An Evaluation of the 2003 South Australian Literacy and Numeracy Tests
A Report for the Australian Education Union (SA)

September 2004

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# Contents

**Introduction** ....................................................................................................................... 1

**Section 1  Literacy and numeracy in the LaN** ...................................................................... 6

  1.1 THE LITERACY PRIVILEGED IN THE LAN TESTS ................................................................. 6
  1.2 THE LITERACY TEST COMPARED WITH THE SACSA FRAMEWORK ................................ 13
  1.3 THE NUMERACY PRIVILEGED IN THE LAN TESTS .......................................................... 20
  1.4 THE NUMERACY TEST COMPARED WITH THE SACSA FRAMEWORK ................................. 22
  1.5 THE DIAGNOSTIC FUNCTION OF THE LITERACY TESTS ................................................. 28
  1.6 THE DIAGNOSTIC FUNCTION OF THE NUMERACY TESTS ............................................... 30
  1.7 THE TEST REPORTS ............................................................................................................ 32

**Section 2  Test design** ........................................................................................................ 35

  2.1 MANOEUVRING BETWEEN TWO SOURCES .................................................................... 35
  2.2 TEST ITEMS WITH MULTIPLE COMPONENTS ................................................................. 36
  2.3 TEST ITEMS WHICH CALL FOR SPECULATION OR CLEVER GUESSWORK ....................... 38
  2.4 TEST ITEMS WHICH DEPEND ON PRIOR KNOWLEDGE OR SPECIFIC CULTURAL KNOWLEDGE ........................................................................................................ 38
  2.5 TEST ITEMS WHICH DEPEND ON COMPETENCY WITH A META-LANGUAGE ................. 40
  2.6 POOR QUALITY TEXTS INCLUDED IN THE MAGAZINE ................................................ 41
  2.7 THE USE OF CONTEXTS WITHIN THE TESTS ................................................................. 41
  2.8 NUMERACY IS LINKED WITH THE ABILITY TO READ AND COMPREHEND TEXT ........... 43
  2.9 GOOD QUESTIONS ............................................................................................................. 44

**Section 3  Review and recommendations** .............................................................................. 45

  3.1 POSITIONING THE LAN AS PART OF A COMPREHENSIVE AND PRODUCTIVE ASSESSMENT PROGRAM ................................................................. 46
  3.2 IMPROVING THE LAN ....................................................................................................... 51

**References** ........................................................................................................................... 55

**Appendix 1 : Analysis of the emphases of the Reading and Viewing strand of the SACSA Framework based on the R-7 English Teaching Resource (DECS 2003a)** .............................................................................. 57

**Appendix 2 : Analysis of the emphases of the Writing strand of the SACSA Framework based on the R-7 English Teaching Resource (DECS 2003a)** .............................................................................. 61

**Appendix 3: Refined analysis of the mathematics focus in each test** ........................................ 65

**Appendix 4: Poor questions in the numeracy test** ................................................................. 78
Introduction

In July 2004 the Australian Education Union (South Australia) commissioned the Centre for Studies in Literacy, Policy and Learning Cultures at the University of South Australia to conduct an evaluation of the 2003 state Literacy and Numeracy (LaN) tests in preparation for participating in a review of these tests. At the time of preparation of this report the 2004 round of testing has been conducted but no review has been announced.

The LaN tests were preceded by the Basic Skills Tests (BST) introduced into South Australian public schools under Education Minister Rob Lucas.

In 2002, DECS moved to develop what it labelled the ‘Integrated Assessment Program’, a key goal being ‘to align the Basic Skills Testing program to the SACSA Framework to closely reflect South Australian curriculum’. This move to integration seems motivated in part by the validity issues arising from the use of the Basic Skills Tests that were developed in NSW and that were not properly aligned with the South Australian curriculum. As stated on the DECS website ‘The tests have been developed with the help of teachers in South Australia and will be marked by specially trained South Australian teachers’.

The LaN Tests are administered annually to students in Year 3, 5 and 7 in South Australia in August of each year.

The logic of such testing has been outlined by Masters (2002):

Effective management depends on an ability to monitor system-wide performances over time, to gauge effectiveness of special programs and targeted resource allocations, to monitor impact of system-wide policies, and to evaluate the success of initiatives aimed at traditionally disadvantaged and under-achieving sections of the student population. Accurate and reliable data allow system managers to measure the progress of a system against past performances, to identify areas requiring special attention, and to set goals for future improvement. Equally, reliable data on educational performances are required for effective school management. … Feedback to parents on student achievement is required if they are to become active partners in their children’s learning. … From the point of view of classroom teachers, systemically-collected measures of student achievement can be useful both for classroom decision making and for wider reporting purposes. (pp.44-45)

It is clear that school systems do need such information and the better quality of that information, the more useful it will be in steering decision making. The question is: how well does a basic skills test such as the LaN deliver quality information to school systems about
the effectiveness of programs, resource allocations and policies, and to parents and teachers on student achievement?

There is considerable debate about the ability of standardised forms of testing such as the LaN to deliver such quality information to systems, parents and teachers. A brief review of literature (for example, McNeil 2000; Eisner 1999; 2001; Luke 1995; Luke & van Kraayenoord 1998; Willis 1998) provides a picture of these concerns which include:

- Due to the significance given to the tests and that similar effort is not put into the alternatives then standardised tests may act as proxies for quality.

- Basic skills tests may have a detrimental effect on teaching, learning and school culture. There is evidence in some places of ‘teaching to the test’, which means that the tests actually contribute to a narrowing of the curriculum. Focusing on an ends/means orientation undermines risk-taking, exploration, curiosity, uncertainty, speculation, and interest in challenging ideas. ‘Descriptive minima will become prescriptive maxima’ (Luke 1998: 61).

- Testing commensurability is based on a notion of age progression (‘a tidy procession of students all marching in unison’ Eisner 1999, p. 56) which may foster standardisation and conformity of expectations rather than optimal learning for every child. Variability is a positive attribute of ‘good’ schooling (see also Austin and Freebody 2001).

- Standardisation runs counter to the logic of local curriculum development. Whilst it may not be the intention, these tests undermine efforts to devise high quality learning that is connected to the lives of local school communities.

- Basic skills tests have trouble assessing much more than a narrowly defined set of literacy and numeracy skills. As a consequence, the shift to ‘multiliteracies’ and ‘numeracy’ could be undermined. More specifically, coding competence (code breaker–how do I crack the code?) is privileged at the expense of semantic (text participant–what does it mean?), pragmatic (text user–what do I do with this, here and now?) and critical competence (text analyst– what is this text trying to do to me? In whose interests?) (see Luke 1995).

- The linkage between testing and pedagogical change is weak (Wyatt-Smith and Campbell 2002). Given that these tests only purport to test ‘particular aspects of literacy and numeracy’ they may not help teachers understand the complexity of literacy performance and achievement and provide limited indication of the much needed pedagogical interventions required to improve the most serious educational problems (e.g. Improving literacy for socio-economically disadvantaged students) (Alloway and Gilbert 1998).

- Paper and pencil tests have trouble providing the necessary textual diversity that is promoted by the curriculum.

- Basic skills tests focus on the performance of skills rather that the underlying understanding.
• Cost and management issues associated with state-wide testing are rarely articulated in the justification for these testing regimes. The financial gain for the testing industry (or the political economy of testing) is rarely mentioned and requires further scrutiny.

• The process of designing test items is messy and arbitrary – something that can be disguised by the ‘scientific’ gloss given to their production and reporting (Wolf and Cumming 2000)

It is our view that standardised tests do have a place in a balanced assessment regime, but the tests need to be of high quality, be careful of the claims made on their behalf and used in ways that do not produce some of the harmful ‘side-effects’ that are outlined in the list above. In other words, standardised tests cannot hope to provide, on their own, sufficient information or impetus for decision-making and pedagogical change. Put more positively, they can be a useful element of a comprehensive assessment strategy provided that:

• there are clear statements about what such tests can and can’t do (i.e. there is not overclaiming about the information they provide)

• the information from the tests is used and presented as part of an overall suite of information that allows for balanced and informed decision making

• the tests are used in ways that do not narrow or skew the curriculum

• the tests are designed to be particularly sensitive to the difficulties faced by the most disadvantaged students

With these issues in mind we approached this analysis by considering what claims are made for the LaN tests, how the information from them is presented, how they relate to the curriculum and how sensitive they are to the learning needs of traditionally disadvantaged student groups, given that these students typically make up a significant proportion of children in the lower bands of achievement (Masters & Forster 1997; Alloway & Gilbert 1997).

Approach to analysis

We began by considering the aims/claims being made for these tests. The Administrative Procedures (2003) document describes the aim of the LaN as ‘to inform students, parents and schools about what students can do in specific aspects of literacy and numeracy’ (p.4).

The tests are also claimed to have a ‘diagnostic function’ which is not explained. We assume this means that the tests aim to provide a guide for teachers about the achievements and difficulties students face and an indication of how these might be addressed.

The LaN is also placed in the context of the SACSA Framework, and the document states that the ‘best way of preparing students for the test is by providing sound teaching and
learning programs in literacy and numeracy based on the SACSA Framework’ (p.4). The LaN is also placed as an element of the Integrated Assessment Program which aims to align all statewide assessment programs with the SACSA Framework. The claim is made that such an alignment will ‘extend the capacity of schools to plan, program and use data in consistent and coherent ways to improve child and student learning’. As well the Integrated Assessment Plan claims that ‘these assessment tasks ‘will help assure the reliability of teacher judgements of learner achievements’.

In summary, there are four main claims made for the LaN tests; that:
1. they are informative for parents and teachers about student literacy and numeracy achievement (information function)
2. they will provide information which will guide teaching (diagnostic function)
3. the best preparation for them is to teach the SACSA Framework and that they align with that framework (curriculum function)
4. they will provide a means of checking the reliability of teacher judgements (reliability function)

Accordingly we designed the analysis to consider these claims for the LaN, using the following questions:
1. what aspects of literacy and numeracy do the LaN tests foreground?
2. what aspects of literacy and numeracy in the SACSA Framework do the tests relate to and how representative is that of the SACSA Framework?
3. how well do the aspects of literacy and numeracy foregrounded in the LaN tests relate to most recent understandings in the research literature?
4. what is the quality and potential usefulness of the results of these tests in the forms they are conveyed to the ‘students, parents and schools’ who are the target audiences for the reports?

The materials used in this analysis were:
- Administrative Procedures for 2003
- Teacher Handbooks for 2003, Years 3, 5 & 7
- LaN 2003 tests, Years 3, 5 & 7, including supplementary ‘magazine’ materials
- Sample LaN reports provided to parents/caregivers, teachers and schools (DECS supplied a sample set for Year 7)
- Guidelines provided to principals for exemptions and other matters not described in the Administrative Procedures
- SACSA Framework statements on literacy and numeracy definitions, key ideas, and band outcomes
- key recent research literature on literacy and numeracy
These materials were analysed linguistically and thematically. Where appropriate, information was tabulated for comparison (e.g. LaN aspects of literacy against SACSA Framework statement).

Clearly, there are other sources of information which would ideally be included in an evaluation. The most notable of these is information from students, parents, teachers and schools about how useful they have found the information, and the uses to which they put it. Given the resources available to the AEU, the conduct of surveys, interviews and observations required to generate such data could not be included in this evaluation.

The evaluation team consisted of:
Professor Barbara Comber, Director, Centre for Studies in Literacy, Policy and Learning Cultures (literacy focus)
Dr Phil Cormack, Deputy Director, Centre for Studies in Literacy, Policy and Learning Cultures (literacy focus)
Dr Robert Hattam, Key Researcher, Centre for Studies in Literacy, Policy and Learning Cultures (numeracy focus)
Mr Mike Chartres, Associate Researcher, Centre for Studies in Literacy, Policy and Learning Cultures (numeracy focus)

Structure of this report
This Report is structured in three main parts:
1. The aspects of literacy and numeracy the LaN tests privilege
   a. in their own right at each level
   b. in relation to the SACSA at each level (including comment on the appropriateness of the level of the tests)
   c. the diagnostic function of the tests
   d. the test reports
2. Test design (comments on the ways that literacy is tested)
3. Review of key points and recommendations designed to support the AEU to take an active and constructive role in the LaN review.

The Report also has a number of Appendices which display some of the detail of the analysis.
Section 1
Literacy and numeracy in the LaN

This section discusses the analysis of the LaN tests to consider:

1. What aspects of literacy and numeracy are privileged in the LaN?
2. How do those aspects of literacy and numeracy compare to the emphases of the SACSA Framework at the three year levels?
3. Given 1 and 2, how ‘diagnostic’ are the tests?
4. What is the value of the reports provided to schools and parents?

Each of these questions was applied in turn to the literacy and numeracy tests and are reported in turn here.

The LaN tests and Literacy

1.1 The literacy privileged in the LaN tests

We began by considering the LaN tests in their own right. We worked through them as a student would, considering each question in turn and recording the issues that arose. This section of the report is organised around each of the separate tests for Year 3, 5 and 7.

1.1.1 The Year 3 literacy test

Each test is divided into three sections:

1. writing task
2. reading
3. language

Each of these is discussed in turn below

Writing task

The writing task asks students to write a persuasive letter ‘Join my team’. This task emphasises:

- the ability/need for students to benefit from preparatory group discussion
- understanding elements of a letter as a text type
- an understanding of team sports, ‘skills’, meeting new people, shyness, teamwork
- an ability to respond to an imaginative scenario (i.e. an inauthentic task)
- understanding of persuasive text genre (‘convince them to join your team’)
Reading

Each of the questions was analysed to identify the aspect of reading that was emphasised (see Table 1.1.1a)

Table 1.1.1a: Aspects of reading emphasised in the Year 3 literacy test

<table>
<thead>
<tr>
<th>Task</th>
<th>Question no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>finding an answer in the text</td>
<td>2*, 3*, 7*, 12*, 15*, 16*, 18*, 19, 20, 21, 23, 25, 27, 28, 29, 30, 32*, 33, 34, 35, 37*, 38*</td>
</tr>
<tr>
<td>* starred question requires mainly text matching</td>
<td></td>
</tr>
<tr>
<td>unmarked questions require rereading, inference from text</td>
<td></td>
</tr>
<tr>
<td>+ crossed questions require knowledge beyond the text to answer</td>
<td></td>
</tr>
<tr>
<td>sequencing text</td>
<td>4</td>
</tr>
<tr>
<td>understand purposes of particular text elements (illustration, headings x 2, bold text)</td>
<td>1, 5, 39, 22</td>
</tr>
<tr>
<td>understanding the genre/text type</td>
<td>6, 8, 10, 17, 24, 36</td>
</tr>
<tr>
<td>choosing main idea</td>
<td>9</td>
</tr>
<tr>
<td>find name of writer/author</td>
<td>11</td>
</tr>
<tr>
<td>understand symbol/logo</td>
<td>13, 14</td>
</tr>
<tr>
<td>understand key terminology – (illustrator, author)</td>
<td>26, 31</td>
</tr>
</tbody>
</table>

We also considered the text types used in the ‘magazine’ the students had to use as reading material (see Table 1.1.1b).

Table 1.1.1b: Text types used in the Year 3 literacy test

<table>
<thead>
<tr>
<th>Title</th>
<th>Text type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hairy eggheads</td>
<td>instructions</td>
</tr>
<tr>
<td>Spaghetti! Spaghetti!</td>
<td>poem</td>
</tr>
<tr>
<td>Tricky Putty</td>
<td>(facsimile of) back of toy package</td>
</tr>
<tr>
<td>A lesson in frog language</td>
<td>magazine article/comic (uncertain source)</td>
</tr>
<tr>
<td>Camouflage</td>
<td>informational text (uncertain source)</td>
</tr>
<tr>
<td>Nan and the Birds</td>
<td>story</td>
</tr>
<tr>
<td>An ant story</td>
<td>fable</td>
</tr>
<tr>
<td>RC games</td>
<td>(facsimile of) web page</td>
</tr>
</tbody>
</table>

Language

Finally the emphases of the ‘Language’ element of the test were considered (see Table 1.1.1c).

Table 1.1.1c: Emphases in the ‘language’ questions in the Year 3 literacy test

<table>
<thead>
<tr>
<th>Task</th>
<th>Question no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spelling (from text read aloud)</td>
<td>1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 18, 22*, 23*, 25</td>
</tr>
<tr>
<td>* starred question is a homophone (hole/whole, of/off)</td>
<td></td>
</tr>
<tr>
<td>Capitalisation</td>
<td>14, 15, 21,</td>
</tr>
<tr>
<td>Punctuation (full stop, question mark, quotation mark, apostrophe for contraction)</td>
<td>16, 17, 19, 24</td>
</tr>
</tbody>
</table>
1.1.2 Year 5 literacy test

The analysis follows the same structure as for the Year 3 test above.

Writing

The writing task asks students to write an explanation. However, this is a multiple-layered task as explanations are typically not hypothetical as this one is. The task emphasises:
- feelings
- details about vandalism hypothetically seen
- a moral positioning and justification
- understanding of the genre of explanation

Reading

Each of the questions was analysed to identify the aspect of reading that was emphasised (see Table 1.1.2a)

Table 1.1.2a: Aspects of reading emphasised in the Year 5 literacy test

<table>
<thead>
<tr>
<th>Task</th>
<th>Question no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>finding an answer in the text</td>
<td>1, 2, 3, 4, 7*, 8*, 10,</td>
</tr>
<tr>
<td>* starred question requires mainly text matching</td>
<td>11*, 12*, 13, 14, 15,</td>
</tr>
<tr>
<td>unmarked questions require rereading, inference from text</td>
<td>20, 22, 23*, 25*, 27,</td>
</tr>
<tr>
<td>+ crossed questions require knowledge beyond the text to answer</td>
<td>28, 29, 31*, 32, 34,</td>
</tr>
<tr>
<td></td>
<td>35, 37, 38*, 39, 41</td>
</tr>
<tr>
<td>recognise labels for aspects of genre/text type</td>
<td>9, 16, 17, 21,</td>
</tr>
<tr>
<td>choosing main idea/purpose</td>
<td>9, 19, 24</td>
</tr>
<tr>
<td>understand purpose of particular text elements (headings, logo, bracketed text, web (hyper)link, dash)</td>
<td>5, 6, 30, 26, 36, 40</td>
</tr>
<tr>
<td>understand symbol/logo</td>
<td>33</td>
</tr>
</tbody>
</table>

Some texts and questions were repeated from the Year 3 test as shown in Table 1.1.2b.

Table 1.1.2b: Texts and questions repeated in Year 5 test from Year 3 test

<table>
<thead>
<tr>
<th>Text</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tricky Putty</td>
<td>5, 6, 7</td>
</tr>
<tr>
<td>Nan and the Birds</td>
<td>9, 10, 12, 14</td>
</tr>
</tbody>
</table>

We also considered the text types used in the ‘magazine’ the students had to use as reading material (see Table 1.1.2c).
Table 1.1.2c: Text types used in the Year 5 literacy test

<table>
<thead>
<tr>
<th>Title</th>
<th>Text type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunstruck poem</td>
<td>poem</td>
</tr>
<tr>
<td>Tricky Putty (facsimile of) back of toy package</td>
<td></td>
</tr>
<tr>
<td>Nan and the Birds story</td>
<td>story</td>
</tr>
<tr>
<td>Wetlands (facsimile of) back cover of book</td>
<td></td>
</tr>
<tr>
<td>Adelaide 36ers (facsimile of) web page</td>
<td></td>
</tr>
<tr>
<td>Sticks and stones informational text (uncertain source)</td>
<td></td>
</tr>
<tr>
<td>Weather map (clip from newspaper?)</td>
<td></td>
</tr>
<tr>
<td>Nepenthes pitcher plant informational text (uncertain source)</td>
<td></td>
</tr>
</tbody>
</table>

Language

Finally, the emphases of the ‘Language’ element of the test were considered (see Table 1.1.2d).

Table 1.1.2d: Emphases in the ‘language’ questions in the Year 5 literacy test

<table>
<thead>
<tr>
<th>Task</th>
<th>Question no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spelling (from text read aloud)</td>
<td>1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 21*, 22, 24*</td>
</tr>
<tr>
<td>“* starred question is a homophone (through/threw, been/bean)</td>
<td></td>
</tr>
<tr>
<td>Capitalisation</td>
<td>16</td>
</tr>
<tr>
<td>Punctuation (question mark, quotation mark, apostrophe of possession)</td>
<td>15, 17, 18</td>
</tr>
<tr>
<td>Grammar (verb tense, pronoun gender)</td>
<td>23, 25</td>
</tr>
</tbody>
</table>

1.1.3 Year 7 literacy test

Data is displayed as for Years 3 and 5.

Writing

The writing task asks students to write an argument in the form of a ‘special feature’ for a youth section in a newspaper. Students are given a choice of issues to write about with some sample issues provided. The task emphasises:

- understanding the genre of argument
- having a point of view
- providing information to support the argument

Reading

Each of the questions was analysed to identify the aspect of reading that was emphasised (see Table 1.1.3a)

Table 1.1.3a: Aspects of reading emphasised in the Year 7 literacy test

<table>
<thead>
<tr>
<th>Task</th>
<th>Question no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>finding an answer in the text</td>
<td>1*, 3*, 4*, 6, 7*, 8, 10, 12, 13, 14, 16*</td>
</tr>
<tr>
<td>“* starred question requires mainly text matching</td>
<td></td>
</tr>
</tbody>
</table>
Some texts and questions were repeated from the Year 5 test as shown in Table 1.1.3b.

Table 1.1.3b: Texts and questions repeated in Year 7 test from Year 5 test

<table>
<thead>
<tr>
<th>Text</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nepenthes pitcher plant</td>
<td>6, 7, 8, 9, 10</td>
</tr>
<tr>
<td>Wetlands</td>
<td>27, 29, 30, 31</td>
</tr>
</tbody>
</table>

We also considered the text types used in the ‘magazine’ the students had to use as reading material (see Table 1.1.3c).

Table 1.1.3c: Text types used in the Year 7 literacy test

<table>
<thead>
<tr>
<th>Title</th>
<th>Text type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fireworks</td>
<td>poem</td>
</tr>
<tr>
<td>Nepenthes pitcher plant</td>
<td>informational text (uncertain source)</td>
</tr>
<tr>
<td>Mr Dragon</td>
<td>story</td>
</tr>
<tr>
<td>The last great wilderness</td>
<td>magazine article (uncertain source)</td>
</tr>
<tr>
<td>Balarinji designs</td>
<td>promotional article/information text</td>
</tr>
<tr>
<td>Wetlands</td>
<td>(facsimile of) back cover of book</td>
</tr>
<tr>
<td>The venomous side of spiders</td>
<td>informational text (uncertain source)</td>
</tr>
<tr>
<td>Article about Fran West</td>
<td>(facsimile of) web page</td>
</tr>
</tbody>
</table>

Language

Finally the emphases of the ‘Language’ element of the test were considered (see Table 1.1.3d).

Table 1.1.3d: Emphases in the ‘language’ questions in the Year 7 literacy test

<table>
<thead>
<tr>
<th>Task</th>
<th>Question no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spelling (from text read aloud) * starred question is a homophone (two/too)</td>
<td>1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 24*, 27</td>
</tr>
<tr>
<td>Capitalisation</td>
<td>19, 22</td>
</tr>
<tr>
<td>Punctuation (apostrophe for contraction, comma, full stop x 3)</td>
<td>16, 17, 18, 20, 21</td>
</tr>
<tr>
<td>Grammar (verb tense, singular/plural form)</td>
<td>23, 26</td>
</tr>
</tbody>
</table>

```table
<table>
<thead>
<tr>
<th>Task</th>
<th>Question no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>unmarked questions require rereading, inference from text</td>
<td>19, 21, 22, 23*, 24*, 27, 28, 30, 32*, 33, 34*, 35, 36, 37*, 38*, 40*, 41*, 42*</td>
</tr>
<tr>
<td>+ crossed questions require knowledge beyond the text to answer</td>
<td>recognising labels for aspects of genre/text type 2, 11, 17, 29</td>
</tr>
<tr>
<td>choosing main idea/purpose</td>
<td>25, 31</td>
</tr>
<tr>
<td>understand purpose of particular text elements (dash, italics x 2, inverted commas, brackets)</td>
<td>9, 18, 20, 26, 39</td>
</tr>
<tr>
<td>understand symbol/logo</td>
<td>5, 15</td>
</tr>
</tbody>
</table>
```
1.1.4 An overview of the aspects of literacy privileged in the tests

These tests, because of their design as paper and pencil group tests, necessarily are limited to only specific kinds of literacy—mainly those connected with writing and the reading (with very limited aspects of viewing) of simple texts. Similarly, because of the style of answer (multiple choice, supply a few words, one extended piece of writing) only limited kinds of student performance can be measured—mainly those connected with individual cognitive activity related to the use of texts out of context. Because of this lack of contextualisation, assessments must stick closely to the literal meanings of texts and not make too many assumptions about the resources that students can bring to the task, otherwise they may end up privileging students’ out-of-school knowledge.

Reading

The tests focus on what might be traditionally called ‘comprehension’ questions which ask students to find answers in the text through reading, scanning, re-reading, or combining information from different parts of the text, or to infer answers using cues provided in the text. Overall, these ‘reading comprehension’ questions made up over half the questions in each of the three tests. Some of these questions required simple text matching between the question and the text (nearly a third in Year 3, around 10% in Year 7 test), while most required more searching than this. A significant minority of questions appeared to rely on information that could not be gleaned from the text alone, and therefore relied on knowledge which may or may not have been included in the curriculum (around a third in Year 7, around 10% in Year 3 test).

The other major emphasis in the text was the ability of students to be able to identify or understand meta-textual labels related to text genres, text types, or aspects that made up these genres or texts. For example six of 39 questions in the Year 3 test sought an understanding of genre or text labels while a further six referred to labels of aspects of texts (headings, bold) or test understandings of labels such as ‘author’ and ‘illustrator’ making nearly a third focused on labelling (similar proportions are evident in the Year 5 and 7 tests). Thus nearly a third of the questions focused on this aspect of reading.

The texts used show a variety of types that might be encountered by students in and out of school. Each test features a poem, a story, an informational text, and a facsimile of a web page. Other pages appearing include fable (Year 3), instructions (Year 3), facsimile of a toy package (Year 3, 5), magazine article (Year 3, 7), facsimile of the back page of a book (Year 5), a weather map (Year 5), and a kind of promotional article (Year 7). However, there were potential problems with some of these texts being reproduced in facsimile form in a ‘magazine’, such as the toy package, web pages, book covers and magazine articles. The ‘reading’ and ‘viewing’ of such texts is as much reliant on their contexts and, for web pages, their interactive elements as the print and pictures which the ‘magazine’ format can display. Occasionally this resulted in questions (see question 37 on the website Year 7 test) which
took assumptions about print based texts (e.g. what a text is ‘called’) and transferred these to web texts (see PowerPoint: Example 1). Also problematic were questions about links on pages – there is no way of telling if there is a link on a paper copy of a web page – in actual use this is determined by running the cursor over words and symbols to see if a link is available.

Writing
The tests privileged writing of the non-fiction genres of argument and explanation. On the face of it, the Year 3 writing task looked the most challenging of the three, asking students to construct an argument out of a given hypothetical situation. Overlaid on this was also the demand to construct this argument as a letter, provide ‘detail’ and relate it to the very complex concept of ‘shyness’. Compared to this, the Year 7 task, which provided the opportunity for students to choose their topic seemed relatively straightforward. The marking rubrics for these writing tasks, confirmed that the focus was on genre organisation and the ability to provide evidence of this in action through appropriate introductions, main sections and conclusions. Also emphasised were sentence structure, verb form, use of pronouns for cohesion, punctuation and spelling (these last two also tested in the ‘Language’ section of the test).

Language
Spelling, as well as being tested as an aspect of the writing task, was the overwhelming focus of the language section of the test (17 of 25 questions in Year 3 with similar proportions in the other tests). Interestingly, homophones which are among the most difficult words to spot as errors because the ‘mistake’ is a correctly spelt word, was featured in all three tests. Beyond spelling the main emphases were on punctuation and capitalisation.

Summary
The aspects of literacy emphasised in these tests are the traditional primary school elements of comprehension, composition, spelling and punctuation. Indeed, if we took away the obviously ‘modern’ texts used in the ‘magazines’ such as the web pages and forms of packaging, the tests would be largely familiar to anyone who attended an Australian primary school in the 1960s where comprehension, composition, spelling and punctuation were specifically identified subjects on the timetable.

One other difference would be a greater emphasis on particular kinds of meta-language, especially to describe text types and elements of texts, evidence of the influence of so-called genre approaches to literacy that emerged in Australia in the 1980s. Thus, the ability to talk

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Words with the same sound but different spelling and meaning, such as hole/whole, through/threw.
about literacy as well as to comprehend, compose, spell and punctuate is being emphasised here.

1.2 The literacy test compared with the SACSA Framework

In considering the aspects of the SACSA Framework against which to evaluate the Literacy tests we used the English learning area. The SACSA Framework itself makes explicit that the English curriculum area provides the focus for literacy development and acts as a ‘reference point and resource’ for literacy in all areas of the curriculum.

English has a significant role in the development of literacy. … The explicit description of literacy skills in English is a reference point and resource for the teaching of literacy in all Learning Areas. (DECS 2004, np.)

For the purposes of this review, we used the **R-7 English Teaching Resource** (DECS 2003a), a ‘companion’ document published to support teachers to implement the SACSA. This document provides an authorised ‘sample range of learning descriptors relating the Key Ideas and Outcomes in English R-7’ (p.6). We used this sample range of learning descriptors as a summary of the key aspects of literacy to be included in a comprehensive R-7 literacy curriculum. This document also provides more explicit descriptors for teachers of expectations at each year level which could be considered against the Year 3, 5 and 7 tests.

According to the **Administrative Procedures** for the 2003 LaN tests (DECS 2003b, p.4) ‘[t]he best way of preparing students for the test is by providing sound teaching and learning programs in literacy and numeracy based on the SACSA Framework’. Accordingly, the LaN tests can be appropriately evaluated for their match with the SACSA.

As a result of analysing the Literacy tests in this way we could then make judgements about the advice given to teachers in terms of preparing students for the tests as well as about the adequacy of the tests as tests of literacy.

1.2.1 An overview of the Literacy Test in relation to the R-7 English curriculum

The English curriculum in the **R-7 English Teaching Resource** is divided into three ‘modes’ which align with most teachers planning in this curriculum area (p.7) Table 1.2.1a shows the major headings and subheadings used to divide the English/literacy curriculum in this document compared with the headings used in the Literacy test.

<table>
<thead>
<tr>
<th>SACSA</th>
<th>Literacy Test</th>
<th>Literacy Test Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listening and Speaking</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
As Table 1.2.1a shows, the Literacy test ‘Language’ section focuses on two of the four sub-elements (spelling and punctuation) of the ‘Writing’ mode in the SACSA document (proofreading covering aspects of spelling especially but not handwriting in the tests). The Literacy Test does not address any major aspects of the ‘Listening and Speaking’ mode of the SACSA document. Interestingly, the reports sent to parents and used by the school split the results in three different categories of Reading, Writing, and Spelling. Thus there is clear slippage between the SACSA Framework and the test and the reporting of the test.

Our analysis focussed on the ‘Reading and Viewing’ and ‘Writing’ sections of the SACSA document to see how these lined up against the Literacy tests. We undertook a summary statement of the ‘developmental learning outcomes’ that are listed for Year 3, 5 and 7 for Reading and Viewing, and or Writing in the R-7 English Teaching Resource. These summaries are included in Appendix 1 and 2. We then compared the emphases of these three year levels with the emphases of the tests discussed in Section 1.1. For each test we considered both the Reading and Viewing and the Writing components of the curriculum separately.

**Year 3 Literacy**

Table 1.2.1b shows the emphases for Reading and Viewing at Year 3 in the R-7 English Teaching Resource. Sample Outcomes that are examples of these emphases are listed alongside.

**Table 1.2.1b: Emphases for Year 3 Reading and Viewing in the SACSA Framework**

<table>
<thead>
<tr>
<th>SACSA Framework emphases</th>
<th>Example Outcome Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emphasis on reading all but the simplest texts ‘with support’</td>
<td>talking about and describing text purposes</td>
</tr>
<tr>
<td></td>
<td>reads books ‘with wider knowledge’ with support</td>
</tr>
<tr>
<td></td>
<td>reads, with support, challenging books of high personal interest</td>
</tr>
<tr>
<td></td>
<td>reads independently for a sustained time</td>
</tr>
<tr>
<td></td>
<td>reads, interprets and follows instructions, with support</td>
</tr>
<tr>
<td></td>
<td>seeks support for reading and viewing</td>
</tr>
</tbody>
</table>
SACSA Framework emphases | Example Outcome Statements
--- | ---
Emphasis on discussing aspects of texts | expresses different interpretations of texts<br>expresses opinions about characters<br>discusses stereotypes of people<br>talks about rhyme, syllables, rhythm in poetry

Emphasis on identification of simple features of texts | identifies noun groups and knows function<br>identifies adverbial phrases and discusses effect<br>identifies nouns and knows label

Emphasis on self-monitoring, adjusting reading processes | adjusts reading behaviour to different kinds of texts – e.g. scans, uses pictures<br>uses self-correction strategies

In summary, the SACSA Framework takes a developmental stance on Year 3 level Reading and Viewing, seeing it as still emergent, with a focus on attempts, self-correction (i.e. making attempts and applying self-monitoring to repair meaning), opportunities to interact around texts, and provision of support to be successful with all but the simplest of texts. The knowledge they are expected to have relates to the identification of simple features of texts with some labels used. On the other hand, the Year 3 Literacy test focusses on the provision of correct answers to comprehension questions about often quite complex texts (texts the SACSA indicates they will need support with), knowledge about texts at the level of whole text and macro-elements such as ‘main idea’ and understanding of genre, and the ability to identify and label aspects of texts such as author/illustrator, use of headings, illustrations and bold text (see Table 1.2.1b above). In short, the Year 3 Literacy Test tests knowledge higher than that recommended for this year level in the SACSA.

This pattern is also evident in the Writing section of the test. Table 1.2.1c shows the emphases of the SACSA in Writing.

**Table 1.2.1c: Emphases for Year 3 Writing in the SACSA Framework**

<table>
<thead>
<tr>
<th>SACSA Framework emphases</th>
<th>Example Outcome Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emphasis on beginning to experiment with and use elements of writing</td>
<td>begins to use pronouns such as he, she, it and conjunctions to link ideas&lt;br&gt;writes a longer piece which is organised according to some elements of a wider range of genres&lt;br&gt;begins to use language appropriate to genre, more independently (e.g. action verbs in recount)</td>
</tr>
<tr>
<td>Emphasis on simple texts</td>
<td>writes and publishes (inc ICTs) for a chosen audience (e.g. family, friends)&lt;br&gt;writes for a variety of personal reasons (e.g. email, poster, card, shopping list)</td>
</tr>
<tr>
<td>Emphasis on support for successful writing including provision of models</td>
<td>experiments with writing a range of forms made familiar through reading and using a framework&lt;br&gt;researches information collaboratively from a variety of sources before writing and sorts the information using a proforma</td>
</tr>
<tr>
<td>Emphasis on identifying and using simple elements of text, punctuation, spelling – but incomplete mastery</td>
<td>uses most letter patterns when attempting unknown words&lt;br&gt;uses letters or letter combinations to represent most syllables in words&lt;br&gt;uses common punctuation such as full stops, capital letters, commas, question marks and apostrophes for contractions</td>
</tr>
</tbody>
</table>
Once again this is quite different from the expectations of the Year 3 Literacy Test which emphasises correctness of spellings, rather than good attempts. The Writing Task in the test (writing a persuasive letter) seems much more difficult than the examples above would indicate. The emphasis in the SACSA is on simple texts such as emails, cards and lists, and the students doing more extended writing only with collaborative support and the provision of models. The punctuation/capitalisation in the LaN does match that laid out in the R-7 English Teaching Resource.

**Year 5 literacy**

Table 1.2.1d shows the emphases for Reading and Viewing at Year 5 in the R-7 English Teaching Resource. Sample Outcomes that are examples of these emphases are listed alongside.

**Table 1.2.1d: Emphases for Year 5 Reading and Viewing in the SACSA Framework**

<table>
<thead>
<tr>
<th>SACSA Framework emphases</th>
<th>Example Outcome Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>More reading of material reflecting wider purposes/text types relevant to personal needs</td>
<td>recognises and describes wider range of purposes of texts and their audience</td>
</tr>
<tr>
<td></td>
<td>reads and discusses items of topical interest in media relating to personal experience, comparing different versions</td>
</tr>
<tr>
<td></td>
<td>reads material relevant to personal purposes, needs, interests</td>
</tr>
<tr>
<td>Greater emphasis on being able to discuss and justify responses to texts and make inferences</td>
<td>makes inferences based on implicit and explicit information</td>
</tr>
<tr>
<td></td>
<td>justifies own interpretation of texts</td>
</tr>
<tr>
<td></td>
<td>justifies opinion about characters</td>
</tr>
<tr>
<td>Emphasis on identifying textual elements and conventions including literary devices</td>
<td>compares the typical punctuation used in print and multimedia texts</td>
</tr>
<tr>
<td></td>
<td>recognises, attends to, and explains punctuation in written texts</td>
</tr>
<tr>
<td>Emphasis on more critical understandings of text construction</td>
<td>discusses how camera angle, viewer position, colour etc construct meaning</td>
</tr>
<tr>
<td></td>
<td>discusses how author conceals/reveals attitudes to people or groups and their lifestyles</td>
</tr>
<tr>
<td>Greater emphasis on use of informational texts for research</td>
<td>locates and sorts information on a topic from a variety of sources (e.g. books, pictures, internet)</td>
</tr>
<tr>
<td></td>
<td>identifies a research topic and makes judgements about appropriateness of information</td>
</tr>
<tr>
<td></td>
<td>accesses records and presents information in a variety of ways</td>
</tr>
</tbody>
</table>

The developmental perspective on literacy continues to be evident at Year 5 with greater control of textual features and a requirement for less help. There is a shift towards a greater range of texts being read over a longer period of time and for students to be able to discuss and respond to those texts, as well as to use them for research. The kinds of textual features and elements students are expected to recognise and use is expanded so that students can see their use across texts and make comment about the main idea and purpose of texts. An obvious change from Year 3 is a much greater emphasis on critical judgement and response, including an understanding of how textual elements may shape the reading of the text. The Year 5 literacy test seems to be much more appropriately levelled in relation to the aspects of SACSA it concentrates on. However it captures none of the expanded range of texts students
can tackle (the range is similar to that in Year 3—see Table 1.2.1d), nor the ability to discuss, justify or compare texts that is emphasised here. The test remains firmly focussed on one text at a time. Similarly the critical element of reading emphasised here is absent from the test. Comments about the unsuitability of the text for examining viewing, made in relation to the Year 3 test, also apply here.

Similar comment can be made about the Writing section of the test. Table 1.3.1e shows the emphases of the SACSA in Writing at Year 5 level.

Table 1.2.1e: Emphases for Year 5 Writing in the SACSA Framework

<table>
<thead>
<tr>
<th>SACSA Framework emphases</th>
<th>Example Outcome Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emphasis on independent writing</td>
<td>constructs a range of text types independently for different purposes and audiences (e.g. expositions, reviews, recounts, historical accounts) writes well-structured texts and well-developed ideas with clear understanding of audience and purpose</td>
</tr>
<tr>
<td>Emphasis on being able to work across texts and contexts</td>
<td>reconstructs texts to suit different audiences, purposes and audiences engages in non-fiction writing which shows awareness of main issues and evidence of information gathered from more than one source</td>
</tr>
<tr>
<td>Emphasis on construction, planning and organisation</td>
<td>contrasts and constructs texts of the same genre from different cultures in terms of structure and language choices researches information independently from a variety of sources before writing lists ideas, draws diagrams, makes notes and talks constructively with peers or teachers before writing</td>
</tr>
<tr>
<td>More emphasis on correctness with familiar forms</td>
<td>recognises importance of correct punctuation and uses it correctly in published text uses with accuracy more direct speech and simple reported speech writes a longer piece which is organised according to elements of a genre, and attempts to use paragraphs recognises errors, corrects spelling of common known words and checks spelling of some unfamiliar words</td>
</tr>
</tbody>
</table>

The greater independence of writing expected at Year 5 level matches the expectations of the writing task in the test. However, the emphasis on being able to work across genres and pull together information from a range of sources is not included. Similarly the test, as it is currently constructed, can not consider issues of working across genres and contexts, nor can it look at students’ planning processes. Correctness at the level of spelling and punctuation seems appropriate in the text but the test does not examine the strategies students have for spelling.

Year 7 literacy

Table 6 shows the emphases for Reading and Viewing at Year 5 in the R-7 English Teaching Resource. Sample Outcomes that are examples of these emphases are listed alongside.
Table 1.2.1f: Emphases for Year 7 Reading and Viewing in the SACSA Framework

<table>
<thead>
<tr>
<th>SACSA Framework emphases</th>
<th>Example Outcome Statements</th>
</tr>
</thead>
</table>
| Emphasis on independent reading across a range of texts | reads fiction texts individually for enjoyment, personal taste, interest  
reads/views range of texts containing multiple social/cultural perspectives including fiction and non-fiction |
| Emphasis on critical evaluation and response | identifies and analyses with greater independence ideas, values and beliefs about abilities, gender, race and culture embedded in texts  
poses critical questions about popular beliefs and position of groups of people portrayed in texts |
| Emphasis on both correct use of genre textual elements and an understanding of their purpose | understands connections between composition and purpose of texts  
analyses features of texts and their role in communicating purpose |
| Emphasis on a strategic approach to remembering, using, evaluating and applying knowledge gained from reading and viewing | remembers content by: answering questions with interpretation; constructing a chronology; describing in detail a character or event  
understands content by: paraphrasing, analysing characters; visually recounting; comparing and contrasting two characters; explaining events; making a story map; formulating questions for discussion  
evaluates texts by: justifying or criticising character motives; creating a list of criteria for judging a text; selecting and debating major issues; comparing and contrasting character lifestyle with own; evaluating usefulness of text against its purpose |

As Table 1.2.1f shows, the SACSA assumes students in Year 7 are working at a mature level, able to read independently, widely and extensively. Key emphases compared to Year 5 are a multi-layered understanding of how texts work and their correct forms and the ability to create, use, remember and apply knowledge from those texts. There is also an increasing emphasis on being able to make critical judgements about texts in terms of how they represent different groups in society. The literacy test does tend to stay at the level of the Year 5 test in terms of the range and focus of its questions (although the difficulty of the texts used is raised in some cases). The test items seem appropriately levelled for the questions asked, but they barely touch on most of the emphases outlined here. Emphasis in the test remains on fairly literal interpretation and cannot/do not touch on issues of use, evaluation, application or remembering.

The Writing sections of the SACSA at Year 7 also assume sophisticated control of most elements of the writing process. Table 1.2.1g shows the emphases of the SACSA in Writing at Year 7 level.

Table 1.2.1g: Emphases for Year 7 Writing in the SACSA Framework

<table>
<thead>
<tr>
<th>SACSA Framework emphases</th>
<th>Example Outcome Statements</th>
</tr>
</thead>
</table>
| Emphasis on independent construction of texts over many genres and purposes | composes a range of texts incorporating text features (e.g. recount, narrative, procedure, report, exposition, explanation)  
explores how texts are altered to suit different audiences, including letters written for different audiences |
| Emphasis on wider contexts for writing up to a global level | writes increasingly to explore local or global issues/topics  
shows awareness of a wider range of perspectives at the community, state and regional level |
SACSA Framework emphasises | Example Outcome Statements
---|---
Emphasis on the ability to orchestrate a range of text and language features to produce complex texts in correct form | selects and uses a variety of sophisticated language elements and displays these by: sequencing events with greater detail; using chapters and subheadings; using paragraphing; including quotations/footnotes, acknowledgments; varying sentence beginnings; embedding specialist vocabulary; using synonyms/antonyms including suffixes and prefixes; language for effect (e.g. clichés, metaphor, simile) introducing items to support/add to text (e.g. graphical, idiom, palindrome) uses resources independently (e.g. computer spell check, rhyming dictionaries, thesaurus)

Emphasis on redrafting, publication | presents and publishes using methods to best suit the purpose including multimedia presentations to the wider community reflects upon and evaluates effectiveness of product through self and peer based evaluation and assessment

These emphases show writing expectations at or near adult level, and students taking responsibility to plan, construct and organise texts to meet many different needs. Also, the contexts and topics that students are expected to manage expand beyond local and personal concerns (elements of the Year 3 and 5 levels) to national and global issues. The writing task in the Year 7 literacy test reflects this to some extent by giving students a choice of issues to write on and asks them to apply this in a difficult genre—that of the persuasive article for a magazine. The other elements of writing tested in the ‘language’ section of the test, seem relatively simple when compared to the sophisticated forms detailed in the SACSA. As noted above in relation to the other levels, the test does not/cannot examine the ability of students to work across texts and genres in increasingly global contexts.

Summary: How the literacy tests relate to the SACSA
The tests do not examine the listening and speaking elements of the SACSA and touch on limited aspects of reading and viewing, and writing. Much of this is a result of the limitations of one-off pencil and paper tests which cannot consider outcomes that:
- students are seen to need ‘support’ to deliver at lower grade levels
- focus on performance over time
- focus on children having opinions or their own interpretations
- rely on interaction (e.g. discussion, seeking help)
- rely on behaviour during the act of reading (e.g. self correction, substitution)
- rely on working with non-print texts such as multimedia and web-based texts
- emphasise experimentation, learning from mistakes, planning, redrafting
- show students using information from contexts that are accessible to them to understand or construct texts
- focus on text selection and preferences

However, it is worth noting that there are outcomes which it could be imagined the test could have tested, but did not. For example:
• testing students’ critical literacy abilities – e.g. identification of stereotypes, consideration of positioning
• testing students’ abilities to work across a range of texts to make inferences and develop knowledge in the higher grade levels

In respect to the match of the tests to the difficulty of the SACSA Framework at each of the three year levels, our review indicates that the tests start too hard at Year 3 and probably move to too simple at Year 7. Once again this is caused by the limitations of the test design which are unable to consider issues of achievement ‘with support’ which is so important at Year 3, and, on the other hand, to track the complex, intertextual linking and cultural-critical work which is so emphasised at Year 7 level (although it should be said that many adults would have trouble exhibiting the literacy levels demanded by the SACSA at Year 7 level).

The LaN tests and Numeracy

1.3 The numeracy privileged in the LaN tests

This section analyses the aspects of numeracy being tested within the 2003 numeracy tests from two perspectives:
- concepts, thinking and working mathematically and skills
- mathematics described in the SACSA Framework

1.3.1 Concepts, thinking and working mathematically, and skills

The mathematics described in school curricula can be sorted in many ways. Mathematics curricula used in South Australian schools since 1989 have used a strand structure where the mathematics is sorted into content strands and process strands each of which incorporate working mathematically (Australian Education Council 1989). The mathematics described in curriculum documents can also be sorted into three groups:
1. mathematical concepts
2. ways of thinking and working mathematically
3. skills.

Table 1.3.1a summarises the focus of questions for each test with respect to concepts, thinking and working, and skills and shows that the tests focus on testing skills (See Appendix 3 for analysis of Year 3, 5 and 7 test items). The analysis of the mathematics to be discussed below shows that these skills are predominantly calculations.
Table 1.3.1a Mathematical focus of questions in numeracy tests

<table>
<thead>
<tr>
<th>Test</th>
<th>Total number of questions</th>
<th>Concept focus</th>
<th>Thinking and working focus</th>
<th>Skill focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 3</td>
<td>46</td>
<td>5 (11%)</td>
<td>7 (15%)</td>
<td>34 (74%)</td>
</tr>
<tr>
<td>Year 5</td>
<td>49</td>
<td>6 (12%)</td>
<td>14 (28%)</td>
<td>29 (58%)</td>
</tr>
<tr>
<td>Year 7</td>
<td>53</td>
<td>4 (8%)</td>
<td>16 (30%)</td>
<td>33 (62%)</td>
</tr>
</tbody>
</table>

The conceptual focus of the tests

While mathematical concepts underpin questions in the test, very few questions (approximately 10%) have a conceptual focus. Approximately 65% of questions across all three tests focus on skills. This suggests that the tests’ designers feel that if students are successful with the skills then the concepts are well constructed and highlights a tension between the test design and the learning principles that underpin the SACSA Framework. The SACSA Framework is built upon a constructivist paradigm where students in the primary years continually construct and refine their mathematical concepts. Simply testing skills will not identify students’ conceptual development. This also raises questions about the diagnostic claim of the tests.

An example of a question that has a conceptual focus is question 34 from the Year 3 test. Putting aside the issue about appropriate and meaningful context, this question focuses on a concept of a fraction. Similarly question 31 in the Year 7 test has a conceptual focus on equivalent fractions. These questions are quite different in nature to the majority of questions in the tests and provide some feedback about students’ conceptual understanding.

Question 32 from the Year 3 test is an example of a question that misses the mark from a conceptual viewpoint. The question simply asks ‘how many lines of symmetry does this rectangle have?’ Is it more significant to know where Year 3s believe the two lines of symmetry are positioned in the rectangle or that a rectangle has two lines of symmetry? This illustrates the difference between the focus of a question being on a concept or a focus on a fact or skill. Students could believe that the lines of symmetry are the diagonals and hence still choose the correct answer. Year 3s are still constructing concepts of line symmetry. They typically test for this attribute of two dimensional figures using a ‘fold test’ or a mirror. The test materials do not support these strategies. So what do students’ answers to this question actually tell us? (See PowerPoint: Example 5)

The thinking and working focus of the tests

The descriptions of numeracy in SACSA and the literature suggest that choosing and using mathematics is central to the notion of numeracy and that being able to think and work mathematically is a significant part of this (see views of numeracy in Section 3.1). Table 1.3.1b is a collation of verbs used by Mason and colleagues (1985), Steen (1990), Nancarrow and colleagues (1990), and Van deWalle (2004) to describe thinking and working mathematically. The underlined verbs indicate the aspects of thinking and working included
in the 25% of test questions with a focus on thinking and working. This suggests there is limited focus on thinking and working mathematically and this focus has a very narrow scope. The dominant aspect of thinking and working is visualising, either visualising two-dimensional representations of objects or visualising locations on maps. The only focus for predicting is showing the missing number in a number sequence.

Table 1.3.1b: Verbs used to describe thinking and working mathematically

<table>
<thead>
<tr>
<th>draw</th>
<th>compare</th>
<th>predict</th>
<th>abstract</th>
</tr>
</thead>
<tbody>
<tr>
<td>represent</td>
<td>identify</td>
<td>hypothesise</td>
<td>synthesise</td>
</tr>
<tr>
<td>describe</td>
<td>classify</td>
<td>generalise</td>
<td>visualise</td>
</tr>
<tr>
<td>communicate</td>
<td>apply</td>
<td></td>
<td>understand</td>
</tr>
<tr>
<td>model</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>explore</td>
<td>validate</td>
<td>question</td>
<td></td>
</tr>
<tr>
<td>investigate</td>
<td>prove</td>
<td>relate</td>
<td>critique</td>
</tr>
</tbody>
</table>

The skills focus of the tests

Approximately 65% of test questions have a skill focus. That is, the majority of questions focus on either:
- calculating, either by using algorithms or other methods;
- skills with reading mathematical forms such as reading values from tables or graphs;
- manipulative skills such as using or reading scales on measuring tools, or
- conventions, for example, the order of reading coordinates.

1.4 The numeracy test compared with the SACSA Framework

One of the claims of the numeracy tests made in the Administrative Guidelines is that students will be well prepared for the test if classroom programs reflected the SACSA Framework. The SACSA Framework describes the mathematics students learn in schools through five strands and through a description of working mathematically.

Each of the strands from the Mathematics Learning Area of the SACSA Framework uses key ideas to describe the scope of mathematics and includes not only the mathematics content but also ways of working mathematically. The following is an overview of the five strands and fourteen key ideas and the working mathematically from the SACSA Framework.

The strands and key ideas from the SACSA Framework

The mathematics described in the SACSA Framework is sorted into five strands each with at least two key ideas. Namely:
- Exploring, analysing and modelling data strand
  - 1st Key Idea (posing questions, collecting, organising, representing data)
  - 2nd Key Idea (interpreting data, drawing inferences)
  - 3rd Key Idea (working with random data)

- Measurement strand
  - 1st Key Idea (developing concepts of measurable attributes, measurement systems)
  - 2nd Key Idea (measurement strategies)

- Number strand
  - 1st Key Idea (developing concepts of number)
  - 2nd Key Idea (developing concepts of operations with number)
  - 3rd Key Idea (developing computational strategies)

- Pattern and algebraic reasoning strand
  - 1st Key Idea (developing concepts of patterns to describe, represent and communicate relationships)
  - 2nd Key Idea (formulate generalisations about patterns and relationships and use generalisations to make predictions and explore cause and effect)
  - 3rd Key Idea (construct and use mathematical models to describe, communicate, represent and explore patterns and relationships)

- Spatial sense and geometric reasoning strand
  - 1st Key Idea (developing concepts and understanding of shape and structure)
  - 2nd Key Idea (developing concepts of transformations)
  - 3rd Key Idea (developing concepts of locations, arrangements, representing and visualising spaces, figures and objects)

The questions from each test can be sorted under the five strands as a way of analysing the spread of mathematics embedded in the tests. Many questions require students to use mathematics from more than one strand. Many questions use data handling or measurement contexts to engage students with number. Given this, spread of mathematics embedded in the tests can be interpreted in two ways: Table 1.4.1a shows the spread of questions sorted under the five strands where questions with a dual focus are included in more than one strand; and Table 1.4.1b shows the spread of questions under the five strands where questions with a dual focus are only included once and only in the strand with the prime mathematical focus of the question.

For example, many questions in each test require students to read information from a graph or table and then undertake a calculation. These questions have been included in both the Exploring, Analysing and Modelling Data and the Number strands in table 1.4.1a but
included in the Number strand only in table 1.4.1b as the prime focus of these questions is calculation.

Table 1.4.1a: Distribution of test questions across the SACSA Framework strands where questions with a dual focus are included in more than one strand.

<table>
<thead>
<tr>
<th>Strand</th>
<th>Year 3 test</th>
<th>Year 5 test</th>
<th>Year 7 test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploring, analysing and modelling data</td>
<td>17%</td>
<td>20%</td>
<td>17%</td>
</tr>
<tr>
<td>Measurement</td>
<td>11%</td>
<td>14%</td>
<td>13%</td>
</tr>
<tr>
<td>Number</td>
<td>53%</td>
<td>39%</td>
<td>47%</td>
</tr>
<tr>
<td>Pattern and Algebraic Reasoning</td>
<td>2%</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>Spatial Sense and Geometric Reasoning</td>
<td>17%</td>
<td>23%</td>
<td>19%</td>
</tr>
</tbody>
</table>

Table 1.4.1b: Distribution of test questions across the SACSA Framework strands where questions with a dual focus are only included in the strand that is the prime focus of the question.

<table>
<thead>
<tr>
<th>Strand</th>
<th>Year 3 test</th>
<th>Year 5 test</th>
<th>Year 7 test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploring, analysing and modelling data</td>
<td>6.5%</td>
<td>6.5%</td>
<td>10%</td>
</tr>
<tr>
<td>Measurement</td>
<td>9.0%</td>
<td>14.5%</td>
<td>11%</td>
</tr>
<tr>
<td>Number</td>
<td>64.5%</td>
<td>43%</td>
<td>49.5%</td>
</tr>
<tr>
<td>Pattern and Algebraic Reasoning</td>
<td>2%</td>
<td>6.5%</td>
<td>6%</td>
</tr>
<tr>
<td>Spatial Sense and Geometric Reasoning</td>
<td>18%</td>
<td>29.5%</td>
<td>23.5%</td>
</tr>
</tbody>
</table>

Tables 1.4.1a and 1.4.1b both show that particular strands are privileged by the mathematical focus of the test questions, that is the:

- number strand is the focus for between 43% and 64.5% of the test questions;
- spatial sense and geometric reasoning strand is the focus for between 18% and 29.5% of questions;
- pattern and algebraic reasoning strand is rarely a focus of questions, between 2% and 6.5%, and
- measurement and exploring, analysing and modelling data strands are mainly used as a context for calculations rather than focussing on the mathematics of measuring and data handling. Approximately 21% of questions use data handling alone, or data handling as the context for calculating.

If the mathematics for each test question is sorted into the fourteen key ideas that make up the five strands the spread of mathematics privileged by the tests is more marked than shown above. Depending on the test, only mathematics from nine or ten of the fourteen strands is included in the tests with a significant imbalance across the key ideas. This is described in more depth in appendix 3, but in particular:

- over 85% of the questions involving the Number strand focus on the 3rd key idea (calculation) and only 15% focus on the 1st key idea (number concepts) with no questions exploring the 2nd key idea from this strand.
the majority of questions from the Spatial Sense and Geometric Reasoning strand focus on representations of space and shape through map work or visualising 3D objects from 2D representations (aspects of the 3rd key idea). The focus of the handful of questions about shape and structure (1st key idea) is on parallelism and line symmetry. The only two transformations (2nd key idea) considered are rotations and enlargements, with the latter more from a measurement focus than a spatial focus.

questions that involve Exploring, Analysing and Modelling Data strand only engage students with reading data (1st key idea). The issue of spread of data, ‘middleness,’ shape of the data, relationships (2nd key idea) is rarely a focus. Random data (3rd key idea) is dealt with minimally and in meaningless contexts (random withdrawal of pencils from a pencil case without looking)

questions with a focus on the Measurement strand, those that focus on the mathematics of measurement and not a calculation, usually focus on a measuring tool, i.e. picture of a clock face or converting units. The distribution across the measurable attributes of distance, surface, contained space, occupied space, turn, durations and cycles of events and amount of matter is poor (1st key idea). Typically students’ understanding of measurement through the primary years focuses on constructing concepts of these measurable attributes and developing direct measurement strategies and the beginnings of indirect measurement strategies (2nd key idea). Measurement in the primary years is more than calculating with numbers that have L or kg or m after them.

the few questions with a focus on the Pattern and Algebraic Reasoning strand are nothing more than filling in the missing number (1st key idea). Steen (1989) and other mathematicians describe mathematics as the science of pattern and this is acknowledged in both past and current curriculum frameworks. Mathematics educators see pattern as one of building blocks of mathematics in school curricula. The mathematics of this strand, e.g. constructing, continuing, describing, representing and generating pattern (1st key idea) is ignored as is using pattern to predict more than the missing number, make generalisations and explore relationships (2nd and 3rd key ideas).

Working mathematically
The SACSA also describes five ways of working mathematically that are woven through the key ideas and scope of each strand, namely:

- **problem-solving**, where learners:
  - build new mathematical knowledge through engaging with situations and working with problems
  - develop dispositions to formulate, represent, abstract and generalise in situations within and outside mathematics
  - apply a wide variety of strategies to engage with situations and solve problems, and adapt these strategies to new situations
  - reflect on and monitor their mathematical thinking in solving problems
- **reasoning and proof**, where learners:
  - recognise that reasoning and proof are essential and powerful parts of mathematics
  - make and investigate mathematical conjectures
  - develop and evaluate mathematical arguments and proofs
  - select and use inductive and deductive reasoning, and methods of proof, as appropriate

- **communication**, where learners:
  - organise and consolidate their mathematical thinking to communicate to others
  - express mathematical ideas coherently and clearly to peers, teachers and others
  - extend their mathematical knowledge by considering the thinking and strategies of others
  - use the language of mathematics as a precise means of mathematical expression

- **connections**, where learners:
  - recognise and use connections between different mathematical ideas
  - understand how mathematical ideas build upon one another to produce a coherent whole
  - recognise, use and learn about mathematics in contexts outside of mathematics

- **representation**, where learners:
  - create and use representations to organise, record and communicate mathematical ideas
  - develop a repertoire of mathematical representations that can be used purposefully, flexibly and appropriately
  - use representations to model and interpret physical, social and mathematical phenomena.

When describing questions that test aspects of working mathematically, the tests have some focus on aspects of:

- **problem solving**, where students apply a wide variety of strategies to engage with situations and solve problems, and adapt these strategies to new situations.

- **connections**, where students recognise, use and learn about mathematics in contexts outside of mathematics.

- **representations**, this is only when using the visual and graphic representations provided in the tests.

In reality, the questions that involve problem solving strategies are no more than mathematical skills such as calculating and map reading. There are very few questions that
foreground problem solving strategies or give students the opportunity to demonstrate their spatial sense, number sense, pattern sense or data sense.

Similarly, the test’s attempt to contextualise mathematics is problematic for all students as it makes assumptions that all students have had similar experiences such as going on holidays where they have access to the information, measuring the lengths of flower stems and snail paths, and graphing personal collections such as Will’s stones.

Summary

- The focus is predominantly (between 58% and 74%) on skills with little focus on students’ concepts.
- While each of the five strands used to describe the mathematics students engage with in the SACSA Framework are a focus for test questions, the majority of questions in each test focus on the number strand, in particular calculations, followed by map work from the spatial sense and geometric reasoning strand.
- Only nine of the fourteen key ideas used to describe the mathematics students engage with in the SACSA Framework are a focus for test questions, again showing calculation is privileged far more than any other aspect of mathematics.
- Data handling is reduced to reading information, often leading to a calculation. Other aspects of mathematics from this strand are not addressed.
- The important strand of pattern and algebraic reasoning is not included in the test.
- There is a marked inconsistency between the five strands used to organise and describe the mathematics students engage with in the SACSA Framework and the three strands used to report students’ numeracy. This implies that teachers and parents / caregivers can use both the SACSA Framework organisers and those of the test to make sense of the student reports with consistency and identify which aspects of the mathematics curriculum are done well and need addressing.
- Thinking and working mathematically has a limited focus in the test.

1.4.1 Teaching the SACSA as preparation for the numeracy test

One of the claims of the test is that students will be well prepared for the test if classroom programs reflected the SACSA Framework. The analysis above suggests to teachers preparing their students for the tests that:

- the Number strand and to a lesser extent the Spatial Sense and Geometric Reasoning strand are privileged above the other three strands;
- of the Number strand, the 3rd key idea about calculating is privileged far more than the other two key ideas;
- of the Spatial Sense and Geometric Reasoning strand, the 3rd key idea about visualising and mapping is privileged far more than the other two key ideas;
- the Measurement and Exploring, Analysing and Modelling Data strands act only as contexts for calculating;
- the Measurement, Exploring, Analysing and Modelling Data and the Pattern and Algebraic Reasoning strands are of little importance, and
- thinking and working mathematically which is central to many descriptions of numeracy is not tested.

These six points raise a number of centres of conflict for teachers who plan a balanced mathematics program for their students and also wish to prepare their students for the tests. Curriculum documents produced by the Australian Education Council (1989), National Council of Teachers of Mathematics (2000) and Department of Education, Training and Employment (DETE 2001) strongly suggest that:
- the mathematics of data handling is becoming more and more important when choosing and using mathematics and this strand is poorly represented and valued in the test.
- pattern is the basis to mathematics and, hence, numeracy and this strand is poorly represented and valued in the test.
- students conceptual development and understanding are crucial and yet the test focuses on skills. The dominance of the 3rd key idea of the Number strand that pervades the tests is one aspect that suggests quite strongly a focus on skills.
- thinking and working mathematically is central to many views about being numerate but is not valued in this test.

We therefore argue that it cannot be claimed that teaching the SACSA Framework is the best possible preparation for the test. Clearly skewing the curriculum towards the emphases described here would result in students doing much better on the tests, of course with negative consequences for their overall numeracy learning.

1.5 The diagnostic function of the literacy tests

In the introduction to this report we noted that, to be diagnostic, the tests needed to provide a guide for teachers about the achievements and difficulties students face and an indication of how these might be addressed. Given this, the ability of the tests to be ‘diagnostic’ is based on three interlocking factors:
1. how well the tests relate to what the curriculum requires (the tests should provide an opportunity for students to display the skills and knowledge that are required by the curriculum)
2. how well the tests assess what has been taught (students can’t be expected to know what hasn’t been included in the curriculum)
3. how informative the tests are about the specific problems students are experiencing or the strengths they can build on (if the teacher doesn’t know what causes the problem it is hard to remediate)
How well the tests relate to what the curriculum requires

This issue has already been addressed in part in section 1.2 where we noted that the tests only relate to a narrow range of the full SACSA Framework. In other words, success or failure on this test does not provide a useful guide alone, to student literacy learning overall. This means that there is potential for students who are seen to be doing well on this test who may not be doing well overall in literacy, as well as there being students who perform weakly on the test but who may be doing much better in other parts of the literacy curriculum. Specifically, this test focuses on mainly operational aspects of literacy, and on particular skills such as the ability to answer comprehension, spelling and punctuation questions. The test provides little diagnostic information on children’s abilities in the use and application of literacy, nor on their abilities to critically evaluate.

How well the tests assess what has been taught

In large part, we found that what is included can also be found in the SACSA Framework (albeit representing only a small proportion of the whole). In other words, the tests do not test knowledge and skills that lie outside the curriculum. However there are two major problems with the tests in regard to matching what has been taught.

First, because it represents only a selection from the available curriculum, it is to some extent a matter of luck for students if that aspect of the curriculum has been taught at around the half-way point of the school year. Thus teachers may well plan to teach the full range of written genres to students, but plan ‘persuasive’ writing in Term 4. Students who are called upon to do this before it is taught may appear to be having problems where in fact it is because the skill or knowledge has not been covered. Similarly, we can imagine that students who studied ‘persuasive’ writing in the weeks before the test would be advantaged.

Second, while the tests relate to the overall SACSA Framework we found, particularly for the Year 3 test, that much of the test was aimed at a level more difficult than that indicated for the Year by the SACSA document reviewed. In other words, the Year 3 test was not a particularly good diagnostic tool because teachers would have been teaching simpler skills and knowledge than the test featured. The issue of level is exacerbated when it is clear that the LaN test is also attempting to provide a normed distribution of students across ability which means that it must include items of higher difficulty than required by the Year 3 curriculum. In other words, students who are achieving at Year 3 level will still have items that they will fail at. There is no indication in any of the reports for teachers or parents which items are in this high range (except by indication of the percentage who fail each item) making it hard to claim the test as diagnosing student performance on the curriculum they have been taught.
How informative the tests are about the problems students are experiencing or the strengths they can build on

This was something the tests do have the potential to provide to teachers whilst remembering that the tests can only give information about a narrow range of problems. However, as will be discussed in Section 2, many test items could not be used in this way as it could not easily be determined why students had failed to answer these items correctly. Thus failure at an item gave no diagnostic information in a teaching sense. Importantly, because the tests focus on right/wrong answers and take no account of how well students can work with support, it is very difficult to determine what aspects of the task students can do, or how close they are to being successful.

Summary

So, can the literacy tests be said to be ‘diagnostic’? We regard this as overclaiming. Only in the most limited sense can a ‘diagnosis’ be claimed — at best, from this test it might be said that the student is having some (difficult to specify) problems that relate to only a limited part of the overall curriculum with (almost no) indication of the learning strengths upon which subsequent teaching might be based. Thus the tests are not a good diagnostic tool in relation to individual student performance and only a limited tool in relation to whole class or school performance. Patterns of poor or good performance may simply be a reflection of the way in which the test did or did not fit into the curriculum cycle of the class or the school.

1.6 The diagnostic function of the numeracy tests

1.6.1 Difficulties determining why students might have failed items

The claims for the tests being diagnostic are difficult to support for each of the three numeracy tests. Almost one third of the questions from the general numeracy tasks section of the tests focuses either on more than one aspect of mathematics or involves a two or three step process. Specifically this is the case for:

- 10 out of 36 questions, approximately 28%, in the general numeracy tasks section of the Year 3 test:
- 13 of the 38 questions, approximately 34%, in the general numeracy tasks section of the Year 5 test, and
- 14 out of 43 questions, approximately 32%, in the general numeracy tasks section of the Year 7 test

Given this, if a student answers a question that involves two aspects of mathematics or two or more steps incorrectly how can the student’s misconception or error be diagnosed?
Some examples of questions that make it difficult to support the claim of being diagnostic for the Year 3 test include:

- question 21 requires students to visualise the 2D representation of prism made from ‘blocks’ and then ‘count’ or ‘calculate’ the ‘blocks’ needed to complete the prism. How do teachers interpret which aspect of mathematics, visualising or counting is done poorly if the student gives the incorrect answer?
- questions 6, 7, 8, 30 and 31 require students to read data from a graph or table and perform a calculation. Again if a student answers any or, in fact, all of these questions incorrectly does the teacher interpret these errors as reading and interpreting data or difficulties in calculating?
- questions 13 and 14 require students measure a distance with a measuring tool and then calculate a distance that is twice the length or $\frac{3}{4}$ the length respectively. How do teachers interpret which aspect of mathematics, i.e. measuring, calculating or understanding the term ‘twice’ or the fraction $\frac{3}{4}$, is done poorly if the student gives the incorrect answer?

Some examples of questions that make it difficult to support the claim of being diagnostic for the Year 5 test include:

- question 4 requires students to visualise the 2D representation of a solid bench seat made from cubes and then ‘count’ or ‘calculate’ the cubes. How do teachers interpret which aspect of mathematics is done poorly if the student gives the incorrect answer?
- questions 10, 11, 17, 18 and 19 require students to read data from a graph or table and perform a calculation. Again if a student answers any, or in fact all of these questions incorrectly, does the teacher interpret these errors as reading and interpreting data, or difficulties in calculating?
- question 34 requires students to identify a fraction and then represent it as a percentage.
- Question 35 requires students to undertake three calculations. If a student answers this question incorrectly does the teacher interpret the error as not understanding the term ‘per’, not being able to multiply by 10, not being able to add up two amounts?
- question 38 requires students to identify that 1/4 of the money spent was for milk from a pie chart and then calculate 1/4 of $3. If a student answers this question incorrectly does the teacher interpret the error as reading and interpreting a pie chart or difficulties in calculating?

Some examples of questions that make it difficult to support the claim of being diagnostic for the Year 7 test include:

- question 40 requires students to use their understanding of seconds in a minute and (speed) rates and then multiply three numbers. How do teachers interpret which aspect of mathematics is done poorly if the student gives the incorrect answer?
- question 43 requires students to use their understanding of proportion and calculate a quantity. Again if a student answers incorrectly does the teacher interpret these errors with proportion or with calculating?
question 36 requires students to calculate an amount using a rate and then convert units. If a student answers incorrectly does the teacher interpret these errors with working with rates or with calculating?

1.6.2 How well the tests assess what has been taught

As described earlier, the tests have a narrow focus of the mathematics described in the SACSA Framework. This challenges the notion that the tests are diagnostic from two points of view.

Firstly, they privilege two particular key ideas of the fourteen described in the SACSA Framework, namely, calculating and spatial arrangements and representations. The tests can only provide a narrow perspective of student ability with the mathematics described in the SACSA Framework.

Secondly, the smaller number of questions that focus on mathematics presented in the remaining twelve key ideas cannot provide much valid feedback about students’ abilities with these aspects of mathematics. For example, with the first key idea from the Spatial Sense and Geometric Reasoning strand, the key properties of shape and structure focused upon across the three 2003 tests are symmetry, parallelism and right angles. This is a very small sample of spatial properties students should engage with. The chance that students have engaged with a particular property by the time of the test is variable. This does not mean that students have not engaged with these properties by the end of Year 3, 5 or 7 but may not have at the time of the test. For many students it is quite possible that the test is testing something that is yet to be taught but will be by the time of the school year. The same can be said for aspects of the other strands and key ideas poorly represented in the test.

1.6.3 Summary

Given these two points, the claim that the numeracy tests are diagnostic is problematic. At best, ‘diagnosis’ can be claimed for approximately 68.5% of the test questions; that is, those with focus on a single aspect of mathematics. This statement assumes that students have actually engaged with these aspects of mathematics at the time of the test and disregards issues about the structure of questions and test design described in Section 2 that we believe impact significantly on providing students with opportunities to demonstrate what they truly know and understand.

1.7 The test reports

The team had access to samples of anonymous Year 7 reports only from the 2003 tests. The materials included a dummy set of reports for Year 7 for a fictitious school which had 76 Year 7 students. The materials consisted of:
1. School summary report
2. Confidential principal report
3. Tables of results for all Year 7 students including:
   a. Means and standard deviations for various school groups
   b. Student results (by strand)
   c. Percentages (of students) in skill bands
   d. Literacy question details
   e. Numeracy question details
   f. Student progress between Year 5 and 7
4. Sample individual student reports

Many of the comments that could be made about the tests relate to those already made about diagnosis. These are summarised in what follows with some additional comment on the reports.

1.7.1 The tests do provide a limited indication of students about whom schools, parents and teachers should be concerned.

The reports to the principal will indicate the percentage and identity of students not achieving the national benchmark which, given the relatively low level of the benchmarks compared to the curriculum, should cause concern to the school.

1.7.2 The reports are confusing because of the lack of consistency between the curriculum strands and the way mathematics is sorted in the tests

The student reports distributed to schools and parents / care givers uses three strands to describe students’ numeracy, namely Number Sense, Measurement Sense, and Spatial Sense. This is not reflective of the content strands used to describe the mathematics in the SACSA Framework. Data handling and measurement are combined under the heading of Measurement Sense and pattern is not addressed at all in the test reports. Some of the questions grouped in the Spatial Sense strand are actually measurement items, e.g. question 29 from the Year 7 test, calculates area of rectangle, an indirect measurement strategy.

In the literacy report there is inconsistency of headings between sections. The strands are Reading, Writing and Spelling when showing band achievement, but Reading ‘Spelling and Language’ and Writing in the display of individual student responses. Neither of these divisions matches exactly with the strands of the SACSA Framework.
1.7.3 There is little indication that the tests assess only limited aspects of the curriculum

The only indication that the tests are only partially related to the curriculum is the title ‘aspects of’ literacy and numeracy given in the heading. We are not sure that parents will realise from this that the test is not the final word on their child’s performance. It could be said that there is more explanation of the limits and possible side-effects contained in a small packet of medicine than there is provided for this test.

1.7.4 The reports provide parents too much detail with too little explanation

The reports show Band level information but there is no explanation as to what the band means and how that relates to the child’s year level in school. Some parents may assume that the band is a year level. Overall the relation of the information to the curriculum is not explained.

The test lists each item on the test with a brief description of the aspect of literacy being tested. There is no indication of how these relate to the curriculum, why they might be important or what the pattern of correct and incorrect answers might mean.
Section 2  
Test design

In this section we outline some of the demands children encounter when undertaking the LaN tests. In other words the design of the tests and items within the test presents students with particular challenges in their own right. (See Appendix 4 for an analysis of poor test items in the numeracy tests.) These include:

1. Manoeuvring between two sources
2. Test items with multiple components
3. Test items which call for speculation or clever guess work
4. Test items which depend on prior cultural knowledge
5. Test items which depend on competency with a meta-language
6. Poor quality texts included in the magazine
7. Use of context in the numeracy test
8. Numeracy is linked with the ability to read and comprehend text

In light of these design issues, the section concludes with a generic description of ‘good’ test items with some examples identified from the 2003 LaN tests.

2.1 Manoeuvring between two sources

The design of these tests, like their counterparts nationally, requires that children can move between a test booklet and the reference material required to answer the questions. While this technology is now very popular with test designers, it does present a number of problems for children who may be very inexperienced with such tasks. Cross-referencing is a skill in its own right.

Moving between the test booklet and the source material is further complicated when a set of questions refers to a different text part-way through a page. The point here is that the first test is really about whether the children can read and follow the instructions. For example in the Year 3 Test of Reading, Question 12 on page 6 near the bottom of the page refers to Tricky Putty, whereas the rest of the questions on this page refer to Spaghetti! Spaghetti! This design feature is repeated throughout the Year 3 test and in the Year 5 and Year 7 tests. Children who have more experience with undertaking similar texts and assignments will clearly be in a better position to handle this design feature.
A clearer instruction to turn to a new text would be helpful. For example: ‘Now you need to read a different text. Turn to Tricky Putty on page 7 of the magazine. Questions 12-15 are about Tricky Putty’.

The problem of manoeuvring between two texts is exacerbated when part-way through the extended task in numeracy students no longer actually need to refer to the magazine. For example, the instructions at the beginning of the Year 3 extended task say, ‘Use The Holiday on page 4 of THE GREAT OUTDOORS to complete Part A to Part E.’ Parts C and D cannot be completed if this instruction is followed. Similarly, Part F and Part E of the Year 5 and Year 7 extended tasks respectively cannot be completed if the corresponding instruction for each test is followed.

If the magazine + text booklet testing technology is to be maintained then the design of sections of the test within that needs to be made more reader-friendly, so that students do not become confused before they actually get to the test items themselves. The issue here is that performance on the literacy and numeracy tests may be contingent upon familiarity with forms of ‘test literacy’. The tests could be better designed with careful attention to these distracting elements.

2.2 Test items with multiple components

Given that the LaN tests claim to provide diagnostic information it is imperative that each item is testing only one operation, otherwise the answer provided does not convey what the student knew or did not know, could or could not do. In a task with multiple components we cannot tell at which point that a child went wrong. Such problems occur in both the literacy and numeracy tests in a variety of ways.

In some cases new information is introduced in the question itself. For example Item 20 in the Year 5 Reading test is phrased in the following way:

<table>
<thead>
<tr>
<th>The second half of the text implies that Tricia Oktober has:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Worked with a highly respected illustrator</td>
</tr>
<tr>
<td>• Lived in the tropical north of Australia</td>
</tr>
<tr>
<td>• Only written about Australian animals</td>
</tr>
<tr>
<td>• Successfully written similar books</td>
</tr>
</tbody>
</table>

There are at least two problems to be solved before students get to the actual task itself. Firstly, what is being referred to in ‘the second half of the text’? Secondly, do students understand the word ‘implies’? The issue here is that there are multiple operations and knowledges required before the actual comprehension task itself can be undertaken. If the child answers this question incorrectly it could be that they are not clear what or where ‘the
second part of the text’ is, what ‘implies’ means, or that they cannot comprehend the text from the magazine.

A similar example occurs in Question 19 in the Year 7 Literacy Test. Here the question reads:

| In the second paragraph, the phrase that very quality is referring to: |
|--------------------------|-----------------|
| tour operators           |
| tourist facilities       |
| a huge expanse of ice    |
| the untouched wilderness  |

On this occasion students must understand the meaning of ‘second paragraph’, ‘phrase’ and ‘referring to’ in order to answer this question correctly. While it might be argued that this is a reasonable expectation, the point here is that there are three pieces of prior information, indeed part of the vocabulary of grammar, which must be understood in order to answer the question. A more direct way of asking this question might have been:

| ‘That very quality’ refers to: |
|------------------------|-----------------|
| tour operators         |
| tourist facilities     |
| a huge expanse of ice  |
| the untouched wilderness|

While the test designers may have been trying to provide helpful information to assist students to locate the information, it results in the question being cluttered and it introduces distracting elements to the item. Ultimately, if students get this item wrong we are no wiser at which point in reading and/or answering the question the problem occurred. Could the student not find the text? Did the students not understand the term ‘referring to’ or were they simply unable to comprehend the text itself.

Similarly 31.5% of questions across the three numeracy tests have multiple components as referred to in section 1.6. For example, question 40 from the Year 7 test requires students to use their understanding of seconds in a minute and rates (speed) and then multiply three numbers. How do teachers interpret which aspect of mathematics is done poorly if the student gives the incorrect answer? This question is described as: ‘solve a problem involving time and speed (metres per second)’ in the Individual Student Report. This is quite ambiguous. What does the term ‘solve problem’ mean? The dual question focus of student understanding of speed and student ability to calculate is ‘side stepped’ with this description. Some of the descriptions of question foci in the Year 7 Individual Student Report include the dual focus. For example, question 42 is described as, ‘Interpret information from a bar graph to solve a percentage problem.’ If a student answers this question incorrectly how is this interpreted to make a diagnosis? Do teachers assume student inability to interpret information, which in this case means read a graph, to calculate, or lack of
understanding about percentage. Questions 25, 36, 40 and 42 are described as having dual foci in the Individual Student Report.

The following questions present quite general and ambiguous descriptions of foci. For example:

- Question A2-1, ‘Identify appropriate strategy to calculate due date of payment.’ What does appropriate strategy mean?
- Question A1-1, Locate data and identify appropriate strategy to calculate lapsed time.’ What does appropriate strategy mean?
- Question H1-1, ‘Identify data sources or mathematical strategy.’ What does this mean?
- Question F1-1, ‘Identify appropriate strategy to convert a distance scale.’ What does appropriate strategy mean?
- Questions 18 and 19, are both described as ‘Calculate the probability of an event.’ The two probabilities are arrived at differently. How does this description help teachers?

In general how are these descriptions to be interpreted and acted upon by teachers to make a diagnosis?

2.3 Test items which call for speculation or clever guesswork

A number of questions across the literacy tests call for speculation about authorial and illustrator intentions. For example students may be asked to decide why a particular illustration has been included (e.g. Question 30, Year 3 Test of Reading). This information is not included in the reference material and the question does not call for visual analysis and interpretation, but speculation or guess-work. This is made even more problematic given that the test designers insist there is only one correct answer. If the child correctly answers such a question (in terms of the test) it is not clear what this tells teachers.

Question 36 in the Year 3 Reading test also calls for speculation in asking children to select the purpose of a web-site. Of course web-sites are texts which typically have multiple purposes. At least two different choices of answers appear equally salient and defensible here. While the test designers may intend these questions to promote critical thinking about texts’ purposes their insistence on one correct answer when this is clearly a matter of opinion and /or guesswork is a problem. In this case the assertion that a web-site would have a single purpose is incorrect and is at odds with current theories of literacy and reading.

2.4 Test items which depend on prior knowledge or specific cultural knowledge

Children’s performance on tests are frequently contingent upon their existing general knowledge base. For example answering Question 12 correctly in the Year 3 test of Reading...
depends on being familiar with consumerist culture, in particular with the phrase ‘Collect them all’. Answering Question 14 correctly in the Year 3 test of Reading depends on knowing what a ‘company logo’ is. Answering Question 16 correctly in the Year 3 test of Reading depends on knowing about the ‘senses’. None of this information is provided in the source material. In these cases, children not only have to be able to read the source material they also need to already know about consumer culture, company logos or that sight, taste, touch and hearing are ‘senses’.

Clearly these knowledges are not equally distributed throughout the population. Test design needs to ensure that taken-for-granted items of knowledge do not prevent students displaying their competence with particular aspects of literacy and numeracy. The issue here is to design the test item in such a way that answering correctly is not contingent on access to privileged knowledges which are not part of the school curriculum at this level.

There are other ways in which cultural or prior knowledges impact on students’ possible interpretation and performance on the test. For instance in the extended writing tasks, the level of students’ resources for writing will vary with respect to their knowledge of the assigned subject and genre. Students are positioned quite differently by the same task. When there is little or no choice the importance of the topic and genre become even more significant.

For example, in 2003 the writing task at Year 3 was described in several paragraphs and involves a number of steps. The set task in summary (and written in bold in amongst other instructions) is:

...To write a letter to your friend to convince them to join your team.

The task incorporates two key elements – the letter form and the need to persuade. Added to this students must persuade an imagined ‘shy friend’ to join a local sports team. A full deconstruction of the multiple problematic elements of this task is too lengthy to include here. However we raise just a few matters that relate to what the task requires and assumes. To successfully complete this task the ideal student knows about:

- being shy (culturally may have very different meanings)
- joining a local sports team (not an option in some areas and may not be part of the knowledge of many 8 year olds)
- pretending to engage in a simulated literacy practice (a letter to an imaginary friend with a problem)
Hence before the literacy demands of this task can be considered there is first the question of how different students might be positioned by this task. It is extremely difficult to write a persuasive letter about a topic where one has little prior knowledge and perhaps no experience. Hence this writing task can be seen as extremely difficult and problematic in that students may very well have vastly different cultural knowledges to bring to bear in this literacy task.

While this task may have been designed with the best of intentions to support young writers through the inclusion of set supposedly authentic parameters within which children can operate, it actually means that many children would have very restricted resources with which to approach the writing.

It is interesting to compare this with the writing task for Year 7 which invites students:

...To present your point of view on any issue that interests you or concerns you by writing an article for the ‘Youth Speaks’ feature.

Here students are given a good range of example issues/questions as a guide, or, from which to choose, but they are also able to select their own issue. This more open-ended task allows students to write persuasively about an area where they have some knowledge or investment, rather than an oddly concocted unconvincing imaginary scenario. Our point here is that different tasks position different students as having more or less knowledge to apply to the set problem. Where there is more choice of options students have a better chance of making good use of their varying knowledge bases as resources for writing.

### 2.5 Test items which depend on competency with a meta-language

Many of the items test familiarity with a meta-language about texts and tasks, rather than an understanding of the texts themselves, or an ability to undertake the tasks. Items in this category include:

- Question 17 Year 3 literacy test – this text would be found in
- Question 17 Year 5 literacy test – This text is commonly known as a…
- Question 2 Year 7 literacy test – What type of poem is Fireworks?
- Question 5 Year 7 literacy test – Which of the following is a metaphor?
- Question 15 Year 7 literacy test – Which of these lines contain a simile?

If students answer these questions correctly we know that they are familiar with the label for the text-types and or/ features of language, but we know little about their understandings of the material.
2.6 Poor quality texts included in the magazine

One of the issues in any tests which use source materials is the quality of the texts themselves. While the magazine genre is problematic (given that these materials barely resemble magazines at all) the test designers have clearly taken seriously SACSA’s emphasis on different genres of texts and have included a wide variety which is a good feature and likely to be motivating and engaging at least at first glance.

However the quality of the magazine (in terms of layout, size of print, readability) as well as the quality of the selected texts within the magazine varies considerably in terms of its likely interest value, factual correctness, and levels of colloquialism, to name but a few areas. The source materials need to be carefully selected and carefully arranged.

If we compare just the first pages of the Year 3 and Year 7 magazines for instance we can see that the size of the print is much smaller in the Year 3 magazine than the Year 7. The Year 3 front page feature text is entitled ‘Hairy Eggheads’ (a totally unfamiliar phrase and indeed we suspect an unfamiliar concept to many students!). The Year 7 front page text is entitled ‘Fireworks’ and includes a poem in large print. These differences are not inconsequential. Test designers need to ensure that other elements of difficulty are not unwittingly added through poor text selection and layout. In attempting to find texts which might pique students’ interests they may unwittingly create confusion and extra stumbling blocks.

Other issues of concern include inaccuracies in the course material (e.g. about spiders and insects, countries and places) and texts which take for granted particular dialects or cultural heritage (pride and joy) or assume certain out-of-school experiences (e.g. buying and collecting sets of items designed for children – Collect them all).

2.7 The use of contexts within the tests

Surely the aim of the numeracy tests is to be inclusive of all students. If numeracy involves ‘the ability and confidence to choose and use mathematics to undertake meaningful tasks,’ (Chartres 2002) then the numeracy tests miss the mark. The contexts employed in the tests can be placed into three groups, namely contexts that:

- employ token names for people or families used to contextualise the mathematics;
- exclude groups of students because of the assumptions made about life experiences, and
- are inappropriate or simply confuse the mathematics being tested.
Employing token names

The view that being culturally inclusive of students in a test means including random names from a variety of cultures or ethnic groups is problematic and has been for over a decade. At one level the practice is little more than tokenism and at a different level is a distracter for many students undertaking the test. How many eight to thirteen year olds have the breadth of experience with a culturally broad range of people to consistently recognise a new word as a person’s name? While the humorous side to the naming with the inclusion of the Wanganeen family and Kathy and Kym may be appreciated by adults the inclusion of names is a distracter. (See PowerPoint: Example 6.) If names are seen to be so important to contextualise questions why aren’t names used in every question? A far better practice is that adopted in some questions where the term ‘a class’ or ‘student’ is used. This structure could be broadened to use terms such as a child, a person, a student, or a family.

Exclusive contexts

Some of the contexts used in the texts make assumptions about the experiences students bring with them. In particular those that use the theme of a holiday as in the Year 5 and 7 tests. A significant proportion of students who engage with the tests do not go on holidays nor are in a position to participate in planning such trips. Similarly the reference to a ‘Maths Whizz’ in the Year 5 test without explaining it is a bingo like game excludes students who have not had such experiences. How advantaged are students who have had these experiences when engaging with the tests?

Inappropriate contexts

Finally, some contexts are simply inappropriate or confuse test questions. The pencil case context to test chance in Year 5 and Year 7 test is simply inappropriate. How many people actually randomly choose a coloured pencil from a pencil case without looking? (See PowerPoint: Example 7) The term ‘choosing and using mathematics in meaningful contexts’ is certainly absent here. The same can be said for many other questions, e.g. in the:

- Year 3 test, children count and tally trees on the way to school
- Year 3 test, who graphs their stone collection and the having the pictures of the buckets of stones is also a distractor
- Year 3 test, the context for measuring distances is so clear in ‘In The Garden’ that black marks have to be included to show from where to measure. The marks themselves are not explained. Is the context appropriate if the marks are needed? Those students who have explored and looked at flowers would know that the stem is not attached to lower most petals of flowers. Their experiences are at odds with what they are asked to measure. (See PowerPoint: Example 2)
- Year 7 test, students are involved in mining, particularly when the sign in the question’s graphic says ‘mining keep out?’
- Year 7 test, costing plumbing and the cost of rain water is a meaningful context?
If numeracy involves choosing and using mathematics in meaningful contexts then the contexts employed in the test need to be examined more critically and reflect the experiences of the students being tested and not use token names to give a feel of cultural inclusivity, nor use contexts that exclude students, nor use contexts that are not real or confuse what is being tested.

2.8 Numeracy is linked with the ability to read and comprehend text

All the questions in the tests are text based and require the student to read and comprehend the question before engaging with it. Simply asking a teacher to read the question as stated on the top of each test question will not resolve the issue of comprehension for students. From this perspective the test advantages the students who are better readers. Does the test assess reading and comprehension or ‘numeracy’? This is compounded when many questions require more reading than is necessary to undertake the mathematical task. It is often the attempt to ‘contextualise’ the question that adds considerably to reading. A few examples include:

- question 1, Year 3, need to read, ‘there were 56 children on the school bus. At the next stop, 24 children got off. How many children were left on the bus?’ to undertake ‘What is 24 less than 56?’
- question 7, Year 3, need to read, ‘altogether, what is the total number of stones in bucket 1 and bucket 2?’ Do the terms altogether and total mean the same, if so why both terms?
- question 10, Year 3, need to read, ‘Eric weighs 29kg and Pablo is 4 kg heavier.’ How heavy is Pablo? To undertake ‘Which of these weights is 4kg heavier than 29kg?
- question 16, Year 3, need to read, ‘Mrs Branch wanted to buy a water tank and had to choose between four different models. She bought the largest tank. Which tank did she buy? To undertake ‘which is the largest number?’ The context is totally unnecessary as each ‘measure’ is in litres. (See PowerPoint: Example 3)
- question 2, Year 5 (also included in the Year 3 test), need to read, ‘Kathy and Kym are playing a game with a spinner. Kathy has the white and Kym has the grey (the term segment of the spinner is absent here) Which spinner gives Kathy and Kym and equal chance of winning? To undertake, ‘Which spinner gives you an equal chance of winning?’
- question 9, Year 7 need to read, (also included in the Year 5 test), ‘The Rasmus family want to conserve water on their property. They purchased 3 tap timers at $19.95 each. How much did they pay? To undertake, ‘How much is 3 timers at $19.95 each?’

If the tests are to reliably identify students’ abilities to successfully undertake mathematical tasks then the tests must give all students every opportunity to engage with the tasks. It can be argued that many of the test items do not achieve this. The focus on language rich tasks is not necessary for the aspects of mathematics being tested. For many students the nature and
volume of text itself is a distracter. This coupled with the poor use of contexts or use of inappropriate contexts impacts on the students’ ability to engage with the tests and as such must cloud the tests’ reliability.

2.9 Good questions

It appears, given the structure of the test, that the best questions are unambiguous, and focus on the literacy/mathematics rather than the context. For example:

- focus on one aspect of literacy/mathematics
- set a simple context that is relevant to the age group of the students and is inclusive of their experiences or not use one at all
- focus on communicating using appropriate mathematical forms and language rather than being tied down to describing a context (e.g. not use names but simply use terms like a child, a student, a family or a person if a context with people is necessary)
- better reflect the constructivist view of learning that underpins the SACSA Framework.
Section 3
Review and recommendations

The LaN tests are an element of the DECS ‘Integrated Assessment Program’ which aims to align all statewide assessment programs with the SACSA Framework. There are four main claims made for the LaN tests, that:

1. they are informative for parents and teachers about student literacy and numeracy achievement (information function)
2. they will provide information which will guide teaching (diagnostic function)
3. the best preparation for them is to teach the SACSA Framework and that the tests align with that framework (curriculum function)
4. they will provide a means of checking the reliability of teacher judgements (reliability function)

We designed our analysis to consider these claims for the LaN, using the following questions:

1. what aspects of literacy and numeracy do the LaN tests foreground?
2. what aspects of literacy and numeracy in the SACSA Framework do the tests relate to and how representative is that of the SACSA Framework?
3. how well do the aspects of literacy and numeracy foregrounded in the LaN tests relate to most recent understandings in the research literature?
4. what is the quality and potential usefulness of the results of these tests in the forms they are conveyed to the ‘students, parents and schools’ who are the target audiences for the reports?

The following discussion gathers together the key points made in Sections 1 and 2 of this report and provides related recommendations to the AEU about the issues, strategies and questions that might inform their involvement in the LaN review.

In our view the AEU is well positioned to take a positive role in the review of the LaN to push for an improvement in the design of the tests as well as ensuring that the tests are more appropriately positioned as an element of a truly integrated assessment program. Therefore, the following discussion both summarises important criticisms that need to be made of the tests, but also provides indications of positive responses to their shortcomings, as well as indicating how the LaN needs to be positioned within a whole assessment framework. We therefore have grouped our discussion and recommendations under two headings:

1. Positioning the LaN as part of a comprehensive and productive assessment program
2. Improving the LaN

3.1 Positioning the LaN as part of a comprehensive and productive assessment program

The limitations of basic skills tests are well known and have been outlined, however they can be valuable if they are complemented by other, more authentic and contextually sensitive forms of assessment that also take account of the literacies that are needed by our students in the future.

3.1.1 Moving assessment beyond the ‘old basics’

As currently designed, the LaN tests tend to privilege the ‘old basics’. Whilst the tests can only assess selected aspects of literacy and numeracy, and hence cannot account for student learning across all possibilities, these tests do test a very narrow range of skills and ignore important elements of both literacy and numeracy. Emphasis of the tests is on comprehension, computation and correctness. A range of other ‘new basics’ have been under-tested such as the cultural, critical, comprehensive, and conceptual. The narrow range of skills tested is apparent for both the literacy and numeracy tests.

The SACSA Framework has shifted the definitions of literacy towards a multiliteracies (New London Group, 1996) approach that enlarges the view of literacy to encompass semiotics: that is, sign systems beyond print. The definition of literacy used by the SACSA is: ‘The ability to understand, analyse, critically respond to and produce appropriate spoken, written, visual and multimedia communication in different contexts.’ There are various conceptual resources that inform this definition and that have credibility with teachers. Of special note is Luke and Freebody’s (1993) ‘elements of reading as critical social practice’. They argue that literacy, considered as a social practice, ‘requires not only the mastery of linguistic rules and competencies to construct meaningful spoken and written texts – but the ‘reading’ of social rules to decide whether to construct it at all, whether the institution and event are worth participating with, contesting, ignoring, dismissing with humour and so forth’ (p.19). Luke and Freebody have developed a model that involves these four elements:

1. coding competence: code breaking (how do I crack this?)
2. semantic competence: text participant (what does this mean?)
3. pragmatic competence: text user (What do I do with this here and now?)
4. critical competence: text analyst (what is this text trying to do to me?)

The aspects of literacy emphasised in these tests are the traditional primary school elements of comprehension, composition, spelling and punctuation. Indeed, if we took away the obviously ‘modern’ texts used in the ‘magazines’ such as the web pages and forms of packaging, the tests would be largely familiar to anyone who attended an Australian primary school in the 1960s where comprehension, composition, spelling and punctuation
were specifically identified subjects on the timetable. One other difference would be a greater emphasis on particular kinds of meta-language, especially to describe text types and elements of texts—evidence of the influence of so-called genre approaches to literacy that emerged in Australia in the 1980s. Thus, the ability to talk about literacy as well as to comprehend, compose, spell and punctuate is being emphasised here.

There are also changing conceptions of numeracy. Over time descriptions of numeracy have shifted from the ‘survival mathematics’ we all need, towards richer descriptions. Descriptions presented by Australian Association of Mathematics Teachers (1998), Chartres (2002), Forrest (1997), Frankenstein (2001), Johnston (1994), Department of Education, Queensland (1994) and Scott (2000) all suggest numeracy involves choosing and using mathematics with confidence and for a meaningful purpose and it is much more than ‘survival mathematics’ or completing arithmetic tasks.

Scott (2000) describes numeracy in terms of three essential ingredients: content, confidence and context. Content refers to knowing some mathematics, confidence to choose and use this mathematics and context refers to understanding the situations, needs and demands to choose and use mathematics. Scott argues that all three ingredients are essential for a person to be numerate. Collectively, the 2003 numeracy tests address one of these three ingredients, that of content or the mathematics. Tests such as these cannot test students’ confidence to choose and use mathematics. The majority of contexts used in the tests to present the mathematics are often atypical of those in which students would choose to use mathematics. Often they are pseudo-contexts and actually exclude students with the assumption that all students recognise and understand the context in which the mathematics is presented in test questions.


- **Technician**: foregrounds mathematical knowledge described in mathematics curriculum;
- **Participant**: emphasises how the mathematical knowledge is transferred to new situations and the mathematical demands of the context are understood both from a personal perspective and where appropriate from socio-cultural perspective;
- **User**: emphasises understanding that mathematical texts and forms have different purposes, structures and features, and
- **Analyst**: emphasises that numeracy is not neutral and can be challenged. Numeracy involves using mathematics to comment critically on the strengths and weaknesses of arguments and explore bias, and that one can critique how mathematics has been used to draw conclusions and make decisions.
The 2003 test items focus on the first of these four roles. The use of pseudo-contexts makes it difficult for students to take on the roles of participant and user in the texts. It appears that the role of numeracy analyst is not part of the design framework of the tests.

The numeracy focus of the tests is very narrow when compared with rich descriptions of numeracy. It can be argued the test items actually assess isolated aspects of mathematics rather than numeracy.

**Recommendation 1**

The AEU argues for the ‘Integrated Assessment Program’ to more seriously address the aspects of literacy and numeracy currently not addressed, or under-addressed in the LaN tests. This will mean both arguing for the tests to be improved to better address ‘new basics’, and arguing for support for alternative modes of assessment to address those new (and old) basics, such as listening and speaking, multi-modal and intertextual reading, which the current paper and pencil format cannot handle.

**3.1.2 Providing an improved basis for diagnosis and pedagogical change**

One of the key claims for the LaN tests is their diagnostic potential for classroom teachers and for school curriculum planning.

Can the literacy tests be said to be ‘diagnostic’? We regard this as overclaiming. Only in the most limited sense can a ‘diagnosis’ be claimed—at best, from this test it might be said that the student is having some (difficult to specify) problems that relate to only a limited part of the overall curriculum with (almost no) indication of the learning strengths upon which subsequent teaching might be based. Thus the tests are not a good diagnostic tool in relation to individual student performance and only a limited tool in relation to whole class or school performance. Patterns of poor or good performance may simply be a reflection of the way in which the test did or did not fit into the curriculum cycle of the class or the school.

In the literacy report there is inconsistency of headings between sections. The strands are Reading, Writing and Spelling when showing band achievement, but Reading ‘Spelling and Language’ and Writing in the display of individual student responses. Neither of these divisions matches exactly with the strands of the SACSA Framework.

The claims for the numeracy tests being diagnostic are difficult to support for each of the three numeracy tests. Almost one third of the questions from the general numeracy tasks section of the tests either focuses on more than one aspect of mathematics or involves a two or three step process. Given this, if a student answers a question that involves two aspects of mathematics or two or more steps incorrectly how can the student’s misconception or error be diagnosed? The same point can be made for items on the literacy test.
As well, the logic of the diagnostic potential of the tests relies on the tests being closely aligned with the SACSA Framework. Given the poor alignment with the SACSA Framework, the claim for the LaN tests’ diagnostic potential is somewhat problematic.

The student reports distributed to schools and parents/care givers uses three strands to describe students numeracy, namely Number Sense, Measurement Sense, and Spatial Sense. This is not reflective of the content strands used in the SACSA Framework. Data handling and measurement are combined under the heading of Measurement Sense and pattern is not addressed at all. Some of the questions grouped in the Spatial Sense Strand are actually measurement items, e.g. question 29 from the Year 7 test, calculates area of rectangle, an indirect measurement strategy.

In our view, the claims of the tests to be ‘diagnostic’ are not supported, except in the most limited of senses. To be diagnostic, the tests need to provide an opportunity for students to display the skills and knowledge that are required by the curriculum at their level. That is, they need to assess what the students have been taught, and the current approach of including material above the expected level should be omitted. If the current ‘norm-referenced approach is used which requires test items above the level required by the curriculum, then the tests should not claim strong diagnostic functions.

Also, to be informative, the tests need to help teachers identify the actual problems students are experiencing as well as how much support students need to be successful—the current design of the test which includes many multiple-aspect tasks and only considering unassisted right/wrong answers does not allow the test to do this. Similarly, the test reports to parents, schools and teachers need to be more directly aligned with the SACSA Framework so that they can be read with and against the required curriculum.

**Recommendation 2**
That the AEU argue for the LaN tests that:

- claims for a diagnostic function be explained, justified and exemplified
- they are better aligned with the curriculum at each year level
- their reporting is consistent with the SACSA Framework in terms of strands, descriptors and bands
- test items are better designed to indicate what students can do with support (especially at Year 3 level) and so it is clear what students can’t do if they answer incorrectly

**3.1.3 Developing testing practices that better reflect constructivist learning**
The SACSA Framework is predicated on a constructivist learning theory.
‘The central thesis of constructivism is that the learner is active in the process of taking in information and building knowledge and understanding, in other words of constructing their own learning’

Learning is the process of constructing knowledge. Learning is not linear; it involves learners extending, elaborating, recognising, reformulating and reflecting upon their own frameworks of knowledge. Learning involves building on prior knowledge. Learning is making explicit the implicit conceptions, frameworks and explanatory systems in the minds of learners, which shape how they interpret and what they learn. Learners’ conceptions are embedded in their culture and tied to their use of language. Learning occurs in a context, and the understandings about the context are part of what is learned. Learning involves learners communicating their questions, intuitions, conjectures, reasons, explanations, judgements and ideas in a variety of forms. Learning involves developing knowledge, skills and dispositions to think and act in ways which determine individual effort, the setting of personal goals, self-assessment and awareness of the uses (and misuse or abuses) of knowledge. Learning involves the progression of learners through cycles of growth. (SACSA Framework).

Adopting a constructivist view of learning has significant implications for the LaN tests. Such a view is a move from behaviourist views of learners that conceived of learning in terms of acquisition and aggregation of reinforced units of information; of ‘practice makes perfect’. The constructivist view is a much more expansive view of learners and learning. Context matters, acknowledgement of prior learning is integral, judgement matters, and being able to try out one’s speculations is critical. Where possible test items should provide opportunities for students to ‘create evidence through performance that will enable assessors to make valid judgements about ‘what they know and can do’ in situations that matter’ (Eisner, 1999, 55).

In our introduction to this report we outlined some of the concerns that have been raised about basic skills testing. Many of these concerns relate to the ways that the limited kinds of testing lead to narrow definitions of quality and poor curriculum matching, especially for the most disadvantaged students. A key concern is the need to design testing that is both valid and reliable and which is organic to the tasks set in the curriculum. In the next section on improving the LaN we argue for work on making the tests better able to test in more complex ways, but it should also be argued that there are limits beyond which basic skills tests cannot go. The ‘Integrated Assessment Program’ needs to incorporate alternative approaches to assessment which are better able to assess and foster constructivist learning and which will avoid the tendency to narrowing which the LaN alone will promote. In our view the Western Australian Monitoring Standards in Education program (MSE) is the kind of model that should be pursued (see http://www.eddept.wa.edu.au/mse/index.html) because it balances the Western Australian Literacy and Numeracy Assessment (WALNA) tests with a Random Sample Assessment program which is designed to have a better fit with the full range of the curriculum. The Random Sample Assessment program has been running
since 1989, and in 2003, for example, Speaking and Listening was assessed in the program. In addition, the MSE program makes available to all schools the comprehensive standards-based assessment materials developed for the Random Assessment program and actively assists schools to use them to make consistent and reliable judgements about student performance.

Recommendation 3
That the AEU encourage improvements to, and expansion of, the Integrated Assessment Program so that:

- alternative approaches to assessment can be researched and developed that require students to create evidence through performance of their learning that relates to the full range of the curriculum
- these alternative approaches can be used to supplement the LaN
- the LaN itself can be improved by being benchmarked against best practice in other states

3.1.4 Improving the transparency of the tests
There seems to be very little critical independent scrutiny of the testing industry in Australia. There is no independent ethical professional codes developed for professional testing organisations (Clarke et al 2000). Given the increasing part that testing plays in Australian schools this seems somewhat odd. Such an oversight is probably indicative of the way that testing itself has been naturalised and placed outside of the usual mechanisms we have for ongoing scrutiny of educational practice.

Recommendation 4
That the AEU raise awareness of the education industry and the public about how much the tests cost, how they are designed, what they can and can’t do and how they should be used ethically.

3.2 Improving the LaN
The discussion to this point has focussed on the ways that the LaN needs to be better positioned and justified as one element only in a properly comprehensive assessment program that enriches, rather than narrows, the curriculum. We now turn to the ways in which the LaN can be improved in its own right.

3.2.1 Avoiding pseudo-contextualisation
Many of the test items attempted to provide some contextualisation for the assessment of basic skills. Given that the tests are designed to test aspects of literacy and numeracy this
seems like a positive aspect of the designing of ‘good’ test items. Unfortunately, too often the contextualising presents the examples in ways that are atypical for many students. We have called these ‘pseudo-contexts’. Such pseudo-contexts:

- are outside of many students’ experiences and hence are counter-productive to assessing what students can do and understand
- actually become distracters or confuse the students
- trivialise cultural diversity and again become distracters
- markedly increase the amount of text that students need to read and comprehend to undertake the tasks.

The use of pseudo-contexts makes it difficult for students to take on the roles of participant and user in the texts. While they may have been introduced for the best of reasons, they actually detract from the quality of the materials.

**Recommendation 4**

That the AEU argues for the tests to be much more straightforwardly designed so that students are clearly introduced to the problems they must address and to ensure that the tests actually test the understandings and skills they are designed to test, rather than students’ abilities to negotiate trivial and unnecessary preambles and contexts.

### 3.2.2 Better aligning the tests with a progression of difficulty from Year 3 to Year 5 to Year 7

As we have outlined above, the claims being made about the LaN depend on the alignment between the test and the SACSA Framework. In 3.1.2 we have discussed alignment in terms of the aspects of literacy and numeracy tested from the SACSA Framework. (See PowerPoint: Example 8) Alignment is also determined by the appropriate match of difficulty of the test to the year level in the curriculum. In other words, the LaN should reflect the developmental nature of the learning outcomes described in the SACSA from Year 3 to Year 5 to Year 7.

To consider this aspect of alignment we focussed on literacy, and undertook to evaluate the ‘developmental learning outcomes’ that are listed for Year 3, 5 and 7 for Reading and Viewing, and for Writing in the R-7 English Teaching Resource and compare these with the emphases of the literacy tests.

Overall, we found that the Year 3 test was more difficult than seemed to be required by the SACSA Framework outcomes. For example, in relation to Reading we said:

In summary, the SACSA Framework takes a developmental stance on Year 3 level Reading and Viewing, seeing it as still emergent, with a focus on attempts, self-correction (i.e. making attempts and applying self-monitoring to repair meaning), opportunities to
interact around texts, and provision of support to be successful with all but the simplest of texts. The knowledge they are expected to have relates to the identification of simple features of texts with some labels used. On the other hand, the Year 3 Literacy test focusses on the provision of correct answers to comprehension questions about often quite complex texts (texts the SACSA indicates they will need support with), knowledge about texts at the level of whole text and macro-elements such as ‘main idea’ and understanding of genre, and the ability to identify and label aspects of texts such as author/illustrator, use of headings, illustrations and bold text.

On the other hand, it appeared that the Year 7 test did not (or could not) match the quite complex intertextual, multi-modal and cultural-critical skills and understandings that seemed required by the SACSA. Overall, we found that the tests, as currently designed performed poorly at either end of the spectrum being assessed: not being able to account for the levels of support and simplicity expected of Year 3’s and not able to extend to the complexities of the Year 7 curriculum.

**Recommendation 5**
That the AEU argue for the LaN tests to be designed to better align with the expectations required in the SACSA of Year 3 and Year 7 students.

### 3.2.3 Ensuring the tests don’t reward differential ‘cultural capital’

Children’s performance on tests are frequently contingent upon their existing general knowledge base. Clearly these knowledges are not equally distributed throughout the population. Test design needs to ensure that taken-for-granted items of knowledge do not prevent students displaying their competence with particular aspects of literacy and numeracy. The issue here is to design the test item in such a way that answering correctly is not contingent on access to privileged knowledges which are not part of the school curriculum at this level.

There are other ways in which cultural or prior knowledges impact on students’ possible interpretation and performance on the test. For instance in the extended writing tasks, the level of students’ resources for writing will vary with respect to their knowledge of the assigned subject and genre. Students are positioned quite differently by the same task. When there is little or no choice the importance of the topic and genre become even more significant.

Educators are faced with having to deal in skilful ways with the fact that their students have different ‘cultural capital’. ‘Cultural capital’ here refers to the sum total of active and tacit knowledges, skills, [and] dispositions that students bring to school as a result of their experiences in the home and community and relate strongly to the particular class, cultural and linguistic groupings to which students belong (Luke 1993). All students possess literate
and numerate cultural capital. Whether that cultural capital is of value for the purposes of the LaN test though depends on the way the test items are designed. Testing and assessment technologies have historically been scrutinised for the ways in which certain, usually middle-class and anglicised cultural capital gets normalised. The middle class experience is treated as ‘normal’ and hence those students from other class locations and from ‘non-normal’ cultural groups experience ‘interactive trouble’ when it comes to be assessed.

Sensitivity to differential cultural capital in these type of tests demands that the contextualising used for test items be carefully trialled with special attention to assumptions about what experiences/knowledge that young people have to draw on.

**Recommendation 6**

That the AEU argue for a process by which test items are carefully scrutinised for assumptions about prior knowledge and the normalisation of particular cultural capital. This process should be designed to take into account the experiences of the most disadvantaged students.
References


## Appendix 1: Analysis of the emphases of the Reading and Viewing strand of the SACSA Framework based on the *R-7 English Teaching Resource* (DECS 2003a)

<table>
<thead>
<tr>
<th>Year 3</th>
<th>Year 5</th>
<th>Year 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texts and contexts</td>
<td>Texts and contexts</td>
<td>Texts and contexts</td>
</tr>
<tr>
<td>▪ recognises and describes purposes of texts</td>
<td>▪ recognises and describes wider range of purposes of texts and their audience</td>
<td></td>
</tr>
<tr>
<td>▪ reads and discusses books ‘with wider knowledge’ with support</td>
<td>▪ reads and discusses items of topical interest in media relating to personal experience, comparing different versions</td>
<td></td>
</tr>
<tr>
<td>▪ reads short books unassisted (interpreted this as finding the answer in the text type questions)</td>
<td>▪ reads material relevant to personal purposes, needs, interests</td>
<td>▪ reads fiction texts individually for enjoyment, personal taste, interest</td>
</tr>
<tr>
<td>▪ reads with support challenging books of high personal interest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ reads independently for sustained time</td>
<td>▪ maintains an interest in and comprehension of a novel over many sessions</td>
<td>▪ reads/views range of texts containing multiple social/cultural perspectives including fiction and non-fiction</td>
</tr>
<tr>
<td>▪ reads, interprets and follows instructions, with support</td>
<td>▪ makes inferences based on implicit and explicit information</td>
<td></td>
</tr>
<tr>
<td>▪ considers characters’ points of view</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ expresses different interpretations of texts</td>
<td>▪ justifies own interpretation of texts</td>
<td>▪ identifies and analyses with greater independence ideas, values and beliefs about abilities, gender, race and culture embedded in texts</td>
</tr>
<tr>
<td>▪ expresses opinions about characters</td>
<td>▪ justifies opinion about characters</td>
<td></td>
</tr>
<tr>
<td>▪ distinguishes fact and opinion</td>
<td></td>
<td>▪ poses critical questions about popular beliefs and position of groups of people portrayed in texts</td>
</tr>
<tr>
<td>▪ identifies intended audience</td>
<td>▪ recognises people with special interests/expectations are target audience for particular texts</td>
<td></td>
</tr>
<tr>
<td>▪ recognises text could have been written differently</td>
<td>▪ discusses how information on a local issue or event is presented differently in different (magazine, TV, website) texts</td>
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</tr>
<tr>
<td>▪ identifies simple symbolic meanings</td>
<td>▪ identifies symbolic use of music, sound effects, voice style in children’s film</td>
<td></td>
</tr>
<tr>
<td>▪ comments on incidents from short film</td>
<td>▪ discusses how camera angle, viewer position, colour etc construct meaning</td>
<td></td>
</tr>
<tr>
<td>▪ discusses stereotypes of people</td>
<td>▪ discusses how author conceals/reveals attitudes to people or groups and their lifestyles</td>
<td></td>
</tr>
<tr>
<td>▪ recognises recurring character types</td>
<td></td>
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<td>Year 3</td>
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<td>Year 7</td>
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</tr>
<tr>
<td>• identifies story elements</td>
<td>• identifies/summarises main points of information and supporting details of reports, main storyline in narratives, main argument in persuasive writing</td>
<td></td>
</tr>
<tr>
<td>Language</td>
<td>Language</td>
<td>Language</td>
</tr>
<tr>
<td>• talks about rhyme, syllables, rhythm in poetry</td>
<td>• identifies figurative language such as simile, metaphor, idiom, alliteration, personification and discusses effect</td>
<td>• understands there is a link between the genre and the organisation of a text</td>
</tr>
<tr>
<td>• talks about characteristics of different kinds of poem</td>
<td></td>
<td>• explains reasons for use of passive voice in information reports and explanations</td>
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<td></td>
<td></td>
<td>• reflects on how writers use modality to create degrees of certainty</td>
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<td></td>
<td></td>
<td>• identifies types of visual information such as chart, map, table, animation</td>
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<td></td>
<td></td>
<td>• discusses features of scripted plays (e.g. acts, scenes, stage directions)</td>
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<tr>
<td></td>
<td></td>
<td>• understands connections between composition and purpose of texts</td>
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<td></td>
<td></td>
<td>• identifies conventions of electronic texts</td>
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<tr>
<td></td>
<td></td>
<td>• compares conventions used in print and electronic texts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• analyses features of texts and their role in communicating purpose</td>
</tr>
<tr>
<td>Grammar</td>
<td>Grammar</td>
<td>Grammar</td>
</tr>
<tr>
<td>• identifies action, mental, relational etc verbs</td>
<td>• identifies subjects, verbs and objects in different texts</td>
<td>• identifies conjunctions</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>• identifies noun groups and knows function</td>
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<tr>
<td></td>
<td></td>
<td>• identifies abstract nouns and discusses effects</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• understands need for specific terms to enhance description</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• identifies adverbial phrases and discusses effect</td>
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<td></td>
<td></td>
<td>• identifies nouns and knows label</td>
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<td></td>
<td></td>
<td>• identifies verbs and knows the label</td>
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<td></td>
<td></td>
<td>• identifies adjectives and knows their function</td>
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<tr>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>• identifies pronouns and knows their function</td>
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<tr>
<td></td>
<td></td>
<td>• identifies relative pronouns</td>
</tr>
<tr>
<td>Year 3</td>
<td>Year 5</td>
<td>Year 7</td>
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<tr>
<td>----------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Punctuation</strong></td>
<td><strong>Punctuation</strong></td>
<td><strong>Punctuation</strong></td>
</tr>
<tr>
<td>▪ uses appropriate terminology for discussing texts – e.g. space, full stop, letter</td>
<td>▪ compares the typical punctuation used in print and multimedia texts</td>
<td>▪ understands function of appropriate punctuation, observing it when reading aloud</td>
</tr>
<tr>
<td>▪ recognises and attends to punctuation</td>
<td>▪ recognises, attends to, and explains punctuation in written texts</td>
<td></td>
</tr>
<tr>
<td><strong>Strategies</strong></td>
<td><strong>Strategies</strong></td>
<td><strong>Strategies</strong></td>
</tr>
<tr>
<td>▪ selects and reads books according to interests, purposes</td>
<td>▪ chooses fiction reading on basis of preferences, interests, recommendations, pursuing a particular theme or topic</td>
<td>▪ discusses points of view, characterisation, use of imagery and development of atmosphere</td>
</tr>
<tr>
<td>▪ seeks support for reading and viewing</td>
<td>▪ talks to others about ideas and information, attends to their opinion, keeps a reading log, makes notes about key features, consults index</td>
<td>▪ develops character portraits indicating accumulation of information about characters</td>
</tr>
<tr>
<td>▪ adjusts reading behaviour to different kinds of texts – e.g. scans, uses pictures</td>
<td>▪ uses different strategies for gathering information – e.g. skim reading, sub-headings, key symbols and icons, note taking</td>
<td></td>
</tr>
<tr>
<td>▪ uses self-correction strategies</td>
<td>▪ consolidates use of monitoring and self-correcting strategies</td>
<td></td>
</tr>
<tr>
<td>▪ makes substitutions or omissions to maintain meaning when reading</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ remembers content by: answering questions with interpretation; constructing a chronology; describing in detail a character or event</td>
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</tr>
<tr>
<td></td>
<td>▪ understands content by: paraphrasing, analysing characters; visually recounting; comparing and contrasting two characters; explaining events; making a story map; formulating questions for discussion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ applies knowledge by: making a board game; rewriting text for younger person; rewriting as script; describing feelings; comparing others’ responses; constructing sociogram of characters</td>
<td></td>
</tr>
<tr>
<td>▪ reads fluently with expression after practice</td>
<td>▪ reads aloud using appropriate pitch, pause, emphasis, intonation</td>
<td></td>
</tr>
<tr>
<td>▪ uses grammatical information in shared and guided reading (e.g. identifying adjectives)</td>
<td>▪ uses grammatical information in shared and guided reading as reference links (e.g. synonyms, antonyms)</td>
<td></td>
</tr>
<tr>
<td>▪ uses connections between personal life experience and texts to enhance understanding of both</td>
<td></td>
<td>▪ evaluates texts by: justifying or criticising character motives; creating a list of criteria for judging a text; selecting and debating major issues; comparing and contrasting character lifestyle with own; evaluating usefulness of text against its purpose</td>
</tr>
<tr>
<td>Year 3</td>
<td>Year 5</td>
<td>Year 7</td>
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<tr>
<td>--------------------------------------------</td>
<td>--------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>▪ uses grapho- and phono-logical cues</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>▪ uses some of following strategies: silent sustained reading; guided reading; reading class novel; reading contract; aural and reading comprehension; personal reading records; reading journal; reading aloud; reading onto tape; borrowing from resource centre</td>
</tr>
<tr>
<td>▪ uses book handling skills (e.g. TOC)</td>
<td>▪ locates and sorts information on a topic from a variety of sources (e.g. books, pictures, internet)</td>
<td></td>
</tr>
<tr>
<td>▪ identifies a research topic and selects relevant, accurate information</td>
<td>▪ identifies a research topic and makes judgements about appropriateness of information</td>
<td></td>
</tr>
<tr>
<td>▪ uses computer software to find information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ uses headings to find information</td>
<td>▪ accesses records and presents information in a variety of ways</td>
<td></td>
</tr>
</tbody>
</table>
## Appendix 2: Analysis of the emphases of the Writing strand of the SACSA Framework based on the R-7 English Teaching Resource (DECS 2003a)

### SACSA Framework – Writing

<table>
<thead>
<tr>
<th>Year 3</th>
<th>Year 5</th>
<th>Year 7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Texts and contexts</strong></td>
<td><strong>Texts and contexts</strong></td>
<td><strong>Texts and contexts</strong></td>
</tr>
<tr>
<td>▪ constructs a range of text types collaboratively (inc narrative, procedure, response, recount, description and information report)</td>
<td>▪ constructs a range of text types independently for different purposes and audiences (e.g. expositions, reviews, recounts, historical accounts)</td>
<td>▪ composes a range of texts incorporating text features (e.g. recount, narrative, procedure, report, exposition, explanation)</td>
</tr>
<tr>
<td>▪ experiments with writing a range of forms made familiar through reading and using a framework (e.g. narrative, procedures, reports, recounts, expositions, poems, persuasive, transactions)</td>
<td>▪ contrasts and constructs texts of the same genre from different cultures in terms of structure and language choices</td>
<td>▪ explores how texts are altered to suit different audiences, including letters written for different audiences</td>
</tr>
<tr>
<td>▪ writes for a variety of personal reasons (e.g. email poster, card, shopping list)</td>
<td>▪ reconstructs texts to suit different audiences, purposes and audiences</td>
<td></td>
</tr>
<tr>
<td>▪ writes and publishes (inc ICTs) for a chosen audience (e.g. family, friends)</td>
<td></td>
<td>▪ writes increasingly to explore local or global issues/topics</td>
</tr>
<tr>
<td><strong>Language</strong></td>
<td><strong>Language</strong></td>
<td><strong>Language</strong></td>
</tr>
<tr>
<td>▪ uses synonyms in own writing and discusses differences in meaning</td>
<td>▪ identifies figurative language (e.g. simile, metaphor) and discusses effect</td>
<td></td>
</tr>
<tr>
<td>▪ uses titles and headings within a text appropriately, with support</td>
<td>▪ uses layout appropriate to genre (e.g. sub-headings in a report)</td>
<td></td>
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<tr>
<td></td>
<td>▪ explores ways in which language can be used to influence the ways that people see themselves, such as writing different versions of advertisement</td>
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</tr>
<tr>
<td>Year 3</td>
<td>Year 5</td>
<td>Year 7</td>
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<tr>
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</tr>
<tr>
<td>• uses language in various innovative ways (e.g. reverse roles of characters)</td>
<td>• selects and uses a variety of sophisticated language elements and displays these by sequencing events with greater detail; using chapters and subheadings; using paragraphing; including quotations/footnotes, acknowledgments; varying sentence beginnings; embedding specialist vocabulary; using synonyms/antonyms including suffixes and prefixes; language for effect (e.g. clichés, metaphor, simile) introducing items to support/add to text (e.g. graphical, idiom, palindrome)</td>
<td></td>
</tr>
</tbody>
</table>

**Grammar**

- writes simple sentences and begins to use conjunctions to form compound sentences
- uses a range of simple, compound and complex sentences
- uses statements, questions, commands and exclamations
- combines clauses to form more complex sentence structures
- uses subject-verb agreement
- uses pronoun correctly and uses conjunctions appropriately
- uses words chosen to suit purpose and audience (e.g. technical language)
- shows appropriate use of reference items (e.g. those, these, that)
- writes with regard to structural elements of genre (e.g. simple introduction as greeting or opening statement)
- writes well-structured texts and well-developed ideas with clear understanding of audience and purpose
- begins to use language appropriate to genre, more independently (e.g. action verbs in recount)
- uses more detailed language appropriate to genre (e.g. adjectival phrases/clauses to build character/setting)
- identifies theme of clause and experiments with changing the theme
- begins to use some descriptive words (adjectives and adverbs)
- shows appropriate use of reference items (e.g. those, these, that)

**Punctuation**

- uses common punctuation such as full stops, capital letters, commas, question marks and apostrophes for contractions
- recognises importance of correct punctuation and uses it correctly in published text
- begins to use quotation marks for direct speech
- uses with accuracy more direct speech and simple reported speech
- punctuates broken quotations accurately
<table>
<thead>
<tr>
<th>Year 3</th>
<th>Year 5</th>
<th>Year 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>writes a longer piece which is organised according to some elements of a wider range of genres</td>
<td>writes a longer piece which is organised according to elements of a genre, and attempts to use paragraphs</td>
<td>plans texts, choosing appropriate scaffolding which include a clear representation of the key idea and consideration of a specific audience</td>
</tr>
<tr>
<td><strong>Strategies</strong></td>
<td><strong>Strategies</strong></td>
<td><strong>Strategies</strong></td>
</tr>
<tr>
<td>plans prepares and drafts texts with teacher support and extensive scaffolding of genre formats</td>
<td>plans, prepares and drafts texts more independently, seeking support with genre format</td>
<td></td>
</tr>
<tr>
<td>reflects on, with support, purpose and intended audience of own writing</td>
<td>adjusts writing to suit the audience and purpose after reflecting, analysing and evaluating</td>
<td></td>
</tr>
<tr>
<td>researches information collaboratively from a variety of sources before writing and sorts the information using a proforma</td>
<td>researches information independently from a variety of sources before writing</td>
<td></td>
</tr>
<tr>
<td>prepares for writing by planning text structure using proformas and brainstorming ideas before writing a topic</td>
<td>lists ideas, draws diagrams, makes notes and talks constructively with peers or teachers before writing</td>
<td>creates texts by: creating a role-play; writing a poem; role-playing characters; placing character in different time frame; writing a chapter that comes before or after a text</td>
</tr>
<tr>
<td>contributes to group writing sessions by suggesting ideas, alternative words and phrases, or places where punctuation might be needed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>reads own writing aloud and makes corrections to clarify meaning (e.g. crosses out or adds a letter)</td>
<td>proofreads own text for meaning, spelling and punctuation and self-corrects words that do not look right</td>
<td>edits and proofreads using a variety of strategies including a checklist and editing software with decreased teacher support</td>
</tr>
<tr>
<td>chooses, redrafts and publishes own writing, giving it a suitable format for a particular purpose</td>
<td>produces written product within negotiated guidelines such as purpose of task, form of final version, deadline, length</td>
<td></td>
</tr>
<tr>
<td>reviews own and peers writing</td>
<td>uses a variety of references to assist writing and editing</td>
<td>uses resources independently (e.g. computer spell check, rhyming dictionaries, thesaurus)</td>
</tr>
<tr>
<td>uses other texts as models</td>
<td></td>
<td>uses and checks unfamiliar vocabulary for spelling and meaning</td>
</tr>
<tr>
<td>shares in the making of a resource book by discussing and choosing a topic of mutual interest, formulating questions and offering information</td>
<td>experiments with creative presentation of writing to engage particular audiences</td>
<td>uses punctuation such as interrupted direct speech marks, capitals, colons, semi-colons and apostrophes of possession</td>
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<tr>
<td></td>
<td></td>
<td>uses paragraphing reflecting genre requirement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>reflects upon and evaluates effectiveness of product through self and peer based evaluation and assessment</td>
</tr>
<tr>
<td>Year 3</td>
<td>Year 5</td>
<td>Year 7</td>
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</tr>
<tr>
<td>uses computers, some software and online resources as planning and writing tools</td>
<td>uses computers, a range of software and online resources as planning and writing tools</td>
<td>organises feedback using a variety of methods (e.g. questionnaire) actively seeking it and using it as a basis for reflection and further development</td>
</tr>
<tr>
<td><strong>Spelling</strong></td>
<td><strong>Spelling</strong></td>
<td><strong>Spelling</strong>*</td>
</tr>
<tr>
<td>spells high frequency words correctly in own writing</td>
<td>recognises errors, corrects spelling of common known words and checks spelling of some unfamiliar words</td>
<td>recognises and corrects common misspellings and takes action using a variety of strategies</td>
</tr>
<tr>
<td>uses most letter patterns when attempting unknown words</td>
<td>uses knowledge of word meanings as a spelling strategy</td>
<td></td>
</tr>
<tr>
<td>identifies possible spelling errors in own writing (e.g. circling doubtful words)</td>
<td>makes informed attempts at spelling consistently, using a multi-strategy approach</td>
<td></td>
</tr>
<tr>
<td>uses letters or letter combinations to represent most syllables in words</td>
<td>uses knowledge of base words to make new words</td>
<td></td>
</tr>
<tr>
<td>experiments with tools such as spell check</td>
<td>uses knowledge of prefixes, suffixes and compound words to make new words</td>
<td></td>
</tr>
<tr>
<td>uses big books, dictionaries, wall charts and other resources to assist with spelling, punctuation, grammar</td>
<td>spells unknown words using visual and phonological strategies such as knowledge of common letter patterns and critical features of words</td>
<td></td>
</tr>
<tr>
<td>can order alphabetically even if the majority of the word is the same</td>
<td>recognises most misspell words in own writing and uses a variety of resources for corrections, including electronic</td>
<td></td>
</tr>
<tr>
<td><strong>Handwriting</strong></td>
<td><strong>Handwriting</strong></td>
<td><strong>Handwriting</strong></td>
</tr>
<tr>
<td>forms letters of the alphabet and numerals correctly</td>
<td>writes using consistent shape, size, slope and formation of letters</td>
<td></td>
</tr>
<tr>
<td>uses lower and upper case letters of consistent size and formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>begins to use linked script</td>
<td>links letters when writing</td>
<td></td>
</tr>
<tr>
<td>uses relaxed posture and maintains finger movements and arm slide during cursive script patterns</td>
<td>uses correct pencil grip and maintains correct body position</td>
<td></td>
</tr>
</tbody>
</table>

* Nothing listed under spelling for Year 7, but placed here from under heading ‘strategies’
Appendix 3: Refined analysis of the mathematics focus in each test

The mathematics tested in the Year 3 test

Analysis of the mathematics being tested in the extended tasks

The extended task requires students to respond to ten questions privileging adding quantities in 50% of the questions. The mathematics from four of the fourteen key ideas from the SACSA Framework are evident in the extended tasks, i.e.:

- two of the ten questions focus on mapping skills, one with directions and pathways (3rd key idea of the Spatial Sense strand) and one with reading distances and calculating distances (3rd key idea of the Spatial Sense strand and 3rd key idea of the Number strand)
- two questions require students to read information from calendar (2nd key idea of the measurement strand) with one leading to counting or calculating nights away (3rd key idea of the Number strand)
- one question requires students to calculate a time and mark hands on an analogue clock face (3rd key idea of the Number strand and 2nd key idea from the Measurement strand)
- two questions require students to calculate quantities of fish (3rd key idea of the Number strand)
- one question requires transferring data from text to a graph (1st key idea of Exploring, Analysing and Modelling strand)
- one question requires reading data from a graph (2nd key idea of Exploring, Analysing and Modelling strand)

Analysis of the mathematics being tested in the individual numeracy questions

The individual numeracy questions require students to respond to thirty six questions heavily privileging calculating. The mathematics from nine of the fourteen key ideas from the SACSA are evident in the individual test questions, i.e.:

- five questions require students to read a graph or table of information (2nd key idea of the Exploring, Analysing and Modelling Data strand) for the purpose of calculating (3rd key idea of the Number strand)
- one question requires students to work with random data (3rd key idea of the Exploring, Analysing and Modelling Data strand)
- five questions require students to calculate measurements (2) or simply read a measuring tool (3), (2nd key idea of the Measurement Strand)
• four questions require students to work with numeration (1st key idea of the Number strand) with one leading to a calculation (3rd key idea of the Number strand)
• nineteen questions require the students to calculate, particularly addition and then subtraction (3rd key idea of the Number strand)
• one question requires students to predict numbers in a sequence (1st key idea of the Pattern and Algebraic Reasoning strand)
• three questions require students to work with a spatial attribute (1st key idea of the Spatial sense and Geometric Reasoning strand)
• seven questions require students to work with locations and representation of spaces and objects (3rd key idea of the Spatial sense and Geometric Reasoning strand)

Conclusions about the mathematics privileged in this test

When viewed by strands described in the SACSA Framework the following conclusions can be drawn about the focus of the test questions.

For the exploring, analysing and modelling data strand
• all five questions that require students to read a graph, tally or table of information do so for the purpose of calculating. The data handling focus described in the first key ideas of this strand is non existent, e.g. any focus on patterns, spread of data, making choices, and predictions is not addressed. Simply read the graph or table and then calculate
• only one question with a random data or chance focus is reasonable

For the measurement strand
• depending on which view you take, questions 10 and 35 could be seen as dealing with mass. They are not. Mass is simply the context for calculating
• questions 2 of Part B, 11, 12, 13 and 14 could be seen as dealing with distance with two involving actual measurements and three leading to calculating
• questions, 15 and 22 could be seen as dealing with capacity but do no more than provide a context for ordering numbers or reading a scale.
• question 21 can be seen as counting units of volume
• question 27 requires students to choose a comparative measure for an amount of turn.
• four of the ten questions that could be linked with the measurement strand is actually about measurement. Four questions are more about number and calculations. No question is about estimation. The focus on measurable attributes and choosing measuring units are both absent from the questions
• while calculations focus on capacity, volume and mass there is nothing conceptual about these measurable attributes in the questions. Nothing in the test explores volume and capacity involves quantifying spaces, mass involves quantifying matter, or that time can involve quantifying durations of events or identifying cycles of events. Quantifying
distances only involves lengths and not widths, depths, diagonals, distance of a boundary. The concept of angle as an amount of turn is addressed

- no questions about time at all. Ideas about cycles of events, natural events or cycles of events, time spans greater than minutes and hours are absent
- overall reference to the measurement strand is more for providing a context for calculating and not about a broader, richer view of measurement itself

For the number strand

- four of the questions with a number focus on test number concepts, question 15 focuses on magnitude, questions 20 and 24 (place value), question 34 focuses on fractions.
- approximately 53% of questions in this part of the test are about calculating, mainly addition. They are of two types, those that use reading data from tables and graphs or using measurements to calculate quantities, or those that are straight out calculations with two using money as the context
- the ideas of relationships and patterns between numbers, concepts of addition, subtraction, etc are not addressed in the test (from the 1st and 2nd key ideas of the SACSA Framework).

For the pattern and algebraic reasoning strand

- question 28 is the only question to focus on pattern in any form and is about calculating a missing number
- absent from the test are the ideas about what makes a pattern a pattern, patterns that are not just about number, predicting, describing relationships, representing relationships and making generalisations (not with algebraic symbols)

For the Spatial Sense and Geometric Reasoning strand

- three questions have a focus on shape and structure, identify the right angle triangular faced solid and the attribute of line symmetry in a 2 D figure. No other attribute of shape is addressed, e.g. convexity, other angles, point symmetry, nature of boundary. Why are these attributes of shape alone addressed?
- visualising from 2D to 3D is a focus of four questions with questions 3, 5 and 36 being poorly constructed
- direction with respect to left and right is the focus of question 1, part B and then compass direction is the focus of 26 and location using grid references in questions 9 and 25.
- no question has a focus on a congruent transformation

The SACSA Framework suggests that all five strands used to describe the valued mathematics for South Australian schools should be addressed equally in classroom
programs. This also suggests that mathematics from all fourteen key ideas be addressed. The aspects of mathematics tested within this test focuses on 10 of the 14 key ideas (approx 71% of key ideas). The spread of aspects of mathematics tested when viewed by strands is at best (i.e. questions that appear across strands using contexts are counted for each strand):

- Data handling 17%
- Measurement 11%
- Number 53%
- Pattern and Algebra 2%
- Spatial sense 17%

More realistically when the measurement and data handling contexts are sorted for what they are, calculations, the spread is approximately:

- Data handling 6.5%
- Measurement 9.0%
- Number 64.5%
- Pattern and Algebra 2%
- Spatial sense 18%

When describing questions that test aspects of working mathematically, the tests have some focus on aspects of:

- problem solving, where students apply a wide variety of strategies to engage with situations and solve problems, and adapt these strategies to new situations
- connections where students recognise, use and learn about mathematics in contexts outside of mathematics

In reality, the questions on the problem solving strategies are no more than mathematical skills such as calculating and map reading. There are very few questions that foreground problem solving strategies.

Similarly, the test’s attempt to contextualise mathematics is problematic for all students as it makes assumptions that all students have had similar experiences such as going on holidays where they have access to the information, measuring the lengths of flower stems and snail paths, and graphing personal collections such as Will’s stones.

One of the claims of the test is that students will be well prepared for the test if classroom programs reflected the SACSA Framework. The analysis above suggests to teachers preparing their students for the tests that the:
• number strand, in particular the 3rd key idea about calculating, is privileged far more than any other strand or key idea
• spatial sense and geometric strand, in particular visualising and mapping, i.e. the 3rd key idea, is privileged more than the remaining three strands
• measurement and data handling strands acts only as contexts for calculating.
• data handling and pattern strands are of little importance
• thinking and working mathematically which is actually central to many descriptions of numeracy is not tested, if indeed it can be, with this type of assessment tool

The mathematics tested in the Year 3 test does not reflect the scope of mathematics described in the SACSA Framework as implied in the Teacher Handbook. Three points of significance:
• data handling is becoming more and more important when choosing and using mathematics and this strand is poorly represented and valued in the test.
• pattern is the basis to mathematics and hence numeracy. This strand is poorly represented and valued in the test
• thinking and working mathematically is central to many views about being numerate but is not valued in this test

The mathematics tested in the Year 5 test

Analysis of the mathematics being tested in the extended tasks
The extended task requires students to respond to ten questions privileging adding quantities. The mathematics from three of the fourteen key ideas from the SACSA Framework are evident in the extended tasks, i.e.:
• four of the nine questions focus on mapping skills, two with grid references, one with compass direction (which is more complex than the same question focus in the Year 7 test) and one with reading distances (3rd key idea of the Spatial Sense strand)
• four questions require students to read information from the tables and calculate amounts of money (3rd key idea of the Number strand)
• one question requires students to read distances from a map and add them (3rd key idea of the Spatial Sense strand and 3rd key idea of the Number strand)
• one question requires students to mark hands on an analogue clock face (2nd key idea of the Measurement strand)

Analysis of the mathematics being tested in the individual numeracy questions
The individual numeracy questions require students to respond to thirty eight questions heavily privileging calculating. The mathematics from nine of the fourteen key ideas from the SACSA Framework are evident in the individual test questions, i.e.:
- six questions require students to read a graph or table of information (2nd key idea of the Exploring, Analysing and Modelling Data strand) from the and lead a calculation (3rd key idea of the Number strand)
- three questions require students to work with random data (3rd key idea of the Exploring, Analysing and Modelling Data strand)
- six questions require students to calculate measurements or simply read a measuring tool (2nd key idea of the Measurement Strand)
- one question requires students to estimate a measurement (2nd key idea of Measurement strand)
- three questions require students to work with numeration (1st key idea of Number strand)
- seventeen questions require the students to calculate (3rd key idea of the Number strand)
- two questions require students to predict numbers in a sequence (1st key idea of the Pattern and Algebraic Reasoning strand)
- four questions require students to work with a spatial attribute (1st key idea of the Spatial sense and Geometric Reasoning strand)
- eleven questions require students to work with orientations and transformations (2nd key idea of the Spatial sense and Geometric Reasoning strand)
- three questions require students to work with locations and representation of spaces and objects

When viewed by strands described in the SACSA Framework the following conclusions can be drawn about the focus of the test questions.

**For the exploring, analysing and modelling data strand**
- all six questions that require students to read a graph or table of information do so for the purpose of calculating. The data handling focus described in the first key ideas of this strand is non existent, e.g. any focus on patterns, relationships, spread of data, making choices, and predictions is not addressed. Simply read the graph or table and then calculate
- only one of the three questions with a random data or chance focus is reasonable, i.e. question 2. The use of pencil case is a problematic scenario for the questions about chances of randomly selecting a pencil. Who randomly selects a pencil by colour?

**For the measurement strand**
- all but one of the seven questions that could be linked with the measurement strand is actually about measurement. Four questions are about calculations, two focus on reading a scale of a drawn tool and only one question is about estimation. The focus on
measurable attributes and choosing measuring units are both absent from the questions with the exception of question 25

- while calculations focus on capacity, volume, mass, area and time, there is nothing conceptual about these measurable attributes in the questions. Nothing in the test, except question 25, explores that volume and capacity involves quantifying spaces, area involves quantifying surfaces, mass involves quantifying matter, or that time can involve quantifying durations of events or identifying cycles of events. Quantifying distances (lengths, widths, depths, diagonals, perimeters, circumferences) is absent in Year 5 but in Year 7 test
- questions dealing with time are about reading diagrams of time pieces or recording on measuring devices, or converting between formats, or calculating only. Ideas about cycles of events, natural events or cycles of events, and time spans greater than minutes and hours are absent
- overall reference to the measurement strand is nothing more than a context for calculating and not about a broader, richer view of measurement itself

For the number strand
- four of the questions focus on number concepts, questions 6, 14, 34 and 38. Question 14 is poorly worded and doesn’t make sense. Questions 34 and 38 focus on proportion, and then representing a proportion in another form, money or percentage. The latter is more Year 7 than Year 5
- approximately 45% of questions in this part of the test are about calculating, mainly addition. They are of two types: those that use reading data from tables and graphs or measurements to calculate quantities, or those that are straight out calculations (two using money as the context)
- the ideas of relationships and patterns between numbers, concepts of addition, subtraction, etc are not addressed in the test (from the 1st and 2nd key ideas of the SACSA Framework).
- of the three questions that deal with the concept of proportion, question 2 is more about fairness in a chance situation and questions 34 and 38 are ‘two part’ questions and are a focus more on calculation

For the pattern and algebraic reasoning strand
- two questions that focus on pattern in any form are about calculating a missing number
- absent from the test are the ideas about what makes a pattern a pattern, patterns that are not just about number, predicting, describing relationships, representing relationships and making generalisations (not with algebraic symbols)
For the Spatial Sense and Geometric Reasoning strand

- one question has a focus on shape and structure, the attribute of parallel sides in 2D figure. No other attribute of shape is addressed, e.g. convexity, angle, line symmetry, point symmetry, nature of boundary. Why is parallel alone addressed?
- visualising from 2D to 3D is a focus of three questions with question 1 being poorly constructed
- compass direction is the focus of three questions out of the fourteen with a focus in this strand. Why does the test need to devote 21% of the spatially orientated questions focus on compass direction?
- the only transformation tested is rotation and question 9 being poorly constructed

General comment about the mathematics privileged in this test

The SACSA Framework suggests that all five strands used to describe the valued mathematics for South Australian schools should be addressed equally in classroom programs. This also suggests that mathematics from all fourteen key ideas be addressed. The aspects of mathematics tested with in this test focuses on 9 of the 14 key ideas (approx 64% of key ideas). The spread of aspects of mathematics tested when viewed by strands is at best approximately (i.e. questions that appear across strands using contexts are counted for each strand):

- Exploring, Analysing and Modelling Data 20%
- Measurement 14%
- Number 39%
- Pattern and Algebraic Reasoning 4%
- Spatial Sense and Geometric Reasoning 23%

More realistically when the measurement and data handling contexts are sorted for what they are, calculations, the spread is approximately:

- Exploring, Analysing and Modelling Data 6.5%
- Measurement 14.5%
- Number 43%
- Pattern and Algebraic Reasoning 6.5%
- Spatial Sense and Geometric Reasoning 29.5%

The SACSA Framework also describes five ways of thinking and working mathematically that are woven through the key ideas and scope of each strand, namely:

- problem-solving, where learners:
- reasoning and proof, where learners:
- communication, where learners:
• connections, where learners:
  • representation, where learners:

At best the test has some focus aspects of:
• problem solving, where students apply a wide variety of strategies to engage with situations and solve problems, and adapt these strategies to new situations.
• connections where students recognise, use and learn about mathematics in contexts outside of mathematics

In reality, the questions on problem solving strategies are no more than mathematical skills such as calculating and map reading. There are very few questions that foreground problem solving strategies.

Similarly, the test’s attempt to contextualise mathematics is problematic for all students as it makes assumptions that all students have had similar experiences such as travelling on a train or choose contexts that are not real, i.e. the Rasmus family (as a family) purchase tap timers. The context is not important to what is being tested.

One of the claims of the test is that students will be well prepared for the test if classroom programs reflected the SACSA Framework. The analysis above suggests to teachers preparing their students for the tests that the:
• Number strand, in particular the 3rd key idea about calculating, is privileged far more than any other strand or key idea
• Spatial Sense and Geometric strand, in particular visualising and mapping, i.e. the 3rd key idea, is privileged more than the remaining three strands
• Measurement and Data Handling strands acts only as contexts for calculating.
• Data Handling and Pattern strands are of little importance
• Thinking and working mathematically which is actually central to many descriptions of numeracy is not tested, if indeed it can be with this type of assessment tool

The mathematics tested in the Year 5 test does not reflect the scope of mathematics described in the SACSA Framework as implied in the Teacher Handbook. Three points of significance:
• data handling is becoming more and more important when choosing and using mathematics and this strand is poorly represented and valued in the test.
• pattern is the basis to mathematics and hence numeracy. This strand is poorly represented and valued in the test
• thinking and working mathematically is central to many views about being numerate but is not valued in this test
The mathematics tested in the Year 7 test

Analysis of the mathematics being tested in the extended tasks
The extended task requires students to respond to ten questions privileging calculating quantities. The mathematics from three of the fourteen key ideas from the SACSA Framework are evident in the extended tasks, i.e.:

- seven questions require students to read information from the tables and text and to calculate either times, amounts of money (1st key idea of the Exploring, Analysing and Modelling Data strand, 3rd key idea of the Number strand)
- one question does not require students to use any information contained in the Kangaroo Island page but use added information to a rate (3rd key idea of the Number strand)
- one question requires students to use a scale on the map to calculate a distance. The distance is not a path shown on the map (3rd key idea of the Spatial Sense and Geometric Reasoning strand and 3rd key idea of the Number strand)
- one question is difficult to classify as it asks students to describe what a return fare means.

Analysis of the mathematics being tested in the individual numeracy questions
The individual numeracy questions require students to respond to forty three questions heavily privileging calculating. The mathematics from nine of the fourteen key ideas from the SACSA Framework are evident in the individual test questions, i.e.:

- six questions require students to read a graph or table of information (2nd key idea of the Exploring, Analysing and Modelling Data strand) with three leading a calculation (3rd key idea of the Number strand)
- two questions require students to work with random data (3rd key idea of the Exploring, Analysing and Modelling Data strand)
- three questions require students to calculate distances using relationships shown in a diagram (2nd key idea of the Measurement Strand)
- two questions required students to calculate rates with measurements (1st and 3rd key idea of the Number strand)
- three questions require students to work with numeration (1st key idea of the Number strand)
- eighteen questions require the students to calculate (3rd key idea of the Number strand), eight of these questions focus on proportion.
- two questions require students to predict numbers in a sequence (1st key idea of the Pattern and Algebraic Reasoning strand)
three questions require students to work with a spatial attribute (1st key idea of the Spatial Sense and Geometric Reasoning strand)

seven questions require students to work with orientations, transformations and enlargements (2nd key idea of the Spatial sense and geometric reasoning strand)

three questions require students to work with locations and representation of spaces and objects (3rd key idea of the Spatial sense and Geometric Reasoning strand)

When viewed by strands described in the SACSA Framework the following conclusions can be drawn about the focus of the test questions.

For the exploring, analysing and modelling data strand

- three of the six questions require students to read a graph or table of information. The remaining three questions do the same but for the purpose of calculating. The data handling focus described in the first key ideas of this strand is non existent, e.g. any focus on patterns, relationships, spread of data, making choices, and predictions is not addressed. Simply read the graph or table and then calculate

- Both questions that focus on random data use of a pencil case is a problematic scenario. Who randomly selects a pencil by colour? The two questions require students to calculate probabilities using fractional notation

For the measurement strand

- two questions focus on quantifying surface, one question focuses on counting units the other focuses on calculating area

- three questions focus on indirect measurement strategies to calculate distances. Of these three questions, one question (28) uses an inappropriate context and question 32 uses similar triangle relationships in a form not part of the Year 7 curriculum

- three questions use measurable attributes for students to calculate rates and in themselves are not about measurement

- one question focuses on converting units of measure for fluids while a second focuses on converting units of measure of distances

- the focus on measurable attributes and choosing measuring units are both absent from the questions

- indirect measurement strategies are privileged in this test

- while calculations focus on distance and area and time, there is nothing conceptual about these measurable attributes in the questions. Nothing in the test explores that volume and capacity involves quantifying spaces, area involves quantifying surfaces, mass involves quantifying matter, or that time can involve quantifying durations of events or identifying cycles of events. Quantifying distances heights and a depth appear but not widths, diagonals, perimeters, circumferences
- ideas about cycles of events, natural events or cycles of events and time spans greater than minutes and hours are absent
- overall, reference to the measurement strand is nothing more than a context for calculating and not about a broader, richer view of measurement itself

**For the number strand**
- one question focuses on the conceptual side of number, question 31
- eight questions focus on working with proportions in some way, either as decimals, fractional amounts, percentages, rates. Three additional questions linked with indirect measurement focus on ratios. i.e., approximately 21% questions focus on calculating proportions
- the ideas of relationships and patterns between numbers, concepts of addition, subtraction, etc are not addressed in the test (from the 1st and 2nd key ideas of the SACSA Framework)
- questions that refer to tables and graphs, with the exception of the ‘hourly temperature chart’, use the data solely for the purpose of calculating

**For the pattern and algebraic reasoning strand**
- two questions that focus on pattern in any form are about calculating a missing number.
- absent from the test are the ideas about what makes a pattern a pattern, patterns that are not just about number, predicting, describing relationships, representing relationships and making generalisations (not with algebraic symbols). The notion of using data to search for patterns and relationships and make predictions about what happened next or ‘between’ is absent

**For the Spatial Sense and Geometric Reasoning strand**
- two questions have a focus on shape and structure, the attribute of parallel sides in 2 D figure and one with a focus on rectangles. No other attribute of shape is addressed, e.g. convexity, angle, line symmetry, point symmetry, nature of boundary. Why is parallel alone addressed?
- the attribute of being able to tessellate is complex because it has to do with angle about a point relationships and transformations. It is not a simple ‘pick the shape’ context. This question assumes students can pick the obvious shape and is not about exploring the shapes themselves. Tessellation as a fact?
- one question focuses on 2D – 3D representations, using a net
- for those questions that focus on locations, three focus on compass direction and one has a focus on coordinates. Why does the test need to devote 25% of the spatially orientated questions on compass direction?
two transformations are tested, rotation and enlargements. Why just these two transformations?

*General comment about the mathematics privileged in this test*

The SACSA Framework suggests that all five strands used to describe the valued mathematics for South Australian schools should be addressed equally in classroom programs. This also suggests that mathematics from all fourteen key ideas be addressed. The aspects of mathematics tested with in this test focuses on 9 of the 14 key ideas (approx 64% of key ideas). The spread of aspects of mathematics tested when viewed by strands is at best approximately (i.e. questions that appear across strands using contexts are counted for each strand):

- Exploring, Analysing and Modelling Data 20%
- Measurement 14%
- Number 39%
- Pattern and Algebraic Reasoning 4%
- Spatial Sense and Geometric Reasoning 23%

More realistically when the measurement and data handling contexts are sorted for what they are, calculations, the spread is approximately:

- Exploring, Analysing and Modelling Data 6.5%
- Measurement 14.5%
- Number 43%
- Pattern and Algebraic Reasoning 6.5%
- Spatial Sense and Geometric Reasoning 29.5%
Appendix 4: Poor questions in the numeracy test

It appears, given the structure of the test, that the best questions are unambiguous, and focus on the mathematics rather than the context. Some questions:

- trivialise context by using non anglo names for the people involved and makes the assumption that all students see them as names, e.g. Pablo in the Year 3 test, Juanita, Carmen in the Year 5 test
- use a context that would be unfamiliar to many students e.g. measuring flower stems, graphing stone collections in the Year 3 test, Math Whizz, train timetables in the Year 5 test
- use a context that has tenuous ‘connections with the real world’ or simply doesn’t make sense, e.g. measuring flower stems, building letter boxes, buying water tanks in the Year 3 test, randomly drawing coloured pencils from a pencil case in the Year 5 test
- require students to read a considerable amount of text to set a context, e.g. questions 1, 15, 19, 24, 30 and 31 in the Year 3 test, questions 2, 10, 11, 30, 32 in the Year 5 test and. Is the focus of these questions reading the context or undertaking the mathematics?
- are not possible to undertake if the instructions are followed
- simply don’t make sense or are inaccurate in the way they are worded

Given this the number of poor questions for each test is:

- 30 of 46, or approximately 65% of the Year 3 questions are poor
- 15 of 48, or approximately 31% of the Year 5 questions are poor
- 13 of 53, or approximately 24%, of the Year 7 questions are poor

Poor questions from the Year 3 test:

- extended task, part A, question 1. How do students show their working?
- extended task, part B, question 2. The map shows the position of Murray Camp some distance from River Road. Do students estimate this distance and add to the distances on the road? Do the red dots on the road supposed to show exact distances? If so, how do students know they only add these distances that in fact will not take them to the camp site according to the map?
- extended task, Part C. Students are required to use *The Holiday* page to complete this part. They can’t. The page doesn’t contain any information relevant to this question
- extended task, Part D. Students are required to use *The Holiday* page to complete this part. They can’t. The page doesn’t contain any information relevant to this question They are also asked to show their working. How do they show counting minutes on a representation of a clock face?
practice question 1, a 5cm cricket bat? Why?

question 1, how much reading do students have to complete to undertake a subtraction problem?

question 3, shows four representations of solids and not solids at all?

question 4, how many students count trees on the way to school let alone tally them? Why not simply ask how many is shown by this tally?

question 5 like question 3 is a representation of a solid and why are the measurements necessary?

questions 6, 7 and 8 use a context that is not part of students’ experiences. Which 8 year olds graph the quantities of their stone collections? Even if this was a reasonable context why are the buckets shown? What do they add to the information? They are a distracter

question 10, the names are not needed and the seesaw picture is a distracter. In real life a difference of 4 kg does not mean that the heavier person cannot be at the highest point. It also depends on how close to the fulcrum one sits and if you lean forward or back. Students who have played on a seesaw would know this. Why not simply ask which number is greater than 29. The reference to mass here is irrelevant to focus of the question

question 11. Who measures flower stems? The edges of each stem are also marked to show which lengths are to be measured. How are students alerted to this? If this is the case why simply have students measure 4 lines? Technically stems are attached to the fruit, seed part of the flower and not stop at the lowest point of the flower. Students who have explored flowers would know this. Then there is the question of orientation, are students measuring height or length?

question 12. How far has the snail moved? Does this mean moved to create a trail and if so do students have string available to match accurately the total distance with the corners as shown? Again, the black marks to show start and finish. Do the two marks indicate the start position of the backmost part of the snail’s foot at the start and at the finish of the trail. How are the students alerted to this or indeed that the white line is the snail’s trail? Implications for whether the snail’s body length is included. This could also be interpreted as a measurement across the page where the distance moved is not the path but the distance between start and finish positions.

questions 13 and 14. If students are confused with question 11 they will have the same confusion with both these questions

question 15. The context of Mrs Branch is a distracter and adds to the amount of unnecessary reading students undertake. As there is no exchanging of measuring units the reference to litres is irrelevant. The question should simply be which number is greatest or largest?

question 16. The context of Jemma’s piggybank is a distracter and adds to the amount of unnecessary reading students undertake. Simply ask how much money is shown?
• question 18. The context of Kathy and Kym’s spinner is a distracter and adds to the amount of unnecessary reading students undertake. Simply ask, which spinner gives grey or white an equal chance of winning?

• question 20 doesn’t make sense. 8 000+40+9 itself is not a number. So how will students interpret the instruction ‘write the following number in the box below?’ (See PowerPoint: Example 4)

• question 24. The context of John counting pencils is a distracter and adds to the amount of unnecessary reading students undertake. Four groups of ten and three single pencils are shown. How many pencils altogether? If the purpose of the question is to count by 10s and then add three then students could simply circumvent this strategy by counting each pencil

• question 28 is a two step pattern shown only in number form. Unsuitable for Year 3.

• question 29. The context of Pete buying an ice cream is a distracter and adds to the amount of unnecessary reading students undertake. Simply ask how much money is shown?

• questions 30 and 31 refer to a particular graph that has a title in the lead up instructions to the pair of questions. Why do students need to read ‘from the 1st to the 8th June 2003 for each question. Again unnecessary text for what are numeracy questions

• question 32. Is it more significant to know where students believe the two lines of symmetry are positioned on a rectangle or that a rectangle has two lines of symmetry? This is the difference between the focus of a question being on a concept or on a fact. Eight and nine year olds are still developing concepts of line symmetry and typically test for this attribute of shape using a ‘fold test’ or a mirror. The test materials do not support this

• question 34. How many students have an idea of the context of a monkey climbing a tree?

• question 35. Why have the diagrams? What do they add to the question other than a distracting cue. Mass does not necessarily relate directly to the dimensions of a package. It is a quite different attribute. Postal services would actually have different sized bags for different weights within the ranges shown?

• question 36. There are no solids, only representations of solids

Poor questions from the Year 5 test:

• extended task, part E. What is the concept perimeter being used in part E? ‘… ride around the perimeter of the park,’ does perimeter mean the fence line or the pathway shown? The pathway is not the park’s perimeter but the fence line is. However, the distances shown on the map are next to the pathway. Is the question asking about perimeter of the park or about the length of the pathway?

• question 1. What is meant by most likely?
questions 5 to 7 make the assumption that students know that Maths Whizz is a game like number bingo. Have all students played Maths Whizz? If this is to be used as a context then a better description of the setting needs to be given. This would add to one of the key problems of the test; the amount of reading students need to undertake to complete a mathematics task.

question 8 actually refers to a picture or drawing of a clock face, not a clock.

question 9. To position shape A would actually mean to slide and turn. i.e. more than one transformation. Is this question about ‘to shape A orientate shape A the same as shape B?’ The term orientate would be a challenge for a Year 5 student’s comprehension.

question 14 doesn’t make sense. 8 000+40+9 itself is not a number, so how will students interpret the instruction ‘write the following number in the box below?’

question 15 is much too difficult for Year 5. Question 31 is more suitable and tests the same aspect of mathematics. Year 5’s would need to make the net in question 15 and fold it to respond to this question. Are they resourced to do so?

question 16. Why have the diagrams? What do they add to the question other than a distracting cue. Mass does not necessarily relate directly to the dimensions of a package. It is a quite different attribute. Postal services would actually have different sized bags for different weights within the ranges shown?

question 25. Students in Year 5 are most typically exploring area by covering with units or counting consistent units on grids. Most students would count all squares and many part squares to find a more exact amount than the approximations given as possible options. Much time counting when an approximation is needed.

question 30. Students are asked to use railway timetable of page 3 of the magazine to answer this question, which is impossible.

question 34 is unsuitable for Year 5. The question asks students to determine a fraction, convert it to a percentage and, depending on the strategy used, take the fraction from 1 or take the % from 100%. Students in Year 5 have yet to develop abstract connections between fractions and percentages as different ways to describe proportions let alone undertake a three step process to achieve this.

questions 36 and 37 are confusing from two points of view. Firstly, who in the real world randomly select coloured pencils from a pencil case, let alone even think of the chances of selecting the colour they want? Secondly, the picture does not show all the pencils possible so why have this as a cue if it cannot be used by visual thinkers?

question 39 is unsuitable for Year 5. As stated above, Year 5 students are developing their understanding of area by covering with units or using grids. They may have informal notions of the relationship between rows of square units and the number of squares in each row to quantify rectangular surfaces but not to formalise this as a formula. The 3D sketch of the board makes it difficult for those students who would like to ‘see’ the metres squares on the board and count them to do so.
Poor questions from the Year 7 test:

- extended task in general assumes all students have had the experience of planning for a holiday / trip such as this
- extended task, part B, how do students show their working?
- extended task, part C question 1, what is the focus of this question? Which aspect of numeracy does this test?
- extended task, part C question 2, how do students show their working if it is simply data taken from a table?
- extended task, part E, students are required to use the ‘Islands Impressions’ (see instructions) to answer this question and yet cannot
- extended task, part F, the students are asked to use the scale on the map to calculate the distance between Adelaide to Kingscote (8.5cm). Firstly, the distance in a straight line is between 8 and 8.5 cm depending upon which part of the large ‘dots’ you measure from. Secondly, the whole context of the ‘Island Impressions’ is about a drive – sail trip. This distance is a straight line over water and hence assumes a flight. No roads marked on the map go to Kingscote so where is the consistency with the context?
- extended task parts G and H, the trivial use of names. Five questions use the introduced person Norm and Lisa and then the last two questions use the non introduced Wang family
- question 8. Most students would count all squares and many part squares to find a more exact amount than the approximations given as possible options. Much time counting when an approximation is needed
- question 14 can be interpreted in two ways. One interpretation could use the ‘normal price’ as $1.50 and then save 50 cents so 33.33% discount. A second interpretation could use $1.50 as the discount price, hence the normal price $2 with a 25% discount
- questions 18 and 19 are confusing from two points of view. Firstly, who in the real world randomly select coloured pencils from a pencil case, let alone even think of the chances of selecting the colour they want? Secondly, the picture does not show all the pencils possible so why have this as a cue if it cannot be used by visual thinkers?
- question 28, how is this a meaningful context?
- question 32, question inappropriate for Year 7 students, question 17 is a far more suitable question for testing this aspect of mathematics for Year 7. Typically, Year 7 students are beginning to make generalisations and use variables in informal ways and symbols. The use of abstract symbols for a variable is unsuitable here