Evidence into action – literacy

Dr Tanya Vaughan, Webinar, 30 October 2018

EVIDENCE FOR LEARNING

Acknowledgement of Country

We acknowledge and pay respect to the past, present and future traditional custodians and elders of this country on which we meet.

E4L

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

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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.

Parental background	Number of words
Professional parents	2153 words/hour
Parents from low SES background	1251 words/hour
Parents on government assistance	616 words/hour

Hart, B., & Risley, T. (1995). Meaningful difference in everyday parenting and intellectual development in young American children. Baltimore: Brookes as citied by Snow, P. C. (2016). Elizabeth Usher Memorial Lecture: Language is literacy is language-Positioning speech-language pathology in education policy, practice, paradigms and polemics. International journal of speech-language pathology, 18(3), 216-228.

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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) .

Gilkerson, J., et al. (2017). "Mapping the early language environment using all-day recordings and automated analysis." American journal of speech-language pathology 26(2): 248-265.
Sperry, D. E., et al. (2018). "Reexamining the Verbal Environments of Children From Different Socioeconomic Backgrounds." Child development.
Is There Really a 30 Million-Word Gap? http://shanahanonliteracy.com/blog/is-there-really-a-30-million-word-gap?mc_cid=a92d53eddf&mc_eid=4fbce47e6e#sthash.TlyEgkoD.EuGrOxS5.dpbs

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Five elements of evidence-based reading instruction

Element	Description	In the classroom
Phonemic awareness	The ability to hear the sounds in spoken words and understand that words are made up of sequences of sounds.	**Phoneme blending**: combining individual phonemes to form words. **Phoneme segmentation**: breaking words into their individual phonemes. **Phoneme manipulation**: the ability to manipulate sounds in words.
Phonics	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.	Systematic phonics approaches explicitly teach students a comprehensive set of letter-sound relationships.

Centre for Education Statistics and Evaluation. (2017). Effective Reading Instruction in the Early Years of School. Retrieved from https://www.cese.nsw.gov.au/publications-filter/literature-review-effective-reading-instruction-in-the-early-years-of-school
Education Endowment Foundation. (2017a). Evidence for Learning Teaching & Learning Toolkit: Education Endowment Foundation. Retrieved from http://evidenceforlearning.org.au/the-toolkit/
Education Endowment Foundation. (2016). Improving Literacy in Key Stage One. Retrieved from London: https://educationendowmentfoundation.org.uk/public/files/Publications/Campaigns/Literacy/KS1_Literacy_Guidance.pdf

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Five elements of evidence-based reading instruction

Element	Description	In the classroom
Fluency	Reader's ability to recognise words accurately and quickly and to read aloud with appropriate expression.	**Repeated reading**: learners read passages aloud several times and receive guidance and feedback from their teacher.
Vocabulary	The words learners' know and use when communicating with others.	Three tiers of words 1) First tier – everyday words – e.g. *cat* 2) Second tier – complex but occur regularly e.g. *coincidence* 3) Third tier – specific contexts – e.g. *pheromone*
Comprehension	Learners' understanding of the text. Requires sufficient vocabulary.	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.

Centre for Education Statistics and Evaluation. (2017). Effective Reading Instruction in the Early Years of School. Retrieved from https://www.cese.nsw.gov.au/publications-filter/literature-review-effective-reading-instruction-in-the-early-years-of-school
Education Endowment Foundation. (2017a). Evidence for Learning Teaching & Learning Toolkit: Education Endowment Foundation. Retrieved from http://evidenceforlearning.org.au/the-toolkit/
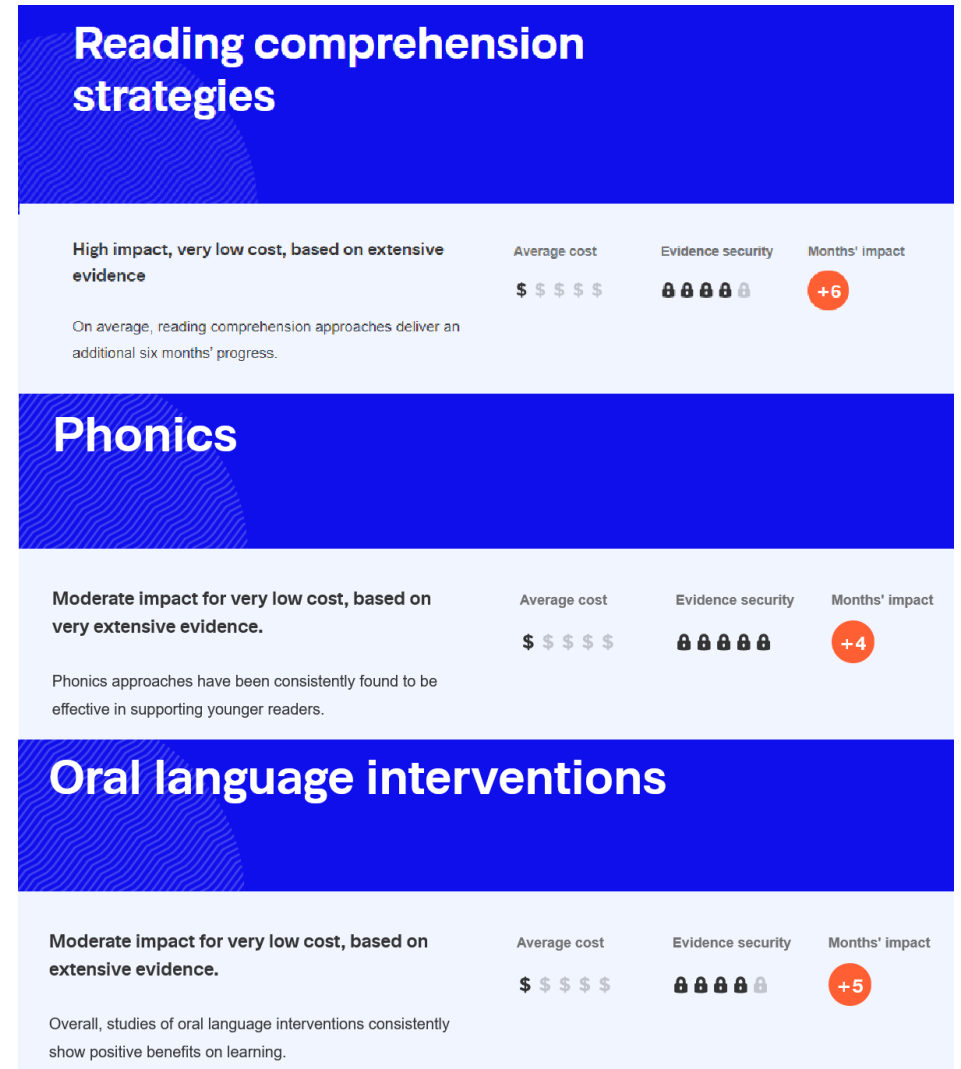Education Endowment Foundation. (2017b). Improving Literacy in Key Stage Two. Retrieved from London: http://dera.ioe.ac.uk/29345/1/KS2_Literacy_Guidance_2017.pdf

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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?

Reading comprehension strategies

High impact, very low cost, based on extensive evidence

Average cost: $ $ $ $ $

Evidence security: 🔒🔒🔒🔒🔓

Months' impact: +6

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

Phonics

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

Average cost: $ $ $ $ $

Evidence security: 🔒🔒🔒🔒🔒

Months' impact: +4

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

Oral language interventions

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

Average cost: $ $ $ $ $

Evidence security: 🔒🔒🔒🔒🔓

Months' impact: +5

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

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The Teaching & Learning Toolkit

+5   Average months' worth of learning progress;

$ Cost to implement; and

🔒   The security of evidence.

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$ Costs

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.

Cost	Description
$	**Very low:** up to about $4,000 per year per class of 25 students, or less than $160 per student per year.
$$	**Low:** $4,001 to $8,000 per year per class of 25 students, or up to about $320 per student per year.
$$$	**Moderate:** $8,001 to $30,000 per year per class of 25 students, or up to about $1,200 per student per year.
$$$$	**High:** $30,001 to $50,000 per year per class of 25 students, or up to $2,000 per student per year.
$$$$$	**Very high:** over $50,000 per year per class of 25 students, or over $2,000 per student per year.

🔒 Evidence security
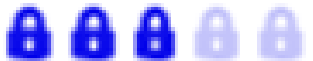
Rating	Description
Very limited	Quantitative evidence of impact from single studies, but with effect size data reported or calculable. No systematic reviews with quantitative data or meta-analyses located.
Limited	At least one meta-analysis or systematic review with quantitative evidence of impact on achievement or cognitive or curriculum outcome measures.
Moderate	Two or more rigorous meta-analyses of experimental studies of school age students with cognitive or curriculum outcome measures.
Extensive	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.
Very extensive	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.

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+5 Average months' worth of learning progress

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

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Reading comprehension strategies

High impact, very low cost, based on extensive evidence

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

Average cost

$ $ $ $ $

Evidence security

🔒🔒🔒🔒🔓

Months' impact

+6

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.

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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

Feathers

Birds

Amphibians — Cold-blooded / Born in water / No scales

Warm-blooded / Babies drink milk / Hair on body

Vertebrates

Mammals

Reptiles

Cold-blooded / Scales / Born on land

Only live in water / Have gills and fins

Fish

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Oral language interventions

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

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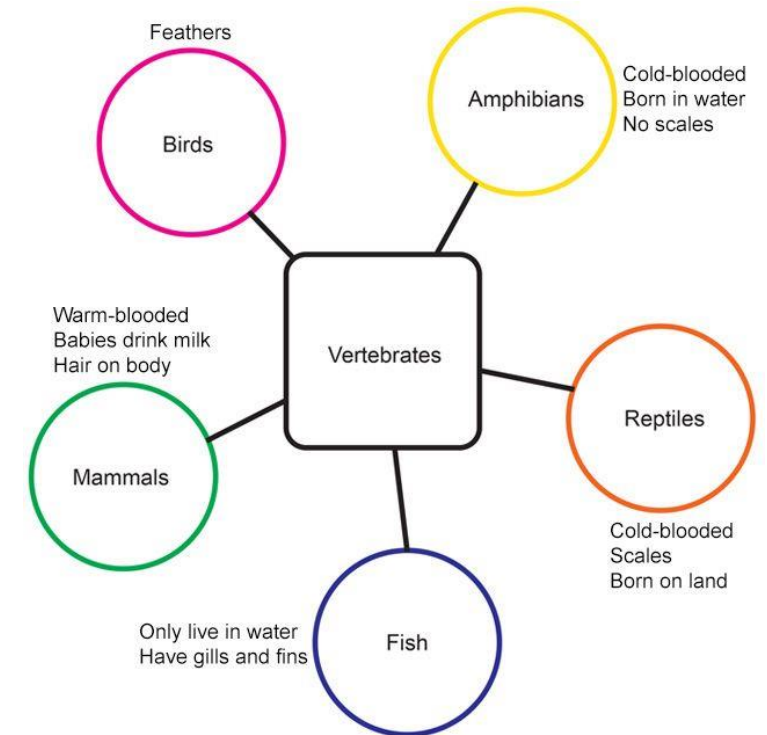
Demonstrate knowledge and understanding of strategies for differentiating teaching to meet the specific learning needs of students across the full range of abilities.

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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.

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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.

Average cost

$ $ $ $ $

Evidence security

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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.

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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.

Education Endowment Foundation. (2014). Reading at the Transition: Interim Evidence Brief. Retrieved from https://educationendowmentfoundation.org.uk/public/files/Publications/EEF_Interim_Evidence_Brief_ReadingaAtTheTransition.pdf

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Effective secondary reading approaches

Approach	Name of program	Effect size	What?	How?
One to one tuition	Perry Beeches	0.36	One hour of tutoring every two weeks to Year 7 students focused on reading and writing.	Coaches worked individually with students.
One to one tuition	REACH Tutoring	0.42	35 minute sessions once a week for 20 weeks.	Tutors are specially trained teacher aides.
Small group tuition	Butterfly Phonics	0.30	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.	Taught by trained practitioner and an assistant.

Adapted from Baye, A., Lake, C., Inns, A., & Slavin, R. (2017). *Effective Reading Programs for Secondary Students*. Retrieved from http://www.bestevidence.org/word/Secondary-Reading-08-03-17.pdf Lord, P., Bradshaw, S., Stevens, E., & Sytles, B. (2015). *Perry Beeches Coaching Programme: Evaluation Report and Executive Summary*. Retrieved from London: https://v1.educationendowmentfoundation.org.uk/uploads/pdf/Perry_Beeches.pdf

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Effective secondary reading approaches

Approach	Name of program	Effect size	What?	How?
Collaborative learning	The Reading Edge	0.29	Partner reading, story retelling, story writing, word mastery and story-structure activities. Instruction focuses on explicit teaching of metacognitive strategies.	Middle school students work in groups of four or five to build each others reading skills.
Metacognitive strategy	Reading Intervention through Strategy Enhancement (RISE)	0.16* mean weighted Although 0.27 for moderate risk students	Students given the opportunity to read independently, to work in small groups and receive whole group lessons.	No additional time given to teaching literacy, rather the time is used for RISE.

Adapted from Baye, A., Lake, C., Inns, A., & Slavin, R. (2017). *Effective Reading Programs for Secondary Students*. Retrieved from http://www.bestevidence.org/word/Secondary-Reading-08-03-17.pdf

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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

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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/

E4L

One to one tuition

Moderate impact for high cost, based on extensive evidence.

Average cost

$ $ $ $ $

Evidence security

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Months' impact

+5

Evidence indicates that one to one tuition can be effective.

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.

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Small group tuition

Moderate impact for moderate cost, based on limited evidence.

Average cost

$ $ $ $ $

Evidence security

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Months' impact

+4

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

1.2
Understand how students learn

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

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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.

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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.

Average cost

$ $ $ $ $

Evidence security

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Months' impact

+5

1.2
Understand how students learn

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Students with diverse linguistic, cultural, religious and socioeconomic backgrounds

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Digital technology

Moderate impact for moderate cost, based on extensive evidence.

Average cost

$ $ $ $ $

Evidence security

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Months' impact

+4

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

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.

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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.

Average cost

$ $ $ $ $

Evidence security

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Months' impact

+5

1.2

Understand how students learn

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

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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.

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Summary of effective teaching approaches

Approach	Months worth of learning progress	Cost	Evidence security
One to one tuition	+5	High – up to $2,000 per student per year	Extensive
Small group tuition	+4	Moderate – up to about $1,200 per student per year	Limited
Peer tutoring	+5	Very low – less than $160 per student per year	Extensive
Digital Technology	+4	Moderate – up to about $1,200 per student per year	Extensive
Collaborative learning	+5	Very low – less than $160 per student per year	Extensive

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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

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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

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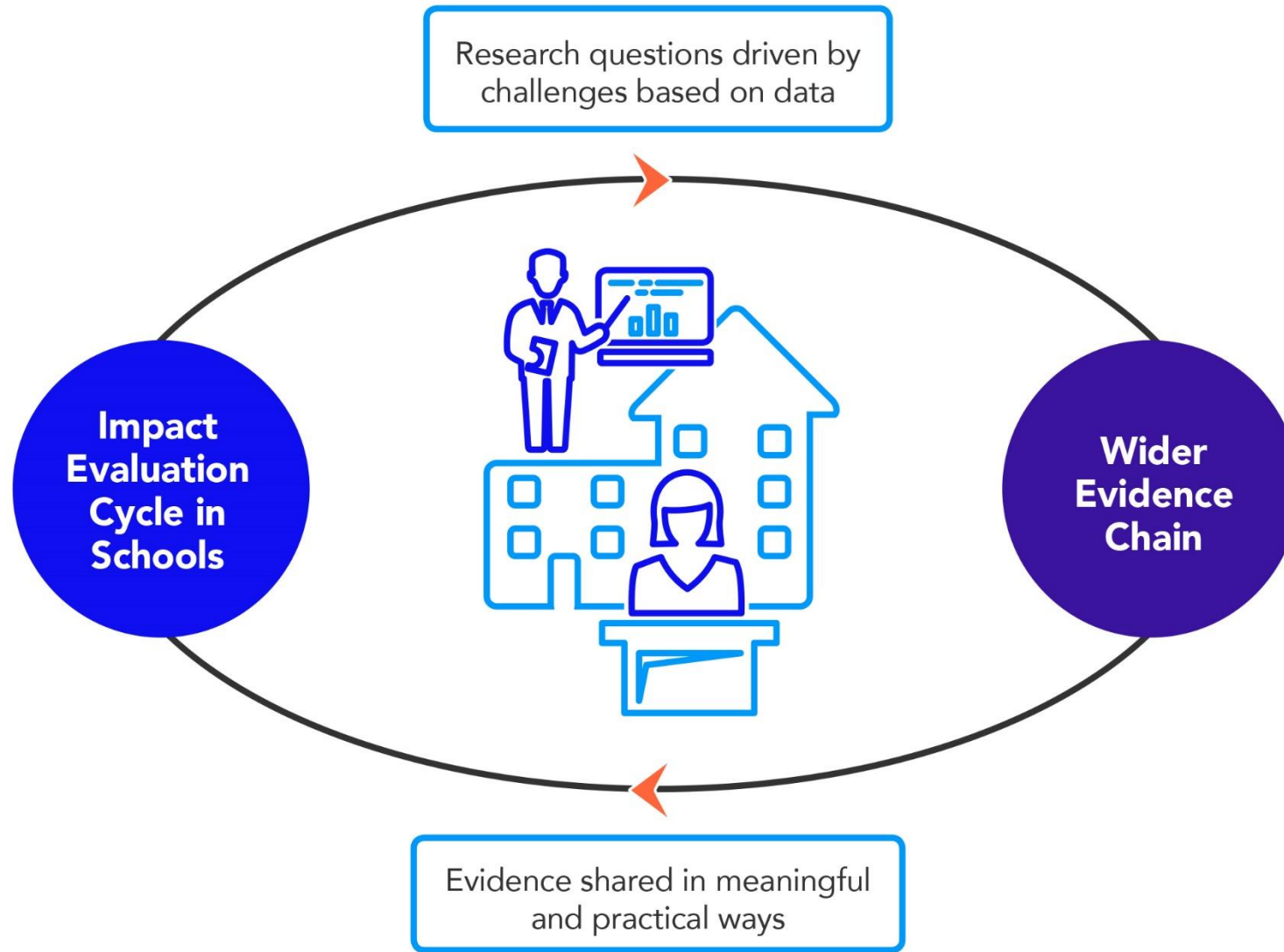
Barriers to engaging with the wider evidence chain?

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.

Source: Sharples, J (2013), *Evidence for the Frontline: A report for the Alliance For useful Evidence*.
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Wider Evidence Chain - external

Production
Generate useful and appropriate evidence

Synthesis
Pull together for comparison and insight

Transformation
Communicate to add meaning and value

Engagement
Share and discuss to create opportunities for local adoption

Implementation
Supported use in local contexts and evaluation of impact and benefit
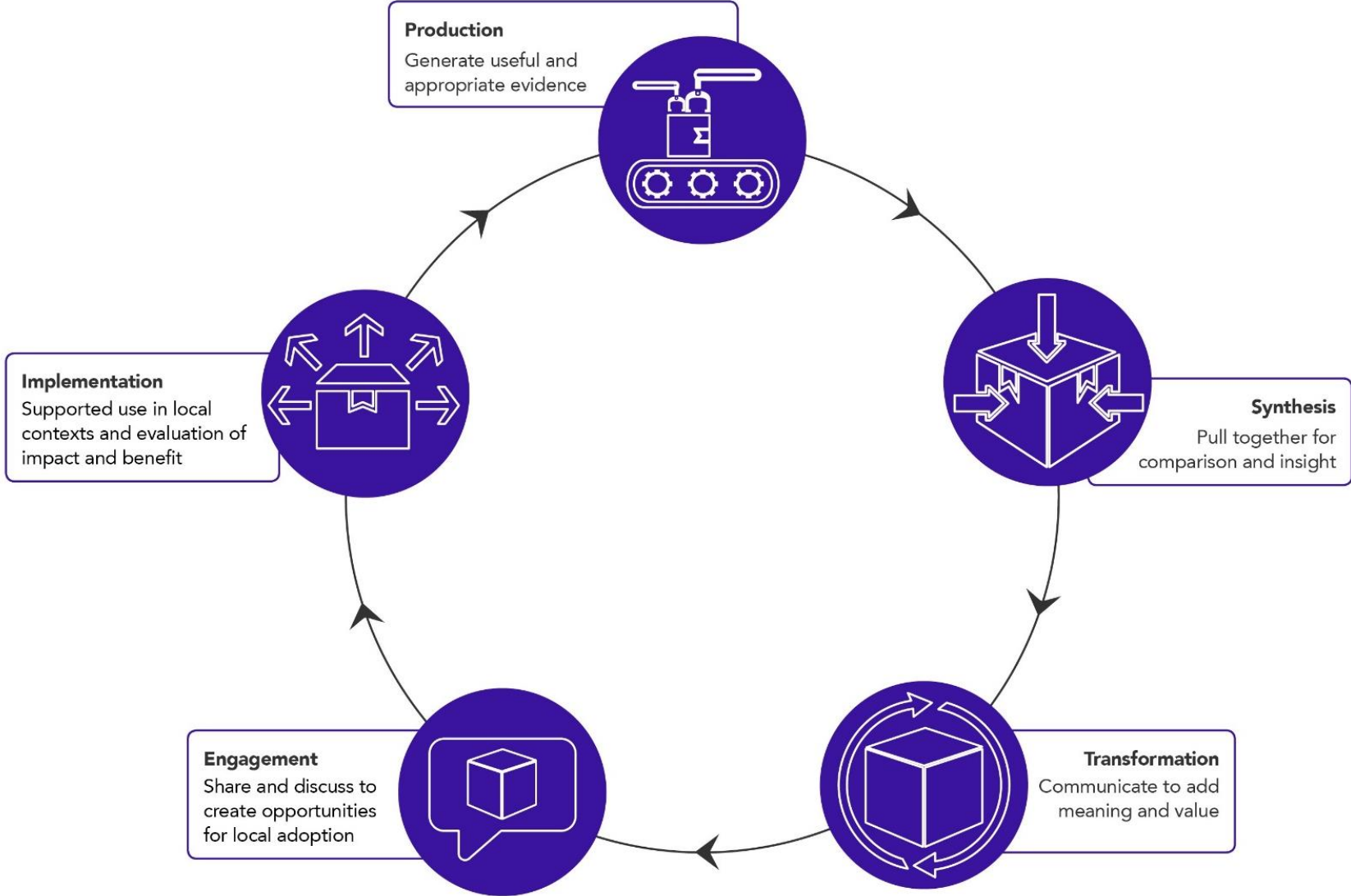
Adapted from Sharples J Evidence Chain for the Frontline (2013).
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Evidence ecosystem

Impact Evaluation Cycle

Analysis
Awareness
Impetus
Adopt
Adapt
1. Act
2. Evaluate
3. Adjust
Embed
Omit

Research questions driven by challenges based on data

Wider Evidence Chain

Evidence shared in meaningful and practical ways

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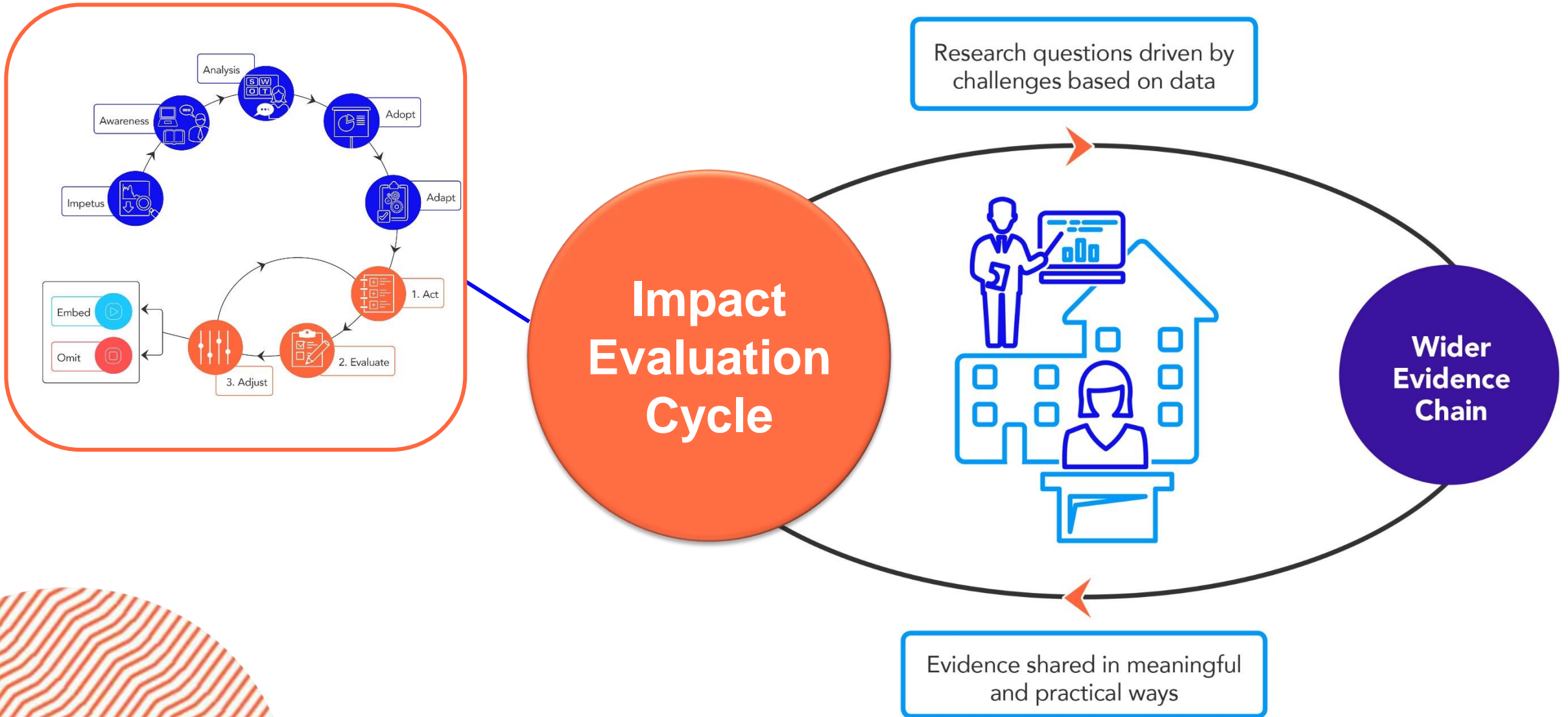
Evidence for Learning Impact Evaluation Cycle
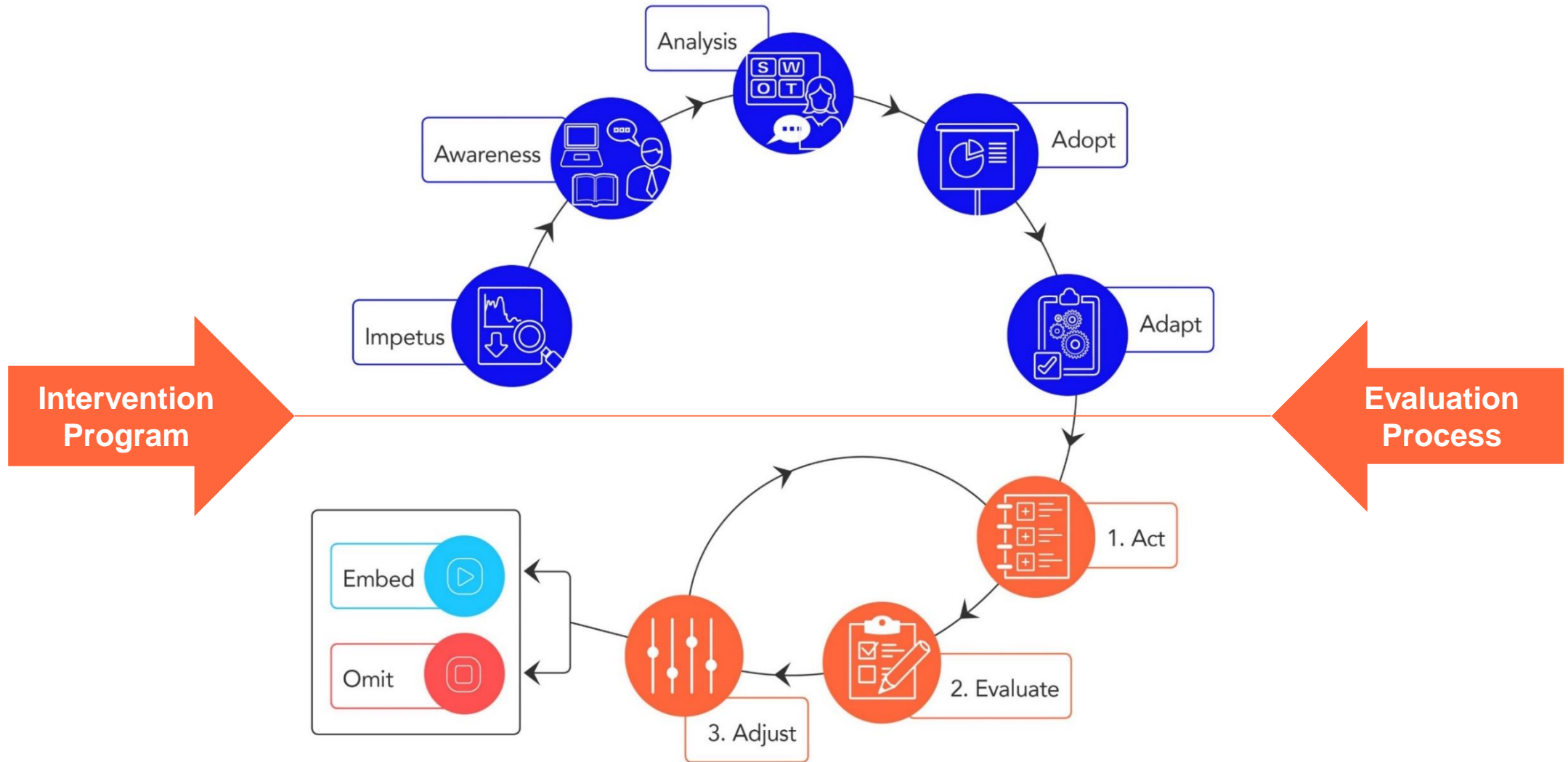
What is evidence-informed decision making?

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).

Source: Vaughan, Deeble and Bush (2017). Evidence-informed decision making. Australian Educational Leader. 39(4) pp.32-35

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Hierarchy of evidence

Levels of Evidence Confidence

Level 1 — Systematic Reviews

Level 2 — Randomised Control Trials, Quasi-experimental Studies

Level 3 — 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 4 — Program Descriptions or reports with limited data or evidence, Opinions, ideas, editorials based on anecdote or experiences

Best Practices

Promising Practices

Emerging Practices

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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)

Build evidence

Share knowledge

Drive use

Supporting school networks
(68 events to date)

Local **Practice Guides** on key topics
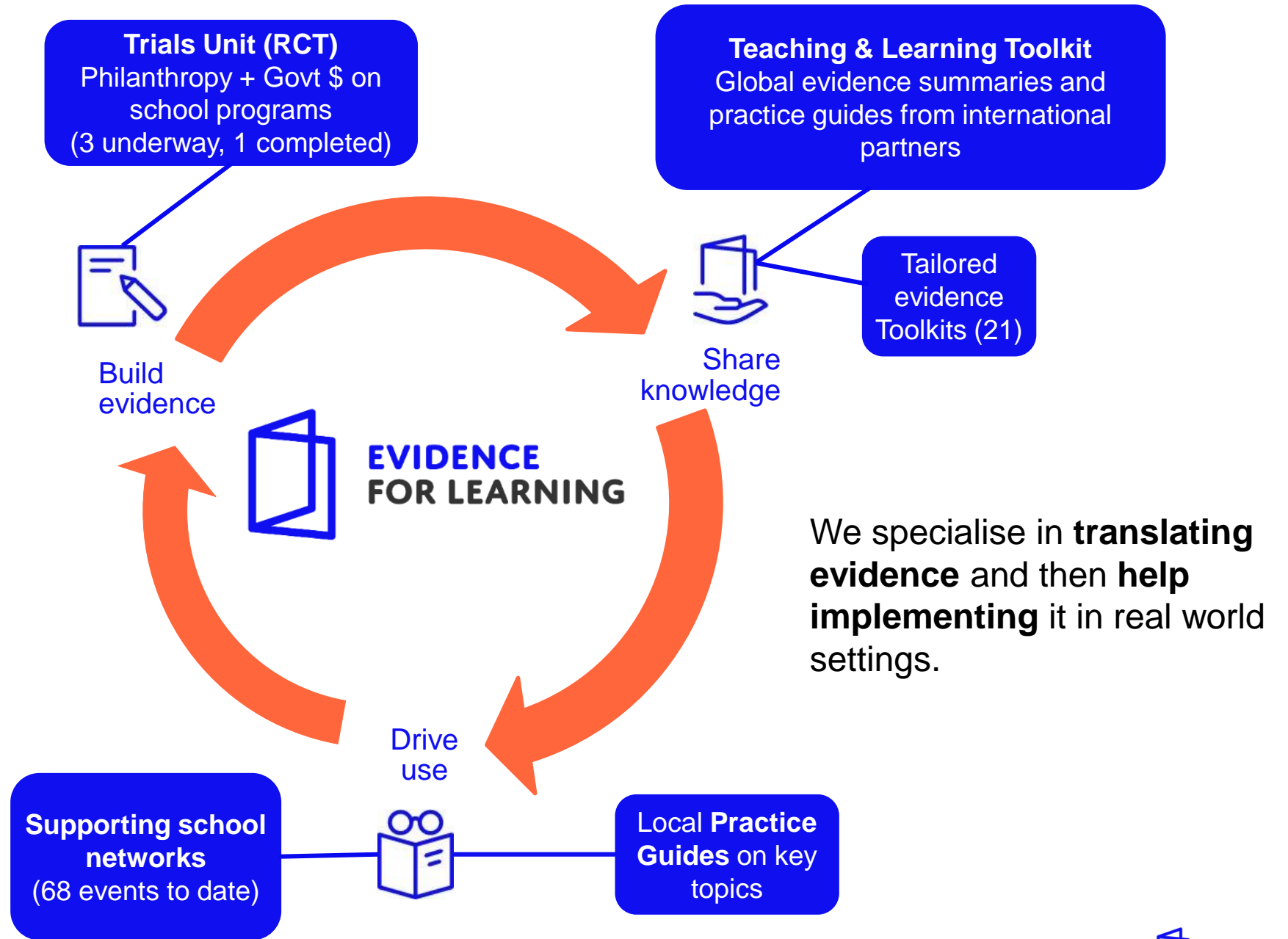
We specialise in **translating evidence** and then **help implementing** it in real world settings.

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Current progress in Learning Impact Fund

MiniLit   `Active`

Small-group reading intervention for struggling Year 1 students.

Developer   **Type of trial**
Multilit   Efficacy

Project progress

QuickSmart Numeracy   `Active`

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

Developer   **Type of trial**
SiMERR National Research Centre at the   Effectiveness
University of New England

Project progress

Resilient Families   `Active`

School-based social-emotional learning program involving parental engagement.

Developer   **Type of trial**
Deakin University   Developmental

Project progress

Thinking Maths   `Completed`

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

Developer   **Type of trial**
South Australian Department for Education   Efficacy

Cost   **Security**   **Months' 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

Year levels
Year 1

Number of schools
9 schools. 237 students (119 intervention and 118 control) and 67 teachers/paraprofessionals*

Type of trial
Efficacy

Scope of funding
Evaluation

Program grant
$0

Evaluation grant
$450,000

Project summary
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.

*Participation data is updated as of December 2017.

MiniLit   Active

Small-group reading intervention for struggling Year 1 students.

Developer
Multilit

Type of trial
Efficacy

Project progress

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Questions?

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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

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Helping great practice become
common practice in education

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