Beyond logocentric literacy assessment: issues in assessing multimodal reading comprehension

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An agenda for discussion…

- Introduction: A consensus on the need for re-theorising reading as multimodal text interpretation.

- The ELLA program as a practical informative site for appreciating the integrative role of images and language in constructing meaning.

- The role of images and image/text relations in the BST 1998 - 2000: An exploratory study.

- Projected research on images and image/text relations in reading comprehension.

- Practical implications for enhanced design of group literacy tests.
Introduction: A consensus on the need for re-theorising reading as multimodal text interpretation.
Re-thinking Reading

A fundamental issue in this paper is the need to reconceptualize reading comprehension as the integrative processing of information from print and images.
The Consensus

In order to understand the role of print in the digital age, it is essential to have a solid grasp of the growing integrative relationship of print and graphics" (p.22)

The impetus provided by the convergence of the culture of the visual and traditional school education intensifies the need for teachers to investigate models of picture–word use.

The changing nature of society underlines the imperative for increased metatextual awareness and visual literacy, including an understanding of picture–word combinations.

It is "particularly important" that research be undertaken "in the comprehension of graphics and text and the study of whether (and how) referential connections between visuals and text can be explicitly taught”.

... no text is an image. No text has the exact set of meaning-affordances as any image. No image or visual representation means in all and only the same ways that some text can mean. It is this essential incommensurablility that enables genuine new meanings to be made from the combinations of modalities.

...many contemporary texts make use of image and of writing at the same time, using both to carry meaning in specific ways. In that context, a theory of reading which relates to the graphic material of 'letters' alone is no longer able to explain how we derive meaning from texts.

“Serial cognitive processing of linear print text” no longer adequately characterizes contemporary reading and writing, which now involve “parallel processing of multimodal text-image information sources”.

"... it is the visual/verbal interface that is at the heart of literacy learning and development for both computer-users and those without access to computers."


Mum had brought some chocolate and Harry and I were starving. “Can we have it now?” I asked.
“No, not yet,” said Dad.
“Why not?” whined Harry.
“Because,” said Dad.
“Because what?” I asked.
“Because I say so,” said Dad.
It seemed he was in one of his moods.

Then we saw the tigers. One of them was just walking along a wall of the cage, then turning round and walking all of the way back. Then it would start again. “Poor thing,” said Mum.
“You wouldn’t say that if it was chasing after you,” snorted Dad. “Look at those nasty teeth!”
The ELLA program as a practical informative site for appreciating the integrative role of images and language in constructing meaning.
Ginger, please put that away and go to bed!

Aw, Mum, I'm nearly on the final level!

For the last time! Bed! Now!

Enjoy all your bossing around while you can! Once I'm eighteen, I'm outta here!

I can't wait! I'll go to bed when I want to go to bed! Get up when I want to get up! Eat what I want to eat! Do everything I want to do!

Including cooking your own meals, washing your own clothes!

Paying off your own car, your own house!

The road of life would have more appeal if people didn't keep putting pot holes in it!
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Be inventive!
Be creative!
Be original and WIN!

Prizes presented at Powerhouse Museum
18. When Ginger's mum says *put that away* she is referring to his
   ○ pets
   ○ game
   ○ clothes
   ○ suitcase

19. Which of the following words best describes how Ginger feels in this picture?
   ○ angry
   ○ pleased
   ○ stunned
   ○ confident

20. Which of the following sayings best captures the theme of this text?
   ○ Life is a bed of roses.
   ○ All that glitters is not gold.
   ○ A stitch in time saves nine.
   ○ Every cloud has a silver lining.

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22. What must all entrants do?
   ○ build a scientific model
   ○ design a new technology
   ○ write a scientific research report
   ○ complete a scientific investigation

23. The series of diagrams down the left hand side of the poster is
   ○ a key
   ○ a signpost
   ○ a flowchart
   ○ a family tree

24. Which stage of the process does this diagram represent?
   ○ building a model
   ○ sending in the entry
   ○ presenting the report
   ○ conducting an investigation

25. Who is the intended audience for the poster?
   ○ employees of Intel
   ○ Powerhouse Museum
   ○ students and teachers
   ○ cartoonists and artists
The role of images and image/text relations in the BST 1998 - 2000: An exploratory study.
Reading Images and Image/Text Relations in the BST

Research Questions

• How many and what kinds of images are included in the New South Wales Basic Skills Tests?

• How many and what kinds of questions explicitly target the role of images in reading comprehension and how many and what kinds of questions could be answered using images when this was not the intention of the question?

• How are the questions targeting the role of images distributed across different types of images and how are the questions which do not target images but which could in fact be answered using images, distributed across the different types of images?
Narrative Images

Narrative images depict participants (human or non-human) participating in actional, reactional and/or verbal events.
Conceptual Images

Conceptual images depict classifications or part-whole relations or symbolic relations. Conceptual images are often maps, graphs, figures, symbols, diagrams, charts.
# Types of Images in the BST

<table>
<thead>
<tr>
<th>Data on Test Items and their relation to Images</th>
<th>BST 1998</th>
<th>BST 1999</th>
<th>BST 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Narrative images</td>
<td>6</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Narrative images involving test items</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Conceptual images</td>
<td>5</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Conceptual images involving test items</td>
<td>4</td>
<td>9</td>
<td>5</td>
</tr>
</tbody>
</table>
Strategies for Determining the Correct Response

1. Read main text
2. Read supplementary text
3. Read main text and supplementary text
4. Read main text and image
5. Read supplementary text and image
6. Read image
7. Read text structure
8. Prior knowledge
Image/Text Relations in the BST

• Strategy 4: Read the main text and the image

In this strategy, the answer to the test item is obtained by reading the main text and the image.

An example of this is found in BST 1998, test item 38, page 14 of the magazine.

The answer to this test item required reading the main text to determine which marine stinger had fronds, identify the corresponding image, and locate the correct image from the test booklet.
Non-targeted strategies

BST 1999, test item 17 states:

17. This text says that the climate could be four degrees warmer...
   - by 2050
   - by 1980
   - in the decade of the 1980s
   - in more than two centuries

The related text (main text), on page 6 of the magazine, states:
'Since 1980 the world's climate has become half a degree warmer. The 1980s was the hottest decade in more than two centuries. The climate is expected to heat up another one to four degrees by the year 2050.'.

The report item description states: 'interpret information that is directly stated in a sentence.' The targeted strategy to answer this test item is therefore strategy 1: 'Read main text'.

However, the text is placed next to an image of a thermometer, which gives a visual representation of the increase in the Earth's temperature by 2050. By reading the image and related secondary text (caption) a correct answer could be obtained.
# Targeted and non-targeted strategies

## BASIC SKILLS TEST 1998 1999 2000

<table>
<thead>
<tr>
<th>Ways of obtaining a correct response</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STRATEGY 4</strong></td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Read the image and main text</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>STRATEGY 5</strong></td>
<td>1</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Read image and supplementary text</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>STRATEGY 6</strong></td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Read image</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
Test Items and Image Types

<table>
<thead>
<tr>
<th>Basic Skills Tests (year five)</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of test items involving <strong>narrative</strong> images</td>
<td>0</td>
<td>1</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Number of test items involving <strong>conceptual</strong> images</td>
<td>4</td>
<td>8</td>
<td>11</td>
<td>23</td>
</tr>
</tbody>
</table>
Test items and targeted and non-targeted use of images

<table>
<thead>
<tr>
<th>Basic Skills Tests (year five)</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of test items in which images were explicitly targeted</td>
<td>3</td>
<td>6</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>Number of test items explicitly targeting narrative images</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Number of test items explicitly targeting conceptual images</td>
<td>3</td>
<td>6</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td>Number of test items encompassing non-targeted reading strategies involving images</td>
<td>1</td>
<td>3</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>Number of test items encompassing non-targeted reading strategies involving narrative images</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Number of test items encompassing non-targeted reading strategies involving conceptual images</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>10</td>
</tr>
</tbody>
</table>
Conclusions

• increase over time in the number of test items involving the reading of images

• larger number of test items in 2000 for which the use of images was included in non-targeted reading strategies

• marked emphasis on conceptual rather than narrative images in these tests
Projected research on images and image/text relations in reading comprehension.
The theory gap

The generation of questions assessing the comprehension of printed text in group-administered written tests has been able to draw on well-established, research-based comprehending practices drawing on theoretical descriptions of the relationship between the grammatical and rhetorical structure of language and the construction of meaning. There is no equivalent tradition concerning the role of images in the comprehension of multimodal texts. While recent syllabus documents require the teaching of 'viewing' or the reading of images, there is a paucity of research-based theoretical frameworks to guide the teaching and assessment of students' understanding of how images contribute the interpretive possibilities of texts.
The research challenge

The challenge is firstly to develop a model of image/text relationships in the intermodal construction of meaning. The next stage of the challenge is to determine how to generate questions that will indicate how young readers are accessing the range of image/text relationships entailed in such a model in their comprehension of different types of reading materials.
Practical implications for enhanced design of group literacy tests
The proposed research will provide important information which will:

• guide the training of item writers
• add to the information used to select texts and items for inclusion in tests
• inform the reporting of test results by enabling systems to more explicitly describe the skill or knowledge required for a student to successfully respond to an item
• enable systems to support teachers so that they are able to explicitly teach students the skills required to successfully gain meaning from multimodal texts
• assist all students to be able to interpret and gain information from a variety of multi-modal texts.