

12  
1984

# WORK PAPERS OF SIL-AAB

## Series B Volume 12

### **PAPERS IN LITERACY**

**Editor: B. Larrimore**

SUMMER INSTITUTE OF LINGUISTICS  
AUSTRALIAN ABORIGINES BRANCH  
DARWIN  
DECEMBER 1984

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## Cataloguing-in-publication Data

Papers in literacy.

Bibliography.

ISBN 0 86892 316 8.

1. Australian languages - Addresses, essays, lectures. 2.  
Linguistics - Australia - Addresses, essays, lectures. 3.  
Reading research - Australia - Addresses, essays, lectures.  
I. Larrimore, Bonnie. II. Summer Institute of Linguistics.  
Australian Aborigines Branch. (Series: Work papers of SIL-AAB.  
Series B; Volume 12).

499'.15



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ISSN 0157-5066

ISBN 0 86892 316 8

## PREFACE

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**DIAGNOSTIC TESTING  
OF THE  
ANINDILYAKWA ORTHOGRAPHY  
FOR BOTH  
READING AND WRITING**

Velma J. Leeding

**0. INTRODUCTION**

The purpose of this paper is to show the content and results of the tests set up to determine the viability of the Anindilyakwa orthography chosen by the Aborigines at Umbakumba, Groote Eylandt, Northern Territory.

The testing was done in April and May 1981, and examined and documented by August of that year. The author has been employed by the Department of Education, Northern Territory, as linguistic adviser for the Groote Eylandt bilingual program since 1974. A copy of the complete testing and marking, with tapes, is being filed with the Australian Institute of Aboriginal Studies, Canberra.

The paper consists of sections outlining the way the diagnostic tests were compiled and administered, the scores for both reading and writing, and the conclusions about the orthography based on those results. Even though the focus was on testing the orthography, the interpretation of other miscues was handled and is included in the paper in order to show that all errors have been covered. A list of linguistic notations and terms used in this paper is given in the first part of the Appendix.

## 0.1 HISTORY OF THE ORTHOGRAPHY DEVELOPMENT

In 1972, the linguist at Angurugu developed an orthography which was later taught to Teaching Aides in the Angurugu school by the literacy worker. In 1974, when I checked the literacy skills of these Aides working in the bilingual program, I discovered that there were constant errors in the spelling of the vowels and some consonants. The literacy worker's evaluation of the problem was that the course had been too fast and that more practice was needed. The orthography continued to be used in the Angurugu School but, again in 1976, the non-Aboriginal teachers in the bilingual program reported to me that the Aboriginal Teaching Aides still could not spell accurately and consistently and, therefore, were not really competent to teach vernacular literacy to the children. At that time, for this and other reasons, the bilingual program at Angurugu was suspended.

In 1975, I began teaching vernacular literacy classes with the Aboriginal Teaching Aides at Umbakumba, using the Angurugu primers. It was observed in 1976 that, after months of daily practice, the Aides could not spell the vowels and peripheral consonants with consistency. As a linguist, I found that, in applying the phonological rules as stated, I could not spell consistently within my own data or with that of the Angurugu linguist.

In 1976/7, the Aborigines at Umbakumba were encouraged to write whatever they felt was correct while I reconsidered the analysis. At the end of 1977, the orthography was revised in accordance with new linguistic insights after discussion with the Aborigines and the Angurugu linguist and literacy worker. It was known at that time that there were still residual problems in the analysis and that more work had to be done on it. The changes were instituted for both communities but the decision was partially rescinded at Angurugu six months later during my absence from Groote Eylandt.

Upon my return in 1979, the Department of Education ruled that the status quo, as of mid-1977, was to be used in both communities while further testing and analysis was done. It was, therefore, extremely difficult for the Umbakumba Aborigines to become consistent in any

orthography when two different ones were in circulation, viz. previously-printed school literature and teaching notes in the mid-1977 one, and church literature from Angurugu utilising some of the late-1977 modifications. Their own choice of orthography was discussed and practised for not more than one hour per week on a casual basis and almost no literature produced at Umbakumba. Some minor changes continued at Angurugu as the linguist revised her analysis.

Testing of different aspects of the orthography was done at Umbakumba between August 1980 and May 1981. The results of the final comprehensive test are examined in this paper. At a formal meeting in December 1981, nine literate Aborigines agreed to a limited amount of over-differentiation in the vowels in order to accommodate the Angurugu people. In all but possibly one instance, the literate Aborigines were correct in their perception of contrastive sounds. The residual problems in my phonological analysis were resolved in August 1981, largely due to insights gained in these discussions.

## 0.2 THE ORTHOGRAPHY

The language, Anindilyakwa, has a primary dichotomy of rounded versus unrounded in the consonants, and high versus low tongue height in the vowels.

The symbols have not changed since its inception in 1972 except for the use of 'k' instead of 'g' in order to give more contrast in the shape of words. The orthography utilises single graphs, digraphs and trigraphs, all of which are called graphemes in this paper. The choice of graphemes was based on those listed in Leeding and Gudschinsky (1974). The phoneme and grapheme equivalents are:

<u>Phoneme</u>	<u>Grapheme</u>
Stops:	
p, p <sup>w</sup>	b
t̥, t	d
t̥	j
t̥	rd
k	k
k <sup>w</sup>	kw

Nasals:

m, m <sup>w</sup>	m
ṃ, n	n
ñ	ny
ṇ	rn
ṅ	ng
ṅ <sup>w</sup>	ngw

Other consonants:

l, l	l
l̥	ly
ḷ	rl
ṛ	rr
ṛ	r
y	y
w	w

Vowels:

i [i, i, u]	i, u
a [e, a, o]	a

Spelling conventions reduce the number of letters in some consonant clusters or allow contrastive clusters to be represented in the orthography.

/ñṭ/	nj
/l̥ṭ/	lj
/ṅṭ/	rnd
/rṭ/	r.d

A hyphen is used between the root/stem and suffix to break words into smaller parts and to facilitate sight recognition of recurring suffixes. An early attempt to place a hyphen between prefixes and the root/stem did not prove to be satisfactory. The Aborigines had to be able to handle word-derivations before being able to apply the spelling convention. There seems to be, however, an innate ability to recognise the suffix as optionally added to the basic part. For this reason the

hyphen is not used on verbs which have obligatory suffixation.

There is under-differentiation in the consonants, viz. one symbol is used for each pair of alveolar and dental phonemes because one of each pair has a low functional load or occurs mainly in loan words; and one symbol has been used for each pair of rounded and unrounded labial consonants because most of the Aboriginal literates felt it was too late to change (some people who read only by sight might be upset). The Angurugu and Umbakumba orthographies both use these symbols but the Angurugu linguist does not have the rounded labials as contrastive in her analysis.

In all other cases there is a one-to-one correspondence between the consonant phoneme and the grapheme. Ease of transition into English is maximal given the difference in the structures of the languages and their phonetics.

There is over-differentiation in the vowels. The allophone [u] was retained because the Aborigines were seeking a compromise with the Angurugu orthography where /u/ is considered to be phonemic. They felt that, with their experience in speaking and writing English, they could cope with writing /ɨ/ as 'u' in a restricted environment. They chose to write 'u' within the syllables, i.e. following /m<sup>w</sup>, p<sup>w</sup>, k<sup>w</sup>, ŋ<sup>w</sup>, w/ as 'mu, bu, kwu, ngwu, and wu' respectively. The one exception to this rule was to write 'i' between /w/, /m<sup>w</sup>/, /p<sup>w</sup>/ and a following /y/. I felt that, as these syllables were all said in isolation in the phonics method used, the literates would pronounce them as [u] and be able to write them. The grapheme 'i' was to be written in every other position.

### 0.3 SPECIFIC DIFFERENCES IN THE TWO ORTHOGRAPHIES

Differences occur in the way the symbols are used for rounded velar consonants, the vowels 'i' and 'u', and lengthened vowels. The Angurugu orthography also uses 'e'.

#### Rounded velars

The Angurugu linguist (personal communication) regards [k<sup>w</sup>u] and [ku], [ŋ<sup>w</sup>u] and [ŋu] as non-contrastive with /k<sup>w</sup>/ and /ŋ<sup>w</sup>/ as the consonant phonemes. The allophones 'ku' and 'ngu' are, however, represented in the orthography: 'ku' and 'ngu' are written preceding a rounded consonant and 'kwu' and 'ngwu' elsewhere.

At Umbakumba both Aborigines and linguist prefer only the use of 'kw' and 'ngw' where they are emic units. It not only prevents over-differentiation but gives consistent representations of the roots at morphophonemic boundaries—an advantage pedagogically and requested by non-Aboriginal teachers.

The two orthographies compare as follows:

<u>Phonemic</u>	<u>Umbakumba</u>	<u>Angurugu</u>	
ayakwa	ayakwa	ayakwa	'speech, language'
ayakwi#laŋwa	ayakwu-langwa	ayakwu-langwa	'about the language'
ayakwi#wa	ayakwu-wa	ayaku-wa	'to the language'
ayaŋka	ayarrka	ayarrka	'hand'
ayaŋki#laŋwa	ayarrki-langwa	ayarrki-langwa	'from the hand'
ayaŋki-wa	ayarrki-wa	ayarrku-wa	'to the hand'

A similar phonological feature is realised with the syllables [k<sup>w</sup>a ~ k<sup>w</sup>ɔ] and [ŋ<sup>w</sup>a ~ ŋ<sup>w</sup>ɔ] at morpheme boundaries where only the second occurs phonetically. Rounding of the consonant is simultaneous with the velar articulation and many non-native speakers do not hear it. The Aborigines, however, are aware of it. The 'w' is written at Umbakumba but not at Angurugu.

<u>Phonemic</u>	<u>Umbakumba</u>	<u>Angurugu</u>	
a#laŋkwi#afaŋki#a	alarrngkwarrakpa	alarrngkwerekpa	'outdoor things'
[a <sub>l</sub> aŋkweŋkpa]			
a#laŋkwi#awaŋyi#a	alarrngkwawarriya	alarrngkawarriya	'bad things'
[a <sub>l</sub> aŋk <sup>w</sup> ɔ waŋiya]			

### Low vowel [e]

The short vowel [e ~ ə ~ e<sup>i</sup>] is written consistently as 'a' at Umbakumba because both the Aborigines and the linguist do not regard it as a contrastive sound. The three vowels are in mutually exclusive distribution or in free variation with [a]. The front allophones are contiguous to a lamino-palatal consonant or precede an underlying [Ci].

In the Angurugu analysis, the vowels are seen as shared allophones of the phonemes /a/ and /e/ as well as in phonemic variation. In the orthography only one symbol is chosen in each word in the literature: 'a' preceding palatals where it is more statistically frequent than 'e' and is considered the phoneme (about six words are seen as exceptions); 'e' in environments where it is more statistically frequent than its variant (but Aborigines are not corrected if they write 'a' before /ŋ/); 'e' where only that variant occurs. The aim of these rules is to make the use of 'e' as numerous as possible.

## High vowel [u]

At Umbakumba the high vowel [u] is regarded as an allophone of /ɨ/ occurring contiguous to rounded consonants and often in free variation with [ɨ]. In order to compromise with Angurugu, the Aborigines decided that 'u' should be included to a limited degree. It could be written within the syllable where the preceding conditioning consonant co-occurred but not used elsewhere, viz. 'mu' for /m<sup>w</sup>ɨ/; 'bu' for /p<sup>w</sup>ɨ/; 'kwu' for /k<sup>w</sup>ɨ/; 'ngwu' for /ŋ<sup>w</sup>ɨ/. In other environments where the conditioning consonant from the following syllable would be dropped in auditory discrimination techniques, the vowel would be written as 'i'. There was one exception to the rule, viz. 'wi', 'mi' and 'bi' would be written preceding 'y' in the next syllable.

The rules are feasible but I predicted problems with the exception because the rounding which is not marked on the labial consonants would be omitted also on the vowel and contrasts with /mɨ/ and /pɨ/ thus removed. There are also places where a clear phonetic [i] occurs in variation with [u] preceding other lamino-palatals in syllables with rounded velars. It was thought that their expertise in English phonics would be helpful but it seemed to me to be likely to produce greater problems.

The Angurugu linguist regards both /u/ and /i/ as phonemes but allows for restrictions in their distribution. The sounds are said to be contrastive only on the basis of a few analogous pairs. The orthography reflects the analysis, viz. 'i' is written between two unrounded consonants where only unrounded allophones can occur; 'u' contiguous to a rounded consonant; 'u' or 'i' where they are considered to be contrastive. Apart from the few analogous pairs, the crucial difference is the writing of 'u' preceding a rounded consonant, e.g. Umbakumba: *arima* 'big'; Angurugu: *aruma* 'big'. Because of suffixation this is statistically very frequent.

## Lengthened vowels

In a small number of words, lengthened vowels sometimes occur in variance with another form, e.g. /yakaya/ ~ /yakayi/ [yaka<sup>i</sup>ya ~ yaka<sup>i</sup>:] 'ouch!'. Stress normally falls on the penultimate syllable and, in line with the above, a lengthened [i:] in a word-final stressed position is interpreted as 'iyi'. At Angurugu, [a<sup>i</sup>: ~ e<sup>i</sup>:] is written 'ayi' but [i:] as only 'i'.

Word-medially, VCV sequences where the consonant is 'y' or 'w' reduce to a long or short vowel. At Umbakumba, both options are recognised in the orthography but at Angurugu only the longer, more traditional form is placed in literature.

Apart from the above, there are a few words where [e<sup>i</sup>] is optionally lengthened in a stressed syllable or to suit the sentence rhythm. Umbakumba Aborigines were uncertain as to whether these should be written as 'a' or 'ayi'. In the tests, the two options are inserted on a random basis. Angurugu uses 'e'. After the tests were administered the glide was found to be an allophone of /a/, conditioned by a following deep structure [Ci] which frequently elides in the surface form.

#### 0.4 THE TEACHING METHOD

Anindilyakwa words are long, averaging between three and six syllables but up to fourteen syllables. There is also a very complex pattern of prefixation and suffixation which produces several hundred prefix combinations on verbs. Similarly, other word classes (parts of speech) can take up to forty-three changes of prefixes. Because of this complexity, it is essential that Aboriginal literates develop competency in using phonic skills. Eventually, like all readers, common words and affix combinations are read by sight.

The teaching method was based on the reading scheme proposed by Gudschinsky (1973) which uses both "look and say" and phonics methods. The system has been revised to suit this particular language and a new Adult Literacy Course designed in 1980. Gudschinsky accepts the syllable as the smallest phonological unit which can be isolated naturally by native speakers of a language. In Anindilyakwa, vowels are isolated in phonics drills but not the consonants. The latter is taught by contrast and negative focus. The phonic value of each grapheme is thus learnt.

The initial formal literacy course for adults takes approximately forty hours to cover all graphemes in all positions in the word and to enable the literates to write a short story independently. Wherever possible, an unstructured advance course is held to give revision in areas which seem to be difficult for all literates.

All Aborigines at Umbakumba under forty years of age can read English but ability varies greatly. Some can operate the phonic rules for writing. There are Aborigines who have taught themselves to read Anindilyakwa by applying the rules for English phonics but these people do not write Anindilyakwa except by finding the words in existing literature and copying them. Facility in reading seems to depend on the correct assignment of phonic values to the consonants and recognising a high versus a low vowel. For example, as they cannot distinguish the vowels in 'man' and 'men' phonetically in English, they tend to ignore the difference in graphemes in Anindilyakwa. These Aborigines are not



considered to be fully literate and are not included in statistical counts of literates in the community.

## 1. CONTENT AND DESIGN OF THE TESTS

The tests are based on information gleaned from books and articles, and from discussions with other linguists and teachers. The Principal, Mr. Peter Clarke, and two teachers at the Umbakumba School, Miss Lorraine Fischer-Johnson and Miss Barbara Marugg, have been extremely helpful.

Suggestions for the diagnostic testing of English phonics have been closely followed. The amount of testing, however, has had to be adapted to suit this particular situation where the language structure is vastly different and the focus is on the viability of the orthography rather than the competence of the literate. The tests were designed to see if the literates could handle their own choices of orthography with consistency and accuracy. While different levels of competency were expected, it was hoped that a general over-all pattern would be seen.

Even though there is a wide range of literature on tests for reading, very little seems to have been written on testing writing. Writing tests in Anindilyakwa followed the same ideas as for reading. Both lists of words and stories were used—the former gave no contextual clues while the latter did. As an orthography is only really tested by the literates applying phonics skills, lists of words which had not been seen before were essential. There was no way to evaluate with certainty whether the words written in stories resulted from the use of phonics skills or from memorisation.

### 1.1 READING TESTS

The reading tests were divided into two sections: (a) reading lists of words with no contextual clues; and (b) reading stories with contextual clues.

The layout was designed to give an uncluttered appearance because a heavy block of the long Anindilyakwa words looks rather formidable. The Reading Lists were placed in two columns; the stories had fairly short lines with hyphens used only where they occur in a word as part of the orthographical system. Too much hyphenation at the end of lines is known to cause problems in reading fluency. All pages were double-spaced.

#### (a) Reading Lists (words)

The Reading Lists contained words from all word classes (parts of speech). List 1 had 61 words, List 2 had 42 words, and List 3 had 53 words, thus making a total of 156 words. (See Appendix: 'Worksheets for Reading Lists'.)

The words used in these tests had not, generally speaking, been used in teaching and testing previously. There were, however, a few common words included to give the reader confidence, to restore confidence after some particularly difficult words, or to ensure that some rare graphemes were tested.

In English diagnostic testing the availability of short words allowed for a concise number of occurrences for each grapheme. This could not be as concise in Anindilyakwa because of the long words and very low frequency of some graphemes. In order to get five occurrences of each (except 'rl' which occurs in only one word) common graphemes had to be multiplied unnecessarily. Frequency counts for consonants and vowels are shown in 'Reading Lists: Statistical Frequency of Graphemes' (see Appendix). The entry of graphemes in syllabic units proved to be the quickest for cross-reference of allophones. Open syllables are tabulated alphabetically but only consonants counted. Consonants closing a syllable and vowels which alone comprise a syllable are shown separately.

#### Reading List 1:

The words contained only open syllables (CV) which are the easiest to read. An attempt was made to have at least three occurrences of each grapheme but it proved to be too unwieldy and some were left for other lists. This was the easiest test.

#### Reading List 2:

This list contained mostly words with open syllables but also some with closed syllables or rarer consonants, such as retroflexes. Closure of syllables and series of consonants, not the length of words, cause the most difficulty in reading. This test is harder than the first one.

#### Reading List 3:

Each word contained at least one closed syllable, sometimes two. The reading of the consonant clusters is more difficult where digraphs and trigraphs occur. Some epenthetic vowels were written but this helps rather than hinders reading fluency because it breaks up the consonant

clusters. This was by far the hardest test but, if handled satisfactorily, indicates that the reader can cope with the whole orthographical system.

#### (b) Stories for reading

Four stories were prepared for testing, none of which had been read before by those tested. Stories 1, 2 and 4 were not generally known but Story 3 is one of the best known Yantarrnga stories. None of those tested had heard the particular version used for testing. (See Appendix.)

Story 1 was told by Mr. Gula Lalara and recorded on cassette by Mrs. Katie Herbert. Story 2 was told and recorded by Mrs. Maria Yantarrnga, Story 3 by Mrs. Tapinkanga Yantarrnga, and Story 4 by Mr. Gula Lalara. There are a few instances where the recording and the script prepared for testing are not identical.

#### Story 1:

The story was taken from an Angurugu booklet which has not been circulated at Umbakumba. It was selected because it was relatively easy to read, was in the popular conversational style for story-telling, and had a predominance of words with the controversial high vowels, 'i' and 'u'. The first half of the story was written in the Umbakumba orthography and the second in the Angurugu orthography (as in the original). The reader's ability in using the two orthographies could thus be evaluated. The context was established in the Umbakumba orthography.

#### Story 2:

This story was very short but contained several difficult words. No paragraphing was used because the Aboriginal literates usually do not paragraph when writing stories. It is traditional but known by only a few of the older people.

#### Story 3:

This story was probably the hardest to read because it was concise with very little repetition of words. Some words were probably not well known. It had a wide range of consonants and closed syllables as well as quite a number of long verbs. From this story it should be apparent as to whether or not the ends of words were being decoded.

## Story 4:

The story is incomplete but left at a natural cut-off point. It was chosen because it had quite a number of words with the controversial 'a' versus 'e'. The first part was written retaining the Angurugu orthography while the second part used the Umbakumba orthography. This was in reverse order to Story 1. The emphatic suffix, -ayika, is also controversial and was written in four possible ways because of the indecision which has surrounded it, viz. e-ka, -ayika, 'ayika and a-ka. While all these possibilities have been discussed at Umbakumba, the last two have not previously been used in teaching.

### 1.2 WRITING TESTS

The tests were divided into two parts: (a) writing a list of words; and (b) writing four short stories. Such testing allowed the literates to choose their own vocabulary, i.e. the words they write frequently or choose to write, but also required them to write words controlled by the person setting the tests. Many of these controlled words would not have been seen before in their specific affixed form, and provided the ideal data for evaluating the viability of the orthography.

#### (a) Word lists for writing

The words were not common in reading material at Umbakumba and have not been used regularly in teaching and testing. This meant that some uncommon constructions were used and these gave difficulty to the younger literates. A few common words were included to bring about or sustain confidence.

There were three writing lists: List 1 had 30 words; List 2 had 40 words and List 3 had 30 words, making a total of 100 words. Each list was read onto cassette tape by Mrs. Katie Herbert, without the linguist reading the words to her. The linguist was present to ensure a good recording and to check that each word was correctly read. The words were said only once but were spaced to the count of three (which accounts for the whispering on the tape).

The statistical frequency of each grapheme was counted to ensure that each was adequately tested. The goal was five occurrences of each but this could not be attained without greatly increasing the number of words. The 'Statistical Frequency of Graphemes' and 'Worksheets for Writing Lists' charts were compiled in the same way as those for reading tests. (See Appendix.)

### Writing List 1:

This list had words with all open syllables and was the easiest test.

### Writing List 2:

The words contained mostly open syllables but some closed syllables (CVC or CVCC) were included. Rarer graphemes were used also. The greatest problem is in writing the consonant/s that close/s syllables. Anindilyakwa words end only in a vowel and a lot of practice in auditory discrimination exercises is needed to overcome writing errors.

### Writing List 3:

All words included at least one closed syllable, sometimes two. The test was really difficult and any person handling it well is competent in handling the whole orthographical system.

#### (b) Writing of stories

Four stories were to be written, between half to a full page of an exercise book. The first two stories to be written were sets of sequences of picture cards made by non-Aboriginal teachers. The last two stories were to be written from large colour photos taken from sets supplied to the school. Topics chosen were well known and were selected because words with controversial graphemes would have to be written. The topics were: a turtle and a dog; a man on a fishing expedition; a group of desert Aborigines sitting around a fire; and a stockyard scene.

As the choice of vocabulary could not be controlled, either phonics skills or memorisation could be used by the authors. Changes to the spelling of common words, however, are significant if they are systematic and not just random error. There appeared to be no way in which these tests could be controlled to remove the variables in creative writing.

The stories were later read onto cassette tapes by Mrs. Katie Herbert for the following reasons: (a) to show that another Aboriginal literate could read what had been written even though it hadn't been seen before; (b) so that other linguists could hear the spoken form along with the written.

## 2. ADMINISTRATION OF THE TESTS

### 2.1 PERSONS TESTED

Discussions about orthography changes had been limited to about ten people who had enough competence and confidence to handle the situation. The common practice for orthography testing is to keep the initial group small, usually not more than ten. It is the workability of the phonics system which needs to be tested, not how many people can use it or like the individual symbols. There is no one at Umbakumba under 40 years of age who is monolingual.

The original aim was to test five out of the ten literates initially taught in the Angurugu orthography but subsequently exposed to all changes, and five new literates taught only the final Umbakumba choices. The latter, however, did not finish the literacy course in time for the Education Department deadline. The men in the community were happy to relegate the testing and final decisions to the women involved. The following is a brief description of those tested, with the first names changed to prevent any embarrassment.

Carla Mamarika: aged 25 years, previously employed as a Teaching Assistant but now employed in the administrative offices. She was involved in discussions after completing the literacy course in 1977, and in casual practice and testing during 1980 and 1981. Her skill was used in the post primary classes and in the church.

Heather Mamarika: aged 26 years, employed as a Teaching Assistant but at Batchelor College for teacher training in 1981. She was in the first literacy class in 1975 and involved in requests for changes since then (especially the using of the shorter forms 'ku' and 'ngu' for rounded velar consonants). Heather has continued teaching the vernacular aspects of the bilingual program in the pre-school, and in story-writing and artwork.

Maxine Mamarika: aged 37 years, formerly employed as Infants 1 Teaching Assistant and as a literacy worker in the bilingual program. She completed the Literacy Course in 1976 and later taught vernacular literacy to the school children; she produced a prolific amount of stories and translations for the school. Her fluency in reading was utilised in the church services. She continued with casual testing and practice up until 1980.

Roberta Yantarrnga: aged 26 years, employed as a Teaching Assistant in the infants classes. Having completed literacy training in 1975, she taught vernacular literacy to the school children, and prepared

supplementary teaching materials as well as writing stories. She is probably the most interested in understanding the structure of her own language. Roberta was not involved in the 1980 discussions but joined in again in 1981.

Sophia Bara: aged 24 years, employed as a health worker in the local government clinic. She completed the literacy course in 1976 when employed as a Teaching Assistant. She has continued to write or translate articles on health and to record the Aboriginal names on birth certificates. In 1980 and 1981 Sophia assisted me in teaching literacy to other health workers and took part in discussions and in casual testing. (She took the current test after leaving hospital and was still not really well.)

## 2.2 ADMINISTERING THE TESTS

Instructions were written in English but explained to the testees, all of whom were bilingual and competent in recording on cassettes. An example of the instructions is as follows:

### Reading Stories 1 to 4

1. You can read the stories in any order you like but the first one is the easy one.
2. Read the story once through to yourself.
3. Put "Story No. . . ." on the tape and read the story right through. If you cannot read a word, say the syllables out loud.
4. Do the same for each story.

It became obvious during the compilation of the tests that I would need to administer one in order to check that instructions were clear and the content suitable. I tested Heather Mamarika. Though the tests were not changed, some problems were observed.

#### (a) Problems in the reading tests

Despite the care taken in choosing vocabulary, some words were not known—three in List 1, one in List 2, and three in List 3. Numerically it is not great but Heather's confidence was lowered to a considerable degree after each failure to decode a word. Aborigines suffer "loss of face" (a sense of shame) very acutely when mistakes are made. Recording

the words meant that a permanent record was available containing the errors. The shyness and insecurity was apparent in whispered speech and slow hesitant reading which was not normal. The words were retained because it was anticipated that others would know them.

In stories where a difficult or uncommon word occurred in the first sentence and could not be decoded quickly, confidence was lost. It was only restored after a couple of sentences in which contextual clues made the meaning apparent.

#### (b) Problems in the writing tests

No problems occurred in the writing of short stories. Heather did these by herself at home. Literates are used to this activity and are confident in doing it.

The main problem arose with the use of the cassette for recording the lists of words for writing. Although the words were carefully and clearly pronounced, the initial consonants were hard to hear and another prefix was sometimes substituted. These initial consonants are all common and were not crucial in the final analysis.

The best way to have conducted this part of the test would have been to have a "live" speaker present the words. Because testing had to be done when testees were available, this was not possible at this time. The other alternative would have been to include the English meaning but this would have added another variable, viz. the degree of proficiency in English.

The other testees were only given the Instructions Sheets which were explained to them, and all necessary paper, pencils and cassettes. Each one completed the tests and operated the equipment alone. The locale and other details are shown on the following chart.

Testee	Locale	Instructions explained by	Approximate time taken
Carla	school office	L. Fischer-Johnson (Deputy Principal)	3 hours in two sessions
Heather	school staff room and at home	V. Leeding (Linguist)	4½ hours in three sessions
Maxine	home	V. Leeding	3 hours in two sessions



Roberta	school office	L. Fischer- Johnson	2½ hours in two sessions
Sophia	clinic room and at home	V. Leeding	2½ hours in two sessions

### 3. MARKING THE TESTS

The tests were compiled to check the viability of the orthography, not reading comprehension. The marking, therefore, focused on the application of phonic skills in reading and writing. The margin of error allowable within the framework of a viable orthography is not known. Marking was certainly not a simple procedure.

The marking was done by Mrs. Katie Herbert, an Anindilyakwa speaker, and myself as linguist. It was felt necessary to have the tests checked by a native speaker of the language who was also literate. As Mrs. Herbert helped with the setting up of the tests, she was the obvious one to assist in their marking. If there was a difference of opinion her decision was final.

#### 3.1 THE READING RECORD

Identification of reading errors was based on the criteria below. Every care was taken to be consistent.

The following miscues were considered to be errors:

- ... omissions and insertions
- ... repeated errors were counted as an error each time
- ... a different grammatical form of the word, i.e. a change in the prefix or suffix
- ... a word read wrongly by sight or because of the context
- ... general visual discrimination miscues

The following miscues were NOT considered to be errors:

- ... self-corrections
- ... acceptable variations of the same word, e.g. an alternative phonetic form; the short form; a longer precise form; an alternative form because of rhythm/timing. Literates were taught to read what was there but to use their own norm when reading aloud.
- ... unknown words
- ... epenthetic vowels, either inserted or omitted (these were evaluated in separate tests)

Words obviously erased from the tapes were counted as errors in word scores but it was later deemed fairer to exclude these for the particular testee in the syllable scores. Where one word was substituted for another, the number of errors was in accordance with the number of syllables in the original. A check was made after the tests to determine the unknown words. (Where a language has short words such detailed planning would not be necessary.)

The notational key is given below (excluding symbols listed in the Key in the Appendix) for those setting up similar testing.

correct response	no marking in the stories, ticked in the lists
wrong response	written above the typed copy
omissions	circled
insertions	marked by a caret and inserted above the typed copy
self-corrections	sc with an arrow to the point of correction
#	not a word
?	hard to hear
< >	unknown word

Footnotes on each page, cross-referenced to incorrect responses, described the nature or meaning of each error to facilitate later collation.

### 3.2 THE WRITING RECORD

The evaluation of errors was the same as for reading except for an additional instance where the low vowel written before a suffix was not counted as an error. Phonological rules apply at these boundaries giving alternative forms.

All hand-written material needed to be typed before being marked so that the system could be consistent with that for reading tests. The darkest impression was considered to be the final choice where letters were over-written.

### 4. TEST SCORES

In the testing of reading ability in English, scoring usually involves counting word errors. This method, however, is not detailed enough for the long words in Anindilyakwa. In addition, it was the adequacy of the phonic skills in relation to the orthography that was being tested. The basic isolatable unit for pronunciation is the syllable which, given the high percentages of accuracy in reading and writing, was suitable for estimating percentages of accuracy.

When the tests were set up, statistics were tabulated in relation to the consonants, either initial or final in the syllable, and the vowels. To present the results in these terms proved to be too time-consuming and of little real value. Errors in syllables were counted and the percentage of accuracy ascertained. (Had percentages been calculated on the grapheme, the percentages of accuracy would have been even higher).

#### 4.1 READING SCORES

The percentage of accuracy in reading the syllables is shown on Table 1. The percentages are shown for each testee and are based on the total number of errors, omissions or insertions.

TABLE 1  
Percentage of accuracy in reading syllables

Testee	Lists	Stories	Average
Maxine	96.7%	98.4%	97.6%
Roberta	96.8%	97.0%	96.9%
Sophia	95.2%	98.1%	96.7%
Carla	93.0%	96.1%	94.6%
Heather	91.8%	95.2%	93.5%

While the percentages of accuracy in words did not show a realistic picture of accuracy, Table 2 gives the figures for those who might be interested in the comparison.

TABLE 2  
Percentage of accuracy in reading words

Testee	Lists	Stories	Average
Maxine	91.1%	94.7%	92.9%
Roberta	91.7%	90.9%	91.3%
Sophia	90.0%	94.9%	92.0%
Carla	81.8%	92.2%	87.0%
Heather	77.6%	88.1%	82.9%

Note that the disparity in the percentages of accuracy for words versus syllables is greater for the less competent reader.

Two different orthographies were used in Stories 1 and 4. The speed of reading and correct intonation patterns indicated that both were read satisfactorily with comprehension. The focus of scoring was placed on the percentage of accuracy, again based on syllables as the more reliable estimate. Table 3 lists the percentages of accuracy in each orthography.

While in six cases out of ten the Angurugu orthography to which they had been exposed the longest had a slightly higher percentage of accuracy, the differences are negligible. The overall average scores are: Angurugu orthography 97.4%; Umbakumba orthography 97.9%.

TABLE 3

Percentage of accuracy for each orthography  
estimated in syllables

Testee	Story 1		Story 4	
	Ang.	Umb.	Ang.	Umb.
Maxine	100.0%	98.2%	100.0%	97.9%
Roberta	98.2%	97.9%	97.6%	99.0%
Sophia	99.1%	98.7%	98.8%	97.2%
Carla	97.3%	98.7%	98.2%	96.6%
Heather	97.3%	97.9%	87.0%	96.5%
Averages	98.4%	98.3%	96.3%	97.4%

For those who are interested in seeing the percentages of accuracy in the two orthographies according to a statistical count of words, these are presented in Table 4. The average scores for the Angurugu orthography were 94.6% and for the Umbakumba one, 93.4%. While the higher one reverses in this scoring, the percentages are still almost equal.

TABLE 4

Percentage of accuracy for each orthography  
estimated in words

Testee	Story 1		Story 4	
	Ang.	Umb.	Ang.	Umb.
Maxine	100.0%	95.7%	100.0%	95.9%
Roberta	96.7%	91.4%	93.8%	95.9%
Sophia	98.3%	96.9%	96.9%	89.0%
Carla	95.0%	96.7%	96.9%	91.7%
Heather	93.3%	94.2%	71.7%	90.4%
Averages	96.7%	94.0%	91.9%	92.6%

The number of syllables and words tested for each orthography was not equal. In Story 1, the testing in the Angurugu orthography was for 60 words (215 syllables) and for Umbakumba 86 words (380 syllables); and for Story 4, 32 words (168 syllables) and 72 words (284 syllables) respectively. The variable occurred because the focus overall was on examining the viability of the Umbakumba proposals.

4.2 WRITING SCORES

The percentage of accuracy in writing syllables in both lists and stories is shown on Table 5, based on the total number of errors, omissions and insertions.

TABLE 5

Percentage of accuracy in writing syllables

<u>Testee</u>	<u>Lists</u>	<u>Stories</u>	<u>Average</u>
Roberta	87.0%	89.1%	88.0%
Sophia	81.7%	86.0%	83.9%
Maxine	80.7%	86.0%	83.4%
Carla	82.0%	85.5%	83.3%
Heather	80.1%	82.6%	81.4%

The percentage of accuracy in words is shown on Table 6 for those interested in the comparison.

TABLE 6

Percentage of accuracy in writing words

<u>Testee</u>	<u>Lists</u>	<u>Stories</u>	<u>Average</u>
Roberta	50.0%	68.1%	59.5%
Sophia	42.0%	56.5%	49.3%
Maxine	42.0%	54.5%	48.3%
Carla	37.0%	54.4%	45.7%
Heather	31.1%	47.7%	39.4%

Note that, as in the reading, the disparity in the percentage for writing syllables versus words is greater for the less competent.

**5. INTERPRETING THE SCORES**

**5.1 READING**

The average percentages of accuracy in reading syllables (Table 1) range

between 97.6% and 93.5%, indicating that all those tested were competent readers. Such high percentages also indicate that, for reading, both orthographies are adequate. The viability of both orthographies is attested as per Table 3 which shows that overall average percentages have a difference of only .5%.

All the usual reading devices appear to have been used by all readers, i.e. sight word and phonic attack skills, self-correction techniques, meaningful substitutions, and guessing based on comprehension of what has already been read.

If reading comprehension and accuracy were the only aims of testing, the above information would be sufficient. In evaluating the viability of the phonetic alphabet itself, closer attention must be given to individual graphemes, especially those that are controversial. The interpretation of the scores covers all graphemes.

#### 5.1.1 CLASSIFICATION OF READING ERRORS

In order to investigate the nature of the reading errors, each person's errors were divided into seven categories, as shown below. All errors were listed in syllables because the combination of consonant and vowel is more relevant than the word to issues of orthography. Syllables containing two errors were listed twice.

- (i) incorrect calling of graphemes
- (ii) methathesis/reversal of graphemes or syllables
- (iii) omission of one syllable when two syllables have the same initial consonant
- (iv) omission of a reduplicated morpheme which usually alters the grammatical meaning, e.g. intensifier
- (v) substitution of another grammatical form, e.g. pronominal prefix, aspect-changing suffix
- (vi) substitution of one word for another
- (vii) error/omission/insertion because a preceding syllable had been called wrongly

In Categories (ii) to (iv), errors were probably due to a lack of concentration or because of tension, having been read correctly but called incorrectly. All errors produced a more common word. Metathesis and the deletion of the first of two similar syllables are features of the language but only in some phonological environments. There is also a tradition where "reading" of bark paintings is from right to left but, as reversal errors are minimal, this is not likely to be the cause of error.



Category (v) lists errors where not enough attention has been given to the beginning or the end of a word. Substitutions usually made sense but were not what the author intended. Initially in literacy classes, adults did not read for meaning but the tests show that this problem is now overcome.

Category (vi) errors were largely due to guessing from the context. A more common sight word of similar shape was called, a meaningful word substituted where a difficult one could not be decoded quickly, or a grammatical word anticipated incorrectly, e.g. *mijiyalya* 'beach' for *miyalkwa* 'low tide'; *arakba* (action accomplished) for *kambirra* (action accomplished so that another can take place).

Category (vii) lists syllables changed to create a meaningful word. A preceding syllable was called incorrectly, necessitating further change, e.g. *ayakwa* 'word' for *-ayika* (emphatic).

#### 5.1.2 DISCUSSION OF READING ERRORS

Category (i) is the only one where errors can be positively identified as relating to the testing of specific graphemes. In the other categories, the required graphemes were omitted, were correct but reversed, or were changed completely with the substitution of morphemes or words.

The problems observed in Category (i) are as follows:

(a) grapheme substitutions: palatal, dental or alveolar consonants (9 errors out of 275+)

The graphemes 'ly' and 'ny' were read as /l/, /n/ or /y/. There is a structural reason for difficulties in this area: communilect and idiolect variation occurs between /ly/, /l/ and /y/, and /ny/ and /y/. Some people use both variants in some words and others only one. In literacy classes, the Aborigines were taught to read what is written but to pronounce it according to their own norm. In the majority of Anindilyakwa words, only one or the other occurs.

In some cases, the problem was due to residual insecurity because of the structure or because a digraph was involved and only part of it read. Errors were at a minimum, indicating that teaching method has coped with the problem and that the graphemes were read satisfactorily.

(b) digraphs: retroflexed and flap consonants (8 errors out of 690+)

Digraphs were occasionally read as either another digraph or a cluster

of two consonant graphemes. The occurrences where 'rd', 'rn', 'rr' and 'r' were called incorrectly as 'nd', 'rd', 'rr', 'rn' or 'r' indicate problems in visual discrimination of similar digraphs. The increased tension under testing probably accounts for the minimal number of errors that were made.

(c) syllable closure: consonants (13 errors out of 420+)

The reading of the consonant graphemes closing syllables caused the most difficulty to the most number of testees. The problem is caused by the structure of Anindilyakwa where all words end in an open (CV) syllable and lies in the area of auditory discrimination. It has been observed in literacy classes that, when the auditory skill is mastered, both reading and writing are satisfactory.

Nearly all errors produced a more common word or a change in the grammatical prefix. The consonants involved were homorganic nasal plus stop, e.g. 'nd', 'ngk' or 'ngkw', and to a lesser extent 'r' and 'rr'. In some cases only the first consonant was read but not those following.

It was difficult to determine whether some errors were related to digraph complexity or syllable closure, e.g. *ningi* 'I' versus *ningki* 'you'. As homorganic clusters caused major problems in early literacy, they were taught to one class as units for auditory discrimination. Structurally there is good evidence to consider them as complex units and some Aborigines, particularly men, view them as such. The language, however, drops the nasal in word-initial position, thus creating an auditory discrimination problem in the syllable-initial position. The Aborigines subsequently chose to split the homorganic cluster for teaching purposes. The low number of errors shows this to be successful.

(d) velar consonants (3 errors out of 805+)

Some literates initially had trouble in distinguishing aurally between velar stops and velar nasals, i.e. /k/ and /ng/, and /kw/ and /ngw/. The sounds vary freely in the closure of syllables at morpho-phonemic boundaries. The minimal number of errors indicates that the problem is now resolved.

(e) rounded velar consonants (4 errors out of 230+)

The syllable 'kwu' was originally taught in contrast with 'ku' where no such contrast exists. The problem was multiplied because it caused confusion in reading and writing 'k' or 'kw' preceding 'a' where a contrast does exist. The present orthography corrects this anomaly by writing only the emic consonant /kw/ before 'u'. Errors mainly preceded /a/ and were minimal.

(f) vowel 'a' which is phonetically [e] (12 errors out of 425+)

All those tested were initially taught to write 'e' but strongly objected to it. The vowel [e] is an allophone of the phoneme /a/ and is currently written as 'a'.

There are about five minimal pairs where under-differentiation of the consonant causes each pair to be written identically, e.g. /pwarra/ [p<sup>w</sup>aʀa] 'NW wind' and /parra/ [peʀa] 'go away' are written as 'barra'. Although context indicates the difference, there were two mistakes. To reduce the ambiguity in another word in the Reading List where no context is given, the form 'mamama' [memema] 'this' was used to avoid confusion between its short form [mema] and 'mama' [m<sup>w</sup>am<sup>w</sup>a] 'it doesn't matter'. There were only three errors out of a possible ten by two testees who shortened the words.

The word 'kangkarrina' [kaŋkaʀina] 'run' was called incorrectly as ke kirena in two out of five cases; and, conversely, the word 'kangkirrana' [keŋkiʀena] 'listen' was called incorrectly as [kaŋkaʀina] in two different cases. The error, however, was not in the reading of the first syllable but in the inattention given to the second and third syllables, 'karri' and 'kirra', which were reversed in both cases. The phonological rule is that [aŋ] precedes /ka/ and [eŋ] precedes /ki/. The orthographical device itself worked well in that all testees applied the rules correctly in the words called.

(g) vowels 'a' and 'i' (8 errors out of 2385+)

Almost all the errors involved the calling of 'a' as 'i' and most of them occurred in conjunction with a change in a grammatical affix. There is, however, the possibility that there is a residual problem in which the name of the grapheme and its pronunciation are confused. Anindilyakwa makes no contrast between the sounds [a<sup>i</sup>] and [e<sup>i</sup>] and Aborigines are only sure of the letter names when they are said within the alphabet, i.e. in context. These errors were minimal and probably just random.

(h) the VCV sequence 'iyi' (3 out of 23)

The sequence 'iyi' can be shortened phonetically to a lengthened vowel. There is a strong structural pressure for contiguous vowels to be different. Where two identical vowels are likely to occur at a morpheme boundary, the Dissimilation Rule applies to change one of the two high vowels to a low vowel.

Errors were made because the vowel in the second syllable was called as 'a' or 'ya'. Three testees gained 100% accuracy. The other two have the lowest overall scores for accuracy in reading.

(i) the lengthened glide [e<sup>i</sup>] written as 'ayi' (10 errors out of 55)

The testees were originally taught to write 'e' for this glide but reacted against it on the grounds that it did not "feel right". Given the choice of 'a', 'ay' or 'ayi', they selected 'ayi' for the long glide and 'a' for the short one.

The errors fall into two groups: final or non-final in a word.

**Final:** Only one word was included in the test and only one testee got it right. The others substituted a very common word in its place, indicating that they probably read it by sight.

**Non-final:** The remaining six errors in 50 occurrences (12%) seem to have occurred because a change of vowel usually indicates two syllables.

In comparison with other percentages of accuracy, this high rate of error shows considerably less ability to handle these graphemes. If the percentage of accuracy were as low for the lengthened vowel in (h), errors could have been attributed to problems in writing length but there is no evidence of this.

It should also be noted that no problems occurred where the short vowel glide with the same phonetic quality was written as 'a'.

(j) full stop as a spelling convention (4 errors out of 25)

The full stop is used to separate two full phonemes from a digraph representing only one phoneme, e.g. 'rd' for /rɔ/ versus 'r.d' for /rɔd/. The Aborigines do not like this convention because the full stop is seen to be related to the end of a sentence rather than the middle of a word. The closure of the syllable was usually omitted and a more common word substituted.

## 5.2 WRITING

The testees showed themselves to be competent in writing skills and thus suitable participants for testing. The percentages of accuracy (Table 5) range between an average of 88.0% and 81.4%.

Writing provides a far better indication of the viability of the orthography than reading, especially when testees are bilingual and biliterate.

### 5.2.1 CLASSIFICATION OF WRITING ERRORS

Twelve categories (shown below) were set up to investigate the nature of each person's writing errors. Attempts were made to keep these the same as for reading but a more detailed classification was needed in the controversial areas, e.g. rounded consonants, high vowel. Listing in syllables remained the same and ambivalent errors were placed in the category most crucial to solving orthography problems. The categories covered errors in writing, as follows:

- (i) incorrect writing of graphemes other than (iv) to (xi)
- (ii) metathesis/reversal of graphemes or syllables
- (iii) in two syllables with the same initial consonant
- (iv) in writing 'w' as rounding on the consonant
- (v) in the short vowel [e] or [e<sup>i</sup>] preceding a velar
- (vi) in the short vowel [e] or [e<sup>i</sup>] other than preceding a velar
- (vii) in the two-syllable sequences for long vowels, 'ayi' and 'iyi'
- (viii) in the high vowel following 'Cw'
- (ix) in the high vowel following 'w'
- (x) in the high vowel following 'm' or 'b' where there is under-differentiation of the consonant and over-differentiation of the vowel
- (xi) in the high vowel preceding a rounded consonant. Further divided into "within the morpheme" and "at MP boundaries" because phonological rules for underlying forms occur.
- (xii) in substituting one word for another

### 5.2.2 DISCUSSION OF WRITING ERRORS

Categories (i), and (iv) to (xi) which refer directly to the incorrect writing of graphemes are discussed below as pertinent to the testing of a phonetic alphabet.

Problems under category (i) are as follows:

- (a) grapheme substitutions: palatal, dental or alveolar consonants (25 errors out of 230+)

The errors occurred because of confusion between 'ly' / 'l', or 'ny' / 'n' and 'y'. Three testees each made between two and four errors; the remaining 17 errors were made by two testees. As the degree of error varied greatly with the individual, it is most likely to be caused by structural complexity (see Section 5.1.2 (a)).

The problem is not orthographical and scores could be improved through adequate teaching methods and revision for individuals needing it. Literature for literacy classes needs to be spelt to suit the Umbakumba community.

(b) digraphs: retroflexed and flapped consonants (42 errors out of 440+)

In 37 of the errors, the alveolar was written instead of its retroflexed counterpart, i.e. the 'r' was omitted. Errors fell into two groups: three-quarters were in syllable-initial position and the remainder in syllable final position.

Retroflexed consonants except /ɻ/ are statistically infrequent, i.e. less than 2% of consonants in over 100 pages of text. Only in two or three cases in the language do they occur in word-initial position. In auditory discrimination exercises, Aborigines dropped the retroflexion for syllable-initial consonants when said in isolation and wrote the resultant alveolar. (Alveolars are not traditionally phonemes but allophones of the dental series.) Part of the digraph or trigraph was written in the closure of the syllables but it was not always the retroflexion which was omitted.

The orthographical devices appear to be satisfactory with structure compounding the normal difficulty in handling digraphs.

Various teaching methods were used to try to overcome problems in writing retroflexed consonants. One method required the word to be slowed down but not completely broken into syllables to help to retain the retroflexion. This did not work because the Aborigines had no way of knowing which words to slow down and which to break completely into syllabic units. The most effective method was one of revision where literates were asked to edit their own work, reading each word carefully and correcting any errors. Such editing was probably not done during these tests because of the pressure.

Only one testee wrote the flap 'rr' incorrectly as the retroflexed 'r'. This distinction has been a problem with a few individuals during auditory discrimination exercises in the early classes.

(c) syllable closure: consonants (66 errors out of 305+)

One testee made no errors in closing the syllables with a consonant but did have errors in writing certain graphemes correctly. One testee (who was not available for an advanced literacy class or for revision) accounted for 29 of the errors, i.e. almost half. The greatest problem was observed in words with syllables closed by two or more graphemes (19

errors out of 35) where either one or none was written. Such syllables are rare in the language but do occur in some very common morphemes.

Errors occur because of structural pressures in the language which cause problems in auditory discrimination. Only a vowel occurs word-finally and so syllable final consonants are dropped when word-medial syllables are said in isolation. Practice in auditory discrimination and editing one's own work has reduced such error to a minimum for most literates.

(d) velar consonants (4 errors out of 455+)

There were no errors in writing these consonants correctly but there were four instances where 'k' or 'm' were added after 'ng'. The combinations of consonants, 'ngk' and 'ngm', are common in the language. Although the /ŋ/ can elide, full forms are always written.

The problems arising in Category (iv) are as follows:

(e) rounded velar consonants

The orthography uses 'w' to symbolise the feature of rounding on velar consonants. The syllables 'kwu' and 'ngwu' contrast with 'ki' and 'ngi', respectively. The data was hard to evaluate because at times the wrong syllable was written. This was considered to be an error in auditory discrimination. The errors listed here are the ones where the combination of consonant and vowel were incorrect as far as the orthography was concerned. What is examined here is the correct use of the orthography in writing the syllables 'kwu/ngwu' or 'ki/ngi' (but not 'ku/ngu') preceding a rounded consonant.

Table 7 shows the percentages of accuracy in writing the above symbols, 'kwu', 'ngwu', 'ki' and 'ngi', according to the Umbakumba orthography. It is divided into two sections: within the morpheme and at the morpheme boundary. The average percentages show that there is about equal ability in handling the graphemes within the morpheme (68.3%: 43/63) and at the morpheme boundary (64.6%: 42/65).

TABLE 7

Percentages of accuracy in writing the rounded/  
unrounded velar consonants preceding u

Testees	Within the morpheme		At the morpheme boundaries	
	Lists	Stories	Lists	Stories
Roberta	100.0% (9/9)	100.0% (7/7)	88.9% (8/9)	100.0% (5/5)
Sophia	66.6% (6/9)	33.3% (1/3)	71.4% (5/7)	0.0% (0/2)
Maxine	100.0% (7/7)	100.0% (4/4)	83.3% (5/6)	60.0% (3/5)
Carla	70.0% (7/10)	33.3% (1/3)	57.1% (4/7)	88.9% (8/9)
Heather	0.0% (0/10)	100.0% (1/1)	16.7% (1/6)	33.3% (3/9)

Two testees who were strongly in favour of writing Cwu throughout but who were originally taught both spellings as contrastive, gained 96.7% (29/30) and 86.4% (19/22). The testee who was in favour of Cw but taught only Cu throughout, gained 65.5% (19/29). The two testees who preferred Cu but were taught both as contrastive, gained 57.1% (12/21) and 19.2% (5/26). The testees' percentages showed a wide range of variation but there is evidence that most chose one set of graphemes rather than using both in a systematic way.

The highest scores of accuracy were attained by those who chose to write 'w' to indicate rounding.

The Angurugu orthography originally had Cwu and Cu in contrast but this was changed in 1980 to mutually exclusive distribution with /kw/ and /ŋw/ as the phonemes. The orthography, however, uses the allophones: Cw preceding unrounded consonants and Cu preceding rounded consonants. At the morpheme junctures, the surface form is written.

Table 8 shows the percentages of accuracy in relation to each orthography. The percentages for Cwu preceding unrounded consonants is the same for both orthographies, with the controversial area being the one preceding rounded consonants.



TABLE 8

Comparison of orthographies relating to rounding  
of the velar consonant

Testees	Preceding C:	Preceding Cw:	
	Ang. and Umb. Cwu	Ang. Cu	Umb. Cwu/Ci
Roberta	100.0% 15/15	6.7% 1/15	93.3% 14/15
Sophia	77.0% 10/13	62.5% 5/8	37.5% 3/8
Maxine	100.0% 12/12	30.0% 3/10	70.0% 7/10
Carla	53.8% 7/13	18.7% 3/16	81.3% 13/16
Heather	11.1% 1/9	76.5% 13/17	23.5% 4/17

Where both Umbakumba and Angurugu orthographies are the same, the percentage of accuracy is 72.6% (45/62). The highest individual inaccuracies were for the person who wanted Cu throughout the language or was taught Cu. Where the orthographies differ, Umbakumba attained 62.1% (41/66) and Angurugu 37.9% (25/66). This indicates almost twice as much success in using the Umbakumba choices where there is a correlation between phoneme and grapheme.

Other errors in the writing of Cw occurred preceding the low vowels. The syllables, /kwa/ and /ŋwa/, clearly contrast with /ka/ and /ŋa/ respectively. Table 9 lists the percentages of accuracy in writing Cwa.

The writing of the rounding of the velar as 'w' before a high vowel cannot be divorced from the same situation preceding a low vowel. The percentages of accuracy in Table 9 indicate that those testees who preferred to write 'w' gained 100% in accuracy in writing Cw correctly preceding the low vowel. Those who chose to omit the 'w' failed to write it accurately preceding the low vowel where the contrast is clear.

These results indicate that there is greater overall accuracy if 'w' is written preceding 'u'.

TABLE 9

Percentages of accuracy in writing 'w' as the  
rounding of a velar consonant preceding 'a'

Testees	Lists	Stories
Roberta	100.0% (10/10)	100.0% (12/12)
Sophia	70.0% (7/10)	93.0% (11/12)
Maxine	100.0% (10/10)	100.0% (14/14)
Carla	100.0% (10/10)	100.0% (11/11)
Heather	100.0% (10/10)	95.0% (19/20)

There is one other problem related to the spelling of the rounded velars. Because the basic form of a syllable and the surface form can differ, a decision was made regarding the spelling at the morpheme boundaries. When a root ends with /k±/ or /ŋ±/ and the suffix begins with a rounded consonant, the root-final syllable can optionally change to [k<sup>w</sup>u] or [ŋ<sup>w</sup>u] in the surface structure. The Aborigines chose to write the basic forms /k±/ and /ŋ±/ in this environment in order to keep the form of the root consistent. If phonic skills are applied the syllable is isolated and the basic form is pronounced and written.

It is extremely difficult to make an assessment of the syllable at the morpheme boundary because two orthographical issues are involved. Ignoring the vowel, the following percentages of accuracy were estimated according to whether C or Cw was written:

Cw preceding C	50%	(3/6)
Cw " Cw	41.5%	(10/24)
C " Cw	87.2%	(34/39)

The greatest percentage of accuracy correlates with the recognition of the hardest one to identify, i.e. the basic form /k±, ŋ±/ which is [kwu,

ngwu] in the surface structure. This confirms that there is an innate feeling for the basic form. Less accuracy was attained when the basic and the surface forms were the same, i.e. the basic (emic) form Cwɪ written as Cwu. The errors were not simply the omission of 'w' but also the choice of the wrong emic syllable. It could be that, in concentrating on getting the basic forms which were difficult, they have leant too much in that direction.

The problems in Categories (v) and (vi) are as follows:

(f) low vowel 'a' which is phonetically [e] (9 errors out of 347)

Everyone was taught to write 'e' for this allophone until late 1980 when it was changed to 'a' at Umbakumba because of repeated requests by the literates. Table 10 shows the percentages of accuracy, together with a comparison for lists and stories.

TABLE 10

Percentages of accuracy for the short low vowel 'a' [e]

Testee	Preceding velar consonants		Preceding non-velar consonants	
	Lists	Stories	Lists	Stories
Roberta	100.0% (7/7)	-	100.0% (48/48)	100.0% (15/15)
Sophia	100.0% (7/7)	-	100.0% (48/48)	100.0% (12/12)
Maxine	71.0% (5/7)	-	98.0% (47/48)	100.0% (20/20)
Carla	100.0% (7/7)	-	96.0% (46/48)	73.0% (11/15)
Heather	100.0% (5/5)	100.0% (2/2)	100.0% (40/40)	100.0% (18/18)

Errors were made by only two testees, both of whom read 'e' regularly in church materials sent from Angurugu. The grapheme 'e' was in only seven errors preceding non-velar consonants. The minimal number of errors indicate that no orthographical problem exists.

The problems in Category (vii) are as follows:

(g) lengthened vowel glide [e<sup>i</sup>] written as 'ayi' (50 errors out of 81)

The testees were taught to write 'e' in this position in accordance with the Angurugu orthography until late 1980. No testees used 'e' in the spelling of the glide. The percentages of accuracy in writing 'ayi' and 'iyi' are shown on Table 11.

TABLE 11

Percentages of accuracy in writing the VCV sequences

Testees	Word Lists		Stories	
	Control Words	Other Words	Control Words	Other Words
Roberta	60.0% (3/5)	0.0% (0/6)	100.0% (5/5)	-
Sophia	40.0% (2/5)	17.0% (1/6)	-	0.0% (0/1)
Maxine	20.0% (1/5)	0.0% (0/6)	100.0% (2/2)	-
Carla	80.0% (4/5)	17.0% (1/6)	100.0% (5/5)	100.0% (1/1)
Heather	40.0% (2/5)	20.0% (1/5)	100.0% (3/3)	-

Five control words were included in the word lists as a basis upon which to gauge the spelling of the more controversial words. These words have a sequence /ayɪ/ and /ɪyɪ/ which optionally reduces to a lengthened vowel. There were 13 errors in 25 occurrences (52%) but one testee had 80% accuracy. In the stories, where the words with 'ayi' or 'iyi' sequences do not have a variant with the short form of the glide, there was 100% accuracy.

There is consistency in the two orthographies in the spelling of the control words. At Angurugu, only the longer, more precise form is included in the literature but at Umbakumba both forms are written and

considered to be legitimate variants of the same word. The younger adults at Umbakumba often use only the shorter form and do not seem to be aware of the longer form used by the older adults. What they do not say, they cannot write. As there were no errors in the spelling of words without a short form, the errors may have occurred simply because the shorter form was chosen.

In the controversial words there were 27 errors in 31 occurrences (87.1%). The results indicate that the testees could not handle their own choice of orthography but continued to find the Angurugu option unacceptable. All errors reduced the glide to one syllable but varied between 'a', 'ai' and 'i'. The one person who used 'ai' also wrote it in another instance where only a single syllable with 'a' can occur. The error 'i' is most likely to be the substitution of another grammatical affix.

If 'a' were taken as the correct symbol instead of 'ayi', the percentage of accuracy in controversial words would be 64%. Following this testing, re-analysis of the controversial glide showed that it is an allophone of the phoneme /a/ with length a supra-segmental feature. Thus the Umbakumba Aborigines wrote according to their intuitions and this was more reliable than their choice during discussions.

The problems in Categories (viii) to (xi) are set out below. All categories refer to the spelling of the high vowel as 'i' or 'u'.

(h) the high vowel /ɨ/ written as 'i' or 'u'

The Aborigines at Umbakumba were taught 'i' and 'u' as contrastive unit until 1980. The decision was made in 1981 to retain 'u' (even though it is not contrastive) but to use well defined spelling rules. The allophone [u] was to be written only within a syllable, contiguous to a rounded consonant, viz. /kwɨ/ as 'kwu'; /ngwɨ/ as 'ngwu'; /mwɨ/ as 'mu'; /pwɨ/ as 'bu'; and /wɨ/ as 'wu'. One exception was made to write /Cwɨ/ preceding /y/ with an 'i'. The grapheme 'i' was to be written in all other instances, viz. where only an unrounded vowel occurred. The contrast between /Cɨ/ and /Cwɨ/ is thus maintained within the syllabic unit though in some cases the contrast is transferred from the consonant to the vowel, e.g. 'mu' /mwɨ/ versus 'mi' /mɨ/, and 'bu' /pwɨ/ versus 'bi' /pɨ/.

Spelling convention preceding /y/:

These syllables should have been written as 'kwu', 'ngwu', 'wi', 'mi' and 'bi'. No data included 'ngwu' and none of these syllables occurred in the stories. In all these syllables, the phonetic variant is [i] of the phoneme /ɨ/. Table 12 sets out the percentages of accuracy.

TABLE 12

Percentages of accuracy in writing 'i' or 'u'  
preceding 'y'

Testees	Lists		Lists	Stories
	kwu	wi	m/bi	m/bi
Roberta	50.0% (1/2)	100.0% (2/2)	100.0% (13/13)	100.0% (6/6)
Sophia	50.0% (1/2)	100.0% (1/1)	100.0% (13/13)	100.0% (7/7)
Maxine	0.0% (0/2)	100.0% (2/2)	100.0% (13/13)	100.0% (5/5)
Carla	100.0% (2/2)	50.0% (1/2)	92.0% (12/13)	100.0% (6/6)
Heather	50.0% (1/2)	50.0% (1/2)	100.0% (12/12)	100.0% (8/8)

No errors were made where 'mi' and 'bi' occurred. Errors occurred when 'kwu' was written as 'kwi', and 'wi' was written as 'wu'.

The Angurugu orthography uses both 'i' and 'u' (see Section 0.3). There is no way to check it in detail at this time but, from words known, the score would be higher where 'i' was used because it would then be correct.

Spelling convention: 'u' following 'm', 'b', and 'w'

The vowel 'u' was chosen as the grapheme to be written after rounded consonants, viz. 'mu' for /mwi/; 'bu' for /bwi/ and 'wu' for /wi/. In literature, only 'u' has been used with /w/ but both 'u' and 'i' have been used with /mw/ and /pw/.

When a high vowel occurs between two rounded consonants, only the allophone [u] occurs. When a high vowel occurs following a rounded consonant and preceding an unrounded consonant, the allophones vary from a high front unrounded vowel to a back rounded vowel. The Aborigines have had the most trouble deciding on how to write the vowel in this position.

Table 13 lists the percentages of accuracy in writing 'u' in the two different positions. Between two rounded consonants, no separation was necessary because of the difference in consonants.

TABLE 13

Percentages of accuracy in writing 'u' following a rounded consonant

Testees	Between Cw and Cw		Between Cw and C			
	Lists m/b/wu	Stories m/b/wu	Lists m/bu	wu	Stories m/bu	wu
Roberta	40.0% (2/5)	100.0% (2/2)	19.0% (3/16)	80.0% (4/5)	14.0% (1/7)	86.0% (6/7)
Sophia	80.0% (4/5)	100.0% (3/3)	69.0% (11/16)	80.0% (4/5)	50.0% (3/6)	100.0% (6/6)
Maxine (16/18)	100.0% (5/5)	100.0% (5/5)	25.0% (4/16)	60.0% (3/5)	0.0% (0/11)	89.0%
Carla (10/12)	100.0% (5/5)	100.0% (3/3)	88.0% (14/16)	80.0% (4/5)	82.0% (9/11)	83.0%
Heather (11/14)	60.0% (3/5)	100.0% (2/2)	43.0% (6/14)	0.0% (0/2)	27.0% (3/11)	79.0%
Average	76.0%	100.0%	48.8%	60.0%	34.8%	87.4%

Only in the stories did all testees gain 100% of vowel accuracy between two rounded consonants, where the first one was 'w'. The words in the story, however, are all well-known vocabulary where 'u' has been written consistently. From observations in literacy classes, these words have been memorised and are usually written very quickly without the phonics skills being applied. In the word lists, where the testees could not control their own data, the percentage of accuracy dropped to 76%.

Where there is a choice of allophones preceding an unrounded consonant, the percentages show that the spelling conventions have not been applied satisfactorily, except for 'wu' in the stories. Wherever an error

occurred the emic /ɨ/ was written. The choice of 'u' meant that the rounding of the consonant was transferred graphemically to the vowel, thus changing 'i' to 'u'. The results show that this is not working. There is an inability to write the allophone consistently or there is a conflict between the emic and the allophonic. After 'm' /mw/ and 'b' /bw/, the emic 'i' /ɨ/ was preferred.

As the Angurugu orthography would use the same symbol 'u' between two rounded consonants and mostly use 'u' between the rounded and unrounded consonants, the percentages of accuracy would apply in that case too. The results show that, except for 'wu' in the stories, the testees did not succeed in using the Angurugu orthography correctly.

It should be noted that two testees wrote 'bw' for the rounded phoneme /pw/. This has never been written in any of the literature and only been briefly discussed in classes. One testee wrote this way before any discussion had taken place.

Spelling convention: 'i' written following an unrounded consonant and preceding a rounded one

The grapheme 'i' was chosen following an unrounded consonant and preceding a rounded consonant. All the allophones from a high front vowel to a back rounded vowel occur, basically [i~ɨ~u~ɯ]. The allophones of the vowel begin as unrounded and become progressively rounded in anticipation of the rounded consonant, but there are variants which are wholly rounded. The emic value of the vowel is /ɨ/.

Table 14 shows the percentages of accuracy and is divided into two sections: within the morpheme and at the morpheme boundary. (The number of occurrences differ in the word lists owing to the inclusion or exclusion of transitional vowels.)



TABLE 14

Percentages of accuracy in writing 'i' between  
an unrounded and rounded consonant

Tessees	Within the morpheme		At the morpheme boundary	
	Lists	Stories	Lists	Stories
Roberta	75.0% (12/16)	40.0% (4/10)	92.0% (23/25)	75.0% (24/32)
Sophia	71.0% (10/14)	67.0% (6/9)	82.0% (22/27)	13.0% (2/15)
Maxine	53.0% (8/15)	25.0% (3/12)	65.0% (17/26)	27.0% (8/29)
Carla	45.0% (10/22)	53.0% (9/17)	75.0% (21/28)	39.0% (15/38)
Heather	58.0% (11/19)	33.0% (6/18)	64.0% (18/28)	42.0% (16/38)
Average	60.0%	43.6%	75.6%	39.2%

There is no significant difference as to whether the grapheme occurred at the morpheme boundary or within a morpheme. This would indicate that the orthography does not require special morphophonemic spelling to cope with differences between the surface and deep structures.

These results show that, in the word lists where the phonic skills have had to be used, there is a significantly greater percentage of accuracy (67.8%) than in the stories where memorised forms of common words were used (41.4%). There are also common suffixes which appear to have been written automatically, e.g. the verb ending *Vma* and the noun affixation *Vwa*.

The Angurugu orthography uses 'u' preceding a rounded consonant. The percentages of accuracy would simply reverse, e.g. 60% accuracy at Umbakumba means 40% accuracy for Angurugu. The average scores would be 32.2% for word lists and 58.6% for written stories for the Angurugu orthography.

In the 1974-77 orthography, high vowels which were phonetically unrounded were written contrastively as 'i' and 'u' because the allophone contiguous to a velar was recorded as [u] (similar to certain English pronunciations of the high back vowel), e.g. 'ajirungka' /ajɪrɪŋka/ [aɪɪrɪŋka] 'ground'; and 'nirungka' /nɪrɪŋka/ [nɪɪrɪŋka] 'he saw it'. The Aborigines pointed out that these high vowels are the same and spelling was altered to make them identical. A similar type of problem, however, has now arisen because of the spelling conventions and is a significant factor in spelling errors. Both vowels are used in words where the phonetic realisation is identical or overlaps, e.g. 'wurriwarda' /wɪrɪwɔɾa/ [wɹɹɪwɔɾa] 'dog'; 'mamurikwa' /mɔwɔmɹɪkwa/ [mɹɹɔwɹɪkwa] 'road'. Another factor causing error is the writing of 'u' in positions where a clear phonetic [i] occurs, e.g. 'yakwabujina' /yakwɔpɹɪjɪna/ [yakwɹɔpɹɪjɪna] 'forget it!'.

(i) spelling convention for the full stop (5 errors out of 5)

Only one word needed to be written with a full stop in the tests but not one testee got it right. One testee wrote the grapheme that closed the syllable but failed to write the full stop. The other four omitted to write the closure of the syllable and the full stop, thus making it impossible to predict what would have been written along with closure. This spelling convention is not satisfactory.

(j) hyphen

There were almost no hyphens written in the Writing Lists but some were used correctly in the stories. Because of other orthographical problems very little attention has been given to writing this symbol. It is a teaching, rather than an orthographical, inadequacy.

## 6. CONCLUSION

There are two questions which need to be answered: (a) did the results show that the tests themselves were adequate? and (b) what conclusions can be made regarding the viability of the orthography?

### 6.1 EVALUATION OF THE TESTS

In setting up the tests, the literature and opinions from other local linguists and educationalists were taken into consideration. The testing does appear to be adequate—the full range of graphemes were covered in the lists designed for the tests and the results show a range of errors, some expected, some not. Generally speaking, the tests gave evidence of the same type of problems observed in the literacy classes and in creative writing. It was also expected that there would be different levels of accuracy or competence and this was evident.

The following suggestions are made on ways to improve future testing:

### Length

The tests were long so that controversial issues would be covered comprehensively but they could have been shortened and been just as effective. The time taken to mark the tests and document the information seemed to be out of proportion to the profitability in assessing the results. It would have been better to put more time into getting shorter tests with only the pertinent data than to spend so much time in handling and marking a large amount. Any problem became apparent in quite a small body of data.

The stories for reading could be reduced to four half-page stories, especially as this is not the crucial way to test an orthography—writing can be seen in the test results to show up more of the problems. The length of stories written by testees was satisfactory. It should be noted that the testees wrote better, slightly longer, stories when given the set of sequence cards. It was obvious that they found it hard to tell a story from just one picture. Supplying a title for a story would probably be just as satisfactory.

### Readability

Stories must be researched for readability. Story 2 had a hard and unusual word in the firstline and, if this was not decoded properly, there was no way to deduce the setting and meaning of the story. This upset the testees and lowered their confidence throughout the story.

In the word lists, it was unfortunate that some words were not known to all testees. The fact that there has been a lot of testing done in this language meant that uncommon forms of words were chosen but that was not the whole problem. Some did not know vocabulary which was thought to be common, e.g. botanical terms. There should be some way to check that all vocabulary is known but this cannot be done with the testee. It may be that another member of the same family could be evaluated beforehand. Age is not the main factor influencing the usage of vocabulary—it is the attitude to their own language in relation to the national language, or the length of time absent from the community in teenage years for higher education.

Problems in readability cause skewing of the scores which is time-consuming when doing statistics and is not fair to the particular testee because it causes such a drop in confidence.

## Reading versus writing

For bilinguals who have basic literacy skills in another language, reading alone is not an adequate test. The errors in writing were far greater and far more indicative of the orthographical problems, e.g. the high vowel problem was not evident at all in the reading.

## Controlled data

The data was controlled in all parts of the tests except the writing of stories. In these stories some difficult or controversial symbols were just not used. If the testing consisted only of creative writing, the tests would have been inadequate. Secondly, because there is no way to judge whether phonics or memorisation of spelling has been used in creative writing, such testing is very hard to evaluate, even to identifying systematic versus random error.

The most adequate data was in the word lists because the person setting the tests made sure that all controversial graphemes or sequences of graphemes were included. With uncommon words used, there is a high probability that phonics skills were used. Tests could be set up using only words but the stories add much more interest for the testees.

## Recorded material

Tape recordings of reading were all, generally speaking, clear and easy to document. Recording of the word lists for writing was not a good idea. A "live" native speaker is necessary for two reasons: to make sure that the testee hears each word clearly (especially chosen prefixed forms) and to ensure that all words are written. Some were missed because of the use of a cassette recorder. While using a "live" speaker may cause problems in organization, any other methods cause greater problems in marking and evaluating the tests. It has been suggested that pictures could have been used but this was not possible in Anindilyakwa because specific prefixes and suffixes had to be tested and because all word classes were considered to be relevant.

## Locale and supervision

There appears to be little difference in the results no matter who gave out the instruction sheets. (The lowest scores were for the testee who had the linguist present!)

There was tension for all testees because they knew that orthography

decisions rested on their accuracy. Some were disturbed by children or relatives. Some did not like recording because other non-Aboriginals might listen to it and note their mistakes. The situation with previous testing kept tenseness to a minimum because they were told that the tests were being done in order to see what revision was needed. It is important that testees be as relaxed as possible.

### Number of testees

Although the number of testees was small, the results gave a good spread of the type of errors occurring. More testees may have changed the actual percentage of errors but would probably not have added any more types of errors since all experienced similar problems to a greater or lesser degree. The sampling was adequate and indicated clearly where the problems were in the orthography.

The original decision was made by nine people with two in strong disagreement on one issue. As there was this division in opinion, it would have been seen to have been fairer to keep the same proportion, i.e. one to four rather than two to three.

## 6.2 ORTHOGRAPHY EVALUATION

The high percentages of accuracy in reading and writing indicate that the testees were competent literates and that their work was a sound basis upon which to establish the orthography. While not all testees had attained the same level of fluency and accuracy in reading and writing, the results show that there was a general ability to use the orthographical system. The percentage of accuracy for writing was lower than for reading, in some cases to a considerable degree.

Information was not available for a comparison to be made between these percentages and another orthography which is known to be viable. The results, therefore, were assessed from within the present testing.

### 6.2.1 GRAPHEMES WHICH ARE NOT CONTROVERSIAL

The graphemes which have been handled with almost no error are as follows:

stops:	b, d, j, k
nasals:	m, n, ng
other cons.:	l, r, y, w
vowels:	a, i

Table 15 gives a comparison of the percentage of error in reading and writing for graphemes which are not controversial. Both linguists consider the orthography to be satisfactory for these graphemes. It can be seen that the margin of error falls between 1% and 11% except for syllable closure and full stop. Note that these percentages are a little high because all errors have been precisely counted, but with high numbers of occurrences (marked +) some may have been missed.

TABLE 15

Comparison of percentages of errors for  
non-controversial graphemes

Graphemes	Reading	Writing
palatal consonants	3.3% (9/275+)	10.9% (25/230+)
retroflexed and flap consonants	1.2% (8/690+)	9.5% (42/440+)
syllable closure	3.1% (13/420+)	21.6% (66/305+)
velar consonants	0.4% (3/805+)	0.9% (4/455+)
/a/ as 'i'	0.1% (8/2385+)	0.0%
full stop	16.0% (4/25)	100.0% (5/5)

The reason for the errors in syllable closure is that the phonics teaching method which isolates syllables (or sounds) is in conflict with a word pattern which always ends in a vowel and thus causes syllable-final consonants to be dropped. The most significant factor was that one testee had no errors, and three had only a minimum number of errors. These results indicate that the orthography is satisfactory but that special attention and time must be given in this difficult area.

The convention placing a full stop between graphemes enables the contrast between [r̥t̥] and [t̥], and [ŋ̥x̥] and [ŋ̥t̥] to be represented in

the orthography as 'r.d' and 'rd' respectively. The original Umbakumba orthography devised by Mr. Fred Gray used 't' instead of 'd' and this problem did not arise. In 1975, I asked the Umbakumba people to change to using 'b' for 'p' and 'd' for 't' in order to bring the two communities into harmony. That compromise has resulted in an orthographical device which the Aborigines cannot handle even though it has been practised for years. They use it accurately in the class when it is being taught but consider it silly to have a full stop in the middle of a word when it should be at the end of a sentence.

The 'r.d' and 'rn.d' sequences have a very low functional load and there are no minimal pairs of words which would cause difficulty. As after six years of practice they have not been able (or, perhaps, willing) to use it, the results show that this orthographical device is not satisfactory.

#### 6.2.2 GRAPHEMES WHICH ARE CONTROVERSIAL

Table 16 lists the percentages of error for controversial graphemes. Only in the case of 'ayi' is there any indication in the column for reading that there are orthographical problems, or even any real difficulty. These results show that, for bilinguals literate to some degree in another language, reading alone is not an adequate test of an orthography unless one is prepared to say that 'ayi' is the only problem.

The wide range of percentages of error in writing indicates that some graphemes are not adequately handled. Each must be evaluated in the light of difficulties in the structure of the language, and overdifferentiation between phoneme and grapheme.

TABLE 16

Comparison of the percentage of errors  
for controversial graphemes

Graphemes	Reading	Writing
rounded velar consonant preceding 'u'	1.7% (4/230+)	33.6% (43/128)
/a/ as 'a' [e]	2.8% (12/425+)	2.6% (9/347)
VCV sequences	1.3% (3/23)	52.0% (13/25)
[e <sup>i</sup> ] as 'ayi'	18.0% (10/55)	87.1% (27/31)
'i' preceding /y/	0.0%	7.0%
'u' following Cw	0.0%	32.2% (13/40)
'i' preceding Cw	0.0%	45.4%

(a) rounded velar consonants

The orthography was correctly used in two-thirds of material tested. These results, statistically, favour the use of 'kw' and 'ngw' preceding 'u'. The highest scores for accuracy were gained by those using them consistently preceding both 'u' and 'a'.

While it would have been more conclusive to have greater percentages of accuracy, the scores do favour the writing of 'w' for rounded velars. The choice can be shown to provide (a) a higher rate of consistency in spelling than previously attained; (b) a one-to-one correspondence of phoneme and grapheme, making it unnecessary to write allophones; and (c) the same spelling of emic forms within the morpheme or across morpheme boundaries. The choice of Cw rather than Cu in all positions will mean less change to Angurugu spelling.

Because of the complexity between deep and surface forms, auditory discrimination exercises in isolating syllable at MP boundaries will still be needed.



(b) /a/ [e] written as 'a'

The results show almost total accuracy in using 'a', despite the teaching of 'e' for four years. The emic /a/ rather than the etic [e] is the best choice for the orthography.

(c) VCV sequence 'iyi'

The long VCV form in the control words is used both at Angurugu and Umbakumba. At Umbakumba, the short form is also allowed in spelling. The high percentage of usage of the short form can be attributed to the fact that four out of the five testees were in the young adult age group which uses shorter forms and less complex structures.

The orthographical system is satisfactory but there must be an optional spelling allowed for the short form as well as the long one. Attention in literacy classes should be given to this as a special feature in contrast with long and short forms that indicate a change in grammatical meaning.

(d) [eɪ:] as 'ayi'

The results clearly indicate that this system of graphemes is not satisfactory. The lengthened glides were usually not heard or written as two syllables in word-initial or word-medial positions. Some Aborigines acknowledge that there is a long and short form of this glide but, if so, they have not chosen to write it. The symbol 'e' used at Angurugu was not used at all by the testees.

The percentage of accuracy using 'a' was 64%, indicating that this was their preference. Where a similar glide was judged to be short and written as 'a' there was 100% accuracy. With all of these glides now recognised as short vowels, the orthography can utilise 'a' for all of them, irrespective of whether they are phonetically lengthened because of the stress/timing/rhythm. The phoneme /a/ has two allophones [e] and [eɪ] conditioned by the following peripheral consonant plus a high front tense vowel. The conditioning is not always apparent phonetically in the surface structure: 'angkalya' [engkalya] = /angki+alya/ 'wet place'; 'wurriwaba' [wurruwepa] = /wirri+wapi+a/ 'parrot'.

Where the long glide occurs in a stressed syllable word finally, most of the errors indicated that two syllables were heard. This glide should continue, therefore, to be written as 'ayi' with an acceptable alternate form 'aya' because this variation occurs in the data, e.g. yakayi [yaka<sup>1</sup>:~yake<sup>1</sup>] varies with yakaya [yaka<sup>1</sup>ya], both of which mean 'ouch!'.

(e) the high vowel

Even though the percentages of error indicate a slightly more favourable acceptance of the Umbakumba orthography than that at Angurugu, these results show that the use of both 'u' and 'i' in the orthography is not satisfactory. If the Aborigines are to be the authorities on the spelling of their own language, their competence and confidence must be raised.

These results climax six years of trying to find a way to keep 'u' in the orthography when only 'i' is emic. If the vowel 'u' is emic, why cannot the literates write it consistently and accurately when they can write other emic units with very little error? Errors indicate that the emic vowel /i/ was chosen. There have been three basic changes in the spelling introduced slowly over six years, with each change making the orthography more systematic. Where other parts of the orthography have been changed from the etic to the emic, results are now satisfactory; but where the etic here has been retained, the results are not. (Note: the words selected for testing were ones where the use of 'u' would be almost identical at both Angurugu and Umbakumba. The results show that neither orthography is handled satisfactorily.)

The most significant factor is over-differentiation, i.e. the writing of the allophone 'u'. The use of 'i' when syllables were isolated from the following conditioning consonant are proving to be satisfactory. It was thought that, as most Umbakumba Aboriginal adults are literate in English, this expertise would facilitate the writing of 'u'. This is not apparent even though the five testees are among the most competent bilinguals/biliterates. The continuing confusion may be attributed to (a) the overlapping system in English where 'u' represents both [u] and [a], or (b) both languages being kept separate and only the emic units in Anindilyakwa being in focus. The spelling conventions themselves were too finely detailed.

The answer lies not in further re-arrangement or simplification of the spelling conventions for the fourth time, but in writing the emic symbol 'i' and deleting 'u' from the orthography. This 'i' is already frequently used and, in the position preceding a rounded consonant, the results show that there is more success in using 'i' when applying phonic skills.

The fact that 'i' can be read fluently in these positions is further attested by the reading of the testees' hand-written stories onto cassette by Mrs. Katie Herbert.

A good practical orthography is not based on statistics alone nor always on a one-to-one correlation between phoneme and grapheme. Deborah Weaver states (1980):

It can be clearly seen that the design of a practical orthography is no easy task. The linguist must be a skilled diplomat as he strives to meet the demands placed upon him by a wide variety of factors. Most importantly the linguist needs to be willing to settle for an orthography which may be less than ideal, linguistically. An orthography which is satisfactory to the speakers of the language by allowing them to learn to read, and which fits into the goals of the national culture is difficult, but not impossible to achieve.

I would add to this statement one further requirement, viz. that the indigenous people be seen to be competent and confident in writing literature with their own orthographical choices.

The orthography preferred by the Umbakumba Aborigines is not ideal but it is culturally acceptable and generally systematic. There is a consensus despite the fact that they have not been free to be exposed to only one orthography during the time of its development.

### Consonants

The recommendations for the consonants are as follows:

1. the symbols chosen remain the same.
2. the alveolar and dental series of consonants continue to be written with only one set of graphemes, viz. 'd', 'n', and 'l'.
3. the contrast between /m<sup>w</sup>/ and /m/, and /p<sup>w</sup>/ and /p/ not be represented in the orthography and that 'm' and 'b' be used for the two phonemes in each pair.
4. the full stop be deleted within words.
5. 'w' be written on rounded velar consonants preceding both high and low vowels, e.g. 'kwa' for the phonemes /k<sup>w</sup>a/ [k<sup>w</sup>a~k<sup>w</sup>e~k<sup>w</sup>ɔ], and 'kwi' for the phonemes /k<sup>w</sup>i/ [k<sup>w</sup>i~k<sup>w</sup>ɪ~k<sup>w</sup>u]. (Note that with the deletion of the vowel 'u' there would be further under-differentiation if the 'w' here is also deleted.)

The above choices mean that there will be three areas of under-differentiation in the consonants, all of which have been

occurring during the last six years without any serious problems in reading and writing by the Aborigines. While under-differentiation may cause problems in some languages, Anindilyakwa has two significant structural features that allow it: (a) some phonemes are very rare; and (b) almost no minimal pairs occur because of the long words. No minimal pairs occur in (2) and (4) above in the traditional vocabulary. To date, only five minimal pairs have been found in (3) and the context has enabled the Aboriginal reader to identify the correct word, e.g. /m<sup>w</sup>arra/ 'wattle (sp.)' written as 'marra' which overlaps with the same spelling for /marra/ [me<sup>ɾ</sup>a] 'rope'.

### Vowels

Only two vowels are emic in Anindilyakwa. Writing more than two means that there is over-differentiation and Aborigines are being asked to write sounds which they cannot hear as contrastive. Over-differentiation is known to cause more problems than under-differentiation but is usually adopted to suit bilinguals who are also literate in another language. In this case, the bilinguals have not been able to write 'u' consistently and have not chosen to continue to write 'e'. As the language can be read and written by native speakers without including the two extra vowels, the best solution is to write only the two vowels which they can hear as contrastive.

The recommendations for the vowels are:

1. 'a' be written for [a], [e] and [æ]; and 'i' for [i], [ɨ], [u].
2. the short [e<sup>i</sup>] glide preceding unrounded velars and labials be written as 'a'. This means that all short glides, [a<sup>i</sup>], [a<sup>u</sup>], [e<sup>i</sup>], and [ɔ<sup>u</sup>], will be written systematically as 'a'.
3. the long glides, [e<sup>i</sup>:] and [a<sup>u</sup>:], and the long vowels, [i:] and [u:], be written as VCV sequences, viz. 'ayi', 'awi', 'iyi' and 'iwi'.
4. where the long vowel or glide has an optional short form, that both be accepted as correct and used in the literature.

The orthography is not ideal and it is too late to effect some changes to reduce the amount of under-differentiation. It is, however, an orthography which can be used competently by the Aborigines. Because the orthography does not represent all emic, contrastive sounds, the non-Aboriginals will need a near native-like fluency to be able to read it. Writing for the non-Aboriginal, who is not a linguist, will be

easier. The old system of writing vowel allophones suited the non-Aboriginals, including the linguists, because phonetic values were written and easily recognised by native speakers of English. I believe it is essential that the orthography be designed to suit the Aborigines who "own" the language so that they may become the authorities on the correct spelling of their own language. The orthography must be workable for all members of the community, not just the ones who are skilled in reading English. The Aborigines at Umbakumba are very concerned about having the orthography as easy as possible for the sake of the children who will be virtually monolingual when learning to read and write.

An example of the orthography as per the above recommendations is in the Appendix. Parts of Stories 1 and 4 for reading have been re-spelt.

## APPENDIX

### Key to Linguistic Notations and Terms

[ ]	phonetic script
' '	graphemic script
/ /	phonemic script
( )	alternate form
~	varies with
:	length
+	following letters: a syllable break following numbers: the total is for lists but not for stories
#	marking system: not a word vernacular words: morpheme break
allophone	a sound which native speakers do not hear as contrastive with other similar sounds
alveolar	a sound made with the tongue on the ridge behind the top teeth, i.e. d, n, l
analogous	similar but not identical
C	consonant
Cw	any labial or velar consonant which is rounded
closed syllable	one which ends with one or two consonant phonemes
dental	a sound made with the tongue against the top teeth, i.e. ḍ, ṇ, ḷ
[e]	represents [e] as in 'bet' and [æ] as in 'bat'
emic	short form of phonemic
high vowel	[i] as in 'beat'; [ɪ] as in 'bit' (New Zealand dialect) or 'could' (Qld. dialect); [u] as in 'put'
literate	able to read <u>and</u> write
low vowel	[a] as in 'but', [æ] as in 'bat', [e] as in 'bet'
minimal pair	a pair of words where only one sound signals a change in meaning, e.g. 'pin' and 'bin'
morpheme	smallest meaningful part of a word
morphophonemic/MP	phonemic at the junction of two morphemes, e.g. root and suffix, prefix and root
open syllable	one which ends with a vowel
palatal	sound made with the tongue blade against the top teeth, viz. 'j', 'ly', 'ny' and 'y'
peripheral	consonants which are labial (m, mw, p, pw, w) or velar (k, kw, ŋ, ŋw)
phoneme	a sound which a native speaker regards as contrastive with other sounds in the language. It may represent one or more phonetic variations.
phonetic alphabet	phonemic representation: one-to-one correspondence between phoneme and grapheme
v	vowel
velar	consonants /k, kw, ŋ, ŋw/

WORKSHEETS FOR THE READING LISTS

Orthographic	Phonemic	Phonetic	English
<u>Reading List 1</u>			
yakwabujina	yakwapwɨjɨna	yak <sup>w</sup> a/ɔ p <sup>w</sup> ɨtɨna	forget it!
kadiya	kaɬɨya	kə/etiya	pretend!
akardanama	akaɬanamwa	akaɬenam <sup>w</sup> a	they will call out
arrikarrina	aɻɨkaɻɨna	eɻik ə/eɻina	turn back!
dirriburaka	tɨɻ (ɨ) p <sup>w</sup> ɨraka	tɨɻ (ɨ) p <sup>w</sup> uraka	straighten it!
niwalyiwuna	nɨwalyɨwɨna	nuwalyuwuna	he cooked it
abinakiya	apɨnakɨya	epinakiya	both the same
ngayabakiya	ŋayapwakɨya	ŋa <sup>i</sup> yap <sup>w</sup> akiya	on my own
rrakajina	ɻakajɨna	ɻakaɨtɨna	sit it along!
mungalika	m <sup>w</sup> ɨŋalɨka	m <sup>w</sup> ɨŋalɨka	pandanus fruit
anani-wiya	ananiwɨya	enenuwiya	now
bulikwa	p <sup>w</sup> ɨlikwa	p <sup>w</sup> ulukwa	bullock
laka	ɭaka	ɭa:ka	ready
ayikalara	akaɭara	e <sup>i</sup> :kaɭara	burnt out area
arribiyaja	eɻɨptɨyaja	eɻɨpiyaɬa	pull it out!
rijawudiyina	riɨjawɨtɨyɨna	riɬa <sup>u</sup> wuɬiyina	get onto it!
jikwa	ɨɨkwa	tɨkwa	sugar
wurrimiyabiya	wɨɻɨm <sup>w</sup> ɨyapwɨya~ wɨɻɨm <sup>w</sup> ɨyapɨya	wuɻum <sup>w</sup> ɨyapwɨya~ wuɻum <sup>w</sup> ɨyepiya	stick insect
kwulinga	kwɨɨɨŋa	kwɨ <sup>i</sup> ulɨŋa	rudder
arrikarrana	aɻakaɻana~aɻɨkaɻana	aɻakaɻena~aɻɨkaɻena~ eɻɨkeɻena	draw it!
lyalyingi-ma	lyalyɨŋɨmwa	lyə/elyɨŋum <sup>w</sup> a	with a knife
ngwayi	ŋwayɨ	ŋwe:/e <sup>i</sup> /a <sup>i</sup>	stop staring!
libanga	lipaŋa	lipaŋa	bait
aningabada	aniŋapwaɬa	eniŋap <sup>w</sup> aɬa	be good!

abungwurra	apw <sup>i</sup> ŋw <sup>i</sup> řa	ap <sup>w</sup> uŋ <sup>w</sup> uřa	drunkenness
wungwudanga	w <sup>i</sup> ŋw <sup>i</sup> řaŋa	uŋ <sup>w</sup> uřaŋa	pinch it!
lyibalyiba	ly <sup>i</sup> paly <sup>i</sup> pa	lyipalyipa	boat
amiyarraba	amiyařapa	emiyeřepa	for a while
kwubardiya	kw <sup>i</sup> p <sup>w</sup> wařiya	k <sup>w</sup> up <sup>w</sup> wařiya	camp out!
akaburra	akapw <sup>i</sup> řa	akap <sup>w</sup> uřa	who?
warnimikirra	waŋ <sup>i</sup> mikiřa	waŋ <sup>i</sup> mikiřa	their names
jadana	jařana	řařena	come out!
adiyarriwa	ařiyař <sup>i</sup> wa	%atiyeř <sup>i</sup> uwa	young
rayika	rayika~raka	re <sup>i</sup> ika~re <sup>i</sup> ika	rake
likwakwa	likwakwa	luk <sup>w</sup> ř <sup>i</sup> kw <sup>a</sup>	en route
barrika	pařika	peřika	gate
amudilya	amw <sup>i</sup> t <sup>i</sup> ilya	am <sup>w</sup> uř <sup>i</sup> ilya	cough
yimilyana	yimw <sup>i</sup> ilyana	yim <sup>w</sup> ilyena	carry me in your arms!
ngabukwuna	ŋap <sup>w</sup> ikw <sup>i</sup> na	ŋap <sup>w</sup> uk <sup>w</sup> una	carry it on the head!
naburraka	napw <sup>i</sup> řaka	nap <sup>w</sup> uřaka	my son
warribaliya	wař <sup>i</sup> pwa <sup>i</sup> řija	w <sup>ř</sup> eř <sup>i</sup> pwa <sup>i</sup> řija	spread it out!
diwadirra	ř <sup>i</sup> wař <sup>i</sup> řa	ř <sup>i</sup> uwet <sup>i</sup> řa	cockatoo
kirribukwaya	kiř <sup>i</sup> p <sup>w</sup> ikwaya	kiř <sup>i</sup> up <sup>w</sup> uk <sup>w</sup> a <sup>i</sup> ya	you (pl) coming
yibulyibulya	y <sup>i</sup> p <sup>w</sup> ily <sup>i</sup> p <sup>w</sup> ilya	y <sup>i</sup> ř <sup>i</sup> p <sup>w</sup> ily <sup>i</sup> ř <sup>i</sup> up <sup>w</sup> ilya	gecko
adirra	ař <sup>i</sup> řa	%e <sup>i</sup> t <sup>i</sup> řa	hole
ngarra	ŋařa	ŋařa	no!
yikwurna	y <sup>i</sup> kw <sup>i</sup> řa	yuk <sup>w</sup> uřa	baler shell
wurimana	w <sup>i</sup> řimwana	wurum <sup>w</sup> ena	fly!
jirrikaya	ř <sup>i</sup> řikaya	ř <sup>i</sup> řika <sup>i</sup> ya	leader
raja	raja	ra <sup>i</sup> řa	rice
kirrangaba	kiř <sup>i</sup> řaŋapwa	kiř <sup>i</sup> řaŋapwa	you two over there



nikalarikwa	nikalarikwa	nikalarukwa	he burnt it
darrawurikwukwa	ṭarawirikwikwa	ṭarawurukwukwa	dove
bayikina	pakina	pei:kina	drink it!
mardawa	mwaṭawa	mwaṭa <sup>u</sup> wa	hot cooking stones
ayiwaya	ayiwaya	e <sup>i</sup> yuwe <sup>i</sup> a <sup>i</sup> ya	weak
kwuja	kwija~kwiwija	kwuṭa~kwuwitṭa	(exclamation)
ayikawarriya	akawaṛiya	e <sup>i</sup> :kawaṛiya	left
liraka	ḷiraka	ḷiraka	light the fire!
lyikajawuna	lyikajawina	lyikaṭa <sup>u</sup> w <sup>i</sup> una	fall down!
ngwadina	ḡwaṭina	ḡwaṭina	cry!

Reading List 2

anima	aṇimwa	aṇ <sup>u</sup> i <sup>i</sup> mwa	mangroves
manyingwunya	mwañiḡwiña	mwa <sup>i</sup> ñiḡw <sup>u</sup> iña	wild fig
naniwurrilana	naniwiṛiḷana	nen <sup>u</sup> i <sup>i</sup> wuṛiḷena	two men drowned
awiyida	awiyita~awita	awiyita~awi:ta	straight
nanggangmina	naḡkaḡmina	n <sup>ḡ</sup> eḡk <sup>ḡ</sup> eḡmina	thief
yiwayiba	yiwapa	yuw <sup>e</sup> i:pa	ant
ningwarrka	nḡwaṛka	nuḡwaṛka	my father
kirriribarrka	kiṛiriṛeṛka	kiṛiriṛeṛka	you all come ashore
dikwurdikwurda	ṭikwiṭikwiṭa	ṭukwuṭukwuṭa	baptised woman
wulyarra	wilyaṛa	w <sup>i</sup> ḷyaṛa	middle
nangangilana	naḡaḡilana	neḡ <sup>e</sup> aḡilena	they panted
dinina	ṭiḡiḡa	ṭiḡiḡa	mosquito
diyakirrarra	ṭiyakiṛaṛa	ṭiye <sup>i</sup> kiṛeṛa	happy woman
mawulyilyikwa	mawulyilyikwa	m <sup>w</sup> aw <sup>u</sup> ilyilyukwa	berry
nyarrngukwajingwa	ñarḡwikwajiḡwa	ñarḡwukwa <sup>i</sup> ṭuḡwa	sulk!
alakana	aḷakana	aḷakana	these two here

warningwarribirra	wan̄iŋwaŋiɓiɓa	wan̄unweŋiɓiɓa	anybody
dilingana	t̄iɓiŋana	t̄iɓiŋena	salt
wurriwayiba	wiŋiɓa	wuŋuw%ei:pa	parrot
ngarringirarrimajina	ŋaŋiŋiɓaŋiɓimajina	ŋaŋiŋireŋimwaɓina	we dried our clothes in the sun
awarridada	awaŋiɓaɓa~awaŋaɓaɓa	aweŋiɓaɓa	rust-coloured
akilyangbarrarra	akilyaŋpaŋa	%eikiɓiɓeŋpa%eŋiɓeŋa	forked stick
akana	akana	%eikena	but
dijwarra	t̄iɓiɓa	t̄iɓuwaŋa	bower bird
minyarnawa	miŋana	miŋana <sup>u</sup> wa	stone axe
warningwanibaliba	wan̄iŋwan̄iɓiɓiɓa	wan̄iŋwen̄iɓiɓiɓa	dingo
ningkiwarana	n̄iŋkiwarana	n̄iŋkiwawarena	you don't want it
niwarrikawariyada	niwaŋiɓaŋiɓa	n̄uwaŋiɓaŋiɓa	he was upset
awankanyarra	awankana	awankaneŋa	always teasing
yimurnirna	yim̄iɓiɓa	yim̄iɓiɓa	stingray
anyirra	aŋiɓa	%eŋiɓa	mucous
ningwunamurra	n̄iŋwunamwiŋa	n̄un̄unamwiŋa	he's growing up
yirranka-baba	yir̄aŋkapwapa	yir̄aŋkapwapa	because of the March fly
arndiwa	aŋiɓa	aŋtuwa	tree
angayimba	aŋampa	%eŋiɓa	place
kirribukwubardijana	kiŋiɓiɓiɓa	kiŋiɓiɓiɓa	you three cheeky ones
yinimukwana	yin̄im̄iɓiɓa	yin̄im̄iɓiɓa	shellfish
bajanangi-manja	paŋanaŋiɓa	paŋanaŋiɓa	on the lantern
marliwiya	maŋiɓa	maŋuwiya	emu
abuliwandiya	ap̄iɓiɓa	ap̄uluwentiya	cover it!
ayabijaba	ayap̄iɓa~ayap̄iɓa	aiyap̄iɓa~aiyep̄iɓa	separate
mamama	mamama	memema	this

Reading List 3

minimbaja	minimpwaja~ manimpwaja	minimp <sup>wa</sup> i <sup>ta</sup> ~ menimp <sup>wa</sup> ta	spear grass
marrbiyinda	maɪpɪyɪŋ <sup>ta</sup> ~ maɪp <sup>wi</sup> yɪŋ <sup>ta</sup>	meɪpɪyɪŋ <sup>ta</sup> maɪp <sup>wi</sup> yɪŋ <sup>ta</sup>	tree
nanarjinama	nanarjɪnamwa	nenar <sup>ɪ</sup> nam <sup>wa</sup>	two men stood up
wurramurnda	wɪɾamwun <sup>ta</sup>	wuɾam <sup>w</sup> ɪ <sup>ŋ</sup> ta	dog's flea
yikwulbanda	yɪkwɪl <sup>p</sup> anta	yuk <sup>w</sup> ul <sup>p</sup> enta	barramundi
amurn.da	amwɪ <sup>n</sup> ta	am <sup>w</sup> ɪ <sup>n</sup> ta	shoulder
yinja	yɪŋja	(yɪ)ŋ <sup>ta</sup>	it's my turn
akwularmbijina	akwɪl <sup>a</sup> ɾmpwɪjɪna	ak <sup>w</sup> ɪl <sup>a</sup> ɾmp <sup>wi</sup> ɪ <sup>ti</sup> na	beside
yiwalkwurra	yɪwɪlk <sup>w</sup> ɪɾa	yuwalk <sup>w</sup> uɾa	shellfish
arngkiwulyaba	arŋkiwɪlyapwa	a(r)ŋk <sup>wu</sup> wɪlyap <sup>wa</sup>	for all time
mijirrkwudarrba	mɪjɪɾkwɪɾ <sup>a</sup> pwa	mi <sup>ɪ</sup> ɾ <sup>w</sup> ɪ <sup>k</sup> wɪ <sup>ɾ</sup> a <sup>p</sup> wa	salt water pool
yilyangmulimula	yɪlyan <sup>m</sup> wɪlɪm <sup>w</sup> ɪl <sup>a</sup>	ilyan <sup>m</sup> wɪlɪm <sup>w</sup> ɪl <sup>a</sup>	stonefish
angbur.da	aŋp <sup>w</sup> ɪɾ <sup>ta</sup>	aŋp <sup>w</sup> ɪɾ <sup>ta</sup>	waterlily
danganjaminjanikba	ɬan <sup>a</sup> ŋjamwɪŋjanɪkpa	ɬan <sup>a</sup> ŋ <sup>ta</sup> am <sup>wi</sup> ŋ <sup>ten</sup> ɪkpa	MF's sister
diyinda	tɪnta~tɪyɪnta	tinta~tɪyɪnta	tree
armbulirra	armpwɪlɪɾa	armp <sup>w</sup> ɪlɪɾa	jellyfish
darrikwanjirra	ɬaɾɪkw <sup>a</sup> ŋjɪɾa	ɬaɾuk <sup>w</sup> aŋ <sup>ɪ</sup> ɾa	hardworking woman
mangkarrkba	mwan <sup>k</sup> aɾkpwa	m <sup>w</sup> aŋkaɾkp <sup>wa</sup>	fruit
ningkiyar.dana	nɪŋkiyar <sup>ta</sup> na	nɪŋkiyar <sup>ta</sup> na	I returned
wulkwa	wɪlk <sup>w</sup> a	wulk <sup>w</sup> a	only
amarmarra	amwarm <sup>w</sup> aɾa	am <sup>w</sup> arm <sup>w</sup> aɾa	sore
kwurn.dirra	kwɪŋ <sup>ta</sup> ɪɾa	k <sup>w</sup> un <sup>ta</sup> ɪɾa	snake
karndirra	kaŋ <sup>ta</sup> ɪɾa	kaŋ <sup>ta</sup> ɪɾa	horn
yayarrandangwa	yayaɾaŋ <sup>ta</sup> ŋwa	ye <sup>i</sup> y <sup>ɛ</sup> ɾ <sup>ɛ</sup> ŋ <sup>ta</sup> ŋ <sup>wa</sup>	King Brown snake
nakbujina	nakp <sup>wi</sup> jɪna	nakp <sup>wi</sup> ɪ <sup>ti</sup> na	he squeezed it

nanambirarrina	nanampirařina	nenempirařina	two men waited
angka	aŋka	%e <sup>i</sup> ŋka	other
dimamarrba	ɬimamařpa	ɬimemeřpa	quail (bird)
akwarrarikba	akwařařikpa	ak <sup>w</sup> ɛ <sup>ɛ</sup> reřikpa	turtle poles
nayikbajana	nakpwajana	ne <sup>i</sup> :kpwařena	he stripped the bark off
yirarringanja	yirařiŋaňja	yirařiŋa <sup>i</sup> ňta	paperbark
nara kangkirrana	nara kaŋkiriřana	nara keŋkiřana	I did not listen
mambarrngarna	mampwařŋaŋa	mamp <sup>w</sup> ařŋaŋa	how many?
yiwankija	y <sup>i</sup> waŋkija	yuwankija	baby wallaby
marŋkirŋkiwulyarra	marŋkiriŋkiwilyařa	m <sup>w</sup> arŋkiriŋk <sup>w</sup> uw <sup>w</sup> ilyařa	midnight
wunjirrikwaja	wiňjiřikwaja	wiňjiřik <sup>w</sup> aja	move!
nimungkwar.dina	nimwiŋkwařɬina	num <sup>w</sup> uŋkwařɬina	he scavenged
angwurn.dikirra	aŋwiŋɬikiřa	aŋ <sup>w</sup> uŋɬikiřa	narrow
akbulkwurakayinga	akpwilkwiřakayiřa	e <sup>i</sup> kp <sup>w</sup> i <sup>w</sup> ulk <sup>w</sup> urake <sup>i</sup> i yina	smooth sand
yalangayikba	ya <sup>l</sup> aŋakpa	y <sup>ɛ</sup> alaŋe <sup>i</sup> :kpa	those two
nangwurrindina	naŋwiřiŋɬina	naŋ <sup>w</sup> u <sup>ř</sup> iŋɬina	it melted
dangirndarra	ɬaŋiŋtařa	ɬaŋiŋteřa	black cockatoo
ambirrkidarrba	ampiřikiřařpa	ɛ <sup>ɛ</sup> mpiřikiřařpa	short and broad
nara kangkarrina	nara kaŋkařina	nara kaŋkařina	I did not run
ningamamikbina	niŋamamikpina	niŋ <sup>ɛ</sup> memikpina	I dozed
angirnda	aŋiŋta	aŋiŋta	chin
nankarrnga	naŋkařŋa	neŋkařŋa	it broke
yabiyarkarbiya aribiribarrkba	yap <sup>w</sup> iya (r)karp <sup>w</sup> iya ariřiriřařpa	yap <sup>w</sup> iya (r)karp <sup>w</sup> iya aripiripeřkpa	three goannas bush further down
ayikbarra	akpwařa	e <sup>i</sup> :kpwařa	headache
yinjarrikina	y <sup>i</sup> ňjařikina~ yaňjařikina	y <sup>i</sup> ňteřikina~ yeňteřikina	towards the speaker

angki-wa

aŋkiwa

e<sup>i</sup>/eŋk<sup>w</sup>uwa

to a far distance

yilarrngkwungma

yilaŋ<sup>r</sup>ŋkw<sup>i</sup>ŋmayilaŋ<sup>r</sup>ŋk<sup>w</sup>iŋma

putrid things

READING LISTS: STATISTICAL FREQUENCY OF GRAPHEMES

## 1. Consonants: initial in the syllable

Syllables	Test 1	Test 2	Test 3	Total
ba [ p(w)a ]	9	5	13	27
[ pe ]	1	2	2	5
da [ ṭa ]	3	3	7	13
[ ṭe ]	1	-	1	2
da [ ta ]	-	1	2	3
[ te ]	-	1	-	1
ja [ ja ]	7	2	7	16
[ je ]	-	1	3	4
[ ja/e ]	-	1	-	1
ka [ ka ]	12	4	7	23
[ ke ]	-	2	-	2
[ ka/e ]	3	2	2	7
kwa [ kwa ]	8	2	4	14
[ kwe ]	-	1	-	1
[ kwa/e ]	-	-	1	1
la [ ḷa ]	3	1	4	8
[ ḷe ]	-	1	-	1
la [ la ]	-	-	-	-
[ le ]	-	1	-	1
lya [ lya ]	2	1	3	6
[ lye ]	1	1	-	2
[ lya/e ]	1	-	-	1
ma [ mwa ]	3	7	7	17
[ me ]	1	2	3	6
[ ma/e ]	-	-	1	1

na	[ na - ]	- -	1 -	- -	1 -
na	[ na ne na/e ]	16 1 -	13 2 1	16 4 -	45 7 1
nga	[ nga nge nga/e ]	9 - -	1 1 1	16 - 1	27 1 2
ngwa	[ ngwa ngwe ]	1 -	2 2	2 -	5 2
nya	[ nya nye ]	- -	3 1	- -	3 1
ra	[ ra re ]	4 -	- 2	5 -	5 2
rda	[ ta te ]	1 1	1 -	4 1	6 2
rna	[ na - ]	1 -	2 -	1 -	3 -
rra	[ rra rre rra/e ]	8 2 -	9 1 1	12 1 1	29 4 2
wa	[ wa we wa/e ]	7 - 1	7 3 2	3 - -	17 3 3
ya	[ ya ye ye/a ]	14 2 1	2 1 2	5 1 2	21 4 5
bi	[ pi ]	6	2	10	18
bu	[ pwu/i ]	7	3	2	12
di	[ ti tu ]	8 1	4 1	5 1	17 3
di	[ ti - ]	- -	1 -	- -	1 -

ji	[ji ju]	3	1	5	9
		1	2	1	4
ki	[ki kwu]	7	4	7	18
		-	1	3	4
kwu	[kwi/u]	6	4	7	17
li	[li lu]	2	1	-	3
		1	2	-	3
li	[li lu]	2	-	-	2
		1	1	-	2
lyi	[lyi lyu]	5	1	-	6
		1	1	-	2
mi	[mi]	4	2	4	10
mu	[mwu/i]	2	3	5	10
ni	[ni nu]	-	1	-	1
		-	1	-	1
ni	[ni nu]	3	-	4	7
		1	8	1	10
ngi	[ngi ngwu/i]	-	2	2	4
		1	1	1	3
ngwu	[ngwu/i]	2	3	1	6
nyi	[nyi nyu]	-	1	-	1
		-	1	-	1
ri	[ri ru]	1	1	2	4
		3	-	-	3
rdi	[rdi ru]	1	1	1	3
		-	2	-	2
rli	[rli]	-	1	-	1
rni	[rni ru]	1	1	1	3
		-	2	-	2
rri	[rri rru]	12	8	7	27
		1	2	1	4

wi	[wi	1	2	1	4
wu	wi/u	6	4	5	15
yi	[yi	2	4	8	14
	yu	2	1	3	6

2. Consonants: final in the syllable

Graphemes	Test 1	Test 2	Test 3	Total
k	-	-	8	8
l	-	-	4	4
m	-	2	4	6
n	[ŋ	-	3	3
n	[n	-	2	5
ng		5	11	16
n	[ny	-	7	8
r	-	-	7	7
rn	-	1	7	8
rr	-	3	8	11
rrk	-	-	2	2
rm	-	-	1	1
rrm	-	-	1	1
rng	-	-	3	3
rrng	-	-	1	1

3. Short vowels which are syllables by themselves

Syllables	Test 1	Test 2	Test 3	Total
a	4	7	10	21
e	7	-	2	9
a <sup>i</sup> /e <sup>i</sup>	1	1	-	2
a/e	2	3	1	6

4. Long vowels

Syllables	Test 1	Test 2	Test 3	Total
ayi	2	1	1	4
Ce <sup>i</sup> :	3	3	2	8

5. Aggregate of consonants and vowels

Graphemes	Test 1	Test 2	Test 3	Total
b	16	8	14	38
p	7	4	12	23



d	$\begin{bmatrix} k \\ t \end{bmatrix}$	13	8	14	35
		-	3	2	5
j		11	7	16	34
k		22	12	27	61
kw		14	7	12	33
l	$\begin{bmatrix} l \\ l \end{bmatrix}$	6	5	4	15
		3	2	4	9
ly		10	4	3	17
m	$\begin{bmatrix} mw \\ m \end{bmatrix}$	5	12	18	35
		5	3	8	16
n	$\begin{bmatrix} n \\ n \end{bmatrix}$	-	3	3	6
		21	26	28	65
ng		10	11	35	56
ngw		3	7	3	13
ny		-	7	7	14
r		8	3	18	29
rd		3	4	6	13
rl		-	1	-	1
rn		2	6	9	17
rr		20	24	34	78
w		16	16	9	41
y		21	10	18	49
a	$\begin{bmatrix} a \\ e \\ a/e \\ ai/ei \end{bmatrix}$	111	74	127	302
		17	25	18	60
		8	13	9	30
		2	1	1	4
i	$\begin{bmatrix} i \\ u \\ i/u \end{bmatrix}$	60	43	56	159
		12	26	10	48
		1	1	1	3
u	$\begin{bmatrix} i/u \\ ei: \end{bmatrix}$	23	17	20	60
ayi		5	4	3	12

WORKSHEETS FOR THE WRITING LISTS

Orthographic	Phonemic	Phonetic	English
<u>Writing List 1</u>			
yabungwurra	yapw <sup>h</sup> wi <sup>r</sup> ã	yap <sup>w</sup> u <sup>h</sup> wu <sup>r</sup> ã	sea wasp
yingwula	y <sup>i</sup> h <sup>w</sup> ãla	y <sup>h</sup> u <sup>h</sup> wula	trepan
marrakwa	mwa <sup>r</sup> akwa	ma <sup>r</sup> ak <sup>w</sup> a	tree coral
mingawa	mwi <sup>h</sup> ãwa	m <sup>w</sup> ã <sup>h</sup> ã <sup>w</sup> a	trochid shell
yilarda	y <sup>i</sup> ãla <sup>t</sup> a	yila <sup>t</sup> a	mud creeper shell
alyakilya	alyak <sup>i</sup> lyã	alyakilyã	mackerel
damaburna	tãmwapw <sup>i</sup> ã	tãmwap <sup>w</sup> ã <sup>h</sup> ã	coral trout
lingwurra	l <sup>i</sup> h <sup>w</sup> ã <sup>r</sup> ã	lu <sup>h</sup> wu <sup>r</sup> ã	trevally
yimudirringwa	yimwã <sup>t</sup> i <sup>r</sup> ã <sup>w</sup> a	y <sup>h</sup> ã <sup>w</sup> ã <sup>t</sup> i <sup>r</sup> ã <sup>w</sup> a (u) <sup>h</sup> ã	catfish
dimirrimara	tãmi <sup>r</sup> ã (ã)mwara	tãmi <sup>r</sup> ã (ã)m <sup>w</sup> ãra	sandfly
dakwarrikwarra	tãkwa <sup>r</sup> ãkwa <sup>r</sup> ã	tãkwe <sup>r</sup> ã <sup>h</sup> kwe <sup>r</sup> ã	rainbow pitta bird
dijariwa	tãjarã <sup>w</sup> a	tã <sup>t</sup> ã <sup>h</sup> ãruwa	friar bird
dimayikalya	tãmakalyã	tã <sup>i</sup> ã <sup>h</sup> me <sup>i</sup> :kalyã	jabiru
yingakiya	yãnak <sup>i</sup> ãya	yãnak <sup>i</sup> ãya	magpie goose
amamayika	amamaka	ememe <sup>i</sup> :ka	branch
yinimukalila	yãnimwãkalã <sup>i</sup> ã	yãnim <sup>w</sup> ã <sup>h</sup> ãkalã <sup>i</sup> ã	pine needles
burima	pwãrã <sup>m</sup> wã	p <sup>w</sup> urum <sup>w</sup> ã	berry
mamurrinyinya	m <sup>w</sup> ãmwã <sup>r</sup> ã <sup>h</sup> ã <sup>h</sup> ã	m <sup>w</sup> ãmwã <sup>h</sup> ã <sup>r</sup> ã <sup>h</sup> ã <sup>h</sup> ã	fruit
najirabina	nãjãrapwãna~ nãjãrapãna	na <sup>i</sup> tã <sup>r</sup> ãpã <sup>w</sup> ã <sup>h</sup> ãna~ na <sup>t</sup> ã <sup>r</sup> ãrepãna	they poured it
wulyingina	wãlyã <sup>h</sup> ãna	wãlyã <sup>h</sup> ã <sup>h</sup> ãna	catch it!
ningilyiwakana	nã <sup>h</sup> ãlyãiwakana	nã <sup>h</sup> ãlyãuwakana	I went off alone
nimarijana	nãmwãrã <sup>i</sup> ãna	nã <sup>w</sup> ã <sup>h</sup> ã <sup>w</sup> ãrã <sup>t</sup> ãna	he rubbed it with sand
naniwarribikama	nãniwã <sup>r</sup> ã <sup>i</sup> pãkamwã	nenã <sup>w</sup> ã <sup>h</sup> ã <sup>r</sup> ã <sup>i</sup> pãkam <sup>w</sup> ã	two men felt it
wiyakayina	wãyakã <sup>y</sup> ãna	wãyãkã <sup>i</sup> yãna~ wãye <sup>i</sup> kã <sup>h</sup> yãna	stay together!

yingarrikwulina	yɪŋaŋɪkwɪlɪna	yɪŋeŋ <sup>u</sup> ɪkwɪlɪna	she was sorry for
marriwa	maŋɪwa	meŋɪwa	current
balimarna	pwalɪmaŋa	p <sup>w</sup> alum <sup>w</sup> ana	hat
mamalarribirra	m <sup>w</sup> am <sup>w</sup> alaŋɪpɪŋa~ mama <sup>l</sup> aŋɪpɪŋa	m <sup>w</sup> am <sup>w</sup> aleŋɪpɪŋa~ meme <sup>l</sup> eŋɪpɪŋa	fighting spear
mardirdarra	maŋɪtaŋa	maŋɪtaŋa	hot day
warnimadirra	waŋɪma <sup>t</sup> ɪŋa	waŋ <sup>v</sup> ɪme <sup>t</sup> ɪŋa	their mouths
<u>Writing List 2</u>			
yiningburna	yɪnɪŋp <sup>w</sup> ɪŋa	yɪnɪŋp <sup>w</sup> ɪŋa	sea snake
wurriyamba	wɪɪyampa	wɪ <sup>v</sup> uŋɪyampa	praying mantis
ngarrikwuyarba	ŋaŋɪkwɪyaŋpa	ŋ <sup>ə</sup> eŋ <sup>u</sup> ɪkwɪ <sup>v</sup> u <sup>v</sup> eŋpa	we missed it
marliwiya	ma <sup>l</sup> ɪwiya	ma <sup>l</sup> uwɪya	emu
wayi	wayɪ	weɪ:~waɪ:	oh!
yiyangkirijana	yɪyaŋkɪrɪjana	ɪyaŋkɪ <sup>v</sup> urɪtɪna	rub it smooth!
karningma	kaŋɪŋmwa	kaŋɪŋmwa	I will know
nilyabajina	nɪlyap <sup>w</sup> ajɪna	nɪlyep <sup>w</sup> aɪtɪna	he is fighting
yirringwanja	yɪrɪŋwaŋja	yɪ <sup>v</sup> uŋ <sup>w</sup> aɪŋtɪ	we stopped
aningimanda	anɪnɪmaŋta	en <sup>v</sup> uŋɪ <sup>v</sup> umɪŋta	harpoon
dinini-murriya	tɪnɪnɪm <sup>w</sup> ɪŋɪya	tɪnɪnɪm <sup>w</sup> uŋɪya	mosquito et al
marrikwurra	maŋɪkwɪŋa	meŋ <sup>v</sup> ɪuk <sup>w</sup> uŋa	Long Tom fish
kwulingi-ma	kwɪlɪŋɪmwa~kwɪlɪŋamwa	k <sup>w</sup> ulɪŋ <sup>ə</sup> ɪmwa	with a rudder
warningwarribirra	waŋɪŋwaŋɪpɪŋa	waŋ <sup>v</sup> uŋ <sup>w</sup> eŋɪpɪŋa	everybody
angambayikbirra	aŋampakpɪŋa	aŋ <sup>ə</sup> empeɪk <sup>v</sup> pɪŋa	flat and smooth
ningilyingkwanima	nɪŋɪlyɪŋkwani <sup>m</sup> wa	nɪŋɪly <sup>u</sup> ɪŋk <sup>w</sup> enɪ <sup>m</sup> wa	I painted
nara aldadangima	nara al <sup>t</sup> at <sup>a</sup> ŋɪmwa	nara al <sup>t</sup> at <sup>a</sup> ŋɪm <sup>w</sup> a	I didn't go straight
naniyarringki-yada	nanyaŋɪŋkɪya <sup>t</sup> a	neniyaŋɪŋkɪy <sup>ə</sup> et <sup>a</sup>	for the old man
yibukwaya	yɪp <sup>w</sup> ɪkwaya	yɪ <sup>v</sup> up <sup>w</sup> uk <sup>w</sup> aɪya	approaching one
yingwu-baba	yɪŋwɪp <sup>w</sup> apwa	yɪ <sup>v</sup> uŋ <sup>w</sup> up <sup>w</sup> ap <sup>w</sup> a	because of the crow
angbulirra	aŋp <sup>w</sup> ɪlɪŋa	ə <sup>v</sup> ɪŋp <sup>w</sup> ɪlɪŋa	blunt

yinimaminda	yinimaminta	yinimeminta	woomera hook
kardiyi	kaṯiyi	kati:	hey!
yilyangi-manja	yilyajimwanja	yilyanṯimwanṯa	on the shark
nara ayakiwarribikima	nara ayakiwaṯipikimwa	nara eṯiyakwuweṯipikimwa	I don't remember
akwarnjirrama	akwanṯiṯrama	akwanṯiṯemwa	sticky substance
kwubardana	kwipwatana	kwupwatana	I will camp out
arribaja	aṯipwaja	eṯipwaṯa	away from the speaker
ayalikwa	ayalikwa	eṯiyṯelukwa	paperbark tree
dadiyiwangkwa-yada	ṯaṯiyiwanṯkiyata	ṯṯeṯiyuwanṯkiyṯeṯa	for the old woman
maldabirra	mwalṯapira	mwalṯepira	empty beach
wuwayijina	wiwa (yi) jina	uwaṯ (yi)ṯina	open it!
nikadirriwarnima	nikaṯiṯruwanimwa	nikatiṯruwanimwa	he started a fire with ashes
yimurrngwu-wa	yimwiṯriwiwa	yimwiṯriwuwu	to the prune tree
awunyamba	awiṯampa	awiṯempa	angry
akilyarriba	akilyarṯpa	ṯeṯikilyarṯepwa	light
ningingarndirrana	nṯinṯanṯiṯrana	nṯinṯanṯiṯrena	I don't like her
awulyikarra	awilyikaṯa	awilyikeṯa	a long way to walk
wurrayikbuda	wiṯakpwiṯa	wuṯeṯi:kpwiṯa	right-handed people
babulikana	pwapwulṯkana	pwapwulṯkena	iron

Writing List 3

yilarrba	yilaṯpa	yileṯpa	plant
wabalbarrija	wapwalpwaṯija	wapwalpwaṯiṯa	bust it open!
arjiyinga	arṯinṯa~arṯiyiṯna	arṯi (yi)ṯna	stand up!
kingambana	kṯinṯampa	kṯinṯempena	I will bathe
awarmpuwarmba	awarmpwiwarmpwa	awarmpwuwarmpwa	shell
yambadabirra	yampwatapira~ yampatapira	yampwatapira~ yempetapira	empty shell

nanirndirrka	nanin̄t̄iřka	nenin̄t̄iřka	two men got down
yirringakburrangina	yif̄iřakpwiřaŋina	yif̄iřakpwiřaŋina	she found it
namarngkinama	namwarŋkinamwa	namwarŋkinamwa	they laughed
alyangma	alyaŋma	alyeŋmwa	southeast
wunjawudana	wiñjawit̄ana	wiñta <sup>u</sup> wut̄ena	carry it on the head!
nara akbikbarrngwuma	nara akpikpwařŋwima	nara ekpikpwařŋwumwa	it's not too heavy to lift
yilarrngkiwarra	yilařŋkiwařa	(y)ilařŋk <sup>w</sup> (u)wařa	portion
kirrandabukwuna	kiřaŋtapwikwina	kiřaŋtap <sup>w</sup> ukwuna	they will finish it
wangkwurna	waŋkwina	waŋk <sup>w</sup> iŋa	fetch it!
nimalkayijika	nimwala <sup>k</sup> ayijika	nimwala <sup>i</sup> (yi)t̄ika	it flapped its wings
ningakbar.dima	niřakpwart̄imwa	niřakpwart̄imwa	I got frightened
nambirrajina	nampiřajina	nempiřaŋina	he looked after it
dilarrkbulala	t̄ilařkpwila <sup>la</sup>	t̄ilařkpwila <sup>la</sup>	thin woman
niwamburrbujanga	niwampwiřpwijaŋa	nuwamp <sup>w</sup> urpwit̄aŋa	they came out of
karndakajama	kaŋtakajama	kaŋtaka <sup>i</sup> t̄ema	I'll fish with a spear
nangalyangbarra	naŋalyaŋpwařa	naŋalyaŋp <sup>w</sup> ara	they hit her head
nakbilyarrikayina	nakpilyařikayina	ne <sup>i</sup> kpilyařika <sup>i</sup> iyina	he lay face down
dalangayikba	t̄alaŋakpa	t̄alaŋe <sup>i</sup> :kpa	those two over there
nara amandima	nara amantimwa	nara amentimwa	I didn't make a fire with sticks
nangbajama	naŋpwajamwa	neŋpwa <sup>i</sup> t̄amwa	he smelt it
nilarrmburrana	ni <sup>la</sup> řmpwiřana	ni <sup>la</sup> řmp <sup>w</sup> uřena	he shared his things
nimangkajika	nimwaŋkajika	nim <sup>w</sup> eŋka <sup>i</sup> t̄ika	he lifted it
maburambalba	mwapwirampwalpwa	mwap <sup>w</sup> ir <sup>a</sup> /emp <sup>w</sup> alpwa	flat
dimarngkambulyima	t̄imwarŋkampwilyimwa	t̄imwarŋkamp <sup>w</sup> wilyimwa	two-faced woman

WRITING LISTS: STATISTICAL FREQUENCY OF GRAPHEMES

1. Consonants: initial in the syllable

Syllables	Test 1	Test 2	Test 3	Total	
ba	[p(w)a]	1	10	11	22
	pe	-	-	1	1
	pa/e	-	-	1	1
da	[ta]	2	7	2	11
	te	-	-	2	2
	ta/e	-	1	-	1
da	[ta]	-	1	-	1
	te	-	-	-	-
ja	[ja]	1	2	5	8
	je	-	1	-	1
	ja/e	1	-	-	1
ka	[ka]	3	3	7	13
	ke	1	2	-	3
	ka/e	1	-	2	3
kwa	[kwa]	1	2	-	3
	kwe	2	1	-	3
la	[la]	2	-	6	8
	le	1	-	1	2
la	[la]	1	-	-	1
	le	1	-	-	1
lya	[lya]	4	1	2	7
	lye	-	2	1	3
ma	[m(w)a]	8	12	13	33
	me	3	3	1	7
	ma/e	2	-	-	2
na	[na]	-	-	-	-
	-	-	-	-	-
na	[na]	8	8	14	30
	ne	1	1	2	4
nga	[nga]	3	2	4	9
	nge	1	-	-	1
	nga/e	-	2	1	3
ngwa	[ngwa]	1	1	-	2
	ngwe	-	1	-	1
nya	[nya]	1	1	-	2
	nye	-	-	-	-
ra	[ra]	1	2	2	5
	re	-	-	1	1
	ra/e	1	-	-	1
rda	[ra]	2	-	1	3
	te	-	1	-	1

rna	[na	2	1	1	4
	-	-	-	-	-
rra	[rra	7	6	6	19
	rre	-	2	1	3
wa	[wa	5	5	6	16
	we	-	1	-	1
	wa/e	1	-	-	1
ya	[ya	2	6	-	8
	ye	-	2	-	2
	ya/e	1	4	2	7
bi	[pi	3	4	6	13
bu	[pwu/i	3	5	7	15
di	[ti	4	3	-	7
	tu	2	-	2	4
di	[ti	-	-	1	1
	tu	-	-	1	1
ji	[ji	1	2	4	7
	ju	-	2	-	2
ki	[ki	3	3	4	10
	kwu	-	2	1	3
kwu	[kwu/i	1	5	1	7
li	[li	3	1	-	4
	lu	-	1	-	1
li	[li	-	2	-	2
	lu	1	-	-	1
lyi	[lyi	1	1	1	3
	lyu	1	-	-	1
mi	[mi	1	1	-	2
mu	[mwu/i	4	2	-	6
ni	[ni	-	1	-	1
	nu	-	1	-	1
ni	[ni	1	6	3	10
	nu/i	3	3	3	9
ngi	[ngi	2	2	1	5
	ngwu	-	4	-	4
ngwu	[ngwu/i	3	2	1	6
nyi	[nyi	1	-	-	1
	nyu	-	-	-	-
ri	[ri	1	1	-	2
	ru	2	-	-	2
rđi	[ti	1	2	1	4
	tu	-	-	-	-
rli	[lu	-	1	-	1
rni	[ni	1	1	-	2
	nu	-	2	-	2
rri	[rri	4	7	2	13
	rru	4	3	-	7

wi	[wi	1	2	-	3
wu	wu/i	1	3	2	6
yi	yi	7	8	5	20
	yu	1	3	-	4

2. Consonants: final in the syllable

Graphemes	Test 1	Test 2	Test 3	Total	
k	-	2	6	8	
l	-	2	3	5	
m	-	2	6	8	
n	[n	-	1	1	2
n	n]	-	1	1	2
ng	-	8	5	13	
n	[ny	-	2	1	3
r	-	-	2	2	
rn	-	2	2	4	
rr	-	3	4	7	
rrk	-	-	1	1	
rm	-	-	2	2	
rrm	-	-	1	1	
rng	-	-	2	2	
rrng	-	-	1	1	

3. Short vowels which are syllables by themselves

Syllables	Test 1	Test 2	Test 3	Total	
a	[a	1	5	3	9
	e	1	3	1	5
	a/e	-	1	1	2
	a <sup>i</sup> /e <sup>i</sup>	-	2	-	2

4. Long vowels

Syllables	Test 1	Test 2	Test 3	Total	
ayi	[e <sup>i</sup> ;	-	-	-	
	C e <sup>i</sup> ;	2	3	2	7

5. Aggregate of consonants and vowels

Graphemes	Test 1	Test 2	Test 3	Total	
b	[pw	4	14	18	36
	p	3	4	8	15



d	[ <sup>h</sup> t t	8	11	6	25
		-	1	2	3
j		3	7	9	19
k		8	12	21	41
kw		4	7	1	12
l	[ <sup>h</sup> l l	6	4	7	17
		3	2	3	8
ly		6	5	4	15
m	[mw m	12	14	13	39
		6	7	10	23
n	[ <sup>h</sup> n n	-	3	1	4
		13	19	23	55
ng		6	17	14	37
ngw		4	4	1	9
ny		2	3	1	6
r		5	3	9	17
rd		3	3	-	6
rl		-	1	-	1
rn		3	6	3	12
rr		15	21	16	52
w		8	13	8	29
y		11	24	6	41
a	[a e a/e a <sup>i</sup> /e <sup>i</sup>	56	75	83	214
		10	20	12	42
		6	8	6	20
		1	2	1	4
i	[i u u/i	37	48	30	115
		14	22	7	43
u	[u/i	12	17	11	40
ayi	[e <sup>i</sup> :	2	3	2	7

READING: STORY 1

Mabakwa-langwa akwa Wurrandindi-langwa

Mabakwa akwa wurrandinda nanimalyangkayina mijiyalyi-manja.

Biya wurrandinda nayama, "Yilikaja miyalkwu-wa, kwa," nayama.

"Ningiwara ngaya," nimirama mabakwa.

"Mani-burra?" nayama wurrandinda.

"Ningkikikamarri-baba makarda mamama," nimirama mabakwa.

"Mamu-da. Yibangabukwunama ningkani-da," nayama wurrandinda.

"Ningiwara ngay. Yikiwurriyama malarri-manja," nimiryama mabakwa.  
"Mana ninganingma ningkakina ningkiwarnkarnnyarri-baba," nimiryama mabakwa.

"Ngayiwa na?" nayama wurrandinda. "Ningkwuwa-dangwa ningkiwurrariya ningkiwarnkarnnyarra ningkakina," nayama wurrandinda.

"Wulalika ayakwa akina wumba ngarringka diwankirrariya dibukwaya wiyida yingangkarrinama yakwuwa-wa," nimiryama mabakwa.

Niwandiyinga wurrandinda, narringarringka dibukwaya diwankirrariya yingangkarrina.

"Miyabana ningkimangayindimurra, diwankirrariya?" nayama wurrandinda.

Ngalaja nara kingiyangbini-da. Yingangkarra biya yingiwurdinga wiyida mardirdarri-manja muwarraka.

"Mabakwa," yingiyama diwankirrariya; "Ningkardada ningkakina mardidarri-wiya wumba likiya awarrwalyi-wa," yingiyama.

Ngalaja mabakwa numulikena akwa numamburra awarrwalyu-manja. Aburraja wurrendinda nuwawiyembada mabaku-wu-da, akwa nenuwardiyina arakbu-da. Biya mabakwa nuwanga wurrendindi-langu-manja eminda, nuwabuluwendingu-wiya wurrendinda.

"Yakayi! Eminda nganja!" nayama wurrendinda. "Merre-ka mema ngay na?" nayama.

"Nganju-kwaba mema merra mamudakbu-manja," numiyama mabakwa.

"Ngawa arakba nungkwurnuwa!" yingiyama duwankirrariya, "Umba likaja nungkuwa mangkurrku-wa," yingiyama wurrendindu-wa, "umba nungkwaja likaja akinu-wa amarda," yingiyama duwankirrariya. Akwa nenilikena akwa ngawu-da.

Ena ngawa.

READING: STORY 2

### Makabaramu-langwa

Nimilikanima makina makabarama naringandangima angalya namurakiwarrkwama. "Nara," niyama yikwurridangwa, "nara ningkwukwiyarbana ningkwuwa, ngayiwa barra ngilyakiwana ngilikaja

ngayiwa," niyama. Nilikana nilyakwuwana nimurakwuwarrikwa akina angalya akina ngawa niringandangima nikwuwarrangima angalya yandilangwa nidirrirndinga yangaba. Yandilangwa yangaba nambilya Yilyangimanja arakba mukwumukwu-manja nangkwungkwulala yakina arakba nambarringa yakwujina kambirra akini-manja angalya. Aningawa.

READING: STORY 3

Nalikana arakbawiya niwarndakana kambirri-da. Niwarndakanima wurrakina bi...ya narradidirranga, narradidirrangimu...wa nayar.didanga angalyi-wa. Nawurrakilawurradina narridakamura biya narrilikakbamurra wurrakina biya niwayijinimurra. Namurndiwayina arakba kamba wurrakina. Nakwayinima wurrakina biya yiyikwayiwa-wiya narrakwa aburra wumba aburraja yadidirringwarni-wiya. Wurrayabijaba angalya awarriwalya naminambilyamura, aburra waka wurriyadi-langwa yimba aburraja wurrikwurdikwurdi-langwa. Akina awarriwalya naminilingkwarjinama, naminingarmbalinama angalya akina.

"Anana ningkwurri-langwa ningkwurra wujanamura," nayama, "wumba yirraja ana yirrilangwa akwurdikwurda ana," nayama. Niwangmakayangimurra arakba kambirra wurrakina najangima akwala wumba narrimurndakamalyangi-murra karrawara. Biya nalyangirrakijaja wurrakina nalyangirra wurranjarrki-yada wurrakini-murriwa mana narrajirrakama wurrakini-baba. Kamba wurrakina wurrikwurdikwurdi-wa nalyangirrakina wurrakina. Biya ngawa wurriwurrakibina warningakwujina niwalamburri-murrimanja wurribina nawarrkbadana. Narrabumukang-bijinama akarrnga wurriwarrkburriira nakwulyarriyina akarringi-da. Akinibungawu-da.

READING: STORY 4

Dirndenikba akwa naburradikba nenilikena yinungungwangba-wa. Nenalilikenu...wa. Nenuwardanga yaraja. Ngarningka yirukwujilangwa, yiniyerruena, yimarndakuwaba, dijinungkwa, dingarna, yinungwerribirre-ka yinungungwangba nenabardakeyina. Nalyangburrukwune-ka alabura.

Nenikekiyuwarna ekalara. Nenumungkadinuma yaraja. Neniyaaminjamu...wa. Yinginakburraŋanga yamakwulyumuda yimarndakuwabu-da dirndenikbu-da. Yaka yingmungkalawudawarre-ka yadirringwarne-ka yingmurra.

"Ngarnda," niyama, "yiningab'ayika yimarndakwuwaba yaka yingmurra, yimungkalawudawarr'ayika."

"A...a, amandangwu-da," yingiyama dirndanikba. "Yaka kwurrirdikwurrirda yaka," yingiyama. "Kwurrirdikwurrirda yaka, yadirringwarna yimarndakwuwaba, jarriya?" yingiyama.

Kamba arakba naburradikba naka nanjarringalyilya nara-ka niyangmarngkwuna-ka.

Kamba arakba niyama nakina, "Kwurrirdikwurrirda, ngarnda, ngayinyangwa aringka, ngarnda. Kwurrirdikwurrirda, ngayinyangwa mamudakba, ngarnda, kwurrirdikwurrirda, ngarnda, ngayinyangwa awa."

"Aba niyamarrkama-ayika naka, niyamarrkamurri-bana nardijajimurra? Nikwikwangbamurra yaka yimarndakwuwaba. Ningkwulangwa kijanamurra ningkana mamudakba yiya aringka yiya yinimalya yiya awa adiniba wumba yangminjada-ayika arakba. Kaba! Yakilikaja arakba angalyi-wa," yingiyama.

Story 1: free translation

#### About the Legless Lizard and the Mouse

The legless lizard and the mouse played on the beach. The mouse said, "Come, let's go to the low tide area." "I don't want to," said the lizard. "Why not?" asked the mouse. "Because you are not familiar with the sea," said the lizard. "That doesn't matter! You can carry me on your head," said the mouse. "I don't want to. You would push me over on a stone," said the lizard. "I know you are always argumentative." "Me?" said the mouse, "You are the bad one—always fighting." "Stop talking because Duwankirrariya is approaching and running straight towards us," said the lizard.

The mouse looked and they both saw Duwankirrariya running. "What do you want, Duwankirrariya?" asked the mouse. She did not speak. She ran and climbed straight up the hot casuarina tree. "Lizard," she said, "you are hot during the day so go to the shade." The lizard went and stayed in the shade. The mouse fought the lizard and they hit each other. Then the lizard bit the mouse on the nose as he bent over. "Ouch! My nose!" said the mouse. "This is my blood, is it not?" "Mine, too, on the tail," the lizard said to him.

"Now you two!" said Duwankirrariya. "You go to the pandanus tree," she said to the mouse, "and you (the lizard) go to the grass." And the two of them went. That's all.

#### Story 2

The shark ray went, cutting the way open. He crossed to the other side. "No," said the swordfish, "you have a blunt (nose). I'll go first and lead the way." He led and crossed to the place on the other side. Once there he cut open a place and descended. He stayed in the south, in the deep sea, and sat down and meditated. And so he lives there at that place.

### Story 3

They went fishing with spears and kept on spearfishing before returning home. After returning home they cooked the fish and kneaded the flesh (of the stingray) and ate it. They shared small ones with some people and big ones with others. These people lived separately in a shady place away from the ordinary people and belonged to a sacred place.

The shade grew and hollowed out that place. "This is yours. Eat it," they said, "but we own this sacred place." They sat together and ate some (of the fish) but put much of it up on high. And then they got angry with the ordinary people over the gift and the ordinary people got angry with them because they came from another place and settled there. These people then polished and showed their teeth. Their teeth shone. That's the finish.

### Story 4

His mother and her son went (hunting) for edible bush animals. And they kept on going and killed a goanna, a bandicoot, a native cat, a blue-tongue lizard, an echidna and a snake and collected all kinds of bush animals. The paperbark container was filled!

They followed the burnt-out countryside and dug for goanna. They continued doing the same thing. His mother found a really big blue-tongue lizard—big and fat and beautifully coloured. "Mother," he said, "that's a really good blue-tongue lizard—it's so fat." "Oh, that's true," said his mother, "this is a big blue-tongue lizard, isn't it?"

And so her son, a young boy, praised her and said, "Blue-tongue lizard, mother, the head for me, mother. Blue-tongue lizard, mother, the tail for me, mother. Blue-tongue lizard, mother, the liver for me."

"Why does he keep on calling out? The lizard is a big one. You will eat the tail, the head, its fatty flesh and liver but stop talking! Be quiet! We'll go on home," she said.

#### READING LIST: 2

Reader: Roberta Yantarrnga

anima  
manyiwunya  
naniwurilana  
awiyida  
nangkangmina  
yiyayiba

akilyangbarrarra  
akana  
dijiwarra  
minyarnawa  
warningwanibaliba  
ningkiwarana

ningwarrka  
kirribarrka  
dikwurdikwurda  
wulyarra  
nangangilana  
dinina  
diyakirrarra  
mawulyilyikwa  
nyarrngukwajingwa  
alakana  
warningwarribirra  
dilingana  
wurriwayiba  
ngarringirarrimajina  
awarridada

niwarrikawarriyada  
awankanyarra  
yimurnirna  
anyirra  
ningwunamurra  
yirrangki-baba  
arndiwa  
angayimba  
kirribukwubardijana  
yininukwana  
bajanangi-manja  
marliwiya  
abuliwandiya  
ayabijaba  
mamama

READING: STORY 2

Reader: Carla Mamarika

Makabaramu-langwa

Nimilikanima makina makabarama naringandangima angalya namurakiwarrkwama. "Nara," niyama yikwurridangwa, "nara ningkwukwiyarbana ningkwuwa, ngayiwa barra ngilyakiwana ngilikaja ngayiwa," niyama. Nilikana nilyakwuwana nimurakwuwarrikwa akina angalya akina ngawa niringandangima nikwuwarrangima angalya yandilangwa nidirrirndinga yangaba. Yandilangwa yangaba nambilya Yilyangimanja arakba mukwumukwu-manja nangkwungkwulala yakina arakba nambarringa yakwujina kambirra akini-manja angalya. Aningawa.

WRITING LIST 3

Writer: Roberta Yantarrnga

yilarrba  
wabalbarrija  
arjiyinga  
kingambana  
awarmbuwarmba  
yambadabirra  
nanirndirrka  
yirringakburrangina  
namarngkinama  
alyangma  
wunjawudana  
nara akbikbarrngwuma

nara amandima  
nangbajama  
nilarrmburrana  
nimangkajika  
maburambalba  
dimarngkambulyima

yilarrngkiwarra  
kirrandabukwuna  
wangkirna  
nimalkayijika  
ningakbar.dima  
nambirrajina  
dilarrkbulala  
niwamburrbujanga  
karndakajama  
nangalyangbarra  
nakbilyarrikayina  
dalangayikba

#### WRITTEN STORIES

Writer: Roberta Yantarrnga

##### Story 1

Warna wurriwarda niwakbujingwuma amardi-manja nanimijangima yimanda niwarrangbama yinimamuwa. Biya nidirrirnda-manja arakba aburraja wurriwarda nalikana namungkadina yakina yinimamuwa akwa niwalyibarna

Story 2 Naka naningkarba nilikana akwalyi-wa anilangwu-ma dingka ningwurrkwana akwalya. Biya ningarikwumurni- wa narrikba, biya nilawurradina angalyi-wa, niliraka angwura akwa nidaka biya nijanga akina akwalya

##### Story 3

Warna wurriyikwayiwa akwa wunaningkarbu-kiya

#### CLASSIFICATION OF READING ERRORS

Reader: Maxine Mamarika

(i) incorrect reading of the graphemes

List 1	biya	as	ba
List 3	ji	"	jiyi
	ang [eng]	"	aring
	kang [keng]	"	kang

Story 1	ning+ka	"	ninga
Story 3	la	"	lya
Story 4	a	"	ya

(ii) metathesis/reversal of graphemes or syllables

List 1	li+ka	"	kwu+la*
	wa+rri	"	wi+rri* [wurra]
List 3	ki+rri	"	ka+rri
Story 3	ji+rri	"	ja+rri [jerrri]

(Note: The correct phonological changes from 'i to u' and 'a to e' have been applied when syllables were reversed.)

(iii) omission of one syllable when two syllables have the same initial consonant

List 2	ma+ma+ma	"	mama [mema]
Story 1	ma+ma+ma	"	mama [mema]

(Note: The short form is correct.)

(iv) omission of a reduplicated morpheme

Story 3	di+di	"	di
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(v) substitution of another grammatical form

List 1	nga	"	ngam
List 2	na	"	ni [nu]*
List 3	wun	"	nin
	na	"	ni
	yi	"	a
Story 1	wiya	"	da
	neni	"	yini
Story 2	na	"	nama
Story 3	min	"	∅
	ja	"	jayina
	ma	"	∅
Story 4	-da	"	∅

(vi) substitution of one word for another

List 2	manyingwunya	"	mangiyiwanga
List 2	yiwankija	"	yakwaja
Story 1	miyalkwu-wa	"	mijiyalyi-wa
Story 3	niwalamburri-	"	niwalyibarni-
Story 4	kijanamura	"	kinijaya
Story 1	mana	"	∅



(vii) error/omission/insertion because another syllable has been called wrongly

List 1	ng	"	nga
Story 3	na	"	niw [nuw]
	ka	"	kwa
Story 4	a	"	wa

CLASSIFICATION OF WRITING ERRORS

Writer: Roberta Yantarrnga

(i) incorrect writing of the graphemes

List 1	li	as	lyi (twice)
	nyi	"	mi
	rđi	"	đi
List 2	rning	"	ning
	kiya	"	ka
	rđi	"	đi
	kwarn	"	kwan
	rda	"	đa
	rni	"	nu
	ngarn	"	warn
List 3	ja	"	jiya
	ar	"	a
	nirn	"	ni
	marng	"	mar
	larrng	"	larr
	rna	"	na
	bar.	"	ba
	burr	"	birrk
	la	"	lya
	man [men]	"	min
	marng	"	mar
Story 1	rrirn	"	rrin
Story 2	ø	"	ngi
	rni	"	nu
Story 3	wum	"	um
Story 4	kwa	"	wa
	ma	"	na
	rring	"	rri

(ii) metathesis/reversal of graphemes or syllables

List 1	lyi+wa	"	wulya
Story 2	ra+ka	"	ka+ra

(iii) error when two syllables have the same initial consonant

Story 4	di+rra	"	rri+rra
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(iv) no errors

(v) no errors

(vi) no errors

(vii) errors in the two-syllable sequences 'ayi' and 'iyi' Control words:

List 2	wayi	"	wa
List 3	kayi	"	ka

Other words:

List 1	mayi	"	ma (twice)
List 2	bayik	"	ba
	rdiyi	"	rdi
	rrayik	"	rrik
List 3	ngayik	"	ngak

(viii) errors in the high vowel following Cw

List 2	kwu /kwi/	"	ki
	ngwu /ngwi/	"	ngi

(ix) errors in the high vowel following /w/

List 2	wu /wi/	"	wi
List 3	wu /wi/	"	yi
Story 2	wu /wi/	"	wi

(x) errors in the high vowel following 'm' and 'b'

List 1	bu /pwi/	"	bi (three times)
	mu /mwi/	"	mi (three times)
List 2	bu /pwi/	"	bi (three times)
List 3	bu	"	bi (eight times)
	burr	"	birrk

Story 1	bu	"	bi (twice)
	mung	"	ming
Story 2	mu	"	mi
Story 3	bu	"	bi
Story 4	bu	"	bi (twice)

(xi) errors in the high vowel preceding a rounded consonant

Within the morpheme:

List 1	dirr	"	durr
	ri	"	ru (twice)
List 2	yi	"	yu
	rni	"	nu
Story 2	ri	"	ru
Story 4	yi	"	yu (twice)
	li	"	lu (twice)
	ji	"	ju

At morpho-phonemic boundary:

List 1	ni	"	nu
List 2	ki	"	kwu (twice)
List 3	ni	"	nu
	ki	"	kwu
Story 1	ni	"	nu (twice)
Story 2	lyi	"	lyu (twice)
	rri	"	rru
	rni	"	ru
Story 4	ni	"	nu
	ji	"	ju

(xii) one word has been substituted for another

List 2	kwulingima	yinguma
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#### SAMPLE OF ORTHOGRAPHY

##### Story 1:

Mabakwa akwa wirrandinda nanimalyangkayina mijiyalyi-manja.  
 Biya wirrandinda nayama, "Yilikaja miyakwi-wa, kwa," nayama.  
 "Ningiwara ngaya," nimiyama mabakwa.

"Mani-birra?" nayama wirrandinda.

#### Story 4:

Nanikakiywarna akalara. Nanimingkadinima yaraja. Naniyaminjami...wa. Yinginakbirranga yamakwilyimida yimarndakiwabi-da dirndanikbi-da. Yaka yingmingkalawidawarra-ka yadirrngwarna-ka yingmirra.

#### Stories for Writing by Aborigines:

Yaka yimanda niwarrangbama yinimamiwa mijiyalyi-manja abirraja wirriwarda nanirringka yimanda amardi-langwa. Biya nalikana arakba wirriwarda mijiyalyi-wa yibini-wa niwabirangka yinimamiwa nanirringka arakba yibina yinimamiwa wirrakina wurriwarda.

Warna warningwarba bilikwi-manja narrararikinama marra-ma. Wimba abirraja wirriyikwayiwa karrawara aka-manja narraringkinama wirrakini-wa.

#### **BIBLIOGRAPHY**

##### Anindilyakwa literature

- Leeding, Velma J. 1977. 'Anindilyakwa Dictionary'. First draft, typed and duplicated, 85pp.
- . 1978. 'The Syllables in Anindilyakwa'. First draft, typed and duplicated, 49pp.
- . 1979. 'Anindilyakwa Phonology: Umbakumba Communilect'. M.A. thesis, Macquarie University, Sydney.

##### Teaching Method

- Freundenburg, Allen. 1976. 'The Language-experience approach to teaching reading'. *Read* Vol. 11: 4, pp.97-99. S.I.L., Papua New Guinea.
- Gudschinsky, Sarah C. 1973. *A Manual of Literacy for Preliterate Peoples*. 180pp. Summer Institute of Linguistics, Papua New Guinea.
- Gattegno, Caleb. 1969. *Reading with words in Colour*. Educational Explorers, England.



- Casebolt, Barbara. 1980. 'Readability of materials'. *Notes on Literacy* No. 32, pp.1-6. A review of the literature in relation to remote communities.
- Edwards, Dr. Peter. 1976. *Reading Problems: Identification and Treatment*. Primary Education (Publishing) Pty. Ltd., 41 Rowena Parade, Richmond, Victoria. A very readable book with concise statements about the nature of reading problems. It outlines specific tests and was extremely helpful in diagnosing errors.
- Clay, Marie M. 1977. *A Diagnostic Survey: The early detection of reading difficulties*. Heinemann Educational Books, New Zealand. The most helpful book on recording, marking and diagnosing errors. It deals only with reading. (Second edition 1979).
- Cotterell, Peter. 1978. 'Lecture Notes'. *Notes on Literacy* No. 25, pp.1-48. Includes some interesting types of testing and discussions of various options. Most were related to testing reading comprehension.
- Kemp, Max. 1980. 'Innovations and Practice: Tests of English for Migrants (TEMS)'. *Australian Journal of Reading* Vol. 3:1. Not relevant.
- McKay, G.R. 1979. 'Orthography testing procedures for Djebbbana (Gunibidji)'. Typed MS, 5pp. Discusses testing done with several young adults literate in English. Short stories were used for reading tests and words for writing tests as the Aborigines became literate in their own language. As no details of the actual content or marking were included, it is difficult to ascertain whether scoring was precisely done or impressionistic.
- Rabin, Chaim and I.M. Schlesinger. 1974. 'The influence of different systems of Hebrew orthography on reading efficiency'. In Joshua A. Fishman (ed.), *Advances in Language Planning*, pp.556-71. Mouton, The Hague. A very interesting article on the differences and difficulties in using alternative Hebrew alphabets. From this article came the idea of using alternative orthographies within the same story. Problems in testing are discussed.
- Rudder, John. 1979. 'Diagnostic testing in languages with phonemic alphabets'. *Notes on Literacy* No. 28, pp.1-2. This testing is similar to what was done in Anindilyakwa. It is, however,

based on the order of teaching the symbols. Not much detail is given.

Theobald, John. 1976. *Classroom Testing, Principles and Practice*. Longmans, Australia, Pty. Ltd., Hawthorn, Victoria. Deals with comprehension, rather than the more controlled diagnostic testing.

Wilson, Clifford. 1975. *The Language Abilities Guide*. Worth Publishing Co., Mt. Waverley, Victoria 3149. There are some useful ideas for a wide range of testing for reading comprehension but very little in phonics testing.

Zorc, David and Mrs. Nellie Prado Zorc. (no date). 'The uses of creative writing for testing and teaching English Literacy'. Typed MS, 17pp. This article deals with Aborigines who speak English as a second language and focuses on developing their creativity, identifying grammatical errors, and improving their vocabulary, but not the testing of a phonetic alphabet.

The following references are listed under the name of the test or the institution at which it was developed:

*ACER Word Identification Test*, Australian Council for Educational Research, Hawthorn, Victoria 3122. These tests 'indicate what approach the child uses with words: is it predominantly a phonic or a whole word approach?' Test coding is in a quick, simple method for sight vocabulary versus phonic analysis. The layout and instructions have been used and adapted for the tests in Anindilyakwa.

*Brennan Record for the Interpretation of Miscues*, Reading/Language Centre, Wagga Wagga, N.S.W. 2650. A test of comprehension with useful coding for separating phonic errors into three classes.

*Canberra College of Advanced Education*, School of Teacher Education, Canberra. (Prepared by Mr. Don Phillips.) Some of the basic testing follows that of ACER but there is a more detailed method for coding errors. Included was 'Instruction for diagnostic phonic elements test (screen)'. As the strongest conditioning of Anindilyakwa allophones is by the following syllable, this example was helpful.

*Domain Diagnostic Tests of Phonics*, (no information as to the source).  
These are sample sheets of tests similar to ACER but showed the statistical frequency of consonants and vowels.

*Gapadol Reading Comprehension Tests*, Heinemann Education Australia, South Yarra, Victoria 3141. Not suitable for the testing of phonics.

### Readability

The subject of 'readability' was investigated when choosing stories for reading. Readability as suggested by Flesch, Fry, SMOG (Cloze) et al, is based on such things as the number of sentences, number of words per sentence, the number of syllables per word, and was taken from random samples of texts. While these views did not always agree, they were helpful in pinpointing certain factors of which to be wary. (See *Resource Book on the Development of Reading Skills*, 1973, Education Department, South Australia, for an overview of the literature available.)