) 13.1
10	(24) 30	(12) 15	(34) 42.5	(10) 12.5
			AV% 30.58	
item	signal	isayini		
6	(24) 22.6	(22) 20.8	(26) 24.5	(34) 32.1
7	(28) 19.4	(46) 31.9	(38) 26.4	(32) 22.2
8	(14) 15.2	(24) 26.1	(3) 8.7	(46) 50
9	(12) 9.8	(70) 57.4	(14) 11.5	(26) 21.3
10	(14) 17.5	(28) 35	(10) 12.5	(28) 35
	AV% 16.9			
item	solemn	okulusizi		
6	(28) 26.4	(16) 15.0	(28) 26.4	(34) 32.1
7	(46) 31.9	(38) 26.4	(30) 20.8	(30) 20.8
8	(18) 19.6	(36) 39.1	(28) 30.4	(10) 10.9
9	(48) 39.3	(18) 14.8	(38) 31	(18) 14.8
10	(26) 32.5	(12) 15	(36) 45	(6) 7.5
			AV% 30.72	
item	communica- tion	ukuxoxa		
6	(6) 5.7	(6) 5.7	(10) 9.4	(34) 79.2
7	(4) 2.8	(4) 2.8	(6) 4.2	(130) 90.3
8	(4) 4.3	(4) 4.3	(6) 6.5	(78) 84.8
9	(8) 6.6	(0)	(16) 13.1	(98) 80.3
10	(2) 2.5	(2) 2.5	(8) 10	(68) 85
				AV% 83,92

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	link	ikhongco		
6	(34) 32.1	(8) 7.5	(22) 20.8	(42) 39.6
7	(64) 44.4	(8) 5.5	(20) 13.9	(52) 36.1
8	(32) 34.8	(2) 2.2	(10) 10.9	(48) 52.2
9	(80) 65.6	(12) 9.8	(4) 4.3	(26) 21.3
	(40) 50	(2) 2.5	(2) 2.5	(36) 45
				AV% 38.84
item	liquid	uketshezi		
6	(18) 17.0	(18) 17.0	(50) 47.2	(20) 18.9
7	(16) 11.1	(22) 15.3	(66) 45.8	(40) 27.8
8	(12) 13.0	(24) 26.1	(40) 43.5	(16) 17.4
9	(12) 9.8	(22) 18.0	(62) 50.8	(26) 21.3
10	(8) 10	(16) 20	(42) 52.5	(14) 17.5
				AV% 20.58
item	wrist	isihlakala		
6	(30) 28.3	(14) 13.2	(30) 23.3	(32) 30.2
7	(10) 6.9	(50) 34.7	(40) 27.8	(44) 30.5
8	(22) 23.9	(33) 35.9	(14) 15.2	(23) 25
9	(10) 13.1	(66) 54.1	(32) 26.2	(8) 6.6
10	(4) 5	(42) 52.5	(26) 32.5	(8) 10
		AV% 38.08		
item	root	impande		
6	(34) 32.1	(12) 11.3	(30) 28.3	(30) 28.3
7	(26) 18.1	(48) 33.3	(350) 24.3	(35) 24.3
8	(10) 6.9	(50) 54.4	(18) 19.6	(14) 15.2
9	(16) 13.1	(70) 57.4	(18) 14.8	(18) 14.8
10	(4) 5	(62) 77.5	(12) 15	(2) 2.5
		AV% 46.76		

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	swamp	ixhapozi		
6	(14) 13.2	(16) 15.0	(30) 28.3	(46) 43.4
7	(24) 16.6	(12) 8.3	(20) 13.9	(88) 61.1
8	(8) 8.7	(6) 6.5	(12) 13.0	(66) 71.7
9	(40) 32.8	(8) 6.6	(12) 9.8	(62) 50.8
	(24) 30	(4) 5	(6) 7.5	(46) 57.5
	AV% 20.26			
item	root	ingxabo		
6	(22) 20.8	(13) 17.0	(22) 20.8	(44) 41.5
7	(46) 31.9	(22) 15.3	(38) 26.4	(38) 26.4
8	(24) 26.1	(8) 8.7	(28) 30.4	(22) 23.9
9	(56) 45.9	(14) 11.5	(24) 19.7	(28) 23
10	(14) 17.5	(10) 12.5	(16) 20	(40) 40
		AV% 13		
item	funnel	isetho		
6	(30) 28.3	(14) 13.2	(36) 33.96	(26) 24.5
7	(42) 29.2	(24) 16.6	(60) 41.7	(18) 12.5
8	(33) 35.9	(18) 19.6	(29) 31.5	(22) 23.9
9	(58) 47.5	(26) 21.3	(28) 23	(10) 8.2
10	(42) 52.5	(10) 12.5	(14) 17.5	(14) 17.5
			AV% 29.53	
item	surprised	ukuzuma		
6	(12) 11.3	(16) 15.0	(38) 35.8	(40) 37.7
7	(16) 11.1	(24) 16.6	(38) 26.4	(66) 45.9
8	(6) 6.5	(24) 26.1	(20) 21.7	(42) 45.7
9	(8) 6.6	(14) 11.5	(41) 33.6	(59) 48.3
10	(4) 5	(18) 22.5	(18) 22.5	(40) 50
				AV% 43.58

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	greeting	isibinge-lelo		
6	(12) 11.3	(12) 11.3	(66) 62.3	(16) 15.0
7	(2) 1.4	(18) 12.5	(110) 76.4	(14) 9.7
8	(2) 2.2	(10) 10.9	(76) 82.6	(4) 4.3
9	(0)	(10) 3.2	(110) 90.2	(2) 1.6
10	(0)	(12) 15	(68) 85	(0)
			AV% 79.9	
item	harvesting	okuvuna		
6	(38) 35.8	(16) 15.0	(28) 26.4	(24) 22.6
7	(76) 52.8	(20) 13.9	(14) 9.7	(34) 23.6
8	(38) 41.3	(10) 10.9	(10) 10.9	(36) 39.1
9	(2) 3.3	(28) 23	(50) 41	(42) 34.4
10	(66) 82.5	(0)	(2) 2.5	(12) 15
	AV% 43.14			
item	surprised	ukwethusa		
6	(12) 11.3	(20) 18.9	(32) 30.2	(42) 39.6
7	(8) 5.5	(30) 20.8	(50) 34.7	(54) 37.5
8	(6) 6.5	(16) 17.4	(44) 47.8	(26) 28.3
9	(2) 1.6	((28) 23	(50) 41	(42) 34.4
10	(0)	(22) 27.5	(30) 37.5	(28) 35
				AV% 34.96
item	harvesting	ukufula		
6	(16) 15.0	(26) 24.5	(43) 45.3	(16) 15.0
7	(46) 31.9	(44) 30.5	(30) 20.8	(24) 16.6
8	(14) 15.2	(38) 41.3	(30) 32.6	(10) 10.9
9	(3) 6.6	(40) 32.8	(48) 39.3	(260) 21.3
10	(8) 10	(18) 22.5	(28) 35	(26) 32.5
	AV% 15.74			

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	signal	irobhothi		
6.	(5) 47.2	(26) 24.5	(10) 9.4	(20) 18.9
7	(114) 79.2	(12) 8.3	(6) 4.2	(12) 8.3
8	(74) 80.4	(18) 19.6	(0)	(0)
9	(120) 98.4	(0)	(0)	(2) 1.6
10	(70) 87.5	(8) 10	(0)	(2) 2.5
	AV% 78.54			
item	helicopter	ihelikho- putha		
6	(8) 7.5	(32) 30.2	(48) 45.3	(18) 17.0
7	(22) 15.3	(56) 38.9	(36) 25	(30) 20.8
8	(8) 8.7	(44) 47.8	(20) 21.7	(20) 21.7
9	(4) 11.5	(66) 54.1	(15) 13.1	(26) 21.3
10	(10) 12.5	(42) 52.5	(10) 12.5	(18) 22.5
		AV% 45.26		
item	furry	uboya		
6	(6) 5.7	(6) 5.7	(8) 7.5	(86) 81.1
7	(5) 3.5	(5) 3.5	(6) 4.2	(128) 88.9
8	(4) 4.3	(4) 4.3	(4) 4.3	(80) 87
9	(2) 1.6	(2) 1.6	(2) 1.6	(116) 95.1
10	(1) 1.25	(1) 1.25	(2) 2.5	(76) 95
				AV% 89.42
item	amazed	ukumangalisa		
6	(32) 30.2	(22) 20.8	(20) 18.9	(32) 30.2
7	(42) 29.2	(32) 22.2	(40) 27.8	(30) 20.8
8	(25) 27.2	(26) 28/3	(16) 17.4	(25) 27.2
9	(20) 16.4	(50) 41	(34) 27.9	(18) 14.8
10	(18) 22.5	(20) 25	(14) 17.5	(28) 35
				AV% 25.6

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	amazed	ukushaqeka		
6	(40) 37.7	(16) 15.0	(20) 18.9	(30) 28.3
7	(70) 48.6	(20) 13.9	(28) 19.4	(26) 18.1
8	(48) 52.2	(16) 17.4	(20) 21.7	(8) 8.7
9	(42) 34.4	(46) 37.7	(12) 9/8	(22) 18.0
10	(18) 22.5	(26) 32.5	(10) 12.5	(26) 32.5
				AV% 21.12
item	tusk	izenyo lendlovu		
6	(42) 39.6	(34) 32.1	(20) 18.9	(10) 9.4
7	(96) 66.7	(34) 23.6	(10) 6.9	(4) 2.8
8	(72) 78.3	(10) 10.9	(8) 8.7	(2) 2.2
9	(106) 86.9	(8) 4.6	(8) 4.6	(0)
10	(74) 92.5	(3) 3.75	(3) 3.75	(0)
	AV% 73.56			
item	track	umunqa		
6	(42) 39.6	(12) 11.3	(20) 18.9	(32) 30.2
7	(54) 37.5	(8) 5.5	(30) 20.8	(50) 34.7
8	(26) 28.3	(6) 6.5	(16) 17.4	(44) 47.8
9	(42) 34.4	(2) 1.6	(28) 23	(50) 41
10	(28) 35	(0)	(22) 27.5	(30) 37.5
	AV% 34.96			
item	ambulance	iambulensi		
6	(42) 39.6	(34) 32.1	(10) 9.4	(20) 18.9
7	(96) 66.7	(34) 23.6	(4) 2.8	(10) 6.9
8	(72) 78.3	(10) 10.9	(2) 2.2	(8) 8.7
9	(106) 86.9	(8) 4.6	(0)	(8) 4.6
10	(74) 92.5	(3) 3.75	(0)	(3) 3.75
	AV% 73.56			

AGE GROUP	PICTURE 1	PICTURE 2	PICTURE 3	PICTURE 4
item	musician	umculi		
6	(34) 32.1	(42) 39.6	(8) 7.5	(22) 20.8
7	(64) 44.4	(52) 36.1	(8) 5.5	(20) 13.9
8	(32) 34.8	(48) 52.2	(2) 2.2	(10) 10/9
9	(80) 65.6	(26) 21.3	(12) 9.8	(4) 3.3
10	(40) 50	(36) 45	(2) 2.5	(2) 2.5
		AV% 38.84		
item	pod	umdumba		
6	(14) 13.2	(2) 1.9	(20) 18.9	(70) 66.3
7	(6) 4.2	(4) 2.8	(40) 27.8	(94) 65.3
8	(8) 8.7	(4) 4.3	(24) 26.1	(56) 60.9
9	(24) 19.7	(2) 1.6	(16) 13.1	(80) 65.6
10	(10) 12.5	(0)	(10) 12.5	(60) 75
				AV% 66.56
item	compass	ikhompasi		
6	(26) 24.5	(16) 15.0	(16) 15.0	(48) 45.3
7	(44) 30.5	(46) 31.9	(24) 16.6	(30) 20.8
8	(380) 41.3	(14) 15.2	(10) 10.9	(30) 32.6
9	(40) 32.8	(8) 6.6	(26) 21.3	(48) 39.3
10	(18) 22.5	(8) 10	(26) 32.5	(28) 35
		AV% 15.74		

bus AV = 100%
 bed AV = 100%
 hand AV = 100%
 snake AV = 100%
 tractor AV = 100%
 bee AV = 100%
 boat AV = 100%
 pitcher AV = 100%
 vehicle AV = 100%

APPENDIX 12

RESULTS OF CHI SQUARE TESTS FOR PUPILS

AMAZED

	INCORRECT	CORRECT
ukumangala	74	25
ukushaqeka	78	21

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Not significant	0,453	1	0,501

ASSAULTING

	INCORRECT	CORRECT
ukuhlasela	38	61
ukulimaza	29	70
ukusukela	60	39

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Significant	20,992	2	0,000

AWARDING

	INCORRECT	CORRECT
ukugomel	62	37
ukuklome	24	75

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Significant	29,684	1	0,000

BOLT

	INCORRECT	CORRECT
ibhawoti	22	77
umshudo	78	21

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Significant	63,360	1	0,000

CEREMONY

	INCORRECT	CORRECT
umgidi	51	48
umkhosi	44	55
umshado	7	92

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Significant	50,082	2	0,000

COMMUNICATION

	INCORRECT	CORRECT
ukukhulumisana	15	84
ukuxoxa	16	83

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Not significant	0,038	1	0,845

CONTEMPLATING

	INCORRECT	CORRECT
ukucabana	18	81
ukuninga	79	20

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Significant	75,202	1	0,000

COW

	INCORRECT	CORRECT
inkomazi	16	83
inkomo	8	91

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Not significant	3,034	1	0,082

DECORATED

	INCORRECT	CORRECT
hlotshisiwe	9	90
ukuhlobisa	6	93

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Not significant	0,649	1	0,420

DELIVERING

	INCORRECT	CORRECT
ukuletha	21	78
ukunikeza	6	93

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Significant	9,649	1	0,002

DEMOLISHING

	INCORRECT	CORRECT
ukubhidliza	19	80
ukudiliza	17	82

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Not significant	0,136	1	0,712

DILAPIDATED

	INCORRECT	CORRECT
ebhidlikike	31	68
ukudilikile	32	67

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Not significant	0,023	1	0,879

DISAGREEMENT

	INCORRECT	CORRECT
impikiswano	40	59
ukungavumelani	39	60
ukungezwani	23	76
ukupikisano	38	61
ukuxabana	11	88

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Significant	31,200	4	0,000

DISAPPOINTMENT

	INCORRECT	CORRECT
indumalo	61	38
ukudumala	61	38
ukujabha	62	37
ukuphoxeka	58	41

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Not significant	0,383	3	0,944

DISECCTING

	INCORRECT	CORRECT
ukucwiya	69	30
ukuhlinza	17	82

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Significant	55,585	1	0,000

EMPTY

	INCORRECT	CORRECT
akukholutho	17	82
isiceke	34	65

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Significant	7,633	1	0,006

EXHAUSTED

	INCORRECT	CORRECT
ukhandlekile	77	22
ukukhathala	48	51

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Significant	18,249	1	0,000

FRAGILE

	INCORRECT	CORRECT
okufayo	27	72
ukwephukayo	74	25

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Significant	44,644	1	0,000

GROUP

	INCORRECT	CORRECT
idlanzana	59	40
isigejana	84	15
isixuku	17	82

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Significant	93,192	2	0,000

HARVESTING

	INCORRECT	CORRECT
okuvuna	56	43
ukufula	85	15

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Significant	17,249	1	0,000

HOISTING

	INCORRECT	CORRECT
ukufukula	80	19
ukukhuphula	33	66
ukuphakamisa	46	53
ukuqukula	74	25

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Significant	62,926	3	0,000

INFLATED

	INCORRECT	CORRECT
okukhukhumeza	33	66
ukufutha	13	86

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Significant	11,327	1	0,001

LINK

	INCORRECT	CORRECT
ikhongco	61	38
xhumanisa	41	58

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Significant	8,088	1	0,004

MEASURING

	INCORRECT	CORRECT
ukukala	26	73
ukulinganisa	36	63

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Not significant	2,348	1	0,125

PEDAL

	INCORRECT	CORRECT
iphedali	81	18
isishovo	75	24

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Not significant	1,088	1	0,297

ROOT

	INCORRECT	CORRECT
impande	54	46
ingxabo	87	13

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Significant	16,364	1	0,000

SIGNAL

	INCORRECT	CORRECT
irobhothi	21	78
isayini	83	16
uphawu	49	50

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Significant	77,971	2	0,000

SOLEMN

	INCORRECT	CORRECT
odabukile	53	46
okulisizi	69	30

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Significant	5,467	1	0,019

SURPRISED

	INCORRECT	CORRECT
ukumangala	56	43
ukuzuma	56	43
ukwethusa	65	34

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Not significant	2,265	2	0,322

TEARING

	INCORRECT	CORRECT
ukudabula	14	85
ukuklebula	6	93

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Not significant	3,560	1	0,059

TRUNK

	INCORRECT	CORRECT
isigodo	8	91
isiqu	72	27

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Significant	85,912	1	0,000

VEGETABLE

	INCORRECT	CORRECT
imifino	66	33
isilimo	48	51

TEST STATISTIC	VALUE	DF	PROB
Pearson Chi-Square Significant	6,699	1	0,010

APPENDIX 13

AGE GROUPS TO WHICH ZULU WORDS ARE APPLICABLE FOR NORMATIVE PURPOSES AS DETERMINED BY SELECTION CRITERIA

6 YEARS	7 YEARS	8 YEARS	9 YEARS	10 YEARS
inkomazi				
isiceke	<i>isiceke</i>	<i>isiceke</i>		
uthango				
	ukuling- anisa			
ukuzelula				
ukukala				
ukubopha				
ukuname- thisela	<i>ukuname- thisela</i>	<i>ukuname- thisela</i>		
ukumbam- batha				
	ukutshuza	<i>ukutshuza</i>		
ihlombe	<i>ihlombe</i>			
	ukuconsa			
isilimo	<i>isilimo</i>	<i>isilimo</i>	<i>isilimo</i>	
ifulemu				
				isiqu
ivasi	<i>ivasi</i>	<i>ivasi</i>		
		ukumangala	<i>ukuman- gala</i>	<i>ukuman- gala</i>
		umakhanika		
ukuklome- lisa				
	uphawe	<i>uphawe</i>	<i>uphawe</i>	
umuntu				
ukungez- wani				
	ukukha- thala	<i>ukukhathala</i>		

6 YEARS	7 YEARS	8 YEARS	9 YEARS	10 YEARS
ukuphiki- swano				
umkhosi	<i>umkhosi</i>	<i>umkhosi</i>	<i>umkhosi</i>	
	ukungavu- melani	<i>ukunga- vumelani</i>	<i>ukunga- vumelani</i>	
igatshana				
	ukuhlase- la			
ukuvutha				
okufayo				
ukulimaza				
ukudili- kile	<i>ukudili- kile</i>			
	ukuphaka- misa	<i>ukuphaka- misa</i>		
ebhidli- kile				
ukukhu- phula				
ukucaba- nga				
xhumaniso	<i>xhumaniso</i>	<i>xhumaniso</i>		
				ukucwi- ya
	ukuzuma			
				okulu- sizi
		helikhopu- tha	<i>helikho- putha</i>	<i>helikh- oputha</i>
			isihla- kala	<i>isihl- akala</i>
		impande	<i>impande</i>	<i>impande</i>

TOTAL 27

9 + 8

4 + 11

1 + 7

4 + 3

* items and numbers in italics reflect items which were also common to a lower age group

APPENDIX 14

FINAL ZULU TEST FORM USED FOR NORMATIVE STUDY

	Zulu item	Key
1.	okufayo	(3)
2.	ukumbambatha	(1)
3.	ukucabanga	(2)
4.	inkomazi	(1)
5.	ukulimaza	(1)
6.	ihlombe	(3)
7.	ukuklomelisa	(3)
8.	ukubopha	(2)
9.	ifulemu	(1)
10.	ebhidlikile	(4)
11.	ukukhuphula	(1)
12.	igatshana	(2)
13.	ukuzelula	(1)
14.	umuntu	(2)
15.	ukungezwani	(1)
16.	isilimo	(4)
17.	ukudilikile	(4)
18.	ukuphikiswano	(1)
19.	ukuvutha	(3)
20.	umkhosi	(4)
21.	ukukala	(4)
22.	xhumaniso	(4)
23.	ukunamethisela	(4)
24.	uthango	(4)
25.	ingozi	(2)
26.	isiceke	(3)
27.	ivasi	(3)
28.	ukungavumelani	(1)
29.	ukuhlasela	(1)
30.	ukulinganisa	(2)
31.	ukuconsa	(2)
32.	ukuphakamisa	(1)
33.	ukuzuma	(4)
34.	ukukhathala	(2)
35.	uphawe	(1)
36.	ukutshuza	(2)

APPENDIX 15

RAW SCORES FOR NORMATIVE STUDY

6 YEAR OLDS

7 YEAR OLDS

RAW SCORE	NUMBER OF SUBJECTS	RAW SCORE	NUMBER OF SUBJECTS
5	2	14	12
7	2	15	4
9	8	16	6
11	8	18	6
12	8	19	8
13	14	20	17
14	6	21	14
15	5	22	14
16	9	23	10
17	2	24	15
18	10	25	8
19	6	26	10
20	7	27	10
21	2	28	2
22	5	29	6
23	2	30	2
24	4		
25	2		
26	3		
28	1		
	n 6years = 106	n 7years = 144	

Range for 6 year olds	=	5 to 28
Mean for 6 year olds	=	15.88
Std deviation for 6 year olds	=	5.048
Range for 7 year olds	=	14 to 30
Mean for 7 year olds	=	21.78
Std deviation for 7 year olds	=	4.155

APPENDIX 16

TWO SAMPLE PROPORTION TESTS

KEY : Population 1 = Students
 Population 2 = Educators

1.	Population 1	Population 2
Sample Size	100	100
No. Successes	20,9	27
Proportion (Sample)	0,20900	0,27000
Difference	-,06100	
Pooled Std. Error of Difference (Sample)	0,06020	
95% C.L. of Difference	(-,17899, 0,05699)	
Std. Error of Difference (Hypothesis)	0,06036	
Z Value	-1,010678	
Prob.	0,31217	

TWO SAMPLE PROPORTION TESTS

KEY : Population 1 = Student Translators
 Population 2 = Educator Translators

2.	Population 1	Population 2
Sample Size	100	100
No. Successes	20	10
Proportion (Sample)	0,20000	0,10000
Difference	,10000	
Pooled Std. Error of Difference (Sample)	0,05000	
95% C.L. of Difference	(,00200, 0,19800)	
Std. Error of Difference (Hypothesis)	0,05050	
Z Value	1,980295	
Prob.	0,04767	

3.	Population 1	Population 2
Sample Size	100	100
No. Successes	45	40
Proportion (Sample)	0,45000	0,40000
Difference	0,05000	
Pooled Std. Error of Difference (Sample)	0,06982	
95% C.L. of Difference	(-,08685, 0,18685)	
Std. Error of Difference (Hypothesis)	0,06991	
Z Value	,7151983	
Prob.	0,47449	

4.	Population 1	Population 2
Sample Size	100	100
No. Successes	70	80
Proportion (Sample)	0,70000	0,80000
Difference	-,10000	
Pooled Std. Error of Difference (Sample)	0,06083	
95% C.L. of Difference	(-,21922, 0,01922)	
Std. Error of Difference (Hypothesis)	0,06124	
Z Value	-1,632994	
Prob.	0,10247	

5.	Population 1	Population 2
Sample Size	100	100
No. Successes	30	20
Proportion (Sample)	0,30000	0,20000
Difference	0,10000	
Pooled Std. Error of Difference (Sample)	0,06083	
95% C.L. of Difference	(-,01922, 0,21922)	
Std. Error of Difference (Hypothesis)	0,06124	
Z Value	1,632993	
Prob.	0,10247	

6.	Population 1	Population 2
Sample Size	100	100
No. Successes	50	35
Proportion (Sample)	0,50000	0,35000
Difference	0,15000	
Pooled Std. Error of Difference (Sample)	0,06910	
95% C.L. of Difference	(0,01456, 0,28544)	
Std. Error of Difference (Hypothesis)	0,06991	
Z Value	2,145596	
Prob.	0,03191	

7.	Population 1	Population 2
Sample Size	100	100
No. Successes	50	65
Proportion (Sample)	0,50000	0,65000
Difference	-0,15000	
Pooled Std. Error of Difference (Sample)	0,06910	
95% C.L. of Difference	(-,28544, -,01456)	
Std. Error of Difference (Hypothesis)	0,06991	
Z Value	-2,145595	
Prob.	0,03191	

8.	Population 1	Population 2
Sample Size	100	100
No. Successes	65	80
Proportion (Sample)	0,65000	0,80000
Difference	-0,15000	
Pooled Std. Error of Difference (Sample)	0,06225	
95% C.L. of Difference	(-,27201, -,02799)	
Std. Error of Difference (Hypothesis)	0,06315	
Z Value	-2,375423	
Prob.	0,01753	

9.	Population 1	Population 2
Sample Size	100	100
No. Successes	35	20
Proportion (Sample)	0,35000	0,20000
Difference	0,15000	
Pooled Std. Error of Difference (Sample)	0,06225	
95% C.L. of Difference	(0,02799, 0,27201)	
Std. Error of Difference (Hypothesis)	0,06315	
Z Value	2,375423	
Prob.	0,01753	

10.	Population 1	Population 2
Sample Size	100	100
No. Successes	90	100
Proportion (Sample)	0,90000	1,00000
Difference	-,10000	
Pooled Std. Error of Difference (Sample)	0,03000	
95% C.L. of Difference	(-,15880, -,04120)	
Std. Error of Difference (Hypothesis)	0,03082	
Z Value	-3,244429	
Prob.	0,00118	

11.	Population 1	Population 2
Sample Size	100	100
No. Successes	35	40
Proportion (Sample)	0,35000	0,40000
Difference	-,05000	
Pooled Std. Error of Difference (Sample)	0,06837	
95% C.L. of Difference	(-,18401, 0,08401)	
Std. Error of Difference (Hypothesis)	0,06847	
Z Value	-,730297	
Prob.	0,46521	

12.	Population 1	Population 2
Sample Size	100	100
No. Successes	25	10
Proportion (Sample)	0,25000	0,10000
Difference	0,15000	
Pooled Std. Error of Difference (Sample)	0,05268	
95% C.L. of Difference	(0,04675, 0,25325)	
Std. Error of Difference (Hypothesis)	0,05374	
Z Value	2,791453	
Prob.	0,00525	

13.	Population 1	Population 2
Sample Size	100	100
No. Successes	40	50
Proportion (Sample)	0,40000	0,50000
Difference	-,10000	
Pooled Std. Error of Difference (Sample)	0,07000	
95% C.L. of Difference	(-,23720, 0,03720)	
Std. Error of Difference (Hypothesis)	0,07036	
Z Value	-1,421338	
Prob.	0,15522	

14.	Population 1	Population 2
Sample Size	100	100
No. Successes	15	85
Proportion (Sample)	0,15000	0,85000
Difference	-,15260	
Pooled Std. Error of Difference (Sample)	0,05068	
95% C.L. of Difference	(-,79672, -,59808)	
Std. Error of Difference (Hypothesis)	0,07071	
Z Value	-9,86276	
Prob.	0,000	

15.	Population 1	Population 2
Sample Size	100	100
No. Successes	40	35
Proportion (Sample)	0,40000	0,35000
Difference	0,05000	
Pooled Std. Error of Difference (Sample)	0,06837	
95% C.L. of Difference	(-,08401, 0,18401)	
Std. Error of Difference (Hypothesis)	0,06847	
Z Value	,730297	
Prob.	0,46521	

16.	Population 1	Population 2
Sample Size	100	100
No. Successes	85	90
Proportion (Sample)	0,85000	0,90000
Difference	-,05000	
Pooled Std. Error of Difference (Sample)	0,04664	
95% C.L. of Difference	(-,14141, 0,04141)	
Std. Error of Difference (Hypothesis)	0,04677	
Z Value	-1,069044	
Prob.	0,28505	

17.	Population 1	Population 2
Sample Size	100	100
No. Successes	15	10
Proportion (Sample)	0,15000	0,40000
Difference	-,05000	
Pooled Std. Error of Difference (Sample)	0,04664	
95% C.L. of Difference	(-,04141, 0,14141)	
Std. Error of Difference (Hypothesis)	0,04677	
Z Value	1,069045	
Prob.	0,28505	

18.	Population 1	Population 2
Sample Size	100	100
No. Successes	30	50
Proportion (Sample)	0,30000	0,50000
Difference	-,20000	
Pooled Std. Error of Difference (Sample)	0,06782	
95% C.L. of Difference	(-,33293, -,06707)	
Std. Error of Difference (Hypothesis)	0,06928	
Z Value	-2,886751	
Prob.	0,00389	

19.	Population 1	Population 2
Sample Size	100	100
No. Successes	30	5
Proportion (Sample)	0,30000	0,05000
Difference	0,25000	
Pooled Std. Error of Difference (Sample)	0,05244	
95% C.L. of Difference	(0,19722, 0,40278)	
Std. Error of Difference (Hypothesis)	0,05657	
Z Value	5,3033	
Prob.	0,00000	

20.	Population 1	Population 2
Sample Size	100	100
No. Successes	20	15
Proportion (Sample)	0,20000	0,15000
Difference	0,05000	
Pooled Std. Error of Difference (Sample)	0,05362	
95% C.L. of Difference	(-,05509, 0,15509)	
Std. Error of Difference (Hypothesis)	0,05374	
Z Value	,9304841	
Prob.	0,35212	

21.	Population 1	Population 2
Sample Size	100	100
No. Successes	40	30
Proportion (Sample)	0,40000	0,30000
Difference	0,10000	
Pooled Std. Error of Difference (Sample)	0,06708	
95% C.L. of Difference	(-,03148, 0,23148)	
Std. Error of Difference (Hypothesis)	0,06745	
Z Value	1,482499	
Prob.	0,13821	

22.	Population 1	Population 2
Sample Size	100	100
No. Successes	40	25
Proportion (Sample)	0,40000	0,25000
Difference	0,15000	
Pooled Std. Error of Difference (Sample)	0,06538	
95% C.L. of Difference	(0,02185, 0,27815)	
Std. Error of Difference (Hypothesis)	0,06624	
Z Value	2,264554	
Prob.	0,02354	

23.	Population 1	Population 2
Sample Size	100	100
No. Successes	70	85
Proportion (Sample)	0,70000	0,85000
Difference	-,15000	
Pooled Std. Error of Difference (Sample)	0,05809	
95% C.L. of Difference	(-,26386, -,03614)	
Std. Error of Difference (Hypothesis)	0,05906	
Z Value	-2,540003	
Prob.	0,01109	

24.	Population 1	Population 2
Sample Size	100	100
No. Successes	10	5
Proportion (Sample)	0,10000	0,05000
Difference	0,05000	
Pooled Std. Error of Difference (Sample)	0,03708	
95% C.L. of Difference	(-,02268, 0,12268)	
Std. Error of Difference (Hypothesis)	0,03725	
Z Value	1,342312	
Prob.	0,17949	

25.	Population 1	Population 2
Sample Size	100	100
No. Successes	85	100
Proportion (Sample)	0,85000	1,00000
Difference	-,15000	
Pooled Std. Error of Difference (Sample)	0,03571	
95% C.L. of Difference	(-,21998, -,08002)	
Std. Error of Difference (Hypothesis)	0,03725	
Z Value	-4,026936	
Prob.	0,00006	

26.	Population 1	Population 2
Sample Size	100	100
No. Successes	85	95
Proportion (Sample)	0,85000	0,90000
Difference	0,10000	
Pooled Std. Error of Difference (Sample)	0,04183	
95% C.L. of Difference	(-0,01801, 0,18199)	
Std. Error of Difference (Hypothesis)	0,4243	
Z Value	2,357023	
Prob.	0,01842	

27.	Population 1	Population 2
Sample Size	100	100
No. Successes	15	5
Proportion (Sample)	0,15000	0,05000
Difference	0,10000	
Pooled Std. Error of Difference (Sample)	0,04183	
95% C.L. of Difference	(0,01801, 0,18199)	
Std. Error of Difference (Hypothesis)	0,04243	
Z Value	2,357023	
Prob.	0,01842	

28.	Population 1	Population 2
Sample Size	100	100
No. Successes	60	80
Proportion (Sample)	0,60000	0,80000
Difference	-,20000	
Pooled Std. Error of Difference (Sample)	0,06325	
95% C.L. of Difference	(-,32396, -,07604)	
Std. Error of Difference (Hypothesis)	0,06481	
Z Value	-3,086067	
Prob.	0,00203	

29.	Population 1	Population 2
Sample Size	100	100
No. Successes	10	35
Proportion (Sample)	0,10000	0,35000
Difference	-,25000	
Pooled Std. Error of Difference (Sample)	0,05635	
95% C.L. of Difference	(-,36044, -,13956)	
Std. Error of Difference (Hypothesis)	0,05906	
Z Value	-4,233338	
Prob.	0,00002	

30.	Population 1	Population 2
Sample Size	100	100
No. Successes	30	15
Proportion (Sample)	0,30000	0,15000
Difference	0,15000	
Pooled Std. Error of Difference (Sample)	0,05809	
95% C.L. of Difference	(0,03614, 0,26386)	
Std. Error of Difference (Hypothesis)	0,05906	
Z Value	2,540003	
Prob.	0,01109	

31.	Population 1	Population 2
Sample Size	100	100
No. Successes	35	55
Proportion (Sample)	0,35000	0,55000
Difference	-,20000	
Pooled Std. Error of Difference (Sample)	0,06892	
95% C.L. of Difference	(-,33508, -,06492)	
Std. Error of Difference (Hypothesis)	0,07036	
Z Value	-2,842677	
Prob.	0,00447	

32.	Population 1	Population 2
Sample Size	100	100
No. Successes	20	35
Proportion (Sample)	0,20000	0,35000
Difference	-,15000	
Pooled Std. Error of Difference (Sample)	0,06225	
95% C.L. of Difference	(-,27201, -,02799)	
Std. Error of Difference (Hypothesis)	0,06315	
Z Value	-2,375423	
Prob.	0,01753	

33.	Population 1	Population 2
Sample Size	100	100
No. Successes	40	65
Proportion (Sample)	0,40000	0,65000
Difference	- ,25000	
Pooled Std. Error of Difference (Sample)	0,06837	
95% C.L. of Difference	(- ,38401, - ,11599)	
Std. Error of Difference (Hypothesis)	0,07062	
Z Value	-3,539961	
Prob.	0,00040	

34.	Population 1	Population 2
Sample Size	100	100
No. Successes	45	35
Proportion (Sample)	0,45000	0,35000
Difference	0,10000	
Pooled Std. Error of Difference (Sample)	0,06892	
95% C.L. of Difference	(- ,03508, 0,23508)	
Std. Error of Difference (Hypothesis)	0,06928	
Z Value	1,443376	
Prob.	0,14891	

35.	Population 1	Population 2
Sample Size	100	100
No. Successes	45	65
Proportion (Sample)	0,45000	0,65000
Difference	- ,20000	
Pooled Std. Error of Difference (Sample)	0,06892	
95% C.L. of Difference	(- ,33508, - ,06492)	
Std. Error of Difference (Hypothesis)	0,07036	
Z Value	-2,842676	
Prob.	0,00447	

36.	Population 1	Population 2
Sample Size	100	100
No. Successes	20	5
Proportion (Sample)	0,20000	0,05000
Difference	0,15000	
Pooled Std. Error of Difference (Sample)	0,04555	
95% C.L. of Difference	(0,06072, 0,23928)	
Std. Error of Difference (Hypothesis)	0,04677	
Z Value	3,207135	
Prob.	0,00134	

37.	Population 1	Population 2
Sample Size	100	100
No. Successes	60	70
Proportion (Sample)	0,60000	0,70000
Difference	-,10000	
Pooled Std. Error of Difference (Sample)	0,06700	
95% C.L. of Difference	(-,23148, 0,03148)	
Std. Error of Difference (Hypothesis)	0,06745	
Z Value	-1,482498	
Prob.	0,13821	

38.	Population 1	Population 2
Sample Size	100	100
No. Successes	80	85
Proportion (Sample)	0,80000	0,85000
Difference	-,05000	
Pooled Std. Error of Difference (Sample)	0,05362	
95% C.L. of Difference	(-,15509, 0,05509)	
Std. Error of Difference (Hypothesis)	0,05374	
Z Value	-,9304844	
Prob.	0,35212	

39.	Population 1	Population 2
Sample Size	100	100
No. Successes	20	45
Proportion (Sample)	0,20000	0,45000
Difference	-,25000	
Pooled Std. Error of Difference (Sample)	0,06384	
95% C.L. of Difference	(-,37512, -,12488)	
Std. Error of Difference (Hypothesis)	0,06624	
Z Value	-3,774257	
Prob.	0,00016	

40.	Population 1	Population 2
Sample Size	100	100
No. Successes	80	55
Proportion (Sample)	0,80000	0,55000
Difference	0,25000	
Pooled Std. Error of Difference (Sample)	0,06384	
95% C.L. of Difference	(0,12488, 0,37512)	
Std. Error of Difference (Hypothesis)	0,06624	
Z Value	3,774257	
Prob.	0,00016	

41.	Population 1	Population 2
Sample Size	100	100
No. Successes	40	55
Proportion (Sample)	0,40000	0,55000
Difference	-,15000	
Pooled Std. Error of Difference (Sample)	0,06982	
95% C.L. of Difference	(-,28685, -,01315)	
Std. Error of Difference (Hypothesis)	0,07062	
Z Value	-2,1239774	
Prob.	0,03367	

42.	Population 1	Population 2
Sample Size	100	100
No. Successes	50	45
Proportion (Sample)	0,50000	0,45000
Difference	0,05000	
Pooled Std. Error of Difference (Sample)	0,07053	
95% C.L. of Difference	(-,08824, 0,18824)	
Std. Error of Difference (Hypothesis)	0,07062	
Z Value	,7079926	
Prob.	0,47895	

43.	Population 1	Population 2
Sample Size	100	100
No. Successes	30	35
Proportion (Sample)	0,30000	0,35000
Difference	-,05000	
Pooled Std. Error of Difference (Sample)	0,06614	
95% C.L. of Difference	(-,17964, 0,07964)	
Std. Error of Difference (Hypothesis)	0,06624	
Z Value	-,7548512	
Prob.	0,45034	

44.	Population 1	Population 2
Sample Size	100	100
No. Successes	5	10
Proportion (Sample)	0,05000	0,10000
Difference	-0,05000	
Pooled Std. Error of Difference (Sample)	0,03708	
95% C.L. of Difference	(-,02268, -,12268)	
Std. Error of Difference (Hypothesis)	0,03725	
Z Value	-1,342312	
Prob.	0,17949	

45.	Population 1	Population 2
Sample Size	100	100
No. Successes	90	95
Proportion (Sample)	0,90000	0,95000
Difference	-,05000	
Pooled Std. Error of Difference (Sample)	0,03708	
95% C.L. of Difference	(-,12268, 0,02268)	
Std. Error of Difference (Hypothesis)	0,03725	
Z Value	-1,342312	
Prob.	0,17949	

46.	Population 1	Population 2
Sample Size	100	100
No. Successes	55	60
Proportion (Sample)	0,55000	0,60000
Difference	-,05000	
Pooled Std. Error of Difference (Sample)	0,06982	
95% C.L. of Difference	(-,18685, 0,08685)	
Std. Error of Difference (Hypothesis)	0,06991	
Z Value	-,7151987	
Prob.	0,47449	

47.	Population 1	Population 2
Sample Size	100	100
No. Successes	15	20
Proportion (Sample)	0,15000	0,20000
Difference	-,05000	
Pooled Std. Error of Difference (Sample)	0,05362	
95% C.L. of Difference	(-,15509, 0,05509)	
Std. Error of Difference (Hypothesis)	0,05374	
Z Value	-,9304841	
Prob.	0,35212	

48.	Population 1	Population 2
Sample Size	100	100
No. Successes	60	65
Proportion (Sample)	0,60000	0,65000
Difference	-,05000	
Pooled Std. Error of Difference (Sample)	0,06837	
95% C.L. of Difference	(-,18401, 0,08401)	
Std. Error of Difference (Hypothesis)	0,06847	
Z Value	-,7302961	
Prob.	0,46521	

49.	Population 1	Population 2
Sample Size	100	100
No. Successes	75	100
Proportion (Sample)	0,75000	1,00000
Difference	-,25000	
Pooled Std. Error of Difference (Sample)	0,04330	
95% C.L. of Difference	(-,33487, -,16513)	
Std. Error of Difference (Hypothesis)	0,04677	
Z Value	-5,345225	
Prob.	0,00000	

50.	Population 1	Population 2
Sample Size	100	100
No. Successes	30	25
Proportion (Sample)	0,30000	0,25000
Difference	0,05000	
Pooled Std. Error of Difference (Sample)	0,06305	
95% C.L. of Difference	(-,07357, 0,17357)	
Std. Error of Difference (Hypothesis)	0,06315	
Z Value	,7918077	
Prob.	0,42847	

51.	Population 1	Population 2
Sample Size	100	100
No. Successes	45	50
Proportion (Sample)	0,45000	0,50000
Difference	-,05000	
Pooled Std. Error of Difference (Sample)	0,07053	
95% C.L. of Difference	(-,18824, 0,08824)	
Std. Error of Difference (Hypothesis)	0,07062	
Z Value	-,7079926	
Prob.	0,47895	

52.	Population 1	Population 2
Sample Size	100	100
No. Successes	25	15
Proportion (Sample)	0,25000	0,15000
Difference	0,10000	
Pooled Std. Error of Difference (Sample)	0,05612	
95% C.L. of Difference	(-,01000, 0,21000)	
Std. Error of Difference (Hypothesis)	0,05657	
Z Value	1,767767	
Prob.	0,07710	

53.	Population 1	Population 2
Sample Size	100	100
No. Successes	50	70
Proportion (Sample)	0,50000	0,70000
Difference	-,20000	
Pooled Std. Error of Difference (Sample)	0,06782	
95% C.L. of Difference	(-,0,06707, -0,32036)	
Std. Error of Difference (Hypothesis)	0,06928	
Z Value	-2,886751	
Prob.	0,00389	

54.	Population 1	Population 2
Sample Size	100	100
No. Successes	35	30
Proportion (Sample)	0,35000	0,30000
Difference	0,05000	
Pooled Std. Error of Difference (Sample)	0,06614	
95% C.L. of Difference	(,17964, 0,07964)	
Std. Error of Difference (Hypothesis)	0,06624	
Z Value	,7548512	
Prob.	0,45034	

55.	Population 1	Population 2
Sample Size	100	100
No. Successes	15	25
Proportion (Sample)	0,15000	0,25000
Difference	-,10000	
Pooled Std. Error of Difference (Sample)	0,05612	
95% C.L. of Difference	(-,21000, 0,01000)	
Std. Error of Difference (Hypothesis)	0,05657	
Z Value	1,767767	
Prob.	0,07710	

56.	Population 1	Population 2
Sample Size	100	100
No. Successes	35	50
Proportion (Sample)	0,35000	0,50000
Difference	-,15000	
Pooled Std. Error of Difference (Sample)	0,06910	
95% C.L. of Difference	(-,28544, -,01456)	
Std. Error of Difference (Hypothesis)	0,06991	
Z Value	-2,145596	
Prob.	0,03191	

57.	Population 1	Population 2
Sample Size	100	100
No. Successes	10	15
Proportion (Sample)	0,10000	0,15000
Difference	-,05000	
Pooled Std. Error of Difference (Sample)	0,04664	
95% C.L. of Difference	(-,14141, 0,04141)	
Std. Error of Difference (Hypothesis)	0,04677	
Z Value	-1,069045	
Prob.	0,28505	

58.	Population 1	Population 2
Sample Size	100	100
No. Successes	10	15
Proportion (Sample)	0,10000	0,15000
Difference	-,05000	
Pooled Std. Error of Difference (Sample)	0,04664	
95% C.L. of Difference	(-,14141, 0,04141)	
Std. Error of Difference (Hypothesis)	0,04677	
Z Value	-1,069045	
Prob.	0,28505	

59.	Population 1	Population 2
Sample Size	100	100
No. Successes	60	45
Proportion (Sample)	0,60000	0,45000
Difference	0,15000	
Pooled Std. Error of Difference (Sample)	0,06982	
95% C.L. of Difference	(0,01315, 0,28685)	
Std. Error of Difference (Hypothesis)	0,07062	
Z Value	2,123977	
Prob.	0,03367	

60.	Population 1	Population 2
Sample Size	100	100
No. Successes	70	90
Proportion (Sample)	0,70000	0,90000
Difference	- ,20000	
Pooled Std. Error of Difference (Sample)	0,05477	
95% C.L. of Difference	(- ,30735, - ,09265)	
Std. Error of Difference (Hypothesis)	0,05657	
Z Value	-3,535534	
Prob.	0,00041	

61.	Population 1	Population 2
Sample Size	100	100
No. Successes	70	50
Proportion (Sample)	0,70000	0,50000
Difference	0,20000	
Pooled Std. Error of Difference (Sample)	0,06782	
95% C.L. of Difference	(0,06707, 0,33293)	
Std. Error of Difference (Hypothesis)	0,06928	
Z Value	2,886751	
Prob.	0,00389	

62.	Population 1	Population 2
Sample Size	100	100
No. Successes	50	80
Proportion (Sample)	0,50000	0,80000
Difference	- ,30000	
Pooled Std. Error of Difference (Sample)	0,06403	
95% C.L. of Difference	(- ,42550, - ,17450)	
Std. Error of Difference (Hypothesis)	0,06745	
Z Value	-4,447496	
Prob.	0,00001	