An Analysis of
Grade Four
Natural Sciences and
Human and Social Sciences
Texts and
A Comparison between Grades 3 and 4

On behalf of the Limpopo
Education Department

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4.5 Academic Language Functions 36
4.6 Conclusion 36

CHAPTER 5: Social Sciences Text Two 37
5.1 Coherence 37
5.2 Cohesion 39
5.3 Syntax 44
5.3.1 Tree diagram 44
5.3.2 Syntactic structures 45
5.4 Vocabulary 47
5.4.1 Challenging language 48
5.5 Academic Language Functions 48
5.6 Conclusion 48

CHAPTER 6: Conclusions: the gap between the Foundation Phase and the Intermediate Phase 49
6.1 Introduction 49
6.2. Cohesion 49
6.3 Syntax 51
6.4 Vocabulary 55
6.5 Academic Language Functions 56
6.6 Have we made accurate assumptions? 59
CHAPTER 1: INTRODUCTION TO THIS STUDY

The main purpose of this investigation has been to explore the literacy demands on learners who are required to read text across the curriculum (i.e. in each of the Learning Areas) at the beginning of the Intermediate Phase (IP) of education in Limpopo Province. Its method has been to compare the academic literacy demands at Grade 4, as found in a limited sample study, with the literacy demands of materials analysed for learners in Grade 3, in an earlier analysis of teaching materials in Limpopo Province (Macdonald 2007). In essence, this subsequent evaluation of Grade 4 learning materials was designed to answer the following questions:

- Is there a significant academic literacy gap between materials that learners are expected to read by the end of Grade 3, and those which learners are expected to read in Grade 4?
- If there is a gap, can we identify the nature of the gap?
- Can we formulate recommendations from this study that can inform teacher education, and the production of learning and teaching materials, in order to improve literacy development in Limpopo Province?

The focus of this second report for Limpopo Province is to establish the nature and kind of specific language used in the different Learning Area texts for Grade 4. The two Learning Areas selected for analysis were Social Sciences (SS) and Natural Sciences (NS). The texts that were examined came from the same publishers as those represented in the Foundation Phase (FP) analysis. This was done because these are flagship courses/schemes, and considerable attention was given to their content and design.

There is a design difference between Foundation Phase and Intermediate Phase analyses. In the FP analysis, the final 30 sentences of the Grade 3 Language Book or Reader were analysed. For English L1 (first or home language), no Language schemes (i.e. Language textbooks) per se were located, so books from reading schemes or information books for young readers (chosen by teachers as Grade 3 level) were used.

In the IP books, it was more difficult to decide what to analyse. If this was to “fit” with another aspect of the evaluation study (viz. the fieldwork and classroom data collection conducted during the third quarter of 2007) the analysis should have come two-thirds of the way through the books. In the end, we decided to look at sentences at the beginning, middle and end of the books. This had one important but unintended consequence: within ten sentences at each point, it was not possible to capture a whole lesson, whether it be largely information or activity based. While vocabulary and syntactic structures (i.e. intra-sentential analysis) are not affected here, the cross-sentential analysis (i.e. cohesion and coherence) is affected because of the smallness of the sample for analysis.

The model on which this study was based was Van Rooyen’s (1990) study of two Grade 2, 3 and 4 Language courses, and 200 sentences from each of two Grade 5

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1 Since all provinces in South Africa follow the National Curriculum Statement of the national Department of Education, and publishers supply the same materials to all provinces, this study has relevance beyond Limpopo Province.
Natural/General Science books. Van Rooyen was able to draw some strong conclusions because her analysis was both extensive and exhaustive. For example, because she analysed more than one whole Language course, she could identify exactly what vocabulary should have been learnt — that is if the course was completed (a shaky assumption). She could then make arithmetical assumptions about the degree of novelty of the Science extracts, e.g. how much new vocabulary, new syntactic structures, new cohesive ties and coherence aspects occurred. Her comprehensive study carried a lot of weight at that time when explaining the chasm separating the then Standard 2 (Grade 4) from Standard 3 (Grade 5) for L2 (second language) learners.

We turn now to what was done in the present mini-study of Grade 4, which will be compared with the analysis of the L1 and L2 Grade 3 texts in the first phase of the study. The levels of analysis for the Grade 3 texts were coherence, cohesion, syntax, vocabulary and Academic Language Functions. The same type of analysis has been done for two Natural Sciences and two Social Sciences books in this the second phase of the materials' analysis reported on here. In this document, most of the data is from the Grade 4 analyses. In conclusion there is a comparison between the L1 and L2 Grade 3 texts, and the Natural Sciences and Social Sciences Grade 4 texts analysed below. There are some final comments on whether the nature of the findings is realistic.

A novel component of the analysis is an instrument, Academic Language Functions, discovered and developed for the first phase of materials’ analysis. It is reproduced in Chapter 6.5, and is worth consulting at this point.
CHAPTER 2: NATURAL SCIENCES TEXT ONE

2.1 COHERENCE

This text for Grade 4 is reasonably short, 110 pages, and covers a small number of basic topics.1

Chapter 1: Planet Earth and Beyond:
  1.1 Water
  1.2 Soil.
  1.3 Air.
  1.4 Weather.
Chapter 2. Matter and Materials:
  2.1 Materials.
Chapter 3: Energy and Change:
  3.1 Sources of energy in nature.
Chapter 4: Life and Living:
  4.1 Animals, feeding and food.
  4.2 Plants.

Text One is a “second string” book for Natural Sciences; the flagship course could not be analysed because this author had helped edit it.

NS Text One is a beautifully designed book, full of pictures that coordinate with the text. There are different relationships between the pictures and the written text. On the next page is a page from the text – imposed over a complex picture. The pictures are not labelled, and sometimes cut across text, as with the picture of food. A more detailed analysis needs to be made of the text/illustration relationship, which varies through the book. However, it may be asked if this intra-paragraph text is cohesive. Propositions follow one another, and there is liberal use of connectives (conjunctions).

2.2 COHESION

2.2.1 Beginning text


Analysis
[1a][1b][1c] Lexical reiteration “feel”
[2a][2b] Lexical cohesion “skin”, “mouth”
[3a][3b][3c] Lexical reiteration “hot day”
[3z][3d] Lexical cohesion “hot day”, “Hottest Day of the Year”
[4a] Anaphoric reference “this”, refers to the entire previous sentence
[5a] Exophoric reference “you”.

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1 In the NCS the Science topics for the Intermediate Phase are set out as a whole and authors can choose when to deal with specific topics. While this choice is to be commended, the policy will disadvantage children who move to different schools during the phase. Another concern is that if a complete series (Grades 4-6) is not used in the phase, teachers may be teaching the same topics at different grades.
1 Water

Look at this picture. Count how many different sources of water you can find. How many different water containers can you see?

1. Find three examples of people using water in this picture.
2. Where does the water come from that the people are using?
3. Find three examples of dirty or polluted water.
Challenging language/Academic language

“feel” intensive rather than transitive
“this” anaphora referring to whole of preceding sentence.

Academic Language Functions

1. Following instructions
2. Observing and comparing
13. Justify (give reasons for an action, a decision, or a point of view).

2.2.2 Middle text


The activity was fun, but it’s [7a] dangerous to put [3f] your [2g] hands into a pot of [6e] water if [3g] you aren’t sure how [1f] hot [6f] the water is.


Analysis

[1a][1b][1f] Lexical collocation “cold”, “hot”
[1a][1c][1d][1e] Lexical reiteration “cold”
[1f][1g] Lexical cohesion “hot”, “cooler”
[1f][1h] Lexical cohesion “hot”, “burned”
[2a][2b] Lexical reiteration “the hand”
[2a][2c] Lexical cohesion “the hand”, “both hands”
[2d][2d][2e] Lexical reiteration “hand”
[2f][2g][2h] Lexical reiteration with definite reference “your hands”
[3a][3b][3g][3h][3i] Lexical reiteration and exophoric reference “you”
[3c][3d][3e][3f][3j] Lexical reiteration and exophoric reference “your”
[4a][4b] Lexical reiteration “got”
[5a][5b] Lexical cohesion “warmer”, “warm”
[5b][5c] Collocation “warm”, “cold”
[6a][6b][6c][6d] Anaphor ic reference – definite article “the […] water”
[6e][6f][6g] Lexical reiteration
[6g][6h] Anaphoric reference “the water”, “it”
[7a][7b] Collocation “dangerous”, “careful”
[8a][8b] Anaphoric reference “a baby”, “the baby”.


Challenging language/Academic language

“got … got …” intensive rather than transitive use
“confused” unfamiliar word, used metaphorically
“feel” used intensively rather than transitively

2 An intensive verb refers to the subject, e.g. “I feel tired”. Transitive uses take a proper object, e.g. “I feel the stone”.

7
"actually" = "in reality", which is a difficult concept
"get burned" past participle instead of transitive verb
"activity", "but...if" construction; implicit "if ...(then)...and" construction.

**Academic Language Functions**
1. Instructing

### 2.2.3 Supplementary text

2. [1a] Plants are [2a] useful
   Many of the things [5b] we eat and drink [10a] come from [1i] plants. On these two pages are some examples of what [1j] plants give [5c] us.

1. Make a list of all the different kinds of things you eat and drink.
   * Which of these things come from plants?
2. Next to each word write down the kinds of plants that the food comes from. ³

**Analysis**

[1a][1b] Lexical reiteration "plants"
[1b][1c] Anaphoric reference "plants", "they"
[1b][1d] Anaphoric reference "plants", "they"
[1c][1f][1h] Anaphoric reference "plants", "they"
[1i][1j] Lexical reiteration "plants"
[2a][2b] Lexical reiteration "useful"
[3a][3b] Lexical cohesion "living things", "people", "animals"
[3b][3c] Lexical reiteration "animals"
[4a][4b] Lexical cohesion "shade", "protection"
[5a][5b][5c] Lexical reiteration "us", "we"
[6a][6b] Anaphoric reference "the soil", "it".

**Conjunctions:** "and" (3), "also".

**Challenging language/Academic language**

"useful" abstract but explained
"protect" abstract, and the use of "eroded" is not explanatory
"make oxygen" abstract and difficult for this level were it to be explained
"provide" abstract, could have used "help with" but now indication about the process.

**Academic Language Functions**

None. (The extension has instructions, but not analysed.)

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³ Text inadvertently excluded when supplementary sentences were chosen. It was not later analysed because the text would run to 33 sentences, and not comparable with the other three.


- How many [4c]people in your [8c]class have the same [3b]favourite [2g]food?

5. [8f]You can also make [5a]a graph to show the [3b]favourite [2h]foods in [8g]your class that [7b]comes from plants.

Draw [5b]a graph like the [5c]one below, **with** one [5d]picture per [6b]learner.

**Analysis**

[1a][1b] Anaphoric reference “word and picture chain”, “this one”
[1a][1c] Partial lexical reiteration “word and picture chain”, “word chain”
[2a][2b] Lexical reiteration “the foods”
[2b][2c][2f][2g][2h] Lexical reiteration “word(s)”
[3a][3b] Lexical reiteration “favourite”
[4a][4b] Lexical cohesion “class”, “learner”, “people”
[5a][5b] Lexical reiteration “a graph”
[5b][5c] Anaphoric reference “graph”, “one”
[5b][5d] Lexical cohesion “graph”, “pictures”
[6a][6b][6c] Anaphoric reference “learner”, “his or her”
[7a][7b] Lexical reiteration “comes from plants”
[8a][8b][8c][8d][8e][8f][7g] Exophoric reference your”, “your”
[9a] Exophoric reference “like this one”.

**Conjunctions:** “and”(2), “until”, “only”, “how many”, “also”, “with”, “or”.

**Challenging language/Academic language**

“What happened to it?” Interpreted by picture.

“per” = for each
“each” a new word and concept.

**Academic Language Functions**

1. Following instructions
2. Seeking information
3. Recording (measure carefully: write down, make notes and sketch pictures, complete diagrams, fill in data in tables)
4. Inform (report, explain or describe information or procedures – retell story or content-related information in own words, tell main ideas, summarise, use graphic forms such as flow charts, posters, diagrams, pie-charts and bar graphs).

**Summary of cohesion types:**

<table>
<thead>
<tr>
<th>Anaphoric reference</th>
<th>Cataphoric reference</th>
<th>Collocation</th>
<th>Ellipsis</th>
<th>Exophoric reference</th>
<th>Lexical cohesion</th>
<th>Lexical reiteration</th>
<th>List</th>
<th>Conjunction</th>
<th>Challenging language</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td>9</td>
<td>8</td>
<td>37</td>
<td>-</td>
<td>14</td>
<td>16</td>
</tr>
</tbody>
</table>
The activity was fun, but it's dangerous to put your hands into a pot of water if you aren't sure how hot the water is.
### 2.3.2 Syntactic structures

Syntactic structures NS Text One compared with Text Two (see Chapter 3)

<table>
<thead>
<tr>
<th>Structures</th>
<th>Science 1</th>
<th>Science 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. All types of verb groups except for complex verb groups</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>2. Commands, statements and denials</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3. Wh- questions with words like who, how and how much</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>4. how many</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>5. what</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>6. Wh- in subordinate clause</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>7. Yes/No questions, including auxiliary and modal fronting</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>8. Tenses: present, past, present continuous</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>9. Tense: past perfect</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10. Relative clause with the relative pronoun who</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>11. that as relative clause marker</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>12. Co-ordinating sentences with and and or</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>13. Co-ordinating phrases with and (not but or or)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>14. or</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>15. Passive construction</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>16. Modal can</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>17. Modal could</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>18. Modal must</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>19. Modal may</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>20. Demonstrative</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>21. Non-finite verb group complement, e.g. The best thing to do would be (for you) to tell everyone</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>22. Non-finite verb group complement Type II: All I did was (to) hit him.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>23. Non-finite post modifier of NP (PP)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>24. Phrasal NP postmodifier</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>25. Phrasal NP premodifier</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>26. Non-finite complement of verb-group</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>27. Finite adverbial with before, then</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>28. when</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>29. Comparative clauses as big as/as fast as</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>30. Subordinating conjunctions before, then</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>31. because, where, when, since</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>32. when</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>33. then</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>34. What</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>35. Wh- in subordinate clauses</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>36. Discourse markers (COMP) now, then</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>ID</td>
<td>Feature</td>
<td>YES</td>
</tr>
<tr>
<td>-----</td>
<td>--------------------------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>37</td>
<td>Past perfect tense</td>
<td>✓</td>
</tr>
<tr>
<td>38</td>
<td><em>that</em> as relative clause marker</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>Ellipsis/substitution</td>
<td>✓</td>
</tr>
<tr>
<td>40</td>
<td>Lists</td>
<td>✓</td>
</tr>
<tr>
<td>41</td>
<td>Multiple embeddings</td>
<td>✓</td>
</tr>
<tr>
<td>42</td>
<td>Adverbial Phrases: Purpose</td>
<td>✓</td>
</tr>
<tr>
<td>43</td>
<td>Time</td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>Place</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>Manner</td>
<td>✓</td>
</tr>
<tr>
<td>46</td>
<td>Present participle</td>
<td>✓</td>
</tr>
<tr>
<td>47</td>
<td>Past participle</td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>Asyndetic co-ordination</td>
<td>✓</td>
</tr>
<tr>
<td>49</td>
<td>Possessive</td>
<td>✓</td>
</tr>
<tr>
<td>50</td>
<td>Demonstrative</td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>Existential <em>there</em></td>
<td></td>
</tr>
<tr>
<td>52</td>
<td><em>And</em> as sentence initial</td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>NP in apposition</td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>Transposed clause/phrase</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Interupting</td>
<td>✓</td>
</tr>
<tr>
<td>55</td>
<td>Conjunctions</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>also</em>, <em>until</em>, <em>if</em>, <em>and</em>, <em>also</em>, <em>or</em>,</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>but</em>, <em>like</em>, <em>that</em>, <em>actually</em>, <em>so</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>then</em>, <em>and then</em>, <em>next</em>, <em>also</em>, <em>if</em>,<em>when</em></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL (without conjunctions)**

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>37</td>
</tr>
</tbody>
</table>

**AVERAGE FOR EACH TEXT TYPE**

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>34</td>
<td></td>
</tr>
</tbody>
</table>

Compared to the Grade 3 texts, this text also reveals a large number of syntactic structures. The tree diagram illustrates the processing load of multiple embeddings in one sentence. These two factors will put a high information-processing load on the children. There are also 14 conjunctions, some of which were definitely not encountered before, e.g. "and also", "so then" and "actually". However, it must be said that there is not yet evidence of Noun Phrase heaviness as Subject of the sentence, nor are there interrupting constructions (i.e. remarks set into the sentences and flanked by dashes), which presumably will be seen in the Senior Phase books.

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4 The syntactic structures are just marked as occurring, rather than the absolute number of occurrences, which would require the analysis of the whole book. However, it should be pointed out that if a structure is used a number of times, it is more likely that the children will learn to understand, and perhaps use, it.
2.4 VOCABULARY

a
about
activity
actually
all
also
and
animals
are
aren’t
baby
bath
be
beautiful
being
below
both
breathe
burned
but
can
careful
chain
choose
chosen
class
cold
come
confused
cool
cooler
dangerous
day
do
does
down
draw
drink
each
eat
eroded
examples
favourite
feel
felt
food
for
from
fun
gets
give
got
graph
groups
hand
happens
have
her
his
hot
Hottest
how
if
in
into
is
it
it’s
keep
learner
like
list
living
look
lukewarm
make
many
might
more
most
mouth
need
of
on
one
only
or
other
oxygen
pages
people
per
picture
plants
pot
protect
protection
provide
put
same
shade
should
show
skin
soil
some
story
sure
talk
than
that
the
then
these
they
things
this
to
two
until
us
useful
very
warmer
was
water
we
what
when
where
why
with
word
write
Year
you
your

327 words
190 lexemes
10.9 words/
sentence
There are 19 words which are highlighted in the list above, but this under-predict the difficulties with the language, as there are difficult expressions and academic and discipline-based terms or constructions.

2.4.1 Challenging language/Academic language

Difficult words/ constructions:
1. “feel” intensive verb usage rather than transitive
2. “this” anaphora referring to whole of preceding sentence
3. “got ... got ...” intensive rather than transitive verb use
4. “confused” unfamiliar word, used metaphorically
5. “feel” verb used intensively rather than transitively
6. “actually” = “in reality”, which is a difficult concept
7. “get burned” past participle intransitive instead of transitive verb
8. “activity”, “but...if” construction; implicit “if ... (then) ... and” construction
9. “useful” abstract but is explained
10. “protect” abstract
11. the use of “eroded” is not explanatory
12. “make oxygen” abstract and difficult for this level were it to be explained
13. “provide” abstract, could have used “help with” but no indication about the process
15. “per” = for each
16. “each”: a new word and concept.

The large number of difficult expressions would imply that this text is too difficult for learners, even when it is mediated by a teacher.

2.5 ACADEMIC LANGUAGE FUNCTIONS

1. Following instructions (3)
2. Observing and comparing
3. Seeking information
5. Recording
11. Inform

There is a relatively small number of Academic Language Functions, because the extracts showed reasonably simple kinds of tasks for the children to undertake. This list certainly under-predicts the total range in the book.

2.6 CONCLUSION

This is an example of a well-written book. The relationship between text and illustrations varies considerably, and the children will need to know when to use the pictures, which are not labelled. Although it is a user-friendly book, the fact that it is the first book children study for Natural Sciences means that it has both academic and discipline-specific words and expressions, which will be the principal challenge for learning.
CHAPTER 3: NATURAL SCIENCES TEXT TWO

3.1 COHERENCE

There are four modules in this text:
Module 1: Life and living
Module 2: Energy and change
Module 3: Matter and materials
Module 4: Planet Earth and beyond.

As mentioned in the Introduction, the Science curriculum has been constructed in such a way that topics may be dealt with in any grade of the Intermediate Phase. Therefore, the topics in different books for the same grade are likely to differ. (The constructors of the curriculum seem not to have anticipated children changing schools and either missing out topics or repeating topics, or both.)

This text is well laid out, with clear distinction between sections and subsections (underlined); headings, though underlined, do not have subsection numbers. About half the illustrations are in colour, the rest in black and white; illustrations do not have numbers to refer to in the text. There are also “picture” webs at the beginning of each module, to give an overview of what is to come. Module 1 and Module 3 are quite incoherent, while Modules 2 and 4 make more sense (to this author).

3.2 COHESION

The cohesion in this second study is approached differently from the first report on language materials. In this current study, three groups of seven sentences were initially selected, and then, in order to make direct comparisons with the Grade 3 analyses, another nine supplementary sentences were added. This means that the cohesion is broken up. However, in the final chapter all the cohesion types are consolidated for the purpose of comparison.

3.2.1 Beginning text


Activity 1: Investigating living things
1. Look at [10a] Figure 1 on the next page. [10b] This is [11a] Thandi’s drawing of the things that [11b] he found in [11c] his school grounds.
Wind energy

Activity 4: Making a sailboat

You will need:
- a flat piece of Styrofoam
- a square sheet of paper
- a twig sharpened with a knife at both ends

NOTE: BE CAREFUL WHEN USING A KNIFE!

Figure 6: This is how your sailboat should look.

What to do:
1. Shape the Styrofoam into a base for the boat as shown.
2. Push the twig through the paper to make a sail.
3. Stick the twig into the Styrofoam base.
4. Carefully place your boat on the surface of a pond or in a tub of water.

- What happens to the boat when you place it on water?
- What happens when you fan your boat with a book?
- Will your boat move faster or more slowly on a windy day?
- Explain to your teacher why the boat moves.

You have already learnt that energy is the ability to do work. When you move something from one point to another we say that you are doing work. In this activity you saw that wind moved the boat. The wind can do work (moving the boat) and is, therefore, a form of energy.
Analysis
[1a][1b] Exophoric reference “you”
[2a][2b] Lexical reiteration “a living thing”
[3a][3b] Lexical cohesion “a living thing”, “a non-living thing”
[3b][3c] Lexical reiteration “a non-living thing”
[4a][4b] Lexical reiteration “a dog”
[5a][5b] Lexical cohesion “do things”, “feeding”
[6a][6b] Lexical reiteration “a chair”
[7a][7b] Anaphoric resolution “a living thing”, “living things”
[8a][8b] Lexical reiteration “organisms”
[9a][9b] Collocation “can do”, “cannot do”
[10a][10b] Anaphoric resolution “Figure 1”, “this”
[11a][11b][11c] Anaphoric resolution “Thandi’s”, “he”, “his”. ○
Conjunctions: “and”.
Challenging language/Academic language
“wondered” unusual word – could have substituted “thought about” (a gratuitous sentence anyhow)
“living things”, “non-living things” abstract
“non-living” unusual usage
“organisms” only explained in difficult information box
“discover” academic word in this context.

Academic Language Functions
1. Following instructions (reading instructions to make or do something)
2. Observing and comparing (noticing things that seem pertinent; using senses at hand or watch something.

3.2.2 Middle text
1. Shape the [2a]Styrofoam into [5a]a base for [4a][6a]the boat as shown.
   • [9a]What happens to the [6c]boat when [3b]you place it [8c]on water?
   • Will [6e]your boat move [7a]faster or more [7b]slowly on a windy day?

Analysis
[1a][1b] Lexical reiteration “the twig”
[2a][2b] Lexical reiteration “Styrofoam”
[3a][3b][3c] Exophoric reference “you”, “your”
[4a][4b] Collocation “boat”, “sailed”
[5a][5b] Anaphoric reference “a base”, “a […] “base”
[6a][6b][6c] Lexical reiteration “boat”
[6a][6d][6e] Lexical reiteration “your boat”
[7a][7b] Collocation “faster”, “more slowly”
[8a][8b][8c] Lexical cohesion “surface of a pond”, “in a tub of water”, “on water”
[9a][9b] Lexical reiteration (parallelism) “what happens”.
Conjunctions: “or”(2).

**Challenging language/Academic language**
“shape” used as a verb
“as shown” should have referred to illustration as “See Picture X”
“twig” unfamiliar word
“surface” unfamiliar word
“tub” unfamiliar word
“What happens” academic phrase.

**Academic Language Functions**
1. Following instructions (reading instructions to make or do something)
2. Observing and comparing (notice things that seem pertinent; use senses at hand or watch something.

3.2.3 End text

[CHECK YOUR PROGRESS
1. Are the following statements TRUE or FALSE?]
(a)[2a]Our [1a]solar system consists of the [1b]sun with [1c]planets and [1d][3a]their moons.
(b) Jupiter is the centre of [2b]the solar system.
(b)[3a] The moon is one of the [1c]planets orbiting the sun.
(c) Human beings have landed on the [3c]moon.
(d) There is no air in tap water.
(e) Wind is a form of energy.
(f) Name the [4a]four layers that make up [4b]the earth.

**Analysis**
[1a][1b][1c][1d] Lexical cohesion “solar system”, “sun”, “planets”, “moons”
[1c][1e] Lexical reiteration “plants”
[2a][2b] Anaphoric resolution “our solar system”, “the solar system”
[3a][3b][3c] Anaphoric resolution “their moons”, “the moon”
[4a][4b] Lexical cohesion/anaphoric resolutions “four layers”, “the earth”.
Conjunctions: “and”.
Sentences (d)(e)(f) are separate, as they all are, but they have little connection with one another.
Challenging language/Academic language

“consists of” academic language
“solar system” new concepts but accurately defined
“orbiting” new word, not explained
“landed on” verb usage
“form of” academic language
“layers” new word, not explained.

Caveat: some of these words might have been clarified in the original discussions earlier in the book.

Academic Language Functions

1. Following instructions.

3.2.4 Supplementary text

Talk to [16a]your [1a]partner and [7]Ø [1b]together work out an explanation as to why people do [2a]the following:

- [2b]Fan themselves on a hot day. [...] [14a]


Meteorologists use special instruments to find out the [9a][10a]wind direction and [8]Øspeed. [16b]You will learn more about [9b]these is Grade 5.


Analysis

[1a][1b] Lexical cohesion “partner”, “together”
[2a][2b] Cataphoric reference “the following”, “fan themselves”
[3a][3b] Anaphoric reference “moving air”, “It”
[4a][4b] Lexical reiteration “evaporation”
[5a][5b] Lexical cohesion “moving air”, “evaporation”
[6a][6b] Collocation “liquids”, “gases”
[7] Ellipsis “you” (pl.)
[8] Ellipsis “wind”
[9a][9b] Lexical cohesion “wind direction and speed”, “these”
[10a][10b] lexical reiteration “wind”
[12] Ellipsis of subject with nonfinite verb “moving”
[14] List

19
Lexical Cohesion “a form of energy”, “energy” (subset) “work”  
Exophoric reference “you”, “your”.  
Conjunctions: “because”, “and”(2), “so”.

Challenging language/Academic language
“work out” academic language  
“work out an explanation” double complexity  
“as to why” could have used “the reason why” but which is also academic language  
“moving air” ambiguous  
“causes” academic language  
“Meteorologists” ?definition  
“use special instruments” opaque  
“to find out” academic meaning  
“Meteorologists use special instruments to find out” three types of difficulty pile up  
“do work” academic meaning  
“a form” academic meaning.

Academic Language Functions
1. Following instructions.
3.3 SYNTAX

3.3.1 Tree diagram
In this Unit you will discover what living organisms can do that non-living things cannot do.
### 3.3.2 Syntactic structures

Syntactic structures NS Text Two compared with Text One

<table>
<thead>
<tr>
<th>Structures</th>
<th>Natural Science 1</th>
<th>Natural Science 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. All types of verb groups except for complex verb groups</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>2. Commands, statements and denials</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3. Wh- questions with words like <em>who</em>, <em>how</em> and <em>how much</em></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>4. <em>how many</em></td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>5. <em>what</em></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>6. Wh- in subordinate clause</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>7. Yes/No questions, including auxiliary and modal fronting</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>8. Tenses: present, past, present continuous</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>9. Tense: past perfect</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10. Relative clause with the relative pronoun <em>who</em></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>11. <em>that</em> as relative clause marker</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>12. Co-ordinating sentences with <em>and</em> and <em>or</em></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>13. Co-ordinating phrases with <em>and</em> (not <em>but</em> or <em>or</em>)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>14. <em>or</em></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>15. Passive construction</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>16. Modal <em>can</em></td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>17. Modal <em>could</em></td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>18. Modal <em>must</em></td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>19. Modal <em>may</em></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>20. Demonstrative</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>21. Non-finite verb group complement e.g. <em>The best thing to do would be (for you) to tell everyone.</em></td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>22. Non-finite verb group complement Type II: <em>All I did was (to) hit him.</em></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>23. Non-finite post modifier of NP (PP)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>24. Phrasal NP postmodifier</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>25. Phrasal NP premodifier</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>26. Non finite complement of verb-group</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>27. Finite adverbial with <em>before, then</em></td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>28. <em>when</em></td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>29. Comparative clauses as *big as/*as <em>fast as</em></td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>30. Subordinating conjunctions <em>before, then</em></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>31. <em>because, where, when, since</em></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>32. <em>when</em></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>33. <em>then</em></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>34. What</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>35. Wh- in subordinate clauses</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>36. Discourse markers (COMP) <em>now, then</em></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>37. Past perfect tense</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>38. <em>that</em> as relative clause marker</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>39. Ellipsis/substitution</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>40. Lists</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>41. Multiple embeddings</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>42. Adverbial Phrases: Purpose</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>43. Time</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>44. Place</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>45. Manner</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>46. Present participle</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>47. Past participle</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>48. Asyndetic co-ordination</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>49. Possessive</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>50. Demonstrative</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>51. Existential <em>there</em></td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>52. <em>And</em> as sentence initial</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>53. NP in apposition</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
| 54. Transposed clause/phrase | 0 | interrup-
| | | ting |
| 55. Conjunctions | also, until, if, and also, or, but, like that, actually, so then, and then, next, also, if, when or, and, because, so |

TOTAL (without conjunctions) | 32 | 37 |

AVERAGE FOR EACH TEXT TYPE | 34 |

Compared to the Grade 3 texts, this second NS text reveals the largest number of syntactic structures¹. The tree diagram above illustrates the processing load of multiple embeddings in one sentence. These two factors together will put a high information-processing load on the children. Van Rooyen (1990) adds the vocabulary to the syntactic constructions to establish a further indication of heaviness. (But she has the actual words from the Language schemes.) However, it must be noted that there is not yet evidence of Noun Phrase “heaviness” as Subject of the sentence, nor are there interrupting constructions, which presumably will be seen in the Senior Phase books. These are constructions that really trip up young readers.

¹ The syntactic structures are just marked as occurring, rather than the absolute number of occurrences, which would require the analysis of the whole book. However, it should be pointed out that if a structure is used a number of times, it is more likely that the children will learn to understand, and perhaps use, it.
3.4 VOCABULARY

2
5
a
able
about
air
an
and
are
as
at
back
base
because
beings
boat
book
called
can
cannot
carefully
causes
centre
chair
change
consists
cooler
day
direction
discover
dog
drawing
dearth
energy
evaporation
ever
example
explanation
fan
faster
feeding
Figure 1
find
following
for
form
found
four
gases
Grade
grounds
happens
have
he
his
hot
human
in
instruments
into
is
it
Jupiter
landed
layers
learn
like
liquids
living
look
make
makes
meteorologists
module
moon
more
move
moving
name
next
no
non-living
of
on
one
or
orbiting
organisms
our
out
page
paper
partner
people
place
planets
pond
push
remember
remind
sail
school
shape
shown
slowly
so
solar
something
special
speed
stick
Styrofoam
sun
surface
system
talk
tap
Thandi’s
that
the
their
themselves
there
these
thing
this
through
to
together
tub
twig
Unit
up
use
water
what
when
why
will
wind
with
wondered
work
you
your
yourself

298 words
207 lexemes
9.9 words per sentence
It is presumed that children would find the bolded words in the vocabulary list difficult.

3.4.1 Challenging language/Academic language

Difficult words/constructions:
1. “wondered” unusual word – could have substituted “thought about” (a gratuitous sentence anyhow)
2. “living things”, “non-living things” abstract
3. “non-living” unusual usage
4. “organisms” only explained in difficult information box.
5. “discover” academic word in this context
6. “consists of” academic language
7. “solar system” new concepts but accurately defined
8. “orbiting” new word, not explained
9. “landed on” verb usage
10. “form of” academic language
11. “layers” new word, not explained.
12. “shape” used as a verb
13. “as shown” should have referred to illustration as “See Picture X”
14. “twig” unfamiliar word
15. “surface” unfamiliar word
16. “tub” unfamiliar word
17. “what happens” academic phrase
18. “consists of” academic language
19. “solar system” new concepts but accurately defined
20. “orbiting” new word, not explained
21. “landed on” verb usage
22. “form of” academic language
23. “layers” new word, not explained.
24. “work out” academic language
25. “work out an explanation” double complexity
26. “as to why” could have used “the reason why” but which is also academic language
27. “moving air” ambiguous
28. “causes” academic language
29. “Meteorologists” ?definition
30. “use special instruments” opaque
31. “to find out” academic meaning
32. “Meteorologists use special instruments to find out” three types of difficulty pile up
33. “do work” academic meaning
34. “a form” academic meaning

Caveat: some of these words might have been clarified earlier in the book.

There are 20 words highlighted as potentially difficult, and 34 constructions-cum-words. This means that this text will be very difficult for the children, even if the teacher is mediating the concepts for them.
3.5 ACADEMIC LANGUAGE FUNCTIONS

1. Following instructions (reading instructions to make or do something); four instances
2. Observing and comparing (noticing things that seem pertinent; using senses at hand or watch something).

3.6 CONCLUSION

Like NS Text One, this is also an example of a well-written book. The relationship between text and illustrations is quite conservative, and the children will need to know when to use the pictures, which are labelled. Although it is a user-friendly book, the fact that it is the first book Grade 4 children study for Natural Sciences means that it has both academic and discipline-specific words and expressions, which will be the principal challenge for their successful learning. There is always the possibility that teachers will make notes for the children in English from such a book, and then the children will docilely memorise them without any proper understanding.
CHAPTER 4: SOCIAL SCIENCES TEXT ONE

4.1 COHERENCE

The first extract consists of a short definition of settlements and then a series of questions that are based on a double spread picture. The questions require interpretation, and the picture is helpful in giving a great deal of information.

The second extract comes from a chapter entitled “Managing Our Water Resources”. The extract comes from the final unit. The other units in this chapter are:

1. We use water in many different ways.
2. Where does our water come from?
3. Can we use any fresh water?
4. What makes our water dirty?
5. Where do we get clean water?
6. We must have clean water.

The unit analysed is summative of the things that have been learned in the chapter. Learners are expected to make judgments about a range of situations – judging specifically: 1. not to dirty the water dirty; 2. clean the water if it is dirty; 3. not to waste clean water. The chapter as a whole has a variety of styles, illustrations, text and activities, which seem to be coherent (although it is beyond the brief of this analysis to comment on units not analysed).

The third extract from a chapter on religions seems reasonably coherent. Each religion is given a page, with an illustration and a symbol for each religion. The headings are:

1. Different religions
2. African traditional religion
3. Buddhism
4. Christianity
5. Hinduism
6. Islam
7. Judaism.

There are only three paragraphs per page, but that seems to the style of the information needed to fit on to a page. The first sentence is premature: “Some Jewish people came to South Africa because they were being persecuted in Lithuania.” It comes before the description of the religion, and really belongs in the third paragraph. There could have been a break between the explanation of the term and where ancient Jews lived, and the section on the role of Moses. There is a break between the early history, and the reason why Jews came to South Africa.

The text is coherent insofar as propositions follow logically from each other. The activity heading is in bold and the instructions given clearly. The illustration is not numbered but does have a descriptive title: it is given on the right hand of the illustration, once again this seems to be because of the constraints of page space.

4.2 COHESION

4.2.1 Beginning text

People live in the [1a] places marked A to D. [1b] These places are called [2a] settlements. [3a] You can see that [2b] not all settlements are the same.

Activity 1

[2c] Look at the picture and answer the questions. [2c] Which settlement has the most people living in it? [2d] In which settlement are there [4a] more kinds of
Some Jewish people came to South Africa because they were being persecuted in Lithuania.

Jews believe that there is only one God. He made the world and rules over it. The word Judaism comes from the name of the special land of the Jews, Judah. Judah is now part of Israel. Many thousands of years ago the Jews were slaves in Egypt and God freed them through a man called Moses. He gave them the law that they should live by. This law is called the Torah and it is the Holy Book of the Jewish people.

Activity 8
Make a flow chart like the one below. Write one sentence in each box.

- Jews came to South Africa to get away from persecution.
- Jewish people built synagogues in South Africa.
- Jews were persecuted in Europe.

The first synagogue Jewish people built in South Africa is in Cape Town.
jobs for people? Talk about [4b]some of the jobs that people can do in [2c]each settlement.

**Analysis**

[1a][1b] Anaphoric reference “places”, “these places”
[2a][2b] Anaphoric reference “settlement”, “not all” (refer to drawing)
[2a][2c] Anaphoric reference “settlement”, “which” … (refer to drawing)
[2a][2d] Anaphoric reference “settlement”, “in which …” (refer to drawing)
[2d][2e] Lexical cohesion “in which settlement”, “in each settlement” (subset)
[3a] Exophoric reference “you”
[4a][4b] Lexical cohesion “more kinds”, “some of” (subset).

**Challenging language/Academic language**

“Places” new term – non-specific
“Settlement” inferred from picture – concept may not be linguistically developed
“more kinds” (of jobs) – implies difference which children may not infer.

**Academic Language Functions**
11. Inform.

**4.2.2 Middle text**

Remember that only [1a] a small amount of the [3a] earth’s water is fresh, and that [1b] this amount stays the same from [2a] year to year. There are [4a] more and more people on the earth [2b] every year. We [4b] all need to make sure that we look after [3b] our water so that there will be enough [3c] clean water for [4c] everyone.

**Activity 11**

The [6a] stories on the next pages tell us about some of the things [5a] we can do to make sure we have clean water. Read the stories with [5b] your partner, look at the pictures and then answer these questions.
1. What is done in [6c] each story to make sure there is [3c] clean water?
2. Write the letters for the stories in [5c] your book.

**Analysis**

[1a][1b] Anaphoric reference “small amount”, “this amount”
[2a][2b] Lexical cohesion “year to year”, “every year”
[3a][3b] Lexical cohesion “the Earth’s water”, “our water”
[3b][3c] Lexical cohesion “our water”, “clean water”
[3c][3d] Lexical reiteration “clean water”
[3d][3e] Lexical reiteration “clean water”
[4a][4b] Lexical cohesion “more and more people”, “everybody”
[4a][4c] Lexical cohesion “more and more”, “all”
[5a][5b] Exophoric reference “your”
[6a][6b][6c] Anaphoric reference “stories”, “the story”, “each story”.

**Conjunctions:** “and”, “so that”, “and then”.

29
Challenging language / Academic language
“amount” this may or may not have been covered in maths
“year to year” idiomatic expression, needs to be understood as “through the years”, but this is equally difficult
“more and more people on the earth” children may not make the connection that this is because babies are being born every year
“we all” the referents may be unclear. It may be seen as only the class, whereas this term has universal application.

Academic Language Functions
1. Following instructions
2. Observing and comparing
11. Informing.

4.2.3 End text


4.2.4 Supplementary text


Analysis (end and supplementary texts)
[1a] specific – definite reference
[1a][1b] Lexical cohesion – definite reference
[1b][1c] Lexical cohesion “the Jews” specific reference
[1c][1d] Lexical reiteration “the Jews”, “the Jews”
[1d][1e] Anaphoric reference “Jews”, “them”
[1d][1f] Anaphoric reference “Jews”, “them”
[1d][1g] Anaphoric reference “Jews”, “they”
[1d][1h] Anaphoric reference “Jews”, “the Jewish people”
[1h][1i] Lexical cohesion “Jewish people”, “many Jewish people”
Lexical reiteration “Jews”
Anaphoric reference “God”, “He”
Lexical Reiteration “Judah”
Anaphoric reference “the Law”, “this Law”
Anaphoric reference “Torah”, “it”
Lexical cohesion “Torah”, “Holy Book”
Ellipsis “they”
Anaphoric reference “they”
Ellipsis “they”
Lexical reiteration “synagogue(s)”
Lexical reiteration “South Africa”
Lexical cohesion “persecuted”, “persecution”.

Challenging language/Academic language
“persecuted”, “persecution” new word not explained
“reigns” new word not explained
“Judaism” religion, not place
“freed slaves” unfamiliar concept
“law to live by” new concept and construction
“Law, Torah” unusual use of “law”
“immigrate” unfamiliar for, easier phrase would have been “came to live in”
“part of Israel” factually incorrect
“small amount” relative concept
“look after” unspecific – later concretized
“enough” unspecific
“things we can do” reference to activity, “we” inclusive
“what is done” agentless passive.

Academic Language Functions
11. Inform.

Summary of cohesion types:

<table>
<thead>
<tr>
<th>Anaphoric reference</th>
<th>Cataphoric reference</th>
<th>Collocation</th>
<th>Ellipsis</th>
<th>Exophoric reference</th>
<th>Lexical cohesion</th>
<th>Lexical reiteration</th>
<th>List</th>
<th>Conjunction</th>
<th>Challenging language</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>10</td>
<td>7</td>
<td>-</td>
<td>5</td>
<td>19</td>
</tr>
</tbody>
</table>

31
4.3 SYNTAX

4.3.1 Tree diagram
When Jewish people immigrated to South Africa they brought their religion with them and built synagogues.
### 4.3.2 Syntactic structures

<table>
<thead>
<tr>
<th>Structures across Grade 4 Social Sciences texts</th>
<th>HSS 1</th>
<th>HSS 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STRUCTURES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. All types of verb groups except for complex verb groups</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>2. Commands, statements and denials</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3. Wh- questions with words like <em>who, how and how much</em></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4. <em>how many</em></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>5. <em>what</em></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>6. Wh- in subordinate clause</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>7. <em>Yes/No</em> questions, including auxiliary and modal fronting</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>8. Tenses: present, past, present continuous</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>9. Tense: past perfect</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10. Relative clause with the relative pronoun <em>who</em></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>11. <em>that as</em> relative clause marker</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>12. Co-ordinating sentences with <em>and</em> and <em>or</em></td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>13. Co-ordinating phrases with <em>and</em> (<em>not</em> <em>but</em> or <em>or</em>)</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>14. <em>or</em></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>15. Passive construction</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>16. Modal <em>can</em></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>17. Modal <em>could</em></td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>18. Modal <em>must</em></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>19. Modal <em>may</em></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>20. Demonstrative</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>21. Non-finite verb group complement e.g <em>The best thing to do would be (for you) to tell everyone.</em></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>22. Non-finite verb group complement Type II: <em>All I did was (to) hit him.</em></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>23. Non-finite post modifier of NP (PP)</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>24. Phrasal NP postmodifier</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>25. Phrasal NP premodifier</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>26. Non-finite complement of verb-group</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>27. Finite adverbial with <em>before, then</em></td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>28. <em>when</em></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>29. Comparative clauses <em>as big as/as fast as</em></td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>30. Subordinating conjunctions <em>before, then</em></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>31. <em>because, where, when since</em></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>32. <em>when, then</em></td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>33. <em>then</em></td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>34. <em>What</em></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>35. Wh- in subordinate clauses</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>36 Discourse markers (COMP) <em>now, then</em></td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>37 Past perfect tense</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>38. <em>that as</em> relative clause marker</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>39. Ellipsis/substitution</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>40. Lists</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>41. Multiple embeddings</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>42. Adverbial Phrases: Purpose</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Item</td>
<td>43</td>
<td>44</td>
</tr>
<tr>
<td>-----------------------------------------------------------</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>Time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Place</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manner</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present participle</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Past participle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asyndetic co-ordination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Possessive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existential <em>there</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>And</em> as sentence initial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NP in apposition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transposed clause /phrase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conjunctions</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>now, since, when, and, because, and then</em></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There are 31 different syntactic structures in this text. This is significantly more than the number of structures in the Grade 3 texts. It is also the case that some of these structures are used more than once. However, since the instances of the structures were not actually counted in the Grade 3 analysis, this is also not reported on in the current analysis.
4.4 VOCABULARY

- a
- about
- Africa
- after
- ago
- all
- and
- answer
- are
- at
- be
- because
- being
- believe
- book
- by
- called
- came
- can
- clean
- comes
- do
- each
- earth
- Egypt
- enough
- every
- everybody
- for
- freed
- from
- gave
- God
- has
- have
- He
- he
- in
- is
- Israel
- it.
- Jewish
- Jews
- jobs
- Judah
- Judaism
- kinds
- land
- law
- letters
- Lithuania
- live
- look
- made
- man
- many
- marked
- more
- Moses
- most
- need
- next
- not
- now
- of
- on
- one
- only
- our
- over
- pages
- part
- partner
- people
- persecuted
- picture
- places
- questions
- read
- reigns
- same
- see
- settlements
- should
- slaves
- so
- some
- South
- special
- stays
- story
- sure
- talk
- tell
- that
- the
- them
- then
- there
- these
- they
- things
- thousands
- through
- to
- us
- water
- we
- were
- what
- which
- will
- with
- world
- write
- year
- you
- your

244 words
119 lexemes
11.6 words per sentence

4.4.1 Challenging language/Academic language

There are ten words bolded as being potentially difficult in the above list. However, there are more when one considers phrases in which others may occur. Constructions (laid out after the cohesion analysis) are also given here, because the concepts/vocabulary may be embedded in these.

1. “places” new term – non-specific
2. “settlement” inferred from picture – concept may not be linguistically developed.
3. “more kinds” (of jobs) – implies difference which children may not infer.
4. “amount” this may or may not have been covered in maths
5. “year to year” idiomatic expression, needs to be understood as “through the years”, but this is equally difficult.
6. “more and more people on the earth” children may not make the connection that this is because babies are being born every year.
7. “we all” the referents may be unclear. It may be seen as only the class, whereas this term has universal application
8. “persecuted”, “persecution” new word not explained
9. “reigns” new word not explained
10. “Judaism” religion, not place
11. “freed slaves” unfamiliar concept
12. “law to live by” concept and construction new
13. “Law, Torah” unusual use of “law”
14. “immigrate” unfamiliar for, easier phrase would have been “came to live in”
15. “part of Israel” factually incorrect
16. “synagogue” meaning needs to be inferred
17. “scriptures” unclear referent. Torah described as law and Holy Book.
18. “Holy Book” unfamiliar concept (not equated to the Bible).

4.5 ACADEMIC LANGUAGE FUNCTIONS

The first two extracts ask the reader to interpret information from a pictures or small cameos. These activities do not extend beyond the text, but are nevertheless legitimate activities. However, it must be said that the range of academic functions is rather narrow. This may be so because Social Sciences needs to give a high level of information, before interpretation can be asked for, or applications looked for.

The third extract is informational text, and as such has only one Academic Language Function – 11. Inform: Report, explain or describe information or procedures; retell story or content related information in own words; tell main ideas; summarise; use graphic forms such as flow charts; posters; diagrams and bar graphs.

On page 149 of Text One, the learners are asked to complete a flow diagram, and are given the sentences to fill in, in the correct order.

4.6 CONCLUSION

This text may be regarded as moderately difficult, with 31 constructions identified, as well as 18 words or phrases seen as linguistically challenging for young L2 readers. The text appears to be well constructed. It may be difficult for the children to master the difference between the different religions at this stage. This is however in the curriculum.
CHAPTER 5: SOCIAL SCIENCES TEXT TWO

5.1 COHERENCE

Enormous care has been taken in this book (and in the others in the series) to illustrate the units copiously, and with specific intent. The mode of learning here is to working things here from illustrations, photos, and other graphic devices. This puts a load on the children’s productive language, but it is the most activity-based book examined in this project.

In the first extract, however, there is a problem — presumably because of space — where the heading says that there is a “timeline”, but there is not sufficient space across the double page spread to fit in all the information the author wants. So the timeline lands up looking like Snakes and Ladders — which is not a catastrophe if the teacher leads the children through the exercise.

The second extract is an application of the chapter “Where we live”; the children are going to be simple town planners. They are referred to information earlier in the book. They are going to plan a new suburb for Cape Town. The instructions are very clear and in a logical order. The only thing missing would be a grid that would have helped the children to copy the map into their book — but grids have not yet been taught in this book.

The end and supplementary texts come from a chapter on “Resources, services and settlements”. Unit 5 is about recycling and reusing. To establish the concepts there are five pictures on the first page. The activity that the children are to do is carefully illustrated, and matches the instructions. The supplementary text is called “What happens to our waste?” On the left hand page (text not analysed) there are rather difficult cross-sectional drawings of what happens to the contents of toilets. The proportions are odd and complex activities reduced to unlabelled shapes. Also, it may be difficult to complete the flow (sic) diagram from the toilet drawings. The unlabelled drawing on the analysed page is easier to interpret — it shows the inputs and outputs from a house with modern amenities. Once again it is cross-sectional. However, the picture of an unserviced township, while black and white, does give the children enough information to work with. The level of questions is within the children’s competence.

This book is largely composed of pictures and activities, and most of them are neither too abstract nor require advanced Mathematics and Geography skills. We may conclude then that the text is coherent.

The illustration of the timeline may be found overleaf. This is followed by the analysis of cohesion.
Activity 1.1

1. Describe the development of transport over time. 

2. Identify the major milestones in the history of transport. 

3. Explain the impact of transport on human civilization. 

4. Give examples of some types of transport from about 2000 years ago to the present. 

A timeline of transport:
5.2 COHESION

5.2.1 Beginning text

Activity 1.1
1. Point to the part of [6a] the timeline that shows the [1a] two earliest forms of [7a] transport. What are [1b] they? [5a]

2. When did [2a][3a] the [3b] first cars appear? Find the [2b] point on [6b] the timeline. Now look at [4a] the changes in [7b] transport that were made since [3c] the first cars were made.

3.[5b] When did [4b] the most changes in [7c] transport happen? To answer Ø[9a] use the word “century” in [8a] your answer.

4. Give examples.

Analysis
[1a][1b] Anaphoric reference “the two earliest”... “they”
[2a][2b] Lexical cohesion “when did”, “find the point”
[3a][3b] Lexical reiteration “the first cars”
[4a][4b] Lexical parallelism/cohesion “the changes”, “the most changes”
[5a][5b] Lexical reiteration “when”
[6a][6b] Lexical reiteration “the time line”
[7a][7b] Lexical reiteration “transport”
[8a] Exophoric reference “your”
[9a][9b] Lexical reiteration “answer”.
Conjunctions: “what”, “when”, “then”, “that”, “now.”

Challenging language/Academic language
“forms of transport” discipline specific
“part of the timeline” a new concept, which may not be clear – in the picture it is to and fro and to and fro, as it wouldn’t fit in portrait or landscape
“when/the point cohesion might not be clear
“changes in transport “as above”
“most changes” reference may be unclear.

Academic Language Functions
1. Following instructions (reading instructions to make or do something)
2. Observing and comparing (noticing things that seem pertinent)
3. Seeking information (exploring the information or acquiring information).
5.2.2 Middle text


2. [3b] The map below is of[1b] a [5b] new urban[6a] area that is being planned for Cape Town. Pretend you are a team of planners. Decide what this [2b] new area needs.

3. Talk about where[2b] you will put these places on[3c] the map.


5. Write down[2e] your reasons for putting places where[7d] you have.

Analysis
[1a][1b] Lexical reiteration “A new urban area”
[1b][1c] Anaphoric reference “needs”, “these places”
[2a][2b][2c][2d][2e] Exophoric reference “you”, “your”
[3a][3b] Lexical reiteration “The map below”
[3c][3d] Lexical reiteration “the map”
[4a][4b] Anaphoric reference “the new urban area”, “this new area”
[5a][5b] Anaphoric reference “needs”, “these places”,
[5b][5c] Anaphoric reference “these places”, “the places”
[6a][6b][6c] Lexical reiteration “area”
[7a] Ellipsis “put them”.
Conjunctions: “that”, “what”, “where”.

Challenging language/Academic language
“plan” as verb
“new urban area” discipline-specific word
“needs” abstract EMS concept
“the places” unspecific referent
“reasons” need to argue for oneself, may be too difficult
“You are going to” implicit speech act – instruction.

Academic Language Functions
1. Following instructions
2. Observing and comparing
7. Compare (analyse similarities and differences in objects or ideas)
11. Inform (report, explain, or describe information or procedures)
13. Justify (give reasons for an action, a decisions or a point of view).
5.2.3 End text

5  What is recycling and reusing?
Most of the [2][1a]rubbish that people throw away ends up in [2a]landfill
sites. A [2b]landfill site is a large area where [1b][5a]rubbish is buried.

Activity 5.1
[ 9a] You are going to examine the contents of a dustbin[3a][4a][7a] to see
what people throw away and how [7b]these things could be recycled or
reused. [9b] You may want to wear rubber gloves to do [3a]this activity.

1.[8a] Empty the content of the dustbin [4a]onto some sheets of paper.

2.[8b] Sort out [5a]the rubbish into the following [6]piles – [7c] glass, metal,
paper, plastic, other.

3. Which [6a] pile is the biggest?

4. Suggest ways some of [5b][7d] this material could be recycled or reused.

Analysis
[1a][1b] Lexical reiteration “rubbish”
[2a] Specific referent (e.g. “the rubbish”)
[3a][3b] Lexical reiteration “landfill sites”
[4a][4b] Anaphoric reference “a dustbin”, “the dustbin”
[5a][5b] Lexical reiteration “rubbish”
[5a][5b][5c] Anaphoric reference “rubbish”, “the rubbish”
[6a][6b] Lexical reiteration “pile”
[7a][7b] Anaphoric reference “the contents…”, “these things”
[7c][7d] Anaphoric reference “List of rubbish”, “this material”
[8a][8b] Anaphoric reference/Lexical cohesion “you are going to…” “this activity”
[9a][9b] Exophoric reference “you”
[10a] Ellipsis “could be”
[11a] Ellipsis “be”.
Conjunctions: “and”, “how”, “or”.

Challenging language/Academic language
“large area” refers to land; large is relative
“other” reference is unclear at this level
“sort out” easier would be “sort into”
“suggest ways” difficult construction, may be opaque
“rubbish” = “this material” alternative reference – same word could have been used.
**Academic Language Functions**
1. Following instructions
2. Observing and comparing
3. Seeking information
5. Recording
13. Justify (give reasons for an action, a decision or a point of view).

5.2.4 Supplementary text

**Activity 4.2**


3. What might happen if all the [3b] outputs did not [5b] leave [6b] the house?

**Activity 4.3**
1. [8a] Look at the photo [7a] on the right. [11a] What kind of area does the photograph show?


3. How can [9b] waste be a danger to people’s health?

4. How can people make sure that the place where they live does not [11b] look like this?

**Analysis**
[1a] Anaphoric reference “these” in preceding text
[2a][2b] Anaphoric reference “all the things”, “these”
[3a][3b] Lexical cohesion “inputs”, “outputs”
[3b][3c] Lexical reiteration “outputs”
[4a][4b] Lexical reiteration “in your exercise book”
[5a][5b] Lexical cohesion “go out”, “leave”
[6a][6b] Lexical reiteration “the house” (with specific reference to the picture)
[7a] Exophoric reference “the right”
[8a][8b] Lexical cohesion “look at”, “see”
[8a][8c] Lexical cohesion “look at”, “describe”
[9a][9b] Lexical reiteration “waste”
[10a][10b][10c] Exophoric reference “you” “your”

*Conjunctions:* “if”, “that”, “where”.
**Challenging language/Academic language**

"might happen" calls for speculation – abstract
"inputs", "outputs" refer to a range of things joined in one category: discipline language.
"kind of area" requires description with new vocabulary.
"kinds of waste" refers to a range of things
"waste a danger" unclear that this refers to health.

**Academic Language Functions**
1. Following instructions
2. Observing and comparing
3. Seek information
10. Predict (another form of interpretation; predict implications).

**Summary of cohesion types:**

<table>
<thead>
<tr>
<th>Anaphoric reference</th>
<th>Cataphoric reference</th>
<th>Collocation</th>
<th>Ellipsis</th>
<th>Exophoric reference</th>
<th>Lexical cohesion</th>
<th>Lexical reiteration</th>
<th>List</th>
<th>Conjunctions</th>
<th>Challenging language</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>10</td>
<td>7</td>
<td>18</td>
<td>-</td>
<td>12</td>
<td>20</td>
</tr>
</tbody>
</table>
5.3 SYNTAX

5.3.1 Tree diagram
You are going to examine the contents of a dustbin to see what people throw away and how these things could be recycled or reused.
### 5.3.2 Summary syntactic structures

Syntactic structures across Social Sciences texts

<table>
<thead>
<tr>
<th>STRUCTURES</th>
<th>HSS 1</th>
<th>HSS 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. All types of verb groups except for complex verb groups</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>2. Commands, statements and denials</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3. Wh- questions with words like who, how and how much</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4. how many</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>5. what</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>6. Wh- in subordinate clause</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>7. Yes/No questions, including auxiliary and modal fronting</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>8. Tenses: present, past, present continuous</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>9. Tense: past perfect</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10. Relative clause with the relative pronoun who</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>11. that as relative clause marker</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>12. Co-ordinating sentences with and and or</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>13. Co-ordinating phrases with and (not but or or)</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>14. or</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>15. Passive construction</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>16. Modal can</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>17. Modal could</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>18. Modal must</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>19. Modal may</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>20. Demonstrative</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>21. Non-finite verb group complement e.g The best thing to do would be (for you) to tell everyone</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>22. Non-finite verb group complement Type II: All I did was (to) hit him.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>23. Non-finite post modifier of NP (PP)</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>24. Phrasal NP postmodifier</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>25. Phrasal NP premodifier</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>26. Nonfinite complement of verb-group</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>27. Finite adverbial with before, then e</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>28. when</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>29. Comparative clauses as big as/as fast as</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>30. Subordinating conjunctions before, then</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>31. because, where, when, since</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>32. when,</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>33. then</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>34. What</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>35. Wh- in subordinate clauses</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>36. Discourse markers (COMP) now, then</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>37. Past perfect tense</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>38. that as relative clause marker</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>39. Ellipsis/substitution</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>40. Lists</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>41. Multiple embeddings</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>42. Adverbial Phrases: Purpose</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>43. Time</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>44. Place</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>45. Manner</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>46. Present participle</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>47. Past participle</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>48. Asyndetic co-ordination</td>
<td>0</td>
<td>✓</td>
</tr>
<tr>
<td>49. Possessive</td>
<td>✓</td>
<td>0</td>
</tr>
<tr>
<td>50. Demonstrative</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>51. Existential there</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>52. And as sentence initial</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>53. NP in apposition</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>54. Transposed clause/phrase</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>55. Conjunctions</td>
<td>now, since, when</td>
<td>and, because, and then, what, when, then, that, how, or, if, then, now</td>
</tr>
</tbody>
</table>

**TOTAL (without conjunctions)**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>31</td>
</tr>
</tbody>
</table>

**AVERAGE FOR EACH TEXT TYPE**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>27</td>
</tr>
</tbody>
</table>

This text has a smaller range of syntactic constructions than the first SS text. The reason for this seems to be the fact that there is not a great deal of informational text. The readers are constantly being asked to look at pictures and make interpretations from them. Whether this makes the book as a whole easier or more difficult to use, is an empirical question. What is clear is that more active learners may integrate their understanding better.
5.4 VOCABULARY

a
about
activity
all
and
answer
appear
are
area
at
away
be
being
below
biggest
buried
Cape
cars
century
changes
contents
copy
could
decide
did
do
down
draw
dustbin
earliest
empty

ends
examine
find
first
following
for
forms
glass
gloves
going
happen
have
how
in
into
is
it
landfill
large
line
look
made
make
map
may
metal
most
needs
now
of
on
onto
or
other
out
paper
part
people
pile
places
plan
planned
plastic
point
put
putting
reasons
recycled
reused
rubber
rubbish
see
sheets
shows
since
site
some
sort
that
the
these
they
things
this
throw
time
to
town
transport
two
up
urban
use
want
wear
were
what
when
where
which
will
word
write
you
your

Words 227
Lexemes 128
7.6 words per sentence

The words that may be challenging are bolded in the above list. There are 14 of them. It is not however the words per se which cause the problem in these texts – it is the expressions, which are copied here. Some of them include idiomatic language, new expressions or discipline-specific language. There are 20 of these, enough to suggest that these short texts would constitute considerable challenge to the learners, even when the text is being mediated. The sentences in this book are shorter than for the first SS book, but this is because this is an activity-based book.
5.4.1 Challenging language/Academic language

Difficult words and expressions:
1. “forms of transport” discipline specific
2. “part of the time line” a new concept, which may not be clear – in the picture it is to and fro and to and fro, as it wouldn’t fit in portrait or landscape
3. “when/the point” cohesion might not be clear
4. “changes in transport” as above
5. “most changes” reference may be unclear
6. “plan” as verb
7. “new urban area” discipline specific word
8. “needs” abstract EMS concept
9. “the places” unspecific referent
10. “reasons” need to argue for oneself, may be too difficult
11. “You are going to” implicit speech act – instruction
12. “large area” refers to land; large is relative
13. “other” reference is unclear at this level
14. “sort out” easier would be “sort into”
15. “suggest ways” difficult construction, may be opaque
16. “rubbish” = “this material” alternative reference – same word could have been used
17. “might happen” calls for speculation – abstract
18. “inputs”, “outputs” refer to a range of things joined in one category discipline language
19. “kind of area” requires description with new vocabulary “kinds of waste” refers to a range of things.

5.5 ACADEMIC LANGUAGE FUNCTIONS

1. Following instructions (reading instructions to make or do something) (4)
2. Observing and comparing, (noticing things that seem pertinent) (3)
3. Seek information (explore the information or acquire information) (3)
5. Recording
7. Compare (analyse similarities and differences in objects or ideas)
10. Predict (another form of interpretation; predict implications)
11. Inform (report, explain, or describe information or procedures)
13. Justify (give reasons for an action, a decisions or a point of view) (2)

There are eight ALFs in these extracts. The relatively high number is a function of the text that requires activity on the part of the learners. Much of the information per se lies in the pictures.

5.6 CONCLUSION

This is an enormously interesting text, in a series that follows the same approach, of giving rich pictorial information to children, and asking them to work with it. It will therefore make demands on the children’s productive language, which is not obvious from the analysis. Nevertheless, the richness of the pictures will surely help to develop the children’s concepts.
CHAPTER 6: CONCLUSIONS – the gap between the Foundation Phase and the Intermediate Phase

6.1 INTRODUCTION

To recap, the focus of this second report on the analysis of learning materials for the Limpopo Province is to establish the nature and kind of language used in specific Learning Area texts in Grade 4. The two subject areas selected were Social Sciences (SS) and Natural Sciences (NS).

There was a design difference between the Foundation Phase (FP) and Intermediate Phase (IP) analyses. In the FP analyses, the final 30 sentences of the Grade 3 Language Book or Reader were analysed, as well as texts for Life Skills and Numeracy. For English L1, no Language schemes per se were located, so books from reading schemes or information books for young readers (chosen as Grade 3 level by teachers) were used. But once again the final 30 sentences were analysed.

As discussed in Chapter 1, it was more difficult to decide what to analyse from the IP materials. If this was to “fit” with when the classroom data collection occurred, the analysis should be of texts two-thirds of the way through the books. In the end however, we decided to look at sentences at the beginning, middle and end of the books. This had one important but unintended consequence: within 10 sentences it was not possible to capture a lesson, whether it be largely information or activity based. While vocabulary and syntactic structures (i.e. intra-sentential analysis) are not affected here, the cross-sentential analysis (i.e. cohesion and coherence) is affected because of the smallness of the sample for analysis – there would be fewer than in a longer text.

The model on which this study was based was Van Rooyen’s (1990) study of two Grade 2, 3 and 4 Language courses, and 200 sentences each from two Grade 5 Natural/General Science books. Van Rooyen was able to draw some strong conclusions because her analysis was both extensive and exhaustiveness. For example, she analysed the whole of the two Language courses, and could therefore identify exactly what vocabulary should have been learnt if the course was completed. Van Rooyen could then make arithmetical assumptions about the degree of novelty of the science extracts, e.g. how much new vocabulary, new syntactic structures and new cohesive ties and coherence aspects occurred. To this she was able to add a prediction of which words would not be understood, and so increasing the difficulties the children were experiencing. Her comprehensive study carried a lot of weight at the time when looking at the chasm separating the then Standard 2 (Grade 4) from Standard 3 (Grade 5) L2 learners.

The comparison between FP L1 and L2 texts in the first phase of the study was based on analysis in terms of coherence, cohesion, syntax, vocabulary and Academic Language Functions (ALFs). For the Intermediate Phase the same type of analysis was done for two Natural Sciences and two Social Sciences books. What follows is a comparison between the L1/2 texts (Grade 3) and the NS and SS (Grade 4) texts; and finally there are some comments on the implications of the findings.

6.2 COHESION

The first level of analysis is of cohesive ties. It should be noted in passing that cohesive devices are to all intents and purposes not explicitly taught, so they are subconsciously developed or acquired, with the exception of conjunctions/connectives such as “and”, “because” and so on; and these words can be regarded as grammatical words, since there is a closed subset of them and they work intimately with syntax.
6.2.1 comparison of cohesive ties by text

1. Grade 3 L1 First Text [Narrative]

<table>
<thead>
<tr>
<th>Anaphoric reference</th>
<th>Cataphoric reference</th>
<th>Collocation</th>
<th>Ellipsis</th>
<th>Exophoric reference</th>
<th>Lexical cohesion</th>
<th>Lexical reiteration</th>
<th>List</th>
<th>Conjunction</th>
<th>Challenging language</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>1</td>
<td>3</td>
<td></td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>28</td>
<td>-</td>
<td>6</td>
</tr>
</tbody>
</table>

2. Grade 3 L1 Second Text [Narrative]

<table>
<thead>
<tr>
<th>Anaphoric reference</th>
<th>Cataphoric reference</th>
<th>Collocation</th>
<th>Ellipsis</th>
<th>Exophoric reference</th>
<th>Lexical cohesion</th>
<th>Lexical reiteration</th>
<th>List</th>
<th>Conjunction</th>
<th>Challenging language</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>-</td>
<td>6</td>
<td></td>
<td>-</td>
<td>-</td>
<td>5</td>
<td>12</td>
<td>-</td>
<td>14</td>
</tr>
</tbody>
</table>

3. Grade 3 L1 Third text [Informational]

<table>
<thead>
<tr>
<th>Anaphoric reference</th>
<th>Cataphoric reference</th>
<th>Collocation</th>
<th>Ellipsis</th>
<th>Exophoric reference</th>
<th>Lexical cohesion</th>
<th>Lexical reiteration</th>
<th>List</th>
<th>Conjunction</th>
<th>Challenging language</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>-</td>
<td>9</td>
<td></td>
<td>-</td>
<td>-</td>
<td>13</td>
<td>11</td>
<td>-</td>
<td>10</td>
</tr>
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</table>

4. Grade 3 L2 First text [Informational]

<table>
<thead>
<tr>
<th>Anaphoric reference</th>
<th>Cataphoric reference</th>
<th>Collocation</th>
<th>Ellipsis</th>
<th>Exophoric reference</th>
<th>Lexical cohesion</th>
<th>Lexical reiteration</th>
<th>List</th>
<th>Conjunction</th>
<th>Challenging language</th>
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</thead>
<tbody>
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<td>29</td>
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5. Grade 3 L2 Second text [Narrative]

<table>
<thead>
<tr>
<th>Anaphoric reference</th>
<th>Cataphoric reference</th>
<th>Collocation</th>
<th>Ellipsis</th>
<th>Exophoric reference</th>
<th>Lexical cohesion</th>
<th>Lexical reiteration</th>
<th>List</th>
<th>Conjunction</th>
<th>Challenging language</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
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<td>6</td>
<td>4</td>
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<td>8</td>
<td>4</td>
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</tbody>
</table>

6. Grade 3 L2 Third text [Narrative]

<table>
<thead>
<tr>
<th>Anaphoric reference</th>
<th>Cataphoric reference</th>
<th>Collocation</th>
<th>Ellipsis</th>
<th>Exophoric reference</th>
<th>Lexical cohesion</th>
<th>Lexical reiteration</th>
<th>List</th>
<th>Conjunction</th>
<th>Challenging language</th>
</tr>
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<tbody>
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<td>-</td>
<td>9</td>
<td>10</td>
<td>-</td>
<td>9</td>
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</tbody>
</table>

7. Grade 4 Natural Sciences Text 1 [Instructional]

<table>
<thead>
<tr>
<th>Anaphoric reference</th>
<th>Cataphoric Reference</th>
<th>Collocation</th>
<th>Ellipsis</th>
<th>Exophoric reference</th>
<th>Lexical cohesion</th>
<th>Lexical reiteration</th>
<th>List</th>
<th>Conjunction</th>
<th>Challenging language</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
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<td>1</td>
<td>9</td>
<td>8</td>
<td>37</td>
<td>-</td>
<td>14</td>
<td>16</td>
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</tbody>
</table>

8. Grade 4 Natural Sciences Text 2 [Instructional]

<table>
<thead>
<tr>
<th>Anaphoric reference</th>
<th>Cataphoric reference</th>
<th>Collocation</th>
<th>Ellipsis</th>
<th>Exophoric reference</th>
<th>Lexical cohesion</th>
<th>Lexical reiteration</th>
<th>List</th>
<th>Conjunction</th>
<th>Challenging language</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
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<td>3</td>
<td>3</td>
<td>4</td>
<td>11</td>
<td>16</td>
<td>1</td>
<td>6</td>
<td>28</td>
</tr>
</tbody>
</table>

9. Grade 4 Social Sciences Text 1 [Informational]

<table>
<thead>
<tr>
<th>Anaphoric reference</th>
<th>Cataphoric reference</th>
<th>Collocation</th>
<th>Ellipsis</th>
<th>Exophoric reference</th>
<th>Lexical cohesion</th>
<th>Lexical reiteration</th>
<th>List</th>
<th>Conjunction</th>
<th>Challenging language</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>10</td>
<td>7</td>
<td>-</td>
<td>5</td>
<td>19</td>
</tr>
</tbody>
</table>

10. Grade 4 Social Sciences Text 2 [Instructional]

<table>
<thead>
<tr>
<th>Anaphoric reference</th>
<th>Cataphoric reference</th>
<th>Collocation</th>
<th>Ellipsis</th>
<th>Exophoric reference</th>
<th>Lexical cohesion</th>
<th>Lexical reiteration</th>
<th>List</th>
<th>Conjunction</th>
<th>Challenging language</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>11</td>
<td>7</td>
<td>18</td>
<td>-</td>
<td>9</td>
<td>20</td>
</tr>
</tbody>
</table>

There are nine categories of cohesive devices (excluding “challenging language” for the moment). The three scarcely represented categories are cataphoric reference, ellipsis/elision and lists. The three most widely represented categories are Anaphoric reference (L1: 23,3; L2: 14; NS: 13; SS: 14,5), Lexical cohesion (L1: 7; L2: 10; NS: 9,5; SS: 8,5) and Conjunctions (L1: 10; L2: 8; NS: 10; SS: 7). The one category which shows up quite sharply in the Grade 4 texts is Exophoric

---

1 This high number is derived from two L1 stories, in which the use of anaphoric reference to talk about the characters is widely used. It is a feature of cohesive narrative, and does not necessarily make the text more difficult to read.
reference, where the author(s) speak directly to the reader e.g. “you”, “your”. These trends can be seen more clearly when the data is arranged by cohesive tie rather than by text: see next page.

6.2.2 comparison of texts by cohesive ties

1. ANAPHORA

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2. LEXICAL REITERATION

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3. LEXICAL COHESION

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5. COLLOCATION

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9. LIST

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10. CHALLENGING LANGUAGE

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6.3 SYNTAX

It should be noted that the table above is an extension of Van Rooyen’s (1990)\(^2\). The added categories are numbers 50-54. In looking at the syntactic structures, it must be remembered that types rather than tokens are noted here.

6.3.1 Syntactic structures across Grade 3 L1 and L2, and Grade 4 Natural Sciences and Social Sciences

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<td>✓</td>
<td>✓</td>
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<td>12. Co-ordinating sentences with and and or</td>
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<td>41. Multiple embeddings</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>42. Adverbial Phrases: Purpose</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>43. Time</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>44. Place</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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</tr>
<tr>
<td>45. Manner</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>46. Present participle</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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</tr>
<tr>
<td>47. Past participle</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>48. Asyndetic co-ordination</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>49. Possessive</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>50. Demonstrative</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>51. Existential <em>there</em></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>52. And as sentence initial</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>53. NP in apposition</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td>✓</td>
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<tr>
<td>Structures</td>
<td>L1</td>
<td>L1</td>
<td>L1</td>
<td>L2</td>
<td>L2</td>
<td>Science 1</td>
<td>Science 2</td>
<td>SS 1</td>
<td>SS 2</td>
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<td>----------------------------------</td>
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<tr>
<td>54. Transposed clause / phrase</td>
<td>0</td>
<td>✓</td>
<td>✓</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>interrupting</td>
<td>0</td>
<td>0</td>
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<tr>
<td>55. Conjunctions</td>
<td></td>
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<tr>
<td>as soon as, and, when, then, if,</td>
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<tr>
<td>again, look</td>
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<tr>
<td>at once, how, before, then,</td>
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<tr>
<td>where, sudden, and, there,</td>
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<td>because</td>
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<tr>
<td>once seen, but, and, when,</td>
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<td>where, at these times, since,</td>
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<td>also, as, because, indeed</td>
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<td>when, behind, then, except,</td>
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<tr>
<td>or, and because</td>
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<tr>
<td>may-be, when, then, because,</td>
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<tr>
<td>but, and, so that, and,</td>
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<td>now, if</td>
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<tr>
<td>also, until, if, and, or, but,</td>
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<tr>
<td>like that, actually, so then,</td>
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<tr>
<td>and then, next, also, if, when</td>
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</tr>
<tr>
<td>TOTAL (without conjunctions)</td>
<td>25</td>
<td>27</td>
<td>25</td>
<td>26</td>
<td>29</td>
<td>31</td>
<td>36</td>
<td>31</td>
<td>31</td>
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</tr>
<tr>
<td>AVERAGE FOR EACH TEXT TYPE</td>
<td>25</td>
<td>26</td>
<td></td>
<td></td>
<td></td>
<td>31</td>
<td>34</td>
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</tr>
</tbody>
</table>

54
It should be remembered that in the texts in this study, a sentence using "may" (for example) might occur three times, but it is only noted once. Hence it is not possible to carry out statistical tests on the different profiles. Furthermore, categories 1 and 2 collapse different types of structures, but this was left in place to facilitate comparisons across the two studies.

In Macdonald (2007) we noted that there was a wide range of structures. The narrowest range, i.e. L2 Scheme 3 had 23 constructions; and since this course introduces syntactic structures very carefully, it is reasonable to assume that it is possible for the children to handle this. This carefully sculpted story also has 11 conjunctions. It is not clear whether an average of five to eight new constructions in Grade 4 would overload the children. Certainly there is not a great increase in the number of conjunctions, except for Natural Sciences Text One. It is worth noting here that many of these are not covered in the language texts, namely, until, and also, like that, actually, so then, and then, and next. It would certainly be the case that the children could not suddenly master seven new conjunctions. It would seem sensible to note the structures that start appearing in other Learning Area texts in Grade 4.

Modal verbs start to occur more: *can, could, may* and *might*. The use of *What* in embedded clauses is also more prevalent. The modal system of meanings is handled very differently in English when compared to the African languages. It therefore has to be used carefully in English, bearing in mind that there are other modal expressions such as "*it is possible that* ...". These would have to be introduced carefully.

We have addressed the question as to whether there is a significantly large number of syntactic structures in the Grade 4 texts, and using my current logic, this does not seem to be the case.

It is, however, possible to draw a conclusion in the opposite direction: that is, perhaps there are too many structures in the L2 texts, because they show the same average total as the L1 texts. (This does not mean of course that they are exactly the same, because the categories 1, 2, 7 and 8 have multiple instantiations.) The question as to whether this difficulty is indeed the case can only be answered empirically.

**6.4 VOCABULARY**

In her research, Van Rooyen actually had a list of all the vocabulary in the Language schemes that she analysed. She was therefore in a position to say exactly how many new words were introduced in the General Science texts. In phases one and two of the study, a total of 530 sentences were analysed, so no such clean data exists. Although there is data as to how many words and lexemes there are, and the average length of sentences, in the text extracts, we cannot easily say how many "new" words are introduced in Grade 4 (unless this becomes an exercise on its own). Instead, the somewhat limited data that is available is summarised below:

**6.4.1 Vocabulary data from all texts**

<table>
<thead>
<tr>
<th></th>
<th>L1:1</th>
<th>L1:2</th>
<th>L1:3</th>
<th>L2:1</th>
<th>L2:2</th>
<th>L2:3</th>
<th>NS 1</th>
<th>NS 2</th>
<th>SS 1</th>
<th>SS 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Words</td>
<td>400</td>
<td>305</td>
<td>419</td>
<td>390</td>
<td>263</td>
<td>293</td>
<td>327</td>
<td>298</td>
<td>244</td>
<td>227</td>
</tr>
<tr>
<td>Lexemes</td>
<td>152</td>
<td>140</td>
<td>210</td>
<td>137</td>
<td>125</td>
<td>98</td>
<td>190</td>
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</tr>
<tr>
<td>Average</td>
<td>13.3</td>
<td>10.2</td>
<td>13.8</td>
<td>13</td>
<td>8.7</td>
<td>9.8</td>
<td>10.9</td>
<td>9.9</td>
<td>11.6</td>
<td>7.6</td>
</tr>
<tr>
<td>length</td>
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<tr>
<td>of</td>
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<tr>
<td>sentence</td>
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</tr>
<tr>
<td>Average</td>
<td>12.4</td>
<td>10.5</td>
<td>10.4</td>
<td>9.6</td>
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<td>per</td>
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<td>text type</td>
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</tbody>
</table>
The L1 first text definitely has the longest sentences. The L2 and Learning Area texts have more or less the same length of sentence. SS second text has short sentences because of a TRUE/FALSE exercise with short sentences. On a trivial readability formula, the L1 sentences would have been thought to be less readable than the L2 sentences, but this assumption is reductionist, because it does not take into account the syntactic structures and the vocabulary used.

Under the rubric of vocabulary, an attempt was made to identify difficult words or phrases in the Grade 4 texts. There are discipline-specific words, for example heat, hot, warmer, lukewarm, cool (NS), which in themselves do not constitute a problem because they are consciously taught. (There are also general academic words such as: hypothesis, hypothesize, differentiate, inform, analysis, validity, etc. These constitute a problem insofar as they are not generally taught, but there are as many as 500 of these words facing a first year tertiary student. If they don’t know how to use them, or what they mean, their studies are likely to be compromised or even futile.) In analysing the difficult words and concepts in the texts, I have not confined myself to these two types of words (i.e. discipline-specific and general academic), but have also focussed on specialised or different uses of words that would presumably not have occurred in the Foundation Phase.

### Examples of challenging language:

<table>
<thead>
<tr>
<th>L1</th>
<th>L1</th>
<th>L1</th>
<th>L2</th>
<th>L2</th>
<th>L3</th>
<th>NS</th>
<th>NS</th>
<th>HSS</th>
<th>HSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
<td>7</td>
<td>7</td>
<td>4</td>
<td>0</td>
<td>16</td>
<td>28</td>
<td>19</td>
<td>20</td>
</tr>
</tbody>
</table>

Here is a small sample from NS Text One:
“feel”: used intensively (copulative) rather than transitively (e.g. “Feel the pebble. It is smooth”) A “but …if” construction which is in meaning a “if …(the) …“and” construction.
“protect”: abstract and unexplained. Could have used “keep safe” “provide”: abstract and unexplained. Could have used “helps with”.

It is hoped that this analysis, driven by experience, has some validity.

### 6.5 ACADEMIC LANGUAGE FUNCTIONS

A consolidated table of ALFs is shown on the next page. In the Grade 4 books there are very few ALFs, and these occurred only where there are activity lessons rather than informational text. Although these functions drive active learning, the simple instructions in the Grade 4 lessons certainly give the children something to think about. It will be seen that there are not ALFs for the L1 texts; this is because they are narrative texts or informational text that did not have any exercises. By contrast, the Grade 3 Life Skills texts are very busy. What must be said is that the Grade 4 texts are starting to become CALP in orientation: they are in the quadrant where the work is cognitively demanding, but not yet completely context-independent. This is because there are supporting illustrations. Since the ALFs do not show a developmental trend, I would argue instead that what I have called “challenging language” is the principal difference between Grade 3 and Grade 4.

Finally I should like to point out that the Grade 4 texts didn’t have structures as complex as Van Rooyen’s Grade 5 texts. I don’t think this is natural developmental trend, but rather a growing awareness by current authors of writing in a child-centred way. Obviously the acid test would be to analyse Grade 5 Natural Sciences texts, but this is beyond the scope of the present study.

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3 This experience is driven by editing Intermediate Phase Science and Technology books that were based on the recommendations of the Threshold Project.
## Academic Language Functions: Grade 3 L2 and Grade 4 NS and SS

<table>
<thead>
<tr>
<th>Language</th>
<th>Learner uses language to:</th>
<th>L1 NCS F.Phase</th>
<th>L2 NCS F.Phase</th>
<th>L2 1&lt;sup&gt;st&lt;/sup&gt; scheme</th>
<th>L2 2&lt;sup&gt;nd&lt;/sup&gt; scheme</th>
<th>L2 3&lt;sup&gt;rd&lt;/sup&gt; scheme</th>
<th>NS 1 Gr 4</th>
<th>NS 2 Gr 4</th>
<th>SS 1 Gr 4</th>
<th>SS 2 Gr 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Following instructions</td>
<td>Read instructions to make or do something</td>
<td>✓</td>
<td>✓</td>
<td>28</td>
<td>48</td>
<td>48</td>
<td>9</td>
<td>6</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>2. Observing and comparing</td>
<td>Notice things that seem pertinent</td>
<td>✓</td>
<td>–</td>
<td>11</td>
<td>13</td>
<td>12</td>
<td>1</td>
<td>–</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td>3. Seek Information</td>
<td>Explore the environment or acquire information</td>
<td>✓</td>
<td>–</td>
<td>6</td>
<td>6</td>
<td>10</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>1</td>
</tr>
<tr>
<td>4. Measuring and estimating</td>
<td>Using measuring instruments and making good guesses</td>
<td>–</td>
<td>✓</td>
<td>6</td>
<td>6</td>
<td>10</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>5. Recording</td>
<td>Measure carefully</td>
<td>✓</td>
<td>–</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>–</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td>6. Analyse</td>
<td>Separation of whole into parts</td>
<td>✓</td>
<td>✓</td>
<td>8</td>
<td>3</td>
<td>7</td>
<td>–</td>
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<tr>
<td>7. Compare</td>
<td>Analyse similarities and differences in objects or ideas</td>
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<td>9</td>
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<tr>
<td>8. Classify</td>
<td>Sort objects or ideas into groups and give reasons</td>
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<td>5</td>
<td>5</td>
<td>4</td>
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</tr>
<tr>
<td>9. Interpreting</td>
<td>Interpret information in different forms</td>
<td>✓</td>
<td>✓</td>
<td>11</td>
<td>3</td>
<td>18</td>
<td>–</td>
<td>–</td>
<td>–</td>
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</tr>
<tr>
<td>9.1 Changing the form</td>
<td>Interpret different forms of information</td>
<td>✓</td>
<td>✓</td>
<td>9</td>
<td>4</td>
<td>8</td>
<td>–</td>
<td>–</td>
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</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>9.2 Applying concepts</th>
<th>Know when to use concepts and how</th>
<th>✓</th>
<th>–</th>
<th>6</th>
<th>3</th>
<th>5</th>
<th>–</th>
<th>–</th>
<th>–</th>
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<th>–</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.3 Making inferences</td>
<td>Infer that which is beyond the obvious</td>
<td>✓</td>
<td>–</td>
<td>3</td>
<td>1</td>
<td>8</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>9.4 Seeing parts and stating relationships</td>
<td>Try different possibilities and find relations</td>
<td>–</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>10. Predict</td>
<td>Another form of interpretation; predict implications</td>
<td>✓</td>
<td>–</td>
<td>3</td>
<td>4</td>
<td>9*</td>
<td>–</td>
<td>1</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>11. Inform</td>
<td>Report, explain, or describe information or procedures</td>
<td>✓</td>
<td>–</td>
<td>12</td>
<td>14</td>
<td>7</td>
<td>1</td>
<td>–</td>
<td>1</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td>12. Hypothesize</td>
<td>Hypothesize consequences</td>
<td>✓</td>
<td>–</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>13. Justify</td>
<td>Give reasons for an action, a decision, or a point of view</td>
<td>✓</td>
<td>–</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td>14. Persuade</td>
<td>Convince another person of a point of view</td>
<td>✓</td>
<td>–</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>15. Solve Problems</td>
<td>Determine solutions using models and theories</td>
<td>✓</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>–</td>
<td>–</td>
<td>–</td>
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<td>–</td>
</tr>
<tr>
<td>16. Synthesize</td>
<td>Combine ideas to form a new whole</td>
<td>–</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>17. Evaluate</td>
<td>Assess the worth of an object, opinion, or decision</td>
<td>✓</td>
<td>–</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>16</td>
<td>5</td>
<td>20</td>
<td>14</td>
<td>18</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>–</td>
</tr>
</tbody>
</table>

Sources: O'Malley (2007), Moodie (2004) and RNCS (2002) for Home Language (L1) and First Additional Language (L2).
6.6 HAVE WE MADE ACCURATE ASSUMPTIONS?

When this text analysis was designed, it was assumed that the majority of school children in Limpopo Province have home languages other than English. It was further assumed, in terms of the National Curriculum Statement, that they would start learning English First Additional Language (EFAL) in Grade 1. Certainly this assumption was validated by the fact that all the Language schemes have Grade 1 books. The Foundation Phase materials’ analysis part of the study started nearly a year before the empirical (fieldwork/classroom observation) research was conducted. A great concern that emerged from the latter was the level of English being taught in Grade 4, and the enormous gap between what the teachers were teaching there and the demands of the Natural Sciences and Social Sciences books that were analysed. By way of making the gulf concrete, two exercises are reproduced here from a Grade 4 child’s work.

In the classroom – observed during the fieldwork part of the study – the children were expected to write the correct form from the blackboard after the class had gone through the exercise.

*Here is the work from the 7th September 2007:*

**Buying and selling**

1. vegetables
2. beans
3. que ae ue
4. bə one ue banches
5. Garden
6. pumpin, pampi, pumpin, pumpkin
7. Beatufi, beautiful
8. Lottry, Lottery
9. mangoes
10. spinach, sepinach

In another lesson, the children were learning present and regular and irregular past tenses of verbs. This lesson took an hour and a half. After the children had practised the forms – coming up to the board to write words, they were then given a photocopied exercise to complete:

*Write the past tense word for the words in brackets.*

**Long ago**

1. Shepherd (look) **looked** after their sheep.
2. Traders (buy) **bought** and (sell) **sold** goods.
3. Potters (make) **made** pots from clay.
4. Farmers (word) **worked** the land.
5. There (is) **was** no food in the land of Canaan.
6. Woman (spin) **spun** and (weave) **weaved** wool into cloth.
7. The brothers (travel) **travelled** very far.
8. The traders (take) **tort** Joseph to Egypt.
9. Many people (go) **went** to the market place.

The teacher marked the work in class and since there were more than 40 children in the class, this meant that while she was busy, they were up to other things, lying on their arms, pinching each other, and whispering.
Of the four schools which this author observed, only one, where Afrikaans teachers were teaching through the medium of English (from Grade 1), would have had the possibility of realistically dealing with the Grade 4 curriculum. Only the Grades 1 and 3 were observed in this school; the three FP teachers were teaching an integrated FP course, which had some very difficult elements to it. The course was too short for each year, so the teachers supplemented what was there with worksheets of their own. The Grade 1s were reading a class Reader from a scheme, and there was one remarkable little girl who could read the Bible Story Book.

Unfortunately the posts of these teachers are under threat, because although there are two teachers teaching SePedi as a language, the Limpopo Department of Education (LDE) is insisting that the children learn through the medium of SePedi.

It is regrettable that this report ends on a sober note. The issue of greatest concern is the absence of understanding (in typical former DET/homeland schools) about the amount and type of English that children have to learn in order to prepare for Grade 4. When I asked what happens in Grade 4, the universal response was that there is code-switching (although this term was not known); and one principal proudly announced that in Grade 4 the children are taught in dual medium. In each case I explained to the teacher(s) that what they were doing was understandable, because the children don’t understand the new concepts – but the chances are that the children are merely waiting for the mother tongue explanation, and are not learning English.

We were informed that the LDE had decided to delay the introduction of English, First Additional Language, to Grade 3, and to concentrate on mother tongue/Home Language until the end of Grade 2. Certainly, developing and strengthening literacy in the Home Language is extremely necessary and important. However, it needs to be noted that students cannot switch to English FAL in Grade 3 and be equipped to cope with English as medium of instruction/language of learning and teaching (LOLT) in Grade 4 – as they will have had only one year of learning English. While putting in place a mother tongue policy for the FP, the provincial and district officials seemed unaware of what the children need in order to cope with a change of medium.

As it is, the children by and large cannot read properly in their mother tongue, so there is unlikely to be enough carry-over to learning to read in English. And furthermore, no examples of extended writing text were seen in any child’s book in the 24 schools included in the fieldwork study. Filling in the blanks, or writing one word answers, will not get the children to the level of understanding of the syntactic structures or (implicitly) the cohesive devices that are waiting for them. Finally, it is the opinion of the author that outcomes based education appears to have “dumbed down” the teachers, and by doing so, is “dumbing down” the children. The performance results of children in C2005, and even the NCS, may, regrettably, be poorer than under the apartheid regime. This is simply not acceptable in our present optimistic era.

In March 2008, the Deputy Director General (GET) announced that children’s reading, from Grade 1 to Grade 6, is now to be formally tested annually; and that change is expected by 2010. As the accompanying fieldwork report shows, a great deal will have to happen in the schools before any real reading will take place, and for there actually to be a blip on the radar screen of reading with comprehension.