Literacy Skills in University Students: Tools for Support

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Context

- College of Education, University of Canterbury
- Our role – To teach those who will teach
- Education = A public health intervention?
College of Education Students

• What do our undergraduate pre-service teachers look like?
• What do we expect of these individuals on entry?
• What expectations do we have of these students on graduation?

• Do we have a further role to play?
Rationale

• Reading is a complex activity consisting of multiple levels of interactive processes.

• Comprehension is an integrative process in which information from different sources / sentences is combined.

• Comprehension is also a constructive process in which information is supplemented by other attributes.

• Early intervention is important, but what about those students who do not receive intervention?

• Research into adult intervention for reading is limited.
Rationale

• Teachers should be good reading models for their students and should be able to demonstrate effective reading strategies in their classroom.

• Teachers’ early reading experiences may affect their students’ reading experiences.

• They are expected to be able to select suitable strategies for the needs of their students and transfer them into the classroom context.

• Many teachers are unfamiliar with reading strategies or know how to use them themselves.
Theory of Reading

• The Simple View of Reading (Gough & Tunmer, 1986)

• States that poor reading skills results from one of three conditions:
  1. Adequate decoding skill, poor language comprehension
  2. Adequate language comprehension, poor decoding skill
  3. Weaknesses in both language comprehension AND decoding skill
Identifying Students in Need of Support

- Large scale assessment of a cohort of education students
- Assessed across a variety of measures of literacy

<table>
<thead>
<tr>
<th>Literacy Measure (score total)</th>
<th>Mean</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spelling (24)</td>
<td>15.07</td>
<td>7 – 22</td>
</tr>
<tr>
<td>Reading Comprehension (20)</td>
<td>10.94</td>
<td>4 – 19</td>
</tr>
<tr>
<td>Language Structure Knowledge (21)</td>
<td>13.79</td>
<td>4 – 21</td>
</tr>
<tr>
<td>Inferencing (30)</td>
<td>23.44</td>
<td>12 – 30</td>
</tr>
<tr>
<td>Working Memory (24)</td>
<td>16.73</td>
<td>6 – 23</td>
</tr>
</tbody>
</table>
n = 129

Education students

Within 1SD
n = 104

1SD below
n = 25

Intervention Group
n = 17
What does it mean to struggle with reading?

Sometimes just reading the instructions for an assignment requires a break.

I don’t always study
But when I do, I still fail
So what did we do?

- Four strategies were used as support/intervention for these students.

1. Text-to-speech software
2. Pre-learning words
3. Mind mapping
4. Highlighting and summarising

Meta-cognitive strategies
Intervention - Methodology

• Each student participated in 5 individual sessions

• Session outline:
  Explain the strategy
  Demonstrate the strategy
  Allow student to practice the strategy
  Summarising task using the strategy
  Reading comprehension task using the strategy
1. Text-to-speech

- Provided by UC for students identified with dyslexia
- Available to UC students (on all campus computers)
- Auditory as well as visual stimuli – multisensory approach
- Students were able to listen to the text as they tracked through and read it themselves.
- They were able to adjust a number of different features e.g. speed, style, pitch, and volume.
2. Pre-learning words

• Students were given a word list containing words that were identified as potentially difficult or unknown.

• They had access to this list prior to and during reading.

• This strategy aimed to assist students’ reading fluency and concentrate on the meaning of the text.

• There was lots of positive feedback about this strategy.
3. Mind maps

- Students were asked to create mind maps that represented the text they had read.
- They were encouraged to make them individual to them, using colour, pictures, or keeping them simple, depending on what they found most useful.
- This is an on-line, or meta-cognitive task. One that requires the individual to think about what they are doing as they are doing it.
4. Highlighting and Summarising

• This was the second meta-cognitive strategy.

• Students were asked to highlight text that they considered to be important, and ideas that were central to understanding the reading.

They were then asked to make concise summaries of the text they had highlighted, in a systematic way.
Results – Reading Comprehension

Interventions for Reading Comprehension

- Baseline
- Text-to-speech
- Pre-learning words
- Mind maps
- Highlighting & Summarising

Mean Score (maximum 10)
Results – Content and Time Taken

Mean number of words produced in summarising task

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Number of words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text-to-speech</td>
<td>50</td>
</tr>
<tr>
<td>Pre-learning words</td>
<td>70</td>
</tr>
<tr>
<td>Mind maps</td>
<td>60</td>
</tr>
<tr>
<td>Highlighting and summarising</td>
<td>90</td>
</tr>
</tbody>
</table>

Mean time taken to produce summary

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Time in seconds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text-to-speech</td>
<td>150</td>
</tr>
<tr>
<td>Pre-learning words</td>
<td>200</td>
</tr>
<tr>
<td>Mind maps</td>
<td>250</td>
</tr>
<tr>
<td>Highlighting and Summarising</td>
<td>300</td>
</tr>
</tbody>
</table>
Results – Pre and Post

Mean reading comprehension scores pre and post intervention for both groups

Assessment Point

Correct Answers (Percentage)

Control Group (n=112)
Intervention Group (n=17)
Conclusions

• Adolescents / adults who reach university have often developed ways of coping with reading difficulties that may have helped them to ‘get by’, but still remain as underlying difficulties.

• Adults are more complex than children and their ‘literacy profile’ may provide insight into which strategies may work best for them as an individual.

• Simply providing these students with a computer does not seem to be the answer.

• Meta-cognitive strategies to aid reading comprehension seem to result in the best gains in comprehension ability.

• Wide spread of results in time taken and content produced.
Implications for students

• There is a need to provide support for students who struggle with literacy.

• We need to identify these students as early as possible in their university pathway.

• Different strategies may be appropriate for different students.

• Relying on computers to provide enough support may not be as beneficial as we believe it to be.

• Improvements are possible.
Implications for teaching

• Improved literacy in pre service teachers will hopefully result in improved teaching for the next generation of students.

• The earliest form of intervention.

• Reading comprehension impacts on a great deal of what takes place in the classroom.

• Increasing students’ awareness of the strategies to support their own reading comprehension will hopefully translate into the classroom to provide support strategies for struggling readers that they subsequently teach.