



If you're a teacher or educator, this practice guide and AERO's other evidence use resources can help you draw effectively on research evidence to strengthen decisions about your practice. If you're a school or service leader, you can use this guide and these resources to support your team in engaging with research evidence as part of their ongoing professional development.

Related frameworks

Early Years Learning Framework V2.0

Principles: Critical reflection and ongoing professional learning.

National Quality Standards

Standard 7.2 Leadership: Effective leadership builds and promotes a positive organisational culture and professional learning community.

Australian Professional Standards for Teachers

Focus Area 6.2: Engage in professional learning and improve practice, which includes 'Plan for professional learning by accessing and critiquing relevant research' at the Highly Accomplished level.

Australian Professional Standards for Principals

Professional Practice 2: Developing self and others.

Ways to use this practice guide

- You can use this practice guide for professional learning to become more familiar with research and to check your knowledge.
- You can use this practice guide for professional learning to discuss research evidence as a team, such as in a community of practice.
- Leaders can use this practice guide to structure dialogue and reflection about using research evidence in a school or service. These concepts can serve as a point of conversation to build shared understandings of how to engage with research evidence.

Assess research before you rely on it to make a decision

Regardless of where you found a piece of research evidence, you'll need to assess how reliable and relevant it is for your purpose and context before you rely on it to make a decision.

Often, the research evidence you can access will be filtered information that provides analysis, synthesis, interpretation, commentary and/or evaluation of original research studies. In other words, someone else has already interpreted the research for you.

Use the CRAAP test to assess non-academic sources

CRAAP is an acronym for Currency, Relevance, Authority, Accuracy and Purpose. Developed by a librarian at the University of California,¹ it's a set of questions to think about when assessing the extent to which you should rely on a particular non-academic source of evidence such as a website or blog. The questions offer a structured way to decide if the information is likely to be objective and reliable, or whether there are signs it could be irrelevant or biased.

Some questions will be more important than others depending on your purpose, so there are no hard and fast rules. The CRAAP test is a tool to help you – it doesn't replace your professional judgment.

Many of the questions relate to online information, but you can also use the CRAAP test to assess printed texts such as books.

AERO has created a handy [template](#) for scoring a source of evidence against the questions. This can help you decide how reliable the source is. It includes some completed examples if you're looking for guidance for scoring.

↓ ↩ ↪ • CRAAP?

Currency – is the information timely?

- When was the information written or posted? Is it up-to-date, or is there a possibility that the information (or the sources the author draws on) might be out-of-date for the topic? Does information about this topic change rapidly?
- If there are links, are they functional?

Relevance – is the information relevant to your topic?

- Does the information help answer your question or tell you what you need to know?
- Is the information at the right level for you (not too advanced and not too basic)?
- What country is it from? Research generated in contexts that are different to yours can still be helpful, but findings may be less directly applicable compared to research generated in your own context (or in contexts very similar to your own).

Authority – are the authors or publishers credible?

- Who is the author? What are their credentials? Are they qualified to write about this topic? What else do they write about?
- If the author is an organisation, what is the nature of their activity? Can you tell who owns or operates the organisation?

- What can you tell from the URL? For example, is it .com or .com.au, .edu, .org, .gov, or .net?
- Is there contact information? Where are they located?
- If a website, is the layout professional?

Accuracy – is the information provided correct? Does the language

- Is the information supported by evidence? How credible is the evidence?
- Are references provided? Are they current and academic sources?
- Can you verify the information somewhere else?
- Does the language seem objective and free from emotion and sensationalism?
- Are there any signs of political, personal or other biases?

Systematic reviews aim to provide a robust answer to a particular question by identifying and synthesising all the relevant academic research. They use rigorous and transparent methods to search for and summarise studies. These methods aim to reduce bias and are reported in such a way that another researcher should be able to reproduce the results following the same method. Systematic reviews will also identify when different studies about the same thing have found different results.

Rapid reviews and scoping reviews also use rigorous and transparent methods. Rapid reviews are like systematic reviews with some steps omitted so they can be completed more quickly. This means they may be less comprehensive. Scoping reviews investigate the size and scope of research literature on a topic – for example, to identify gaps in evidence.

Meta-analyses use statistical methods to combine data from multiple studies about the same question to produce a more reliable estimate of the size of the effect of an intervention. They're usually – but not always – based on a systematic review.

Be aware – not all literature reviews are systematic reviews. Some literature reviews simply provide background for a new study or summarise what's known about a topic. They often include little to no details on how they searched the literature, and may be biased if authors highlight studies that support the story they're telling and downplay those that present alternative findings. A systematic review will always be clearly named as such and will include details of the search methods used.

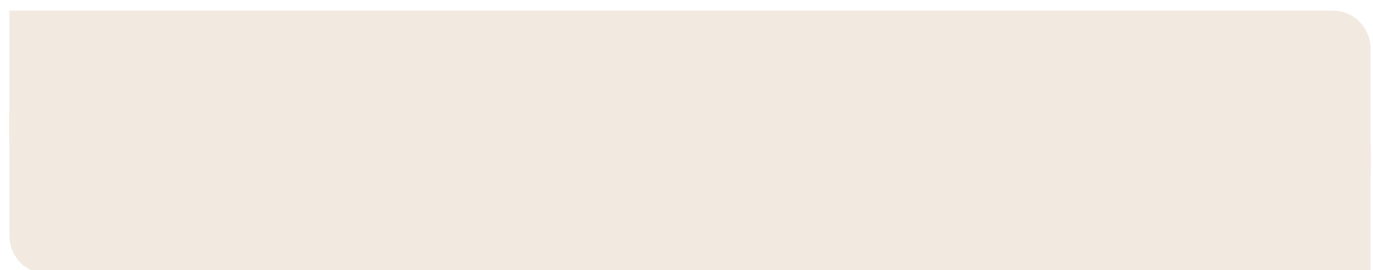
Expert opinion – the opinion of one or more people who are considered to be (or claim to be) experts in the field – is another form of filtered information found in academic journals. Expert opinion based on the experts' knowledge of the research literature may be reliable. Nevertheless, experts sometimes disagree. Perhaps they haven't read all the evidence, or just like everyone else their thinking is unintentionally influenced by bias (see Table 1 in AERO's [The Value of Research Evidence](#) practice guide for a list of common cognitive biases). Expert opinion can be a good starting point but rather than taking it at face value, you could ask yourself a few questions:

- Does the expert have an agenda or any conflicts of interest?
- Have they acknowledged potential biases in their work?
- Have they explained the evidence behind their opinion?
- Can you find any other supporting evidence?
- Are there other experts who disagree?

Single studies (unfiltered information) are essential when you want to dive deeply into a topic, when systematic reviews are outdated or simply don't exist, and when you're not sure if an existing review applies to your context (for example, the review didn't include any studies from Australia).

Even when a study is published in a peer-reviewed academic journal, it's important to critically assess what you read, which can be difficult when you're not a trained researcher. Table 1 provides an overview of AERO's evidence use resources to help you reflect on the rigour and relevance of research about a policy, practice or program you're considering implementing.

Figure 1: AERO's Standards of Evidence



seek to dispel the myth that introducing school uniforms supports a culture of discipline, which in turn causes an improvement in student achievement. The article notes:

[T]here is no robust evidence that introducing a school uniform will, by itself, improve performance, behaviour or attendance. There are studies about these outcomes linked to the introduction of a school uniform policy, but uniform was usually one factor amongst other improvement measures, such as changes in behaviour policy or other teaching and learning developments. So, whilst there is a link between schools with good academic outcomes and uniforms, there is no evidence that uniforms are the cause.

Also, relationships between variables can be complex. In the 1980s, research reporting a correlation between self-esteem and success led to the development of numerous programs to increase self-esteem as a means to increase school achievement. Later research showed that the relationship is reciprocal (success causes high self-esteem at least as much as high self-esteem causes success), that both are influenced by other factors such as home environment or stressful life events, and that different facets of self-esteem might operate differently.²

Caution: correlation does not imply causation

To establish that one thing (let's call it X) causes another (let's call it Y), research needs to show 3 things:

- X comes before Y in time
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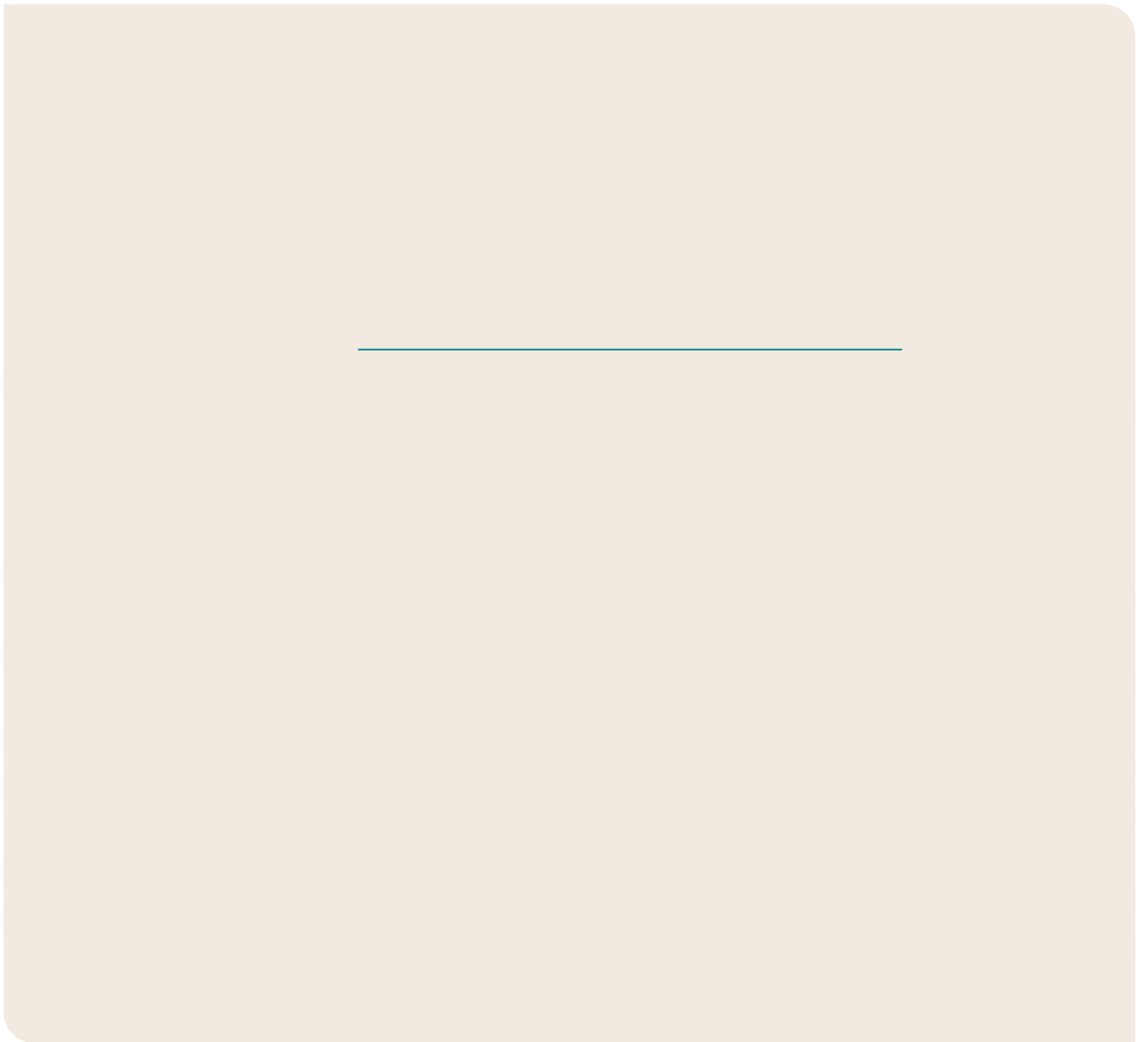
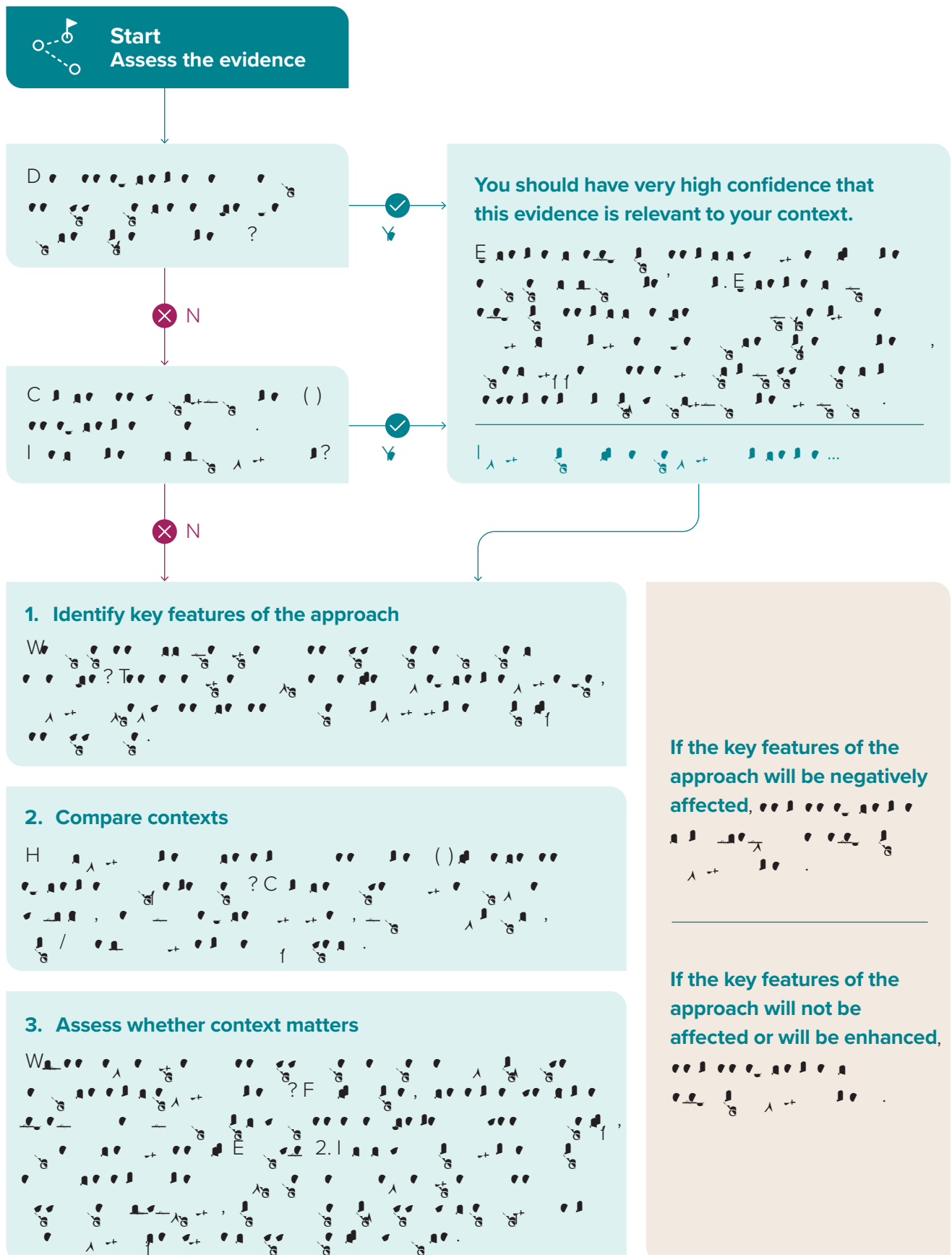


Figure 2: Process for assessing relevance





Knowledge check: Assessing research evidence



Take our quick quiz below or scan the QR code to test your knowledge about research evidence.

1. **If a paper has been published in a peer-reviewed academic journal, you don't need to assess the rigour and relevance of the study.**
 - a. True
 - b. False
 - c. It depends on the journal

2. **Expert opinion...**
 - a. should be trusted because the experts have analysed the research and come to a consensus
 - b. can be subjective because, just like everyone else, experts can be unintentionally influenced by bias
 - c. is as reliable as a systematic review if it's published in a peer-reviewed journal

3. **A researcher collected data about use of a new reading program and student test scores to find out if the new program was more effective than the existing program. Which of the following statements is TRUE? The research would be considered rigorous if:**
 - a. The research methods ruled out the effects of as many other influences on test scores as possible.
 - b. The research found that children in the new program achieved higher test scores than children in the existing program.
 - c. Teachers reported that children enjoyed the new program more than the existing program.

4. **According to AERO's Standards of Evidence, you should have very high confidence in an approach if you have research that associates the approach with positive effects.**
 - a. True
 - b. False

5. **To be relevant, a study MUST be conducted:**
 - a. with students or young people who are the same age as those in my service or school
 - b. in Australia, and preferably in my state
 - c. using a rigorous experimental design
 - d. in similar settings to my own (though what's 'similar' will depend on what's important for the topic)

6. **You come across 4 studies talking about positive effects of a program on infants' adjustment to early education and care. Which of the studies appears to have evidence of causation?**
 - a. ... *leads to* positive effects ...
 - b. ... is *linked to* positive effects ...
 - c. ... *predicts* positive effects ...
 - d. ... is *associated with* positive effects ...

7. A systematic review:

- a. uses statistical methods to combine data from multiple studies to produce a more reliable estimate of the size of the effect of a program
- b. clearly and methodically reports on the results of a single trial testing the effect of a program
- c. uses rigorous methods for searching, synthesising and reporting on multiple studies about the same question

8. A researcher observes that 2 variables, A and B, move together. That is, when A increases, B also increases. Which of these statements about A and B is TRUE?

- a. Variable A and B are correlated
- b. Variable A caused variable B to increase
- c. Variable B caused variable A to increase

Next steps

Once you've determined the evidence is relevant, you can use AERO's [Interactive Evidence Decision-Making Tool](#) to help determine how to implement the approach.

For an overview of different types of evidence and biases to be aware of when reading about evidence, see AERO's [The Value of Research Evidence](#) practice guide.

For guidance on how to find research evidence, see AERO's [Looking for Research Evidence](#) practice guide.

For guidance on how to apply research evidence, see AERO's [Applying Research Evidence](#) practice guide.

Answers: 1(b), 2(b), 3(a), 4(b), 5(d), 6(a), 7(c), 8(a).

Endnotes

- 1 Blakeslee, S. (2004). The CRAAP Test. *LOEX Quarterly*, 31(3), Article 4. <https://commons.emich.edu/loexquarterly/vol31/iss3/4/>
- 2 See:
 - Baumeister, R. F., Cambell, J. D., Krueger, J. I., & Vohs, K. D. (2003). Does high self-esteem cause better performance, interpersonal success, happiness, or healthier lifestyles? *Psychological Science in the Public Interest*, 4(1). <https://doi.org/10.1111/1529-1006.01431>
 - Kärchner, H., Schöne, C., & Schwinger, M. (2021). Beyond level of self-esteem. *Social Psychology of Education*, 24, 319–341. <https://doi.org/10.1007/s11218-021-09610-5>
 - Midgett, J., Ryan, B. A., Adams, Gerald R., & Corville-Smith, J. (2002). Complicating achievement and self-esteem: Considering the joint effects of child characteristics and parent–child interactions. *Contemporary Educational Psychology*, 27(1), 132–143. <https://doi.org/10.1006/ceps.2001.1083>