Evidence into action – literacy

Dr Tanya Vaughan, Webinar, 30 October 2018
We acknowledge and pay respect to the past, present and future traditional custodians and elders of this country on which we meet.
Outline of webinar

• What does the evidence tell us about the effectiveness of different ways to teach literacy?
• What does the evidence tell us about effective teaching approaches?
• Measuring literacy outcomes
• Evidence ecosystem
• Questions
Learners’ backgrounds makes a difference to their starting points in literacy

- By the time children are aged 4, the children from professional parents have heard 30 million more words that those from the lowest Social Economic Status (SES) group.
- High SES households receive more encouraging linguistic input, as well as more expansions and recasts of their own utterances.

<table>
<thead>
<tr>
<th>Parental background</th>
<th>Number of words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional parents</td>
<td>2153 words/hour</td>
</tr>
<tr>
<td>Parents from low SES background</td>
<td>1251 words/hour</td>
</tr>
<tr>
<td>Parents on government assistance</td>
<td>616 words/hour</td>
</tr>
</tbody>
</table>

Further studies into the different starting points for children

Children from homes with lower SES:

- produced fewer vocalisation
- engage in fewer adult-child interactions
- exposed to fewer daily adult words (Gilkerson et al., 2017)

- Another study did not find the same gap although they used different samples (none from high SES) and found similar amounts of words heard between families (Sperry et al., 2018).
## Five elements of evidence-based reading instruction

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
<th>In the classroom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phonemic awareness</td>
<td>The ability to hear the sounds in spoken words and understand that words are made up of sequences of sounds.</td>
<td><strong>Phoneme blending</strong>: combining individual phonemes to form words.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Phoneme segmentation</strong>: breaking words into their individual phonemes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Phoneme manipulation</strong>: the ability to manipulate sounds in words.</td>
</tr>
<tr>
<td>Phonics</td>
<td>An approach to teaching reading that develops learners’ phonemic awareness. Decoding new words by sounding them out and combining or ‘blending’ the sound-spelling patterns.</td>
<td>Systematic phonics approaches explicitly teach students a comprehensive set of letter-sound relationships.</td>
</tr>
</tbody>
</table>

## Five elements of evidence-based reading instruction

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<th>Description</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Fluency</td>
<td>Reader’s ability to recognise words accurately and quickly and to read aloud with appropriate expression.</td>
<td>Repeated reading: learners read passages aloud several times and receive guidance and feedback from their teacher.</td>
</tr>
<tr>
<td>Vocabulary</td>
<td>The words learners’ know and use when communicating with others.</td>
<td>Three tiers of words</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1) First tier – everyday words – e.g. <em>cat</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Second tier – complex but occur regularly e.g. <em>coincidence</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) Third tier – specific contexts – e.g. <em>pheromone</em></td>
</tr>
<tr>
<td>Comprehension</td>
<td>Learners’ understanding of the text. Requires sufficient vocabulary.</td>
<td>Teaching specific strategies that students can apply to both monitor and overcome barriers to comprehension. These include prediction, questioning, clarifying, summarising, inference and activating prior knowledge.</td>
</tr>
</tbody>
</table>


Three common approaches to teaching literacy

1. Reading comprehension strategies
2. Oral language interventions
3. Phonics

What are they and what does the evidence say about their effectiveness?

evidenceforlearning.org.au/the-toolkit/full-toolkit/
The Teaching & Learning Toolkit

+5 Average months’ worth of learning progress;

$ Cost to implement; and

🔒 The security of evidence.
Cost estimations are based on the approximate cost of implementing an approach in a class of 25 students. Cost estimates commonly include the cost of additional resources, and the cost of training or professional development if required.

<table>
<thead>
<tr>
<th>Cost</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>$</td>
<td><strong>Very low:</strong> up to about $4,000 per year per class of 25 students, or less than $160 per student per year.</td>
</tr>
<tr>
<td>$$</td>
<td><strong>Low:</strong> $4,001 to $8,000 per year per class of 25 students, or up to about $320 per student per year.</td>
</tr>
<tr>
<td>$$$</td>
<td><strong>Moderate:</strong> $8,001 to $30,000 per year per class of 25 students, or up to about $1,200 per student per year.</td>
</tr>
<tr>
<td>$$$$</td>
<td><strong>High:</strong> $30,001 to $50,000 per year per class of 25 students, or up to $2,000 per student per year.</td>
</tr>
<tr>
<td>$$$$$</td>
<td><strong>Very high:</strong> over $50,000 per year per class of 25 students, or over $2,000 per student per year.</td>
</tr>
</tbody>
</table>
## Evidence security

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Very limited</strong></td>
<td>Quantitative evidence of impact from single studies, but with effect size data reported or calculable. No systematic reviews with quantitative data or meta-analyses located.</td>
</tr>
<tr>
<td><strong>Limited</strong></td>
<td>At least one meta-analysis or systematic review with quantitative evidence of impact on achievement or cognitive or curriculum outcome measures.</td>
</tr>
<tr>
<td><strong>Moderate</strong></td>
<td>Two or more rigorous meta-analyses of experimental studies of school age students with cognitive or curriculum outcome measures.</td>
</tr>
<tr>
<td><strong>Extensive</strong></td>
<td>Three or more meta-analyses from well-controlled experiments mainly undertaken in schools using student achievement data with some exploration of causes of any identified heterogeneity.</td>
</tr>
<tr>
<td><strong>Very extensive</strong></td>
<td>Consistent high quality evidence from at least five robust and recent meta-analyses where the majority of the included studies have good ecological validity and where the outcome measures include curriculum measures or standardised tests in school subject areas.</td>
</tr>
</tbody>
</table>

### Average months’ worth of learning progress

<table>
<thead>
<tr>
<th>Months impact</th>
<th>Effective size from</th>
<th>... to</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-0.01</td>
<td>0.01</td>
<td>Very low or no effect</td>
</tr>
<tr>
<td>1</td>
<td>0.02</td>
<td>0.09</td>
<td>Low</td>
</tr>
<tr>
<td>2</td>
<td>0.10</td>
<td>0.18</td>
<td>Low</td>
</tr>
<tr>
<td>3</td>
<td>0.19</td>
<td>0.26</td>
<td>Moderate</td>
</tr>
<tr>
<td>4</td>
<td>0.27</td>
<td>0.35</td>
<td>Moderate</td>
</tr>
<tr>
<td>5</td>
<td>0.36</td>
<td>0.44</td>
<td>Moderate</td>
</tr>
<tr>
<td>6</td>
<td>0.45</td>
<td>0.52</td>
<td>High</td>
</tr>
<tr>
<td>7</td>
<td>0.53</td>
<td>0.61</td>
<td>High</td>
</tr>
<tr>
<td>8</td>
<td>0.62</td>
<td>0.69</td>
<td>High</td>
</tr>
<tr>
<td>9</td>
<td>0.70</td>
<td>0.78</td>
<td>Very high</td>
</tr>
<tr>
<td>10</td>
<td>0.79</td>
<td>0.87</td>
<td>Very high</td>
</tr>
<tr>
<td>11</td>
<td>0.88</td>
<td>0.95</td>
<td>Very high</td>
</tr>
<tr>
<td>12</td>
<td>0.96</td>
<td>&gt;1.0</td>
<td>Very high</td>
</tr>
</tbody>
</table>
Reading comprehension strategies

High impact, very low cost, based on extensive evidence

On average, reading comprehension approaches deliver an additional six months’ progress.

### 1.2
**Understand how students learn**

Demonstrate knowledge and understanding of research into how students learn and the implications for teaching.

### 1.5
**Differentiate teaching to meet the specific learning needs of students across the full range of abilities**

Demonstrate knowledge and understanding of strategies for differentiating teaching to meet the specific learning needs of students across the full range of abilities.
Reading comprehension strategies

Reading comprehension strategies focus on the learners’ understanding of written text. Students are taught a range of techniques which enable them to comprehend the meaning of what they read.

They teach a range of techniques that enable students to comprehend the meaning of what is written, such as:

- inferring the meaning from context,
- summarising or identifying key points,
- using graphic or semantic organisers,
- developing questioning strategies, and
- monitoring their own comprehension and identifying difficulties themselves

[Diagram showing categories and characteristics of Vertebrates, Reptiles, Fish, Birds, and Mammals]

evidenceforlearning.org.au/the-toolkit/full-toolkit/
Oral language interventions

Moderate impact for very low cost, based on extensive evidence.

Overall, studies of oral language interventions consistently show positive benefits on learning.

1.2 Understand how students learn
Demonstrate knowledge and understanding of research into how students learn and the implications for teaching.

1.5 Differentiate teaching to meet the specific learning needs of students across the full range of abilities
Demonstrate knowledge and understanding of strategies for differentiating teaching to meet the specific learning needs of students across the full range of abilities.
Oral Language Interventions

Oral language interventions emphasise the importance of spoken language and verbal interaction in the classroom.

They are based on the idea that comprehension and reading skills benefit from explicit discussion of either the content or processes of learning, or both. Oral language approaches include:

- Targeted reading aloud and discussing books with young children
- Explicitly extending students’ spoken vocabulary
- The use of structured questioning to develop reading comprehension.
Phonics

Moderate impact for very low cost, based on very extensive evidence.

Phonics approaches have been consistently found to be effective in supporting younger readers.

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Demonstrate knowledge and understanding of strategies for differentiating teaching to meet the specific learning needs of students across the full range of abilities.
Phonics

- Phonics is an approach to teaching reading, and some aspects of writing, by developing learners’ phonemic awareness.
- This involves the skills of hearing, identifying and using phonemes or sound patterns in English.
- Phonics emphasises the skills of decoding new words by sounding them out and combining or ‘blending’ the sound-spelling patterns.
- Phonics improves the accuracy of the child's reading but not the comprehension.

evidenceforlearning.org.au/the-toolkit/full-toolkit/
Helping bridging the gap as students enter high school

• The effectiveness of any reading catch-up approach is related to the student’s current reading level. It is important that staff have skill and training in diagnostic assessment, as well as in delivering any particular intervention.

• Assessment should help identify whether problems are predominantly related to word recognition, vocabulary knowledge, comprehension or a combination of the above.

• Both one to one and small group tuition can help students catch up. One to one tuition has a slightly higher average impact and a more secure evidence base, but in some cases small group tuition can be as effective. Given its lower cost, schools could consider trialling small group tuition as a first option, before moving to one to one tuition if small group tuition is ineffective.

## Effective secondary reading approaches

<table>
<thead>
<tr>
<th>Approach</th>
<th>Name of program</th>
<th>Effect size</th>
<th>What?</th>
<th>How?</th>
</tr>
</thead>
<tbody>
<tr>
<td>One to one tuition</td>
<td>Perry Beeches</td>
<td>0.36</td>
<td>One hour of tutoring every two weeks to Year 7 students focused on reading and writing.</td>
<td>Coaches worked individually with students.</td>
</tr>
<tr>
<td>One to one tuition</td>
<td>REACH Tutoring</td>
<td>0.42</td>
<td>35 minute sessions once a week for 20 weeks.</td>
<td>Tutors are specially trained teacher aides.</td>
</tr>
<tr>
<td>Small group tuition</td>
<td>Butterfly Phonics</td>
<td>0.30</td>
<td>Groups of 6-8 students with formal phonics instruction, understanding the global aspects of a text, and class discussion of text meaning to improve reading comprehension.</td>
<td>Taught by trained practitioner and an assistant.</td>
</tr>
</tbody>
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</thead>
<tbody>
<tr>
<td>Collaborative learning</td>
<td>The Reading Edge</td>
<td>0.29</td>
<td>Partner reading, story retelling, story writing, word mastery and story-structure activities. Instruction focuses on explicit teaching of metacognitive strategies.</td>
<td>Middle school students work in groups of four or five to build each others reading skills.</td>
</tr>
<tr>
<td>Metacognitive strategy</td>
<td>Reading Intervention through Strategy Enhancement (RISE)</td>
<td>0.16* mean weighted Although 0.27 for moderate risk students</td>
<td>Students given the opportunity to read independently, to work in small groups and receive whole group lessons.</td>
<td>No additional time given to teaching literacy, rather the time is used for RISE.</td>
</tr>
</tbody>
</table>

What are the different ways we can use these strategies to teach literacy?

- One to one tuition
- Small group tuition
- Peer tutoring
- Digital technology
- Collaborative learning

evidenceforlearning.org.au/the-toolkit/full-toolkit/
What does the evidence tell us about effective teaching approaches?

What does the evidence tell us about the best ways to develop learners’ literacy skills?

To find out, we can use the Toolkit…

evidenceforlearning.org.au/the-toolkit/full-toolkit/
One to one tuition

Moderate impact for high cost, based on extensive evidence.

Evidence indicates that one to one tuition can be effective.

<table>
<thead>
<tr>
<th>Average cost</th>
<th>Evidence security</th>
<th>Months’ impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ $ $ $ $</td>
<td>$ $ $ $ $</td>
<td>+5</td>
</tr>
</tbody>
</table>

1.2 Understand how students learn
Demonstrate knowledge and understanding of research into how students learn and the implications for teaching.

1.3 Students with diverse linguistic, cultural, religious and socioeconomic backgrounds
Demonstrate knowledge of teaching strategies that are responsive to the learning strengths and needs of students from diverse linguistic, cultural, religious and socioeconomic backgrounds.

1.5 Differentiate teaching to meet the specific learning needs of students across the full range of abilities
Demonstrate knowledge and understanding of strategies for differentiating teaching to meet the specific learning needs of students across the full range of abilities.
Small group tuition

Moderate impact for moderate cost, based on limited evidence.

Overall, the pattern is that small group tuition is effective and, as a rule of thumb, the smaller the group the better.

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Peer tutoring

Moderate impact for very low cost, based on extensive evidence.

Overall, the introduction of peer tutoring approaches appears to have a positive impact on learning.

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Digital technology

Moderate impact for moderate cost, based on extensive evidence.

Overall, studies consistently find that digital technology is associated with moderate learning gains.

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Collaborative learning

Moderate impact for very low cost, based on extensive evidence.

The impact of collaborative approaches on learning is consistently positive.

<table>
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<tr>
<th>1.2</th>
<th>Understand how students learn</th>
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<td></td>
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</table>
# Summary of effective teaching approaches

<table>
<thead>
<tr>
<th>Approach</th>
<th>Months worth of learning progress</th>
<th>Cost</th>
<th>Evidence security</th>
</tr>
</thead>
<tbody>
<tr>
<td>One to one tuition</td>
<td>+5</td>
<td>High – up to $2,000 per student per year</td>
<td>Extensive</td>
</tr>
<tr>
<td>Small group tuition</td>
<td>+4</td>
<td>Moderate – up to about $1,200 per student per year</td>
<td>Limited</td>
</tr>
<tr>
<td>Peer tutoring</td>
<td>+5</td>
<td>Very low – less than $160 per student per year</td>
<td>Extensive</td>
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<td>Digital Technology</td>
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</tr>
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</table>
How do we know if we’ve made a difference?

Primary

• Pre and post measurement of auditory analysis skills
• How are the students progressing in their ability to read out loud?
• How are the students progressing in their ability to sound out new words?

Primary and Secondary

• How are the students progressing in building a vocabulary of subject specific words?
• NAPLAN results in Reading, Writing and Grammar
• Class grades in reports
• Progressive Achievement Tests (PAT) – Reading and Writing
Evidence ecosystem

Research questions driven by challenges based on data

Impact Evaluation Cycle in Schools

Wider Evidence Chain

Evidence shared in meaningful and practical ways

evidenceforlearning.org.au/evidence-informed-educators/evidence-ecosystem
Barriers to engaging with the wider evidence chain?

Three common barriers to accessing and using research:

- Shortage of time to engage with research
- Overload of information to process
- Insufficient contextualised information for practice.

Wider Evidence Chain - external

Production
Generate useful and appropriate evidence

Implementation
Supported use in local contexts and evaluation of impact and benefit

Synthesis
Pull together for comparison and insight

Engagement
Share and discuss to create opportunities for local adoption

Transformation
Communicate to add meaning and value

Adapted from Sharples J Evidence Chain for the Frontline (2013).
evidenceforlearning.org.au/evidence-informed-educators/evidence-ecosystem
Evidence ecosystem

Impact Evaluation Cycle

Research questions driven by challenges based on data

Evidence shared in meaningful and practical ways
Evidence for Learning Impact Evaluation Cycle

Intervention Program

- Awareness
- Impetus

Evaluation Process

- Analysis
- Adopt
- Adapt

- Embed
- Omit
- 1. Act
- 2. Evaluate
- 3. Adjust
What is evidence-informed decision making?

Evidence informed decisions are about ‘integrating professional expertise with the best external evidence from research to improve the quality of practice’ (Sharples, 2013, p. 7). This is not about ‘prescribing what goes on from a position of unchallenged authority’ (Sharples, 2013, p. 7).

Hierarchy of evidence

Levels of Evidence Confidence

- **Systematic Reviews**
  - Level 1
- **Randomised Control Trials**
- **Quasi-experimental Studies**
  - Level 2
- **Realist Reviews**
- **Case studies with Evidence of Effectiveness**
- **External evaluation with scientific rigour**
- **Case studies with Encouraging Results**
- **Internal or external evaluator that lacks scientific rigour**
  - Level 3
- **Program Descriptions** or reports with limited data or evidence
- **Opinions**, ideas, editorials based on anecdote or experiences
  - Level 4

Best Practices

Promising Practices

Emerging Practices

Better school decisions informed by evidence

We are an Evidence Intermediary; we play a brokering role between research and practice.

Trials Unit (RCT) Philanthropy + Govt $ on school programs (3 underway, 1 completed)

Teaching & Learning Toolkit Global evidence summaries and practice guides from international partners

Tailored evidence Toolkits (21)

EVIDENCE FOR LEARNING

Build evidence

Share knowledge

Drive use

Supporting school networks (68 events to date)

Local Practice Guides on key topics

We specialise in translating evidence and then help implementing it in real world settings.
Current progress in Learning Impact Fund

**MiniLit**
Small-group reading intervention for struggling Year 1 students.

**Developer**
Multilit

**Type of trial**
Efficacy

**Project progress**
![Progress Bar]

**QuickSmart Numeracy**
Small-group student tutoring intervention to increase fluency and automaticity in maths.

**Developer**
SIMERR National Research Centre at the University of New England

**Type of trial**
Effectiveness

**Project progress**
![Progress Bar]

**Resilient Families**
School-based social-emotional learning program involving parental engagement.

**Developer**
Deakin University

**Type of trial**
Developmental

**Project progress**
![Progress Bar]

**Thinking Maths**
Teacher professional learning for middle school maths teachers (Years 6-9).

**Developer**
South Australian Department for Education

**Type of trial**
Efficacy

**Cost**
$500

**Security**
![Security Icon]

**Monthly impact**
-1

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Learning Impact Fund – MiniLit trial

### MiniLit

**Testing a small-group reading intervention for struggling Year 1 students**, focusing on five keys: (1) phonemic awareness, (2) phonics, (3) fluency, (4) vocabulary, and (5) comprehension.

#### Project progress

<table>
<thead>
<tr>
<th>Year levels</th>
<th>Number of schools</th>
<th>Type of trial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>9 schools, 237 students (119 intervention and 118 control) and 67 teachers/paresprofessionals*</td>
<td>Efficacy</td>
</tr>
</tbody>
</table>

#### Scope of funding

<table>
<thead>
<tr>
<th>Program grant</th>
<th>Evaluation grant</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0</td>
<td>$450,000</td>
</tr>
</tbody>
</table>

*Participation data is updated as of December 2017.*

evidenceforlearning.org.au/lif/our-projects/minilit//
Questions?
Where to now?

• Join our Evidence Informed Educator Network
evidenceforlearning.org.au/evidence-informed-educators/join/

• Subscribe to our newsletter for updates evidenceforlearning.org.au/

• Follow us on Twitter @E4Ltweets and Facebook Evidence for Learning

• Comments and feedback please tvaughan@evidenceforlearning.org.au
Helping great practice become common practice in education