



Centre for Program Evaluation

Promoting evidence uptake in schools: A review of the key features of research and evidence institutions

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Abbreviations

ACARA	Australian Curriculum Assessment and Reporting Authority
AACODS	Authority, accuracy, coverage, objectivity, date and significance
ACER	Australian Council for Educational Research
AITSL	Australian Institute of Teaching and School Leadership
CONSORT	Consolidated Standards of Reporting Trials
EBP	Evidence-based practice
EEF	Education Endowment Foundation
EIDM	Evidence-informed decision making
EIP	Evidence-informed practice
ESM	Effective strategies manuals
MCRI	Murdoch Children's Research Institute
NAPLAN	National Assessment Plan -PRS Literacy and Numeracy
NICE	National Institute for Health Care Excellence
OECD	Organisation for Economic Cooperation and Development
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PPP	Public Private Partnerships
RCT	Randomised controlled trial
REI	Research and evidence institution
SCIE	Social Care Institute for Excellence
STEM	Science, technology, engineering and mathematics
STROBE	Strengthening the Reporting of Observational Studies in Epidemiology
TREND	Transparent Reporting of Evaluations with Nonrandomized Designs
UNESCO	United Nations Educational, Scientific and Cultural Organization
WHO	World Health Organization

Promoting evidence uptake in schools: A review of the key features of research and evidence institutions

Executive summary

Despite continued investment in a range of education reforms, national and international assessments have found little improvement in Australian student achievement outcomes. Australia has dropped in the international student outcome assessment rankings due to other countries improving at a greater rate.

The Secretariat for the Review to Achieve Educational Excellence in Australian Schools (Education Excellence Review Secretariat) commissioned the Centre for Program Evaluation at the University of Melbourne to conduct a rapid synthesis of existing evidence to understand: (i) how evidence in education can inform practice; (ii) what the enablers and barriers to evidence uptake are; and, (iii) how schools can be supported to use evidence-informed practices. The rapid synthesis drew upon findings from the practices of multiple sectors including education, health promotion, public health, mental health, and tourism that aim to support evidence-informed practice. These institutes were in Australia, the US, the UK, and the European Union.

Specifically, the synthesis aimed to understand their:

- Impact, governance structures, functions, and functionality
- Approaches to grading and synthesising evidence
- Platforms for synthesising evidence and disseminating findings and user input
- Knowledge translation and application strategies

Findings then informed the recommendation to establish an institution that could support evidence-informed education in Australia by actively closing the gap between evidence synthesis and practice changes.

Review methodology

A multi-method approach was employed to conduct the synthesis, which included semi-structured interviews and adapted systematic review techniques. Information was gathered from website publications, annual reports, and technical reports from research and evidence institutions, peer-reviewed research and policy documents. Overall, 6746 sources were screened, and 88 were identified as relevant for inclusion. Six interviews were conducted. The literature was synthesised, assessed for quality and relevance, and analysed to extract information based on the review aims. Extracted information was then thematically analysed. Given the variations in the quality of sources and findings, the strength of the evidence for each domain was rated against a number of dimensions and is also presented.

Key rapid synthesis findings

The narrative synthesis of the existing literature highlighted a set of principles, governance structures, and functionalities that an ideal institution would require to actively support evidence-informed practice in education.

The importance of the institute being principle-based

Importantly, the institution will need to be independent and principal-based to ensure evidence is used to inform practice. Principles which emerged throughout the literature that relate to increasing evidence informed practice are listed below:

- **Independence:** Maintains a sense of self-determination or autonomy to ensure buy-in from all beneficiaries.
- **Collaborative:** Promotes connection and active engagement with and between the beneficiaries and the institution.
- **Evaluative:** Builds a culture of evaluative thinking across the education sector while exemplifying an approach to monitoring and evaluating practice that ensures quality assurance.
- **Promoter:** Advocates for research agendas and findings with and for beneficiaries.

- **Capacity builder:** Develops and strengthens skills across all beneficiaries to use evidence in some form.
- **Dynamic:** Responds to and actively seeks to thrive in a fast-changing educational environment.
- **Environmental forecaster:** Understands the education environment through scanning and is predictive of contemporary trends, problems and events.
- **Responsive:** Ensures research is relevant and responsive to the needs of the beneficiaries.
- **Innovative:** The application of novel solutions that meet a current or unarticulated educational need. The evidence for the inclusion of these principles is integrated throughout the summary of the literature gathered for the synthesis. However, it must be emphasized that the vision and principles for the model of a way of working for the institution must be determined or, at the very least, ratified by the key stakeholders.

Several studies have demonstrated that the need for clarity of principles is essential and that the institution will need to engage the sector to guarantee the nature and clarity of its' purpose and principles. Based on these principles, the model suggests a cyclical approach to the task of ensuring educational evidence is proffered into action so that educational practice is evidence-informed.

The four functions of the institute – the Evidence into Action Model

The Evidence into Action Model outlined below highlights the key functions that an *independent principle-based* institution might adopt. The model specifies that these specific functions are grounded in the key research areas described and that the various beneficiaries have contributed to understanding the purpose and relevance of the functions. These functions are:

- **Generate and source:** The creation, identification and/or collation of evidence in an area or theme within the key research areas (policy, theory, practice implementation and scale)
- **Synthesis:** combining various components or elements of the research to form a connected whole. The synthesis process requires a systematic approach to combining facts with criteria and standards to enable an evaluative judgement to be made about the topic under investigation.
- **Utilisation:** The process of maximising the use of evidence to inform practice
- **Knowledge management:** process of collating, translating and effectively distributing the synthesised research evidence



Figure 1. Evidence into Action Model

Key research areas of the Institute

These specific research areas are common across the institution, regardless of the targeted research agenda. The following describes the specific areas of focus:

- Theory: An understanding of the theory of change for interventions and programs,
- Practice: The tasks required for the fidelity of the theory or programs etc.,
- Implementation: The degree and quality of tasks needed to put evidence into effect to achieve fidelity, including costs and resource requirements, and
- Scale: The act of taking the evidence to a broad range or general population.

A broader set of beneficiaries

Finally, this aspect of the Evidence into Action Model describes those groups and agents that will benefit from the institution and its activities. The education system as a collective need to take part in and benefit from institution. Pursuing just classroom teachers or policymakers will not have the desired impact. It is also important to recognise that each beneficiary has a specific role within the educational system. Along with this role comes peculiar values and institutionalised knowledge, these preexisting beliefs and practices guide how they come to understand or interpret the nature of a problem and a potential solution. As suggested by Coburn, C., Toure, J., & Yamashita, M. (2009), 'sense-making theory suggests how individuals interpret evidence is often rooted in their preexisting worldviews and shared understandings' (pg. 1127). Coburn et al, go further and suggest that limited exposure and resource can limit the use of evidence to make informed decisions about particular problems. Providing an avenue for all engaged in this utilisation of research information to share and reflect is a necessity. As a consequence of the need for a collective approach to the development of the institution and the beneficiaries would include:

- Researchers: Those engaged in the completion of educational research.
- Practitioners: Those enacting or using evidence/research in educational communities.
- Policymakers: Those who create ideas and plans, especially carried out by government.
- Social commentators: Those who have a voice in the process of education within community e.g. parents, not for profit groups, students, etc.

Organising these efforts is a significant undertaking and, as described, a collaborative partnership will be necessary. One stakeholder suggested that 'this can't be seen as the silver bullet, it will require support from many areas', hence, considering a structure for establishing partnerships around some level collective action will be helpful. Collaboration will be fundamental to this process and mobilising the community around a common agenda that is underpinned by a strong educational theory will increase success. Targeting needs that are relevant to the beneficiaries while at the same time developing strong understanding through the system will be important.

Furthermore, these key functions have a foundation in a utilisation focussed approach where the end users are actively involved in determining relevance and need, and are the beneficiaries of impact.

Key tasks for evidence-centred implementation

It is acknowledged that there are current institutions within the Australian education system that perform one or more of these functions. However, there are no institutions in Australia that operate independently from government to perform all four functions, as well as embodying the principles outlined in the model; nor were there such examples found internationally, providing an opportunity to establish an internationally leading institute. However, the functions of the proposed institute have been informed by an examination of these existing institutes. Further, while stakeholders were interviewed from a range of organisations and there was consensus that more research needs to be generated in the education field, along with more investment into developing structures that can support evidence-informed practice within education.

[We] need the translation from research into evidence so teachers can look back to the evidence base – and...to support teachers in their practice. (Interviewee, education organisation)

The core idea to support utilisation of evidence is to establish structures that enable individuals in different parts of the education sector to engage in deliberation and debate through organisational settings that encourage and enable use of evidence in substantive ways.

Recommendations

Based on our findings, it is recommended that a nationally independent utilisation focussed institution aiming to support evidence-informed practice in education in Australia:

- Develops a set of guiding principles for practice that are acceptable to the education community.
- Is established and implemented in such a way that it mirrors the philosophy of Australia's inclusive, diverse, culture and contexts and acts as a conduit for groups to access and share knowledge.
- Explores the merit and worth of the following guiding principles described in the Evidence into Action model and determines the acceptability of the principles by stakeholders. The following principles are recommended as key to the success of any evidence-based organisation:
 - Independence
 - Collaboration
 - Evaluation
 - Promotion and advocacy
 - Capacity building
 - Environmental forecasting
 - Responsiveness to the educational community
 - Innovation
 - Dynamic
- Is designed to source evidence and be responsive to requests for evidence from policymakers, practitioners, researchers and social commentators.
- Ensures that outcomes relating to uptake, scale of high-impact evidence based research and creation of successful dialogue about implementation processes for school leaders and hence through the structures of schools.
- Is independent or autonomous of government with the provision to be contracted (funded) by government(s) or other institutions.
- Can access multiple funding sources and can be established as a funder of research.
- Develops buy-in at a national level, such that buy-in is established across state and territory borders, political divides and jurisdictions.
- Considers the notion of collective impact and forges connections across governments communities, industry, not-for-profit and philanthropic groups to develop maximum evidence use.
- Establishes a sustainable infrastructure that is based on a dynamic, yet user-friendly technological platform.
- Establishes a functional governance board that is representative of the beneficiaries and funders to ensure the independence and sustainability of the institution.
- Establish a guiding coalition to ensure appropriate set up of the institution

The resourcing for such an institution should be targeted and follow a phased approach where funding is earmarked for: (i) initial set-up; (ii) early foundation; and (iii) the ongoing functioning phase of the institution. Ongoing funding should enable the institute to meet its core functioning needs and targets, whilst top-ups could be made available as required in response to need.

In addition, our findings highlight the lack of quality research on evidence-informed practice in education in Australia, particularly in diverse educational contexts. Maximising research use to close the gap between evidence generation and practice uptake is necessary to ensure greater evidence-informed practice in

Australia. Importantly, this will require greater investment into the generation of this research, where evaluative and implementation-focussed research could be prioritised.

This report provides an overview of the findings of the rapid synthesis, as well as presenting a model for an institution that supports evidence-informed practice and policy in Australia. This rapid synthesis has demonstrated that the evidence relating to evidence-based practice is variable in opinion, quality and judgement of impact. However, it is clear that the idea of establishing an institution to support evidence informed educational policy and practice is accepted as necessary.

To date, many institutions established internationally have yet to realise their full impact potential. We would argue that this is a consequence of a lack of evidence utilisation by the education sector. We have therefore suggested that Australia can be a leader in the establishment of an evidence-based institution that travels the gamut of implementation and impact on the educational sector. The rapid synthesis has identified research, policy and the perspectives of educators, alternative sectors and industry to collate several factors that appear to stimulate effectiveness and efficiency in evidence use within the sector.

These factors have been combined to propose the establishment and implementation of an institution designed to underpin educational practice, policy, research and community perspectives by providing not only rigorous information but also translating this information into usable knowledge and ultimately impact on the learning lives of Australian students.

1. Introduction

The Education Excellence Review Secretariat at the Commonwealth Department of Education and Training contracted the Centre for Program Evaluation at the University of Melbourne to conduct desktop research for the Review to Achieve Educational Excellence in Australian Schools (hereafter referred to as the Review). This report discusses the research findings and details the recommendations.

A rapid synthesis of recent academic and grey literature documenting institutions that support evidence-based practice within public health, health promotion, mental health care, education and tourism was conducted. Based on the synthesis findings, a model that outlines the functions and fundamental principles of institutions that support and effectively use evidence to inform their functioning was produced. In addition to the model, recommendations were developed based on the Australian national education policy and practice context. This report is intended to assist in informing the Review and ongoing efforts to improve the quality of education across Australia.

2. Background and methodology

The concept of evidence-based practice and policy is still a relatively recent development (evidence-based medicine, for example, has only been in place since the 1990s). The concept is based on an underlying premise that if high quality and relevant evidence informed the work of practitioners and policymakers, then this will lead to improved outcomes. However, this premise remains largely theoretical, as evidence of the efficacy of using evidence to inform practice and policy is limited. The evidence that exists has stemmed from improved outcomes in clinical medicine. For instance, evidence demonstrates improved clinical outcomes following the use of experimentally evaluated pharmaceuticals and significant reductions in post-surgical infections as result of the implementation of evidence-informed guidelines for surgical operating procedures (Greenhalgh, Howick, & Maskrey, 2014; Stetler, 2001; Wampold & Bhati, 2004).

In education, the evidence for the efficacy of using evidence to inform practice to improve student achievement outcomes is limited. A common argument among researchers and theorists examining the concept of evidence-based practice and policy in settings that are more 'social' or less 'structured' is that the concept undervalues the role of professional judgement and values. Consequently, the concept of evidence-informed practice was developed (Stetler, 2001; Moore, 2016).

2.1. Evidence-informed and evidence-based practice

Recently, there has been a focus on articulating the distinction between evidence-based and evidence-informed practice. The latter is more relevant for education and socially-oriented aspects of services and policy. Evidence-informed practice involves bringing together different types of evidence, including contextual evidence, and applying this evidence to the practice context of the practitioner (Moore, 2016). The process of synthesising, combining and applying evidence enables the end user to use this evidence to guide their decisions and practice in a way that also incorporates their professional judgement and expertise. Hence, why the term is 'evidence-informed' rather than 'evidence-based' (Greenhalgh et al., 2014; Moore, 2016). For this rapid synthesis, an evidence-informed perspective has been utilised to ensure findings are relevant for the Australian education context.

The tasks of generating, synthesising, translating, and disseminating the evidence in education to enable evidence-informed practice is often taken on by institutions and entities. To our knowledge, a systematic review of the effectiveness of such entities across sectors has yet to be published. Thus, little is known about the effectiveness of the characteristics of these institutions for supporting evidence-informed practice. This rapid synthesis aimed to examine evidence institutions across Australia, the US, the UK and the EU in the areas of education, health promotion, public health, mental health and tourism. Specifically, the review focused on the structures, funding, functions and impact of these institutions on supporting evidence-informed practice. To support the review, in-depth consultation interviews with strategic leaders and representatives of research and evidence institutions were also conducted.

The overarching purpose of the rapid synthesis was to describe and illustrate the characteristics and practices of research and evidence institutions, to describe their effectiveness (defined for this purpose as documented evidence-informed practice), and to identify what characteristics and functions support their effectiveness.

2.2. Rapid synthesis methodology

A multi-method approach was employed to conduct the rapid synthesis, which included adapted systematic review techniques and consultation interviews. Information was gathered from website publications, annual reports and technical reports from research and evidence institutions, peer-reviewed secondary research, and policy documents and relevant grey literature. This literature was synthesised, assessed for quality and relevance, and analysed to extract information based on the review questions. Extracted information was then thematically analysed. The results are presented in the following sections.

The rapid synthesis was guided by the following questions:

- 1. Impact, governance, functions and functionality**
 - What is the effectiveness of research and evidence institutions at achieving evidence-informed practice?
 - What are the governance structures and characteristics of research and evidence institutions and how do they influence impact?
 - What are the functions of research and evidence institutions aiming to achieve evidence-informed practice, and how do they influence impact?
 - What is the functionality of research and evidence institutions aiming to achieve evidence-informed practice, and how does this influence impact?
- 2. Grading and synthesising evidence**
 - What approaches/criteria/systems are used to grade evidence in research and evidence institutions aiming to achieve evidence-informed practice, and how do they influence impact?
 - What techniques/methods are used to collate and synthesise research by research and evidence institutions aiming to achieve evidence-informed practice, and do they influence impact?
- 3. Platforms for evidence synthesis, communication and user input**
 - What platforms are used to share knowledge in research and evidence institutions aiming to achieve evidence-informed practice, and how do these influence impact?
 - To what extent does the user have an input into the platform and how does this influence impact? (e.g. by annotating or adding evidence)
- 4. Knowledge translation and application strategies**
 - What approaches/methods are being used to support knowledge translation in research and evidence institutions aiming to achieve evidence-informed practice, and how do they influence impact?

2.3. Reviewed literature

Literature was sourced and subsequently synthesised from electronic databases, research registers and grey literature databases including:

1. A+ Informat
2. Academic Search Complete
3. Business Source Complete
4. Education Research Complete (ERC)
5. Education Resources Information Center (ERIC)
6. Medline
7. Mintel Academic
8. ProQuest
9. PsycINFO
10. SCOPUS

11. SOCIndex
12. OpenGrey (European grey literature)
13. Grey Literature Report

Research registers

14. Cochrane Collaboration Library
15. Campbell Collaboration Library
16. OECD iLibrary
17. World Bank eLibrary
18. World Health Organization Institutional Repository for Information Sharing
19. UNESDOC (UNESCO Database)

A systematic search strategy was used, the search strings are outlined in the table below.

Table 1: Search strategy

Area of investigation	Search string *= truncation
Effectiveness of institutions	research OR evidence AND institution OR body OR entity AND evidence-bas* practice OR evidence-inform* practice AND outcome OR effect*AND
Governance of institutions	research OR evidence AND institution OR body OR entity AND evidence-bas* practice OR evidence-inform* practice AND govern* OR board OR lead* AND
Functions and functionalities of institutions	research OR evidence AND institution OR body OR entity AND evidence-bas* prac* OR evidence-inform* prac* AND function* OR service* AND
Grading evidence in institutions	research OR evidence AND institution OR body OR entity AND evidence-bas* prac* OR evidence-inform* prac* AND approach* OR criteria OR system* AND grad* OR rank OR assess* evidence AND
Synthesising evidence in institutions	research OR evidence AND institution OR body OR entity AND evidence-bas* prac* OR evidence-inform* prac* AND synthes* method OR synthes* approach AND
Platforms used in institutions	research OR evidence AND institution OR body OR entity AND evidence-bas* prac* OR evidence-inform* prac* AND platform* OR infrastruc* OR communicat* AND use* input OR use* feedback OR use* communicat* AND pract* input OR pract* feedback OR pract* communicat* OR use* contrib* OR pract* contrib* AND
Knowledge translation in institutions	research OR evidence AND institution OR body OR entity AND evidence-bas* OR evidence-inform* prac* AND knowledge translat* OR knowledge mobilis* OR knowledge disseminat* OR knowledge use OR information translat* OR information mobilis* OR information disseminat* OR information use OR evidence translat* OR evidence translat* OR evidence disseminat* OR evidence use

Using the search strategy, a total of 6838 studies were identified. The PRISMA statement below shows that 6746 unique sources were screened by title and abstract, and the full-text was reviewed for 596 articles, with 88 sources meeting the criteria for inclusion. These are outlined further in 70.

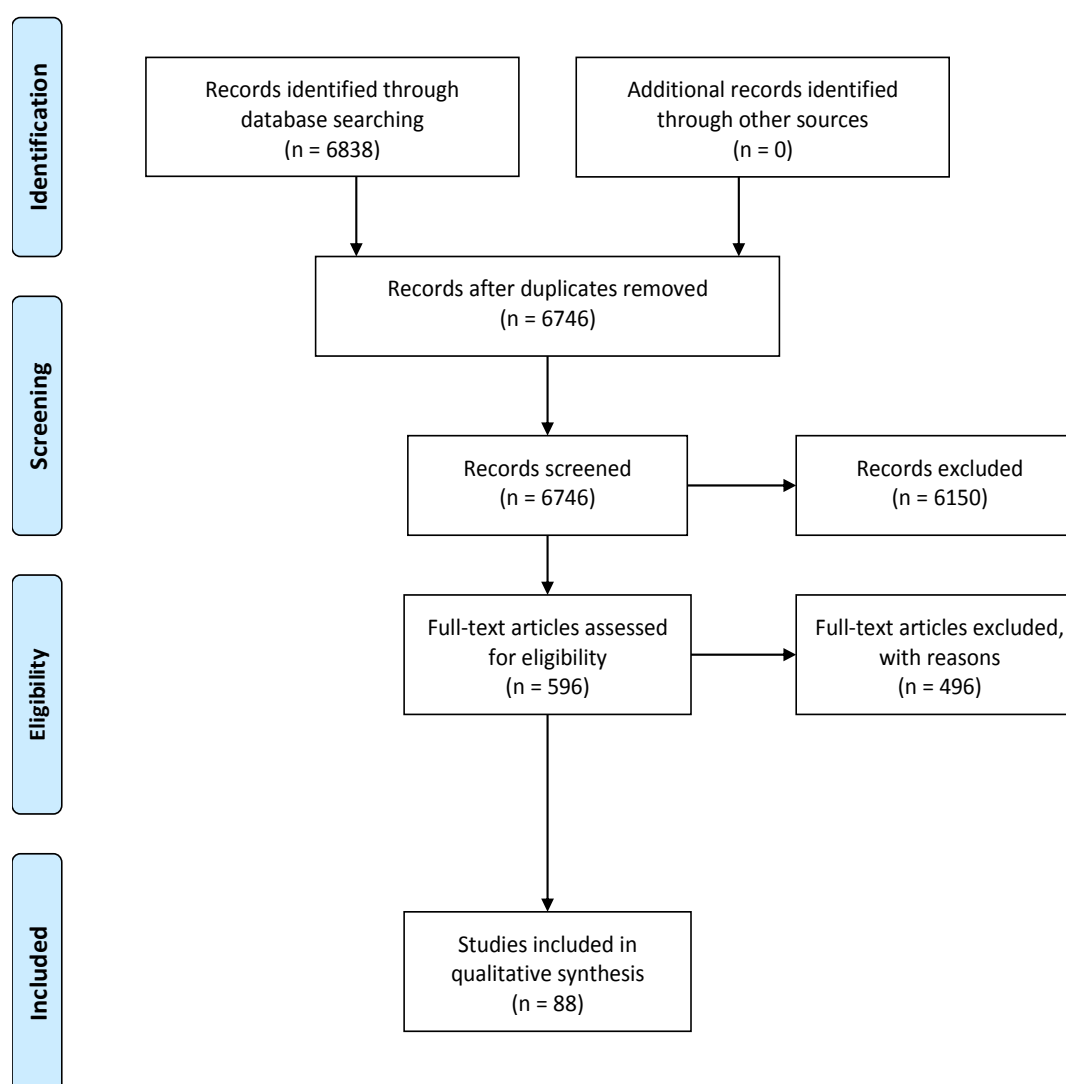


Figure 2: PRISMA Statement

A quality assessment was conducted for all full-text articles reviewed, using the Authority-Accuracy-Coverage-Objectivity-Date-Significance (AACODS) checklist designed for grey literature, evaluation studies and other sources using non-randomised study designs (Tyndall, 2009). The quality assessment results for the 88 included articles is presented in Appendix A. Of the 88 sources included in the review, all were considered recent enough to be relevant to evidence-informed practice in education in Australia. Seventy-eight per cent of reviewed studies included accurate information that was significant for the Review. All reviewed sources were authored by an authority on the subject matter and selective reporting was suspected in 28 per cent of reviewed studies. Overall, the reviewed studies were of relatively high quality according to the AACODS checklist. However, it should be noted that among a large sample of sources (6746), only 1.3 per cent reported on evidence-informed practice, and on institutions that support evidence-informed practice. This highlights how limited the research in this area.

Most included studies were in the public health sector, focussing on sanitation and hygiene, preventive health interventions and disease prevalence monitoring and the development of practice and policy guidelines to support healthy lifestyles. About a quarter of included studies were based in education, many of these examined the use of evidence in schools and in the teaching process. Only 3 of the 88 sources were based in

tourism. This is likely to be because, while evidence-informed practice is an important part of the tourism industry, it is often used to drive revenue and is therefore often considered proprietary.

While the rapid synthesis included studies published in the last ten years as well as seminal sources published earlier, 32 per cent of the included sources were published in the last two years. Most studies were conducted in the USA, with 15% based in Australia. Finally, with respect to study type, most of the included studies used a case study design and meta-syntheses, reviews or systematic reviews.

Overall, the peer-reviewed literature on evidence-informed practice and on institutions that support evidence-informed practice is scarce. However, the included sources have identified practices, structures and characteristics of institutions that can support the pursuit of evidence-informed practice. Some of these sources have well-developed empirical evidence, and others have conflicting evidence. To illustrate these differences, a strength of the evidence assessment has been provided for each of the review findings, which are detailed in section 3.0.

Finally, some limitations to the rapid synthesis methodology should be considered. The rapid synthesis was based on a set of exclusion criteria guided by the purposes and questions for the rapid synthesis. However, it is possible that some relevant literature may not have been included as it may have been unpublished, or outside the scope of the rapid synthesis. In addition, the synthesis findings include an overview of some approaches and strategies that have not been widely trialled in education, given the paucity of research on evidence-informed practice within education. Thus, it is important to carefully evaluate the appropriateness of using these approaches and strategies within the Australian education context. Considerations for operationalising these findings are provided in section 6.0 of this report.

2.4. Stakeholder consultations

Between December 2017 and February 2018, semi-structured interviews were conducted with senior leaders and representatives of research and evidence institutions in education, health and tourism as part of the rapid synthesis. In collaboration with the Education Excellence Review Secretariat, a total of six non-government organisations were approached. The organisations are listed in Table 2. Representatives from the six organisations were invited to participate in a 40-minute interview focussed on gathering insights and understanding the perspectives of the representatives on the collation, synthesis and dissemination of evidence to practitioners in their sector. Representatives from Tourism Australia and the Education Endowment Foundation (EEF) were invited to take part but were not able to.

Table 2: Organisations represented in stakeholder interviews

Organisation representative interviewed
Australian Institute for Teaching and School Leadership (AITSL)
Murdoch Children's Research Institute
Centre for Positive Psychology, University of Melbourne
Social Ventures Australia
Paul Ramsay Foundation
Organisation for Economic Cooperation & Development (OECD)

Seven representatives consented to participate in an interview. They were asked to comment on the following in relation to the research and evidence institution they work in:

- Mission and purpose;
- Governance, functions, and functionality;
- Approach to grading evidence and evidence synthesis;
- Platforms for knowledge dissemination; and
- Other approaches used to support knowledge translation and mobilisation.

Participants were also asked to reflect broadly on their perspectives of how EIP has progressed in their sector and on whether their expectations of an evidence-based approach to education practice and policy development has changed over time. The data gathered from the audio-recorded interviews was collated and the interview notes were analysed to identify common themes using the general inductive approach (Thomas, 2006). This required multiple re-readings of interview notes to identify common perspectives across the interviewees.

This document presents a model for an evidence informed policy and practice. In the spirit of a backward design, the literature supporting the recommendations is presented in a structure that follows the functions of the evidence into action model.

3. The model institution that supports evidence-informed policy and practice

A model of an institution that supports evidence-informed policy and practice in education has been developed and is illustrated in this section. While education is the focus of the rapid synthesis, there is much to be learned from the development and operations of institutions that support evidence-informed policy and practice in other sectors, including health. A series of accompanying recommendations have also been developed based on the findings of the rapid synthesis, outlined in the next section, and a consideration of the Australian education policy context. This section begins with an overview of a proposed model to foster evidence into action and a summary of information gathered in the process of conducting the rapid synthesis follows. Information is presented in alignment with the model.

3.1. The Evidence into Action Model

The rapid synthesis of the evidence points to several dimensions that appear to enable the successful establishment of an evidence-based organisation. The following model represents a collation of these dimensions. Further, it demonstrates the establishment of a utilisation focussed institution.



Figure 3: Evidence into Action Model

There are several assumptions underpinning the suggested model and it utilises a collation of the proposed success criteria for the establishment of an evidence-based institution. At its core, the institution needs to be a principle-based organisation, transparent in its agenda while communication with all stakeholders is viewed as essential. The institution needs to have clearly delineated goals (vision) as well as plans for implementation and sustainability that are solely focused on the education sector. Furthermore, the institution must be relevant to the culture, context and the Australian worldview. With this vision in mind, the model is also

highlighted as utilisation focused and specifically concentrates on the needs of the end users or the beneficiaries. It is apparent from the review that ensuring evidence informed practice is a complex order and there is a tendency to conflate information and knowledge. Consequently, we have come to understand that there is a part of this process that needs further attention. Put simply, information that is received by a recipient must become known to ensure use.

According to Dobbins (2010), 'it is increasingly recognised that developing explicit knowledge technologies and systems to codify and share information is not enough, and more attention must be paid to the starrng of tacit knowledge and to incorporate particular forms of knowledge from multiple sources.'

To facilitate this process, the authors adopted a backward design archetype. 'Like other design professions, such as architecture, engineering, or graphic arts, designers in education must be mindful of their audiences,' (Wiggins & McTighe 2011). Educators are in essence designers, they consider the needs of their students and develop curriculum and learning experiences to meet specified purposes. Similarly, assessments are put in place to determine whether these goals are met. Curriculum development has often used this approach and hence provides a useful example.

Backward design may be thought of as purposeful task analysis, i.e., given a specific desired goal to be accomplished, an architecture needs to be developed. Wiggins & McTighe (2011) suggest four filters to design curriculum that provide some useful insight.

1. To what extent does the idea have enduring value beyond the classroom?
2. How connected is the idea to the heart of the discipline?
3. How much restructuring of thought or knowledge is required?
4. What is the potential that it will facilitate engagement?

The following figure suggests a backward design process.



Figure 4: A process of backward design

This thinking allows us to consider how we engage the profession in evidence informed practice in such a way that it has an impact on teaching and learning. This review has not only taken a similar tactic as backward design in purporting this model but it has also concentrated the essence of the model on impact on the end-users. This focus ensures that the model is not only driven by the users but also promises a utilisation focus.

To achieve full utilisation, not just the generation and translation of evidence, the institution will need to be a principle-based. Several studies have demonstrated that the need for clarity of principles is essential and additionally the institution will need to engage the sector so as to guarantee the nature and clarity of its' purpose and principles (Holmes, 2012). Similarly, it was demonstrated that active collaboration in the form of co-funding and co-implementation will lead to an increase of use of information.

Several principles emerge throughout the literature that relate to increasing evidence informed practice such as the need for collaboration, capacity building and maintaining relevance to practice. The specific weighting or order of these principles has not been determined, however, some principles are essential, because they have the power to facilitate a 'block-chain' system e.g., collaboration and its relationship to environmental scanning and forecasting while others could be considered as mediators.

There are a set of principles that underpin the foundation of the Evidence into Action Model and it's functioning, including:

- **Independence:** Maintains a sense of self-determination or autonomy to ensure buy-in from all beneficiaries.
- **Collaborative:** Promotes connection and active engagement with and between the beneficiaries and the institution.
- **Evaluative:** Builds a culture of evaluative thinking across the education sector while exemplifying an approach to monitoring and evaluation practice that ensures quality assurance.
- **Promoter:** Advocates for research agendas and findings with and for beneficiaries.
- **Capacity builder:** Develops and strengthens skills across all beneficiaries to use evidence in some form.
- **Dynamic:** Respond to and actively seek to thrive in a fast-changing educational environment.
- **Environmental forecaster:** Understand the education environment through scanning and is predictive of contemporary trends, problems and events.
- **Responsive:** Ensure research generated is relevant and responsive to the needs of the beneficiaries.
- **Innovative:** The application of novel solutions that meet a current or unarticulated educational need. The evidence for the inclusion of these principles is integrated throughout the summary of the literature gathered for the synthesis. However, it must be emphasized that the vision and principles for the model of a way of working for the institution must be determined or, at the very least, ratified by the key stakeholders.

Based on these principles, the model suggests a cyclical approach to the task of ensuring educational evidence is proffered into action so that educational practice is evidence-informed. Systematic and scaffolded action is essential to ensure impact on the end-users. There are four components to supporting an action-based approach to the establishment of an educational evidence institution and it is assumed that all components must align to ensure all beneficiaries can utilise evidence (as highlighted in the evidence into action model). The four areas of operation: evidence generation; synthesis; knowledge management; and utilisation are key to successful implementation—they are all intrinsically related where the success and operations of each are influenced by the others. Each operational area is accompanied by a set of activities or precepts that determine implementation and/or strategy. These related actions are suggested as a means of structuring and define the specific areas. They are of course inherently related to the principles. The overlap of these of these governing principles are apparent throughout the development of the model.

The scope of work of institution must be defined and transparent, which raises concerns for education as a complex and complicated discipline. While research topics in education are numerous, there are key research areas that should underpin the work of the institution that can be pursued within topical research, and concern theory and content, practice, implementation and scale. While it could be argued that these encompass all that is education, these key zones provide a scope of the high-level field in which to ground the research. In particular, an understanding of implementation and scale have notably been neglected in past education research, yet these constructs are key to understanding impact. Recently, many evidence based institutions across health and tourism have turned some of their focus to implementation, for example the EEF. The idea of scale in education still seems elusive and there is little evidence of 'how' to scale, despite many government and policy initiatives that test for scale. It is our belief that any the work of the institution should contribute to either educational practice, theory, implementation or scale.

It is useful to structure research in these areas as opposed to topic or even specific educational practice areas such as curriculum, because it allows for educational research topics to be targeted according to need and voice of the beneficiaries as opposed to being driven by fixed targets or agendas. The institution should not only be driven by the end users but also impact on the end-user. We believe that the institution should impact on teachers but also those who are specifically engaged in generating or utilising education research, particularly policymakers. The beneficiaries of the impact of the institution are researchers, practitioners, policymakers and social commentators on education, it is argued that the institution as a matter of principle forge relationships within and between the beneficiaries and the institution. This relationship between the beneficiaries will ultimately have a knock-on effect on evidence informed practice.

As suggested, this utilisation focussed approach will facilitate the development of a system to form the institution. The needs of the end users or beneficiaries will determine targets, resources and scope of the work of the institute. As such along with the key principles collaboration and partnerships will be essential.

3.1.1. Tasks for implementing the Evidence into Action model

As outlined in Figure 3, the following list and descriptions define each dimension within the model. The descriptions are organised based on the four functions, the research areas and the suggested beneficiaries.

Generate and source evidence

The initial step in the cyclical process relates to the creation, identification and/or collation of evidence in an area or theme within the key research areas (policy, theory, practice implementation and scale). The following dimensions in this step depict the high-level characteristics upon which the research will ultimately be judged:

- **Feasibility:** The research can be implemented or achieved in a reasonable manner such that it is non-burdensome, effective, efficient, and considers value for investment of resources.
- **Appropriate:** The research is suitable or proper for the issue, target group or context.
- **Adaptive:** The findings of the research demonstrate adaptability such that the research findings could be implemented in the context of the various regions and population groups within Australia.
- **Effective:** The research investigates the desired level outcomes.
- **Relevant:** The research is considered pertinent to a current educational issue and to educational practice—furthermore, it is relevant to the beneficiaries.
- **Quality:** This standard and rigour of the research as measured against designated criteria for quality.

Evidence synthesis

This second stage is focussed on the process of combining various components or elements of the research to form a connected whole. The synthesis process requires a systematic approach to combining facts with criteria and standards to enable an evaluative judgement to be made about the topic under investigation. The following dimensions describe the strategy and tasks for conducting evidence synthesis:

- **Eclectic methodology:** All research methods are accepted for use, with a clear understanding of the value and limitations of each approach as opposed to only accepting particular study types.
- **Quality:** A set of standards is adopted against which any research could be judged.
- **Fit for purpose:** Any chosen method must align with a key objective of the research, whether the research relates to implementation, theory, practice or scaling.
- **Evaluative judgement:** The institution will determine the merit and worth of the evidence accessed in the synthesis process.

Utilisation

This is the process by which information is used in some form e.g., put to some practical use, hence it solidifies knowledge. The following dimensions describe the high-level strategies for maximising evidence use:

- **Framework:** Articulating a process for maximising evidence utilisation.
- **Beneficiary engagement plan:** Determining who and how much engagement is needed to ensure knowledge is translated and disseminated, and that use is supported in practice and policy contexts.
- **Feedback loop:** The process of ensuring that the receivers of information can voice their perception, assessment and priorities for future research.
- **Connections created:** Collaborative relationships are formed across researchers, practitioners, policymakers and social commentators.
- **Shared responsibility encouraged:** All players within the institution take some responsibility to generate the direction and work of the institution.

Knowledge management

Knowledge management is the process of collating, translating, and effectively distributing the synthesised research information. The following dimensions describe the strategy and tasks for knowledge management:

- **Housing:** All data captured is stored such that it is clean, secure and easily accessible.

- Data linkage: Various sets of information from varying sources can be accessed and connected.
- Translation: Information collected needs to be interpreted and expressed in an appropriate form, language and style to ensure knowledge creation.
- Brokering: This process creates a conduit so the beneficiaries can better utilise and share the evidence in some form, and, importantly, influence each other's work.

Key research areas

These specific research areas are common across the institution, regardless of the targeted research agenda. The following describes the specific areas of focus:

- Theory: Content and programs,
- Practice: The tasks required for the fidelity of the theory or programs etc.,
- Implementation: The degree and quality of tasks needed to put evidence into effect to achieve fidelity, including the required costs and resources
- Scale: The act of taking the evidence to a broad range or general population.

Beneficiaries

Finally, this aspect of the Evidence into Action model describes those groups and agents that will benefit from the institution and its activities:

- Researchers: Those engaged in the completion of educational research.
- Practitioners: Those enacting or using evidence/research in educational communities.
- Policymakers: Those who create ideas and plans, especially those carried out by government.
- Social commentators: Those who have a voice in the process of education within community, e.g. parents, not for profit groups, students etc.

Organising these efforts is a significant undertaking and, as described, a collaborative partnership may be necessary. One stakeholder suggested that 'this can't be seen as the silver bullet, it will require support from many areas', hence, considering a structure for establishing partnerships around some level collective action will be helpful. Collaboration will be fundamental to this process and mobilising the community around a common agenda that is underpinned by a strong educational theory will increase success. Targeting needs that are relevant to the beneficiaries while at the same time developing strong understanding through the system will be important.

3.2. Recommendations

It is recommended that an independent and strategic institution with the aim of supporting, sourcing, generating, synthesising and promoting the use of educational evidence of all forms be established. Specifically, it is recommended that while the institution adopts a way of working that is similar to a Collective Impact approach, it must not syphon off responsibility for the strategic aspects or targets for brokering and connecting knowledge. Furthermore, the organisation should:

- Develop a set of guiding principles for practice that are acceptable to the education community.
- Be established and implemented in such a way that it mirrors the philosophy of Australia's inclusive, diverse, culture and contexts and acts as a conduit for groups to access and share knowledge.
- Explore the merit and worth of the following guiding principles described in the Evidence into Action model and determine the acceptability of the principles by stakeholders. The following principles are recommended as key to the success of any evidence-based organisation:
 - Independence
 - Collaboration
 - Evaluation
 - Promotion and advocacy
 - Capacity building
 - Environmental forecasting
 - Responsiveness to the educational community
 - Innovation
 - Dynamic

- Be designed to source evidence and be responsive to requests for evidence from policymakers, practitioners, researchers and social commentators.
- Ensure that outcomes relating to uptake, scale of high-impact evidence based research and creation of successful dialogue about implementation processes for school leaders and hence through the structures of schools.
- Be independent or autonomous of government with the provision to be contracted (funded) by government(s) or other institutions.
- Access multiple funding sources and be established as a funder of research.
- Develop buy-in at a national level, such that buy-in is established across state and territory borders, political divides and jurisdictions.
- Consider the notion of collective impact and forge connections across governments communities, industry, not-for-profit and philanthropic groups to facilitate maximum evidence use.
- Establish a sustainable infrastructure that is based on a dynamic, yet user-friendly technological platform.
- Establish a functional governance board that is representative of the beneficiaries and funders to ensure the independence and sustainability of the institution.

Finally, the interviewed stakeholders reiterated that one of the core features of a national evidence-based institution is to address inequity in the education system.

To reduce inequality means that you must increase access, then monitor and make decisions based on evidence. (Interviewee, health organisation)

We need to do more on inequity and quality – not NAPLAN which says a lot about reach, but nothing on whether the intervention was effective. We must also help poorer areas or rural areas which usually get poorer services. (Interviewee, education institution)

These reflections have been incorporated into the rapid synthesis findings to discuss the tasks that are necessary for implementation, and for a functioning national evidence institute in Australia.

4. Rapid synthesis: Support for a utilisation model

The findings of the synthesis of literature sourced and the analysis of interviews with key stakeholders from research and evidence institutions are presented in this section of the report. The findings have been organised into four functions that emerged as necessary for institutions that support evidence-informed practice. The four functions identified as necessary for institutions to support evidence-informed practice are:

- (1) Generating relevant evidence
- (2) Synthesising evidence
- (3) Knowledge transfer, brokering and management
- (4) Supporting utilisation of knowledge

Each function is first described, and the themes relevant to that function are discussed with examples from literature reviewed throughout. To further aide in structuring the presentation of findings, a thematic concept map is provided for each of the four functions to illustrate the relationship between the themes. While synthesis is organised around these functions, the argument for a principles-based organisation, the nature of beneficiaries and the scope of such an organisation emerged from this synthesis.

The thematic map overleaf outlines the functions and functionality in reviewed research and evidence institutions, and distinguishes the relationship between functions (what institutions do), functionality (what they aim to do and can do) and actions (how they perform their functions). The themes outlined in this model will be discussed later in this section.

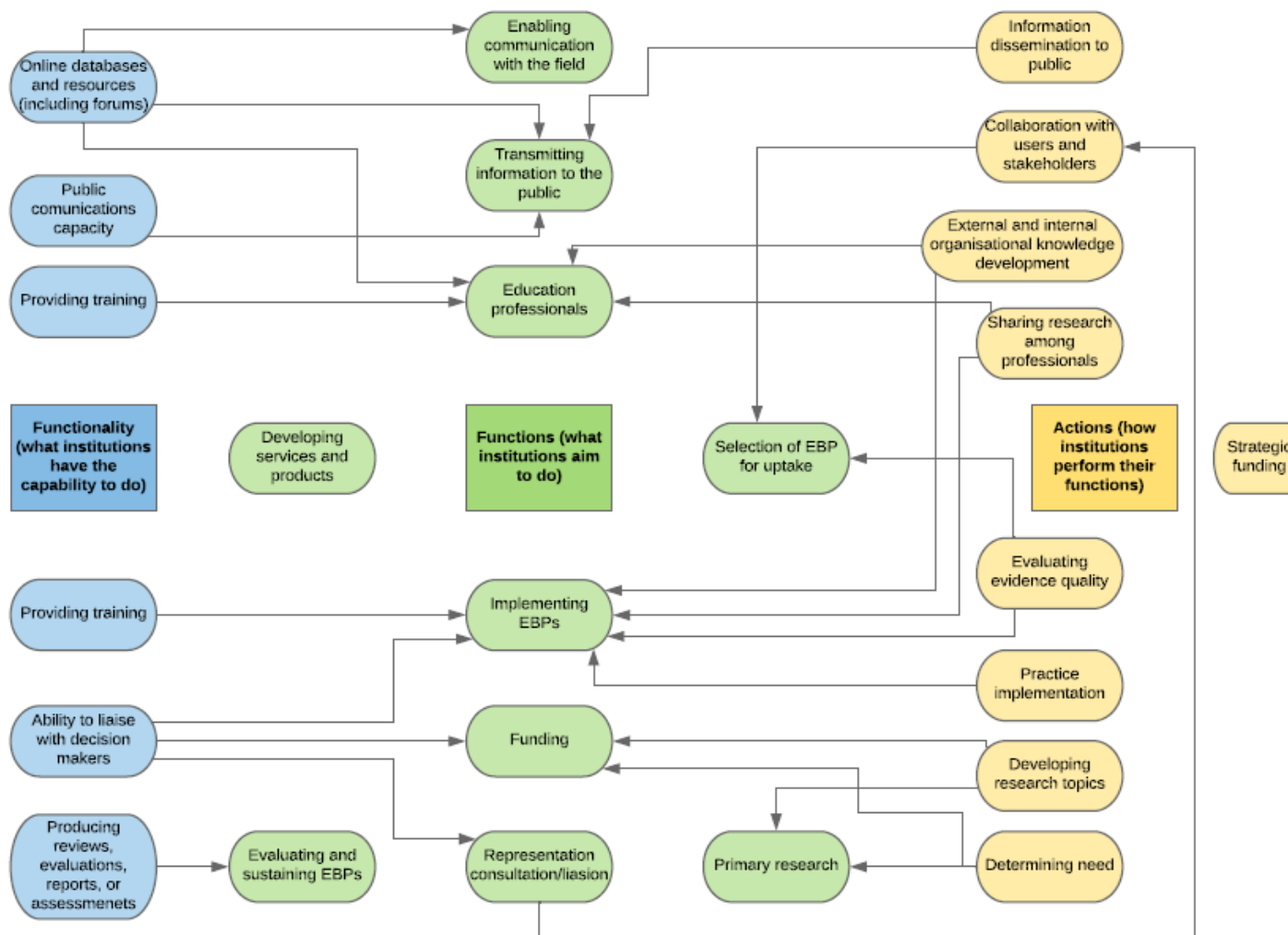


Figure 5: Functions, functionality and actions of reviewed evidence and research institutions

The stakeholders interviewed reported they relied heavily on evidence to support practice and policy development. Most of them referred to their workplaces as evidence-based institutions. As practitioners, they explained their role was to gather data from multiple sources and then translate the evidence into terms that will be useful for policy makers, practitioners and the wider public.

In our Master's course which is offered to teachers, one of my team members developed a course on evidence-based practice to help in-service teachers understand what evidence-based practice is. (Interviewee, education organisation)

[Organisation name] is well-placed to create a market place for institutions that synthesise evidence, and can ensure open-access publishing and financial independence from particular funders. (Interviewee, education organisation)

Furthermore, the interviewees also validated the appropriateness of evidence-informed rather than evidence-based practice in an education organisation. The former was described as more dynamic and more appropriate for the Australian educational context.

Evidence-based is more static – where evidence informed suggests that learning is happening in a systematic way. (Interviewee, health organisation)

Stakeholders defined effective functioning for institutions that support evidence-informed practice as engaging in a process of refining, continually building on and refining the knowledge gained, and disseminating this to all those who can benefit from this knowledge, including practitioners.

4.1. Function 1: Generating relevant evidence

A critical function of research and evidence institutions is to gather and produce research. The generation of research should be feasible, appropriate, meaningful, effective and relevant.

The rapid synthesis revealed the complexity associated with generating relevant evidence that enables evidence-informed practice and policy. Much of this is associated with the need to traverse beyond the realms of scientific knowledge claims, to knowledge that is relevant and applicable to policy and practice (Burns & Schuller, 2007).

Despite the diversity of literature and institutions examined, which included research institutions and international organisations (such as the Cochrane Collaboration, the OECD, the WHO) as well as sector-specific institutions (such as healthevidence.ca and the Education Endowment Foundation), several common themes emerged relating to the generation of evidence that supports evidence-informed practice. However, the evidence did vary with respect to the level of consistency and strength for each theme. The table overleaf details an assessment of the strength of evidence associated with the findings in relation to evidence generation that can support evidence-informed practice. As noted in the table, the evidence is most consistent and strong for the importance of collaboration in the evidence generation process. Therefore, across the reviewed sources, there was in-depth detail about the implications of collaboration on evidence-informed practice.

Table 3: Strength of evidence for findings associated with evidence generation

Theme	Key components	Emerging	Moderate	Comprehensive
Evidence-based practice informed research	<ul style="list-style-type: none"> • Research Methodology • Effect sizes or Statistical Significance • Quality of Evidence • Consideration of an entire body of work • Quantity of Evidence • Funding research for evidence-based practices • Selection of evidence-base practice for uptake • Inclusion of a-typical sources of evidence • Hands-on implementing evidence-base practices • Primary Research • Determining need for research/development • Developing research topics 			
Practicality and usability of evidence	<ul style="list-style-type: none"> • Usability of evidence • Practical knowledge/ready to implement • Responsive to policy and practice needs in the synthesis, translation and dissemination process • Adapting language – user-friendly outputs • Accessibility (language, navigation, ease-of-use) is paramount • Staff skilled in evidence synthesis and knowledge translation 			
Collaboration	<ul style="list-style-type: none"> • Representation: consulting/liaising with policymakers or funding agencies • Contextualising knowledge to practitioners' needs • Advisory/expert groups are important for providing technical expertise to the board/organisation • Collaboration with EBP users and stakeholders • Ability to liaise with decision makers • Evidence-based practice implementation • Collaboration with beneficiaries in knowledge translation • Collaboration between REIs and practitioners • Disconnect between funder goals and end-user needs • Partnerships can be useful for research 			

The following elements were found to be critical features in the production of evidence to inform practice and policy.

4.1.1. Effective collaboration with the intended end-user

There was consensus on the value of researchers collaborating with the intended end-users across all stages of the research process – from design through to the interpretation and dissemination of findings in the reviewed literature. Collaboration (that enabled the intended end-user to inform and contribute to the research design) was reported to increase the likelihood that the resulting evidence was applicable to practice and, accordingly, to the probability that the research would be used to inform practice and policy (Bain & Swan, 2011; Burns & Schuller, 2007; Dobbins, DeCorby, et al., 2010; LaRocca, Yost, Dobbins, Ciliska, & Butt, 2012; Volmink, Siegfried, Robertson, & Gulmezoglu, 2004; WHO, 2013a).

The intended user's contribution to the research design and conduct is impactful because it addresses any gaps in the knowledge and capacity among those who conduct research to appropriately identify implications for practice and policy from research evidence (Dobbins, DeCorby, et al., 2010). Identifying relevant and actionable implications is an aspect of research that is often poorly developed in studies. However, the involvement of the intended end-users who have intimate knowledge of the system structures, organisational infrastructure, and resourcing capacity can result in appropriate, relevant and actionable implications being identified from the research. Furthermore, it can improve dissemination and use-of-evidence more generally, which is an outcome of involvement.

It should be noted that there are few published examples of effective collaborations, particularly those that involve policymakers. Often, research that systematically includes collaboration through

all stages is categorised as a certain research design, such as participatory or action research. However, the reviewed literature on evidence-informed practice signals that this collaboration can and should exist across all

Box 1: The Calm Kids Study

The Murdoch Children's Research Institute (MCRI) is an Australian research institute that specialises in children's health. Their five areas of focus are infection and immunity, cell biology, clinical science, genetics, and population health. One current research project being undertaken by MCRI is The Calm Kids Study, which targets anxiety in children with Attention Deficit Hyperactivity Disorder (ADHD).

The Calm Kids Study is based on a previous small-scale pilot study from 2015 which showed that non-pharmacological interventions may be effective in improving functioning for children with both ADHD and anxiety (Sciberras, Mulraney, Anderson, Rapee, et. al., 2015). The study uses a ten-session intervention to teach children and parents about anxiety and anxiety management strategies with the aim of reducing anxiety and improving child and family functioning. Children undertaking the intervention will be compared with children who did not receive the intervention to determine its effects. The aim of the research study is to determine whether such an intervention significantly affects children with anxiety and ADHD, and to determine its feasibility and scalability. The study involves 133 families to date, and has been running since late 2015 ("News and publications", n.d.).

While the study has been informed by previous research, its goal is to add to the evidence base of mental health interventions for children, specifically supporting using Cognitive Behavioural Theory (CBT) approaches for children with ADHD and anxiety. The pilot study extended "previous research through inclusion of a broad battery of outcome measures, including diagnostic interviews". The current study further expands on the pilot study, as it is a much larger-scale and longer-term research project. In short, The Calm Kids Study will create evidence on which future practice may be based.

MCRI is governed by a Board of Directors and several committees which perform a variety of tasks. Their Development Board advises on fundraising, marketing, and communications; the Executive Committee advises on the overall strategy and long-term research; the Audit, Finance, and Risk Committee advises on the systems and controls to safeguard MCRI's assets; the Translation and Commercialisation Committee advises on business development opportunities; the Investment Committee advises on financial investments; and the Victorian Clinical Genetics Services Board advises on strategy and management for the genetics clinic operations ("Board and Committees", n.d.).

research endeavours aiming to generate evidence for the purposes of informing practice and policy (Burns & Schuller, 2007; Volmink et al., 2004; WHO, 2013b).

In the consultations with stakeholders, an interviewee spoke about a problem they were facing that concerned child abuse and family violence, and how to tackle it. Their unit was asked to generate a list of evidence-based strategies, so the unit produced an evidence informed decision-making framework. This framework has been turned into a set of tools for a local agency.

We took a service issue, analysed it, looked at literature, as well as the effectiveness of relationships between groups. What we understood from literature was that HOW services are delivered is as important as WHAT is delivered.

The lessons learned from this experience was that it was important to engage with the family before an evidence-based strategy is selected. As was observed, it is also important to establish what the need is.

What we must do is to blend what we know about evidence-based process and Evidence based programs. So, for us and our work it is important for us to establish a good relationship with the family and as well, it is critical for parents to use evidence-based strategies.

4.1.2. Focus on generating ‘actionable’ knowledge

Actionable knowledge is developed based on evidence that indicates an ‘action’ and/or ‘change’ in policy and practice that can lead to desired outcomes. The production of this type of knowledge can support the goal of evidence-informed policy and practice. Further, the reach of actionable knowledge can be increased if it is tailored to the intended user(s): When the results or ‘actionable messages’ of research results are tailored to the specific needs of decision-makers, then reported uptake is higher. (Dobbins, DeCorby, et al., 2010, p. 2)

This process of tailoring can be further enhanced by collaboration with the intended users during the dissemination stage, and is often facilitated by co-authoring between researchers and practitioners and/or policymakers (Burns & Schuller, 2007; Dobbins, DeCorby, et al., 2010; Volmink et al., 2004; WHO, 2003).

4.1.3. Development of guidelines

Guidelines can be developed to facilitate the production of actionable knowledge as they articulate how evidence can be operationalised into practice or policy change. The World Health Organization (2003) suggests that guideline development can be conceptualised as a three-stage process:

1. Develop recommendations based on evidence,
2. Identify the influence of recommendations on policy and practice,
3. Apply the recommendation to the context, nature of resources, infrastructure and so forth.

If done adequately, this [three stage process] will allow decision makers in different settings to take the third step of ‘localizing’ the guidelines to their settings, and deciding where the trade-off between additional benefit and additional costs should be set. It will also be useful in determining what is acceptable for the end-users. (WHO, 2003, p. 5)

Health care guidelines developed using the above process have been evaluated comprehensively and found to result in practice change and improved health outcomes (WHO, 2003). However, it is important to note that the magnitude of these outcomes is influenced by the quality of the guidelines, and, critically, their ease of implementation.

Overall, the rapid synthesis findings indicate that institutions aiming to support evidence-informed practice/policy should ensure that the process of generating evidence should: (i) involve collaboration with the intended end-users; (ii) yield knowledge that is actionable; and (iii) work towards developing guidelines with the intended end-users. It is through the evaluation of the implementation of guidelines that evidence-informed policy and practice is evident. While other strategies exist to support knowledge transfer, there is limited evidence of their effectiveness. These strategies are discussed later in this report.

4.2. Function 2: Synthesising evidence

A necessary function of research and evidence institutions is to collate and synthesise existing research. Quality practice in this area is characterised by sourcing, synthesising and appraising evidence that includes a range of methods, and analysing the merit, worth and significance of the evidence, and finally considering the forms of evidence that can best inform policy and practice change.

4.2.1. Defining quality evidence and Methods for Scaling

The increased use of research evidence to inform policy and practice, with an emphasis on identifying, synthesising and applying research evidence to the solution of problems, is reliant on the quality of the research being synthesised. Therefore, the quality of research can be considered a precursor to statements about evidence and an intervention's effectiveness.

When it comes to applying notions of quality in practice, the debate about 'what counts' as good quality is often influenced by the 'hierarchy' of evidence that is common in health care (Daly et al., 2007; Pandis, 2011). However, this approach is often criticised as it is solely focused on providing evidence on the effectiveness of interventions. It is common for different research methods to be compared, with evidence models suggesting a hierarchy or continuum. However, a significant consideration is not whether a particular method was used, but whether the method is appropriate in providing a robust answer to the research question (Boaz, Grayson, Levitt, & Solesbury, 2008). In medicine, the value of different methods is commonly referred to as the 'bench to bedside' paradigm (Woolf, 2008) in which the appropriateness of a method depends on whether the research is attempting to understand the mechanisms of change between an exposure and an outcome to inform intervention development, or testing to inform practice changes. However, the continuum is reliant on high-quality research being conducted and synthesised at each stage, regardless of the type of method used (Jüni et al., 2015; Odom et al., 2005; Seale, 1999). In addition, this approach requires a clear acceptance that different methods have strengths and limitations which are inherent to each, and that each approach aims to address a different type of question. Although Randomised-controlled trials (RCTs) are commonly referred to as the 'gold standard', Jüni et al., (2015) showed that when the quality of an RCT is compromised, the results of systematic and meta-analyses can be distorted. Therefore, research quality is dependent on how the study was conducted, as opposed to the specific method used.

When researchers discuss whether findings and conclusions from research can be trusted, they are referring to validity. Researchers have proposed different frameworks for examining the validity and have various terms to describe different types of validity. Whilst there are some discrepancies in how validity is understood, there is a consensus of four key factors being critical to quality research designs. These are: (i) clarity of the research question; (ii) appropriateness of research methods to answer the question; (iii) how the study was conducted; and (iv) whether the study's results support the conclusions (Boaz et al., 2008; Lohr, 2004; Shavelson & Towne, 2002). Determining the quality of research is often reliant on how the research is reported. To facilitate quality review, several groups of scholars, particularly among public health and medical researchers, have recommended standardised research reporting frameworks to help ensure that essential research information needed to assess quality is included in journal articles. Often described as "checklists," these standards vary by the methodology used and specific research designs. There are several standardised formats for general and specific research designs, including: the Consolidated Standards of Reporting Trials (CONSORT) for RCTs; Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) for observation studies; the Transparent Reporting of Evaluations with Non-randomised Designs (TREND) for non-randomised trials; and the Template for Intervention Description and Replication (TIDIER) for implementation studies (Hoffmann et al., 2014; Kirkwood, 2004; Schulz et al., 2010; von Elm et al., 2008). Although these guidelines are commonly required in health journals as part of the peer-review process, they are not in education journals.

Consensus standards for quality research and consistent reporting are needed for research to be evaluated fairly and reliably. Consensus standards also are needed to facilitate the knowledge translation process, as research quality and evidence must be assessed and deemed sufficient prior to dissemination and knowledge utilisation initiatives (Davis, 2003; Petkovic, Welch, & Tugwell, 2015). In the field of education, criteria for appraising research quality and standardised checklists in reporting are yet to be established. As this debate

continues, there are many ideas in the public domain regarding standards for quality research and strategies for standardised reporting that can be used to help guide the ongoing discussion and decision-making process.

4.2.2. Scale

The notion of ‘scalability’ is both common and important within the health sector, and becoming increasingly significant in the context of education (Goldacre, 2013). Scalability refers to the capacity of interventions that have demonstrated efficacy in small settings, or under controlled conditions, to be expanded to real-world conditions and reach a broader population, whilst retaining effectiveness (Milat, King, Bauman, & Redman, 2013). For instance, can a reading intervention that has been shown to improve student reading in one community have similar benefits when implemented for a higher number of schools from different areas. Not all promising interventions are scalable because of context-specific factors unique to their original setting, such as funding availability, strategic alignment, differential expertise, or existing infrastructure (Kohl & Cooley, 2004). Interventions that are scalable can demonstrate effectiveness across several different contexts for the same type of target population (Milat et al., 2013). Population-based randomised controlled trials are accepted as the most appropriate method to determine an intervention’s effectiveness when implemented across different settings. However, recent research has highlighted that embedded within these trials needs to be robust process evaluations that examine implementation factors that promote or inhibit the intervention’s effectiveness as well as cost-benefit evaluations to understand funding commitments required (Humphrey et al., 2016; Oakley et al., 2006). As the autonomy of schools allows a range of different interventions to be implemented for a given domain, there also needs to be a clear description of what is ‘business as usual’ for control conditions.

It is widely accepted that only interventions that are effective and scalable should be ‘scaled up’ (Carrier, 2017). Scaling up refers to the systematic implementation of an intervention at a whole system level – either horizontally or vertically. Vertical scaling up occurs across a whole system and results in the institutionalisation of a change through policy, regulation, financing or health systems. For example, the introduction of a policy which requires certain types of interventions can be implemented. In contrast, horizontal scaling up refers to the introduction of an intervention to groups of schools in a phased manner, with lessons from the implementation in each group used to inform the next phase of ‘roll out’. The key requirements for scaling up are the need for a clear plan, which integrates ongoing evaluation of the intervention’s fidelity and outcomes, as the intervention is implemented in more settings (Milat et al., 2013).

A significant proportion of the literature included in the synthesis discussed synthesising evidence for the purposes of supporting evidence-informed practice. Several challenges within this synthesis process were identified, including contradicting evidence, a large and exponentially growing amount of evidence, and a limited proportion of people with skills in systematically reviewing and synthesising evidence. In addition, the criteria used for the assessment of evidence quality was debated, as was the roles of content experts, international organisations, professional associations and think tanks.

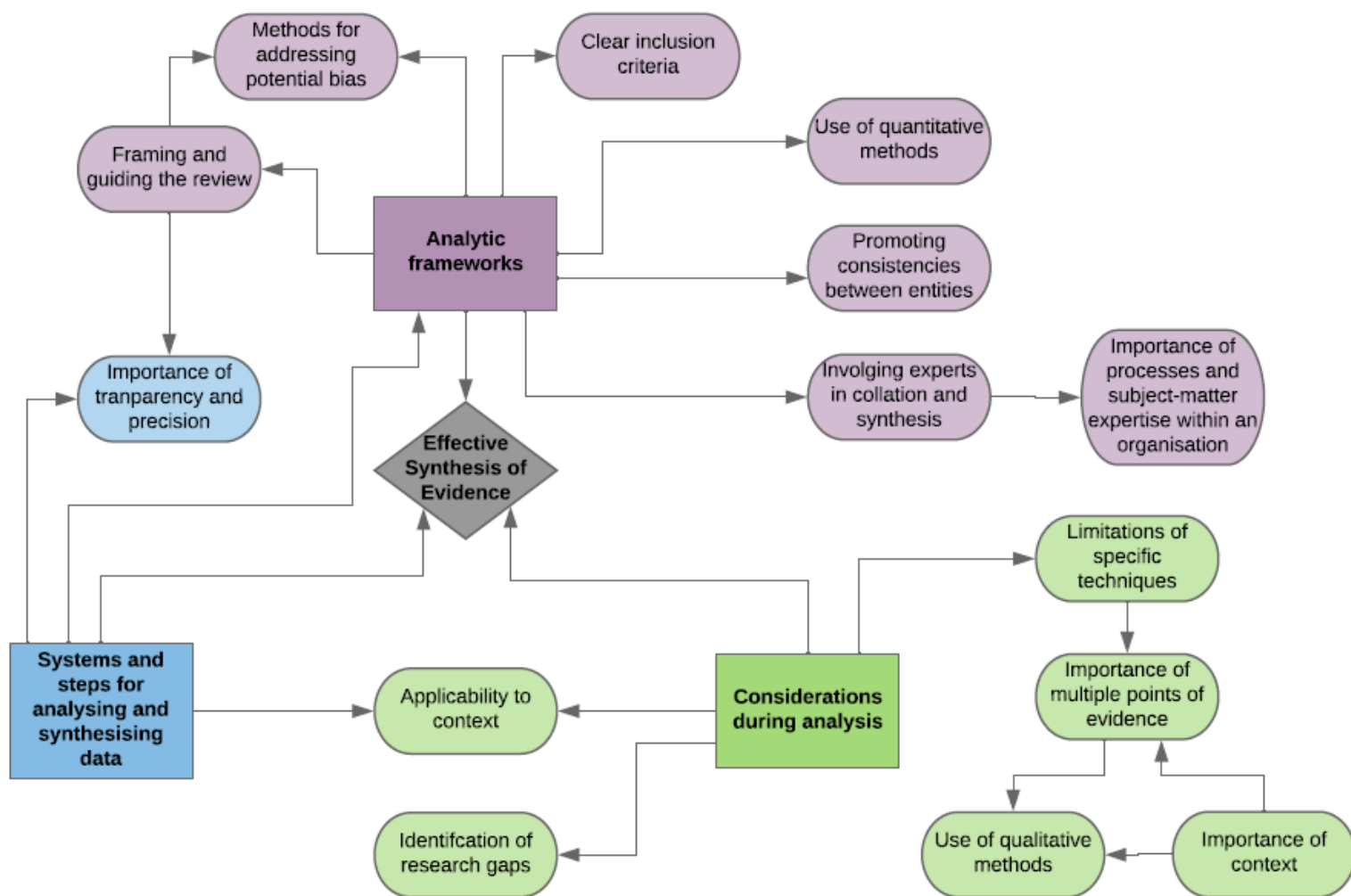


Figure 6: Approaches to evidence synthesis in reviewed research and evidence institutions

However, evidence did vary with respect to the level of consistency and strength for each of the themes associated with evidence synthesis. The table below details an assessment of the strength of evidence associated with the findings in relation to evidence generation that can support evidence-informed practice. As noted in the table, the evidence is most consistent and strong for the importance of collaboration in the evidence generation process, therefore across the reviewed sources, there was in-depth detail about the importance of highly skilled staff to conduct evidence synthesis and the need to incorporate experts into the synthesis process. It should be noted that the evidence for approaches to presenting and assessing evidence in the synthesis process was limited and conflicting.

Table 4: Strength of evidence for findings associated with evidence synthesis

Theme	Key components	Emerging	Moderate	Comprehensive
Quality assessment	<ul style="list-style-type: none"> • Inclusion of user or practitioner in grading process • Relevant quality assessment of evidence • Informed by users • Ability for users to make edits or to update the knowledge base 			
Expert advice	<ul style="list-style-type: none"> • Content experts • Trusted sources • Pre-existing frameworks/rubrics 			
Presentation of graded evidence	<ul style="list-style-type: none"> • Use of a tiered system instead of an include/exclude system • Inclusion of no-effect and insufficient evidence categories 			
Highly skilled staff	<ul style="list-style-type: none"> • Educating/training professionals • Staff skilled in evidence synthesis and knowledge translation 			

4.2.3. Nature of the evidence base

While there are variations in the scale of evidence and topic areas, across the sectors reviewed, (education, public health, health promotion, mental health and tourism) evidence about the effectiveness of interventions, policies, initiatives and efforts to advance the field is growing exponentially. This simultaneously presents an opportunity and formidable challenge to the synthesis process—despite more information about ‘what works’, there is significant variability in the quality of this information and some of the information is contradictory (Burns & Schuller, 2007; Dobbins, DeCorby, et al., 2010; Forman, Gaudiano, & Herbert, 2016; Volmink et al., 2004).

These characteristics present logistical challenges to the synthesis process. With larger volumes of evidence demanding greater resourcing for revision and increasing the likelihood of contradictory findings and variations in evidence quality. Accordingly, improving the reliability and validity of quality assessment is necessary to ensure that the synthesis process continues efficiently and, importantly, is sustainable (Dobbins, DeCorby, et al., 2010; Means, Magura, Burkhardt, Schröter, & Coryn, 2015; Purper, 2016). However, a larger volume of evidence presents methodological challenges to the synthesis process beyond quality assessment; it is plausible that the risk of publication bias can increase due to the tendency for published studies to articulate ‘effectiveness’ rather than ‘ineffectiveness’. Finally, an added challenge is that a proportion of studies and evaluation reports are not published, and incorporating these unpublished works into a synthesis is often impossible (Borenstein, Hedges, Higgins, & Rothstein, 2009).

Box 2: STEM Research Translation

The Centre for Education Policy and Practice within ACER oversees a branch that focuses on “translat[ing] research findings into evidence-based practice” for teachers, school leaders, and system-level leaders. ACER’s translation research broadly consists of several key activities: reviews and synthesis of existing research, dissemination of findings, engagement with end-users, collaboration with practitioners to create practice, and evaluation of the applied research. As such, ACER is involved with all levels of knowledge translation, from synthesis to implementation to evaluation; however, the main function of the ACER translational research process is a focus on synthesising current evidence with an eye towards creating concise, functional information for professionals in the education field.

As Australian student results in STEM have been in decline in recent years (Rosicka, 2016), ACER’s focus has been on interventions and applicable research for use by primary teachers. Initially, ACER’s review of STEM education research began with a literature review on STEM programs with proven student outcomes between the years 2005 and 2016. Fifty-four research and policy documents from the results were included and coded for the review. Randomised controlled trials were the favoured study design, although the review showed that the number of published RCTs that addressed the impact of STEM interventions on student outcomes was very limited. The literature review also found meta-analyses and other study designs. Overall findings from the review showed that common themes in the existing STEM education research were connected to teacher capacity, integration of STEM, active learning, and student engagement (Rosicka, 2016).

The review also identified skills and processes of STEM learning. ACER distilled these findings into suggestions for primary STEM teaching. These suggestions included employing STEM-specialist teachers, mentoring by industry professionals, offering extended or extracurricular study opportunities, adopting an integrated approach to STEM education, using real-world examples to teach students, including inquiry-based STEM activities in the classroom, and increasing student exposure to study and career options within STEM-related fields. While ACER’s review on STEM education research did not identify any proven STEM programs ready for implementation, the review nonetheless made suggestions for specific programs that teachers might find useful to modify or draw upon for their own teaching. ACER disseminates information on evidence-based practice through various platforms, such as the *Teacher* online magazine, which publishes columnist articles and research news; the ACER *Snapshot* series, in which each issue highlights findings regarding a single topic of interest to Australian education; and the Digital Education Research Network (DERN), which provides a database of research on information technologies in education.

ACER is governed by a Board of Directors as well as the ACER Council, and is classified as an independent not-for-profit. ACER is also a registered higher education provider, and as such, also offers qualifications in Education with a focus on evidence-based practice. ACER receives its funding from contracted research and development projects, as well as developing and distributing products and services (ACER, 2017). Surplus revenue is directed back into research and development (ACER, 2017). As an Australian research group, the translational research team specifically looks for interventions that can be applied to Australian primary classrooms, considering the Australian education system’s structure and curriculum. For example, ACER’s review of STEM research focused on interventions that targeted the specific aspects of STEM that are found in the Australian primary school curriculum.

4.2.4. Approaches to assessing the quality of evidence that support evidence-informed practice/policy

The quantity of evidence being produced and the variance in the reliability and validity of this evidence, as well as approaches to assess quality, raise challenges for largely scale evidence synthesis and dissemination (Fisher, 2016; Purper, 2016). While perhaps obvious, this aspect of the function of research and evidence institutions should not be underestimated. If the assessment process is inaccurate, the consequence may be that an evidence recommendation is unsupported – which, if implemented, could at best result in no change, or at worst cause harm (Volmink et al., 2004). It is for this reason that there has been much work into the development of rigorous and stringent quality assessment procedures and related hierarchies of evidence.

In the last decade, there has been considerably growing debate about the appropriateness of existing assessment tools to yield quality evidence that can inform policy and practice. In many sectors, there is a tendency for limited forms of evidence to be judged as high-quality, such as RCT designs and systematic reviews of RCTs. In instances where the desired knowledge claim is concerned with establishing causation, this view of quality evidence may be appropriate (Burns & Schuller, 2007; Dozois et al., 2014). However, in the case of the synthesis of evidence for the specific purposes of supporting evidence-informed policy and practice, causation is not always the desired knowledge claim. Many researchers and policymakers argue that multiple methodologies provide more useful and accurate evidence for informing practice and policy than a single method (Burns & Schuller, 2007; Dobbins, DeCorby, et al., 2010; WHO, 2014). The reviewed literature identified that some institutions create or adapt existing quality assessment tools. An example of the wide variety of evidence included in the *healthevidence.ca* database for generating, disseminating and translating for strengthening the health system is provided in the figure below (Dobbins, DeCorby, et al., 2010; Health Evidence, 2016).

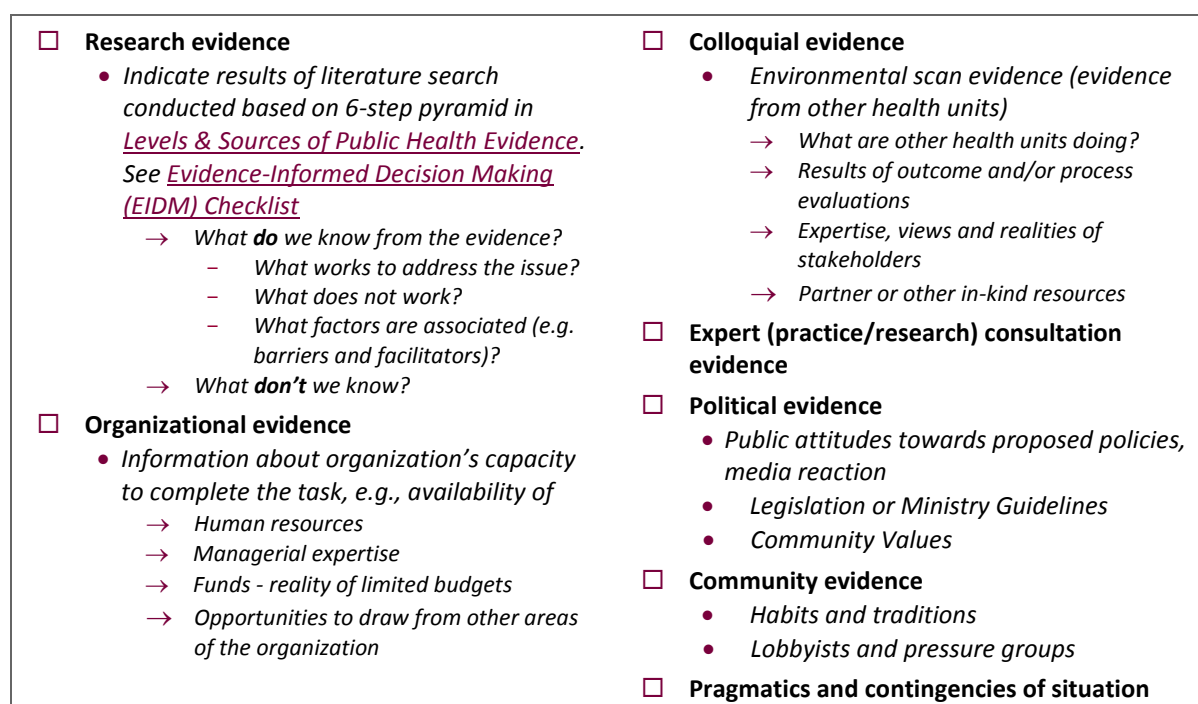


Figure 7: Forms of evidence necessary for informing evidence-informed practice and policy (Health Evidence, 2016)

In addition to a broader view of forms of evidence applicable for informing practice and policy, two additional criteria were identified within the literature as important to include in the quality assessment process. This includes evidence that contributes practitioner and policy-relevant knowledge, as well as evidence that contributes 'implementable' knowledge. Interestingly, operationalising both these criteria in the quality assessment process was reported to require input directly from practitioners and policymakers.

4.2.5. ‘Actionable’, ‘implementable’ and relevant knowledge

It is only knowledge that is considered usable that will be able to inform practice and policy. If this is the aim of the evidence synthesis process, then high quality evidence would need to contribute this type of knowledge. To achieve this, some institutions incorporate practitioners and policymakers into the review process (Dobbins, DeCorby, et al., 2010; Fisher, 2016; WHO, 2013b). The statement from the Social Care Institute for Excellence (SCIE) reflects their view of assessing quality evidence.

We began to understand that national policy requires more than evidence of effectiveness: we also need to know whether the intervention can be provided in ordinary services (not just under experimental conditions), whether it is acceptable to the people it was designed to assist and whether it is affordable. It was therefore never an option that SCIE would simply adopt the unmodified methods of EBP or the original review guidelines of the Campbell Collaboration. Instead, SCIE set about constructing an ‘inclusive’ approach to evidence for practice—one that took account of research-based evidence on effectiveness but also incorporated the knowledge of different stakeholders, and economic evidence. (Fisher, 2016, p. 502)

4.2.6. Role of content experts and evidence and consensus statements from professional organisations

Finally, the reviewed literature highlights the need to include or align definitions of quality evidence in accordance with evidence/consensus statements from professional associations, think tanks and international organisations such as the World Bank, the WHO, the OECD, UNESCO and the United Nations (Davidson, Trudeau, Ockene, Orleans, & Kaplan, 2004; Means et al., 2015; Purper, 2016; WHO, 2014).

These statements may be included in the quality assessment process or they may be used to identify primary sources of evidence to review and synthesise. In addition, it was reported that sector experts from such organisations were recruited by some institutions to review the quality assessment process, or assess the quality of evidence themselves. WHO’s description of those involved in developing evidence-based guidelines for information policy and practice illustrates that experts and intended end-users were involved.

By design, the process was steered by the WHO secretariat with the support of the core guideline development group that included content experts for specialties involved, a methodologist and representatives of potential stakeholders and that maintained a geographic and gender balance. (WHO, 2013a, p. 17)

4.3. Function 3: Knowledge transfer, brokering and management

The management, brokering and transfer of knowledge is a function of research and institutions that is comparatively well-evidenced. Quality practice in this area is characterised by interactive and active knowledge translation, effective knowledge storage, involvement of the intended end-user(s) and finally, data linkage where appropriate.

Effective knowledge translation and dissemination was reported to be critical to the effectiveness of institutions that aim to support evidence-informed policy and practice (LaRocca et al., 2012). The translation and dissemination of knowledge to intended users can be challenging; barriers to effective knowledge transfer are well documented in the literature and include individual and organisational factors. Studies mention limited opportunities for practitioners to participate in knowledge translation processes, poor contextualisation and application of knowledge to practitioners’ needs, and lack of practitioners’ training in evidence-informed policy and practice. Institutions can also be constrained by limited expertise or training in knowledge translations and limited structured frameworks to translate and disseminate knowledge.

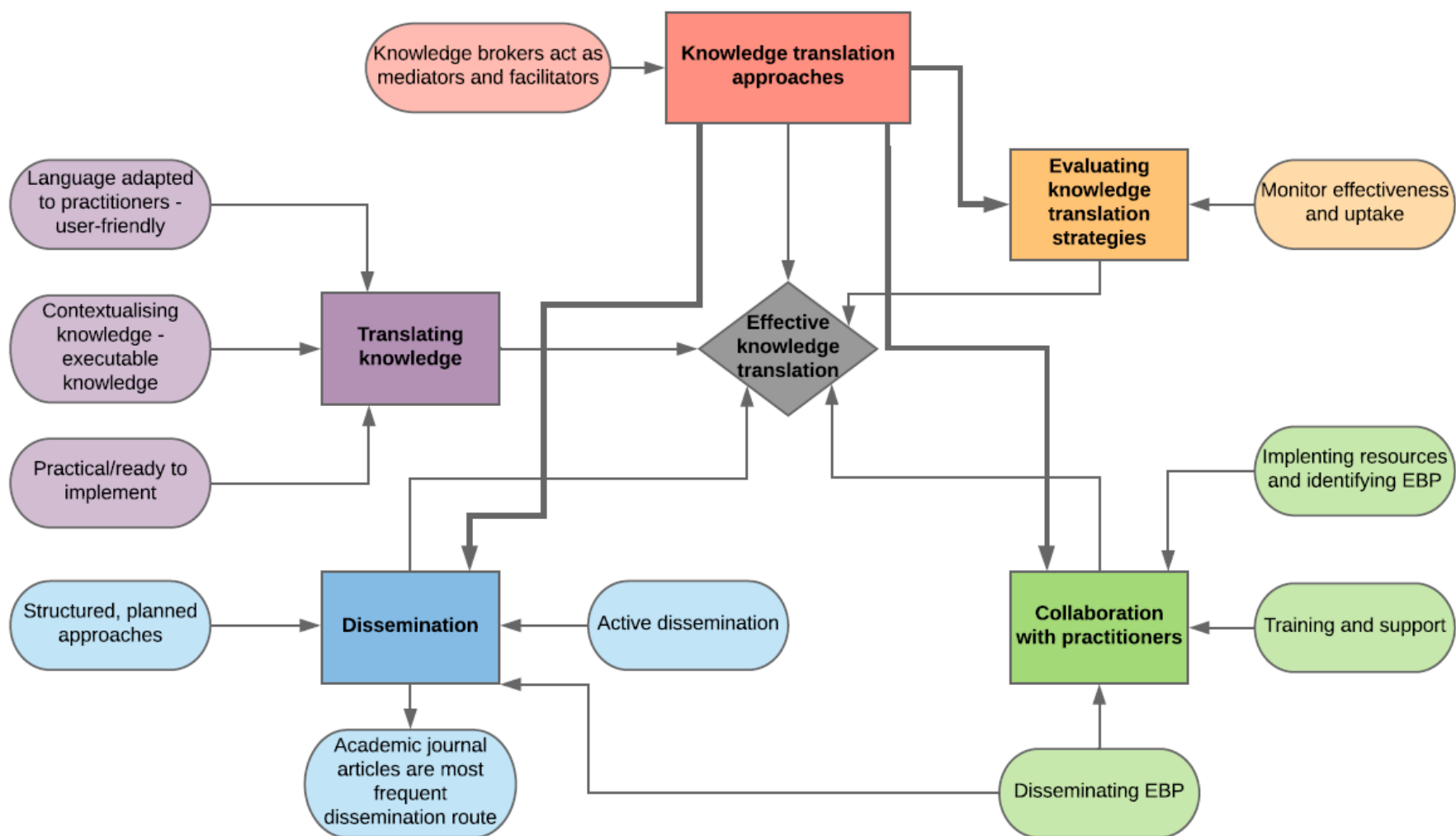


Figure 8: Approaches to knowledge translation, brokering and management in reviewed research and evidence institutions

However, evidence did vary with respect to the level of consistency and strength for each of the themes associated with knowledge translation and dissemination. The table below details an assessment of the strength of evidence associated with the findings in relation to knowledge translation that can support evidence-informed practice. As noted in the table, the strength of the evidence is moderate overall with respect to the importance of knowledge dissemination and active translation, communication between professional, brokering and consideration of user-needs in the knowledge dissemination process. However, more consistent evidence in this area would support the relationship between these themes and evidence-informed practice.

Table 5: Strength of evidence for findings associated with knowledge translation and dissemination

Theme	Key components	Emerging	Moderate	Comprehensive
Knowledge Dissemination	<ul style="list-style-type: none"> Knowledge translation strategies (active, interactive & tailored) impact on evidence-based practice Active dissemination Providing training Structured and planned approaches 			
Communication between professionals	<ul style="list-style-type: none"> Enabling communication within the field Databases and online resources Sharing research among professionals Face-to-face programs supplemented by technology and materials (hand-outs, booklets) Platform incorporates current technology Must disseminate expert-informed, up-to-date, peer-reviewed evidence base Technology-based platforms to reach a wide range of users Emphasis on content; drawing upon existing knowledge base, leadership and expert knowledge Ability for practitioners to communicate with colleagues regarding knowledge base Opportunity for users to provide feedback to research and evidence institutions 			
Knowledge brokers	<ul style="list-style-type: none"> Knowledge brokers 			
Pedagogical considerations of varying users	<ul style="list-style-type: none"> Pedagogical considerations for users of different abilities and needs 			

4.3.1. Approaches to knowledge translation

A recurring theme in the literature is the value of collaboration between institutions, practitioners and researchers to work on knowledge translation and dissemination. Strategies that incorporate collaboration include the production of evidence resources where practitioners are involved in the design and implementation of the resource. They are asked to provide input and feedback to enable the incorporation of their suggestions based on their experiences as practitioners. For example, Duchnowski et al. (2006) report on the design of evidence-based practice manuals for special education teachers:

In this project, there was an extensive effort to solicit critiques by the teachers for the ESM (effective strategies manuals). This procedure allowed teachers to see the manuals change as a result of their input, adding to the degree of ownership they developed for the project. In addition, teachers suggested changes that resulted from their experience and sometimes appeared to be in conflict with the research. (Duchnowski, Kutash, Sheffield, & Vaughn, 2006, p. 845)

This collaboration also supports effective contextualisation of evidence resources to the specific needs of the intended end-user. Resources that are effectively contextualised use appropriate language and provide practical applications to assist policy and practice change based on the evidence. This includes actionable knowledge as noted in the synthesis of evidence section.

Stakeholders consulted from the medical area used policy briefs and evidence papers as their strategies for disseminating knowledge. They have their own dissemination processes. The stakeholders' evidence-based papers are put into grey literature so that they are accessed by practitioners. Webinars and round tables are also used for knowledge dissemination.

For many respondents, the knowledge translation strategies used depend on the purposes of the message they want to convey. For some when they are disseminating research, they use online platforms and social platforms for key messages to bring the high-level decision makers together—this assists in moving the discussion forward, as well as bringing stakeholders together.

4.3.2. Role of knowledge brokers

A brokerage role (which may be assumed by the institution that reviews evidence) can support knowledge translation. This role includes tailoring and targeting the dissemination of knowledge to the intended end-user group, which is the next step after developing contextualised and appropriate evidence resources. In practice, this may involve identifying specific resources of relevance to a particular group of end-users and

disseminating the resources to them effectively (Armstrong, Waters, Crockett, & Keleher, 2007). This may be done automatically through a user sign-in online platform, semi-automatically by group email newsletters, or non-automatic methods of direct communication with individuals/groups is uncommon (Armstrong et al., 2007).

4.3.3. Strategies for disseminating evidence-based knowledge and practices

Whilst both active and passive strategies to disseminate knowledge were evident within the review, active strategies tended to be more impactful. Active strategies are those that involve interaction, including web-based resources and databases of evidence information. Institutions that used this approach for dissemination had greater reach, and were more likely to inform practice or policy (LaRocca et al., 2012). Armstrong et al. (2007) analysed strategies used by the Victorian Department of Human Services to disseminate evidence-based health promotion resources and found that practitioners preferred active dissemination approaches with opportunities to explore local relevance. The authors also found that structured and deliberate dissemination strategies improved the use of resources by practitioners and enhanced translation of evidence into practice (Armstrong et al., 2007). Thus, multifaceted dissemination strategies and routes that are predominantly active can increase the likelihood that the knowledge will be used to inform decision making and practice (Dobbins, Decorby, et al., 2010; LaRocca et al., 2012; WHO, 2003).

4.3.4. Dissemination routes

A variety of dissemination routes were reported in the literature, including face-to-face (workshops, meetings), academic journals and conferences, reports issued to funders, press releases, and newsletters. In a recent study on researchers' strategies to disseminate evidence to public health practice settings, authors found that academic journals, academic conferences, and reports to funders were the top three dissemination

Box 3: The Teaching and Learning Toolkit

The Education Endowment Foundation (EEF) is a UK-based foundation that aims to improve the educational achievement of economically disadvantaged students. One way in which EEF achieves this aim is through their creation of online toolkits to translate evidence for use by educators. They have developed a Teaching and Learning Toolkit targeting primary and secondary education, as well as an Early Years Toolkit targeting early childhood educators. The Toolkits are online tools that summarise education research and appraise specific interventions and actions to make it easy for teachers and school leaders to make decisions about educational approaches. The Toolkit focuses on collecting evidence for various educational approaches, such as behaviour interventions, arts participation, or assigning homework, and presents summaries of these approaches in terms of average impact on learning, strength of supporting evidence, and cost of implementation—thereby operationalising and disseminating educational research to enable evidence-based practice.

A technical appendix is also provided which details the search terms utilised to source evidence, the number of studies (primary and secondary research) synthesised, a statement about the recency of the research, and an overall judgement of the evidence quality (EEF, 2018). This judgement is informed by the study design and the technical design characteristics including risk of bias and effect size magnitude. Using all this information, an overall rating is given for the quality of the evidence (strong, moderate, weak). An estimated cost of implementation per student is also provided for some practices with an accompanying judgement of the size of the cost considering the magnitude of impact this practice has been shown to yield. Links to current research projects funded by the EEF that are related to these practices are also provided in the evidence summaries.

Additionally, further resources are available on the website, for example existing literature reviews, interviews with researchers, or the evidence reviews used by EEF to create the evidence summaries (EEF, 2018b). The Teaching and Learning Toolkit is used by more than half of all school leaders in the UK (EEF, 2016). In addition to summarising current evidence, the online Toolkit also provides in-depth guides on how to use and appraise the Toolkit, as well as information explaining each of the aspects that approaches are graded on (i.e. attainment/impact, evidence strength, and cost). Although the Toolkit exists as an online database, paper communications, such as reports or guides regarding current evidence are also mailed out to individual schools.

EEF's Teaching and Learning Toolkit has "inspired an Australian version" (EEF, 2016), which is run by Evidence for Learning, an organisation supported by Social Ventures Australia, Commonwealth Bank of Australia, and EEF. The Australian Toolkit has an additional module that specifically summarises Australasian educational evidence to facilitate localised evidence-based practice. The Education Endowment Fund is governed by a Chairman and Advisory Board, along with seven Trustees, who guide EEF to meet its charitable objects. EEF is an independent charity originally founded in 2011 by The Sutton Trust with £125 million in grant money from the UK Department of Education.

routes. However, of these routes, those that offer opportunities for interaction such as face-to-face meetings with end users had the most impact on supporting evidence-informed practice and policy (LaRocca et al., 2012; McVay, Stamatakis, Jacobs, Tabak, & Brownson, 2016).

4.3.5. Ongoing monitoring and evaluation of knowledge translation

While there is evidence about effective strategies and dissemination routes for knowledge translation, the degree that the specific strategies are working should be the subject of ongoing monitoring and evaluation, as the needs and context of the intended user groups are not fixed. Knowledge translation should be current, evolving and responsive, which requires continuous monitoring and feedback to ensure that the translation process remains adaptive and barriers to uptake are addressed (Tetroe, Graham, & Scott, 2011).

4.4. Function 4: Utilisation

Explicit efforts to support research utilisation are a necessary role of research and evidence institutions. Quality practice in this area of functioning is characterised by engaging with end-users, systematising feedback mechanisms and creating connections with current debates in policy and practice. The final function of the Evidence into Action Model is focussed on utilisation for institutions that support evidence-informed policy and practice. It is closely related to and dependent on the knowledge translation function, but it also has a distinct relationship to evidence-informed policy and practice. For instance, even if there are effective knowledge translation practices, a poor-quality strategy or infrastructure to support utilisation could prevent evidence-informed policy and practice from occurring. The rapid synthesis identified several characteristics of effective utilisation infrastructures and strategies that support evidence-informed policy and practice. These include: an intentional and evidence-based process of infrastructure development; incorporation of feedback loops into the infrastructure; sustained funding to enable ongoing functionality and forecasting; and a quality knowledge management strategy.

The final function of the evidence into action model for institutions that support evidence-informed policy and practice is focussed on utilisation. It is closely related to and dependent on the knowledge translation function, however, it also has a distinct relationship to evidence-informed policy and practice. For instance, even if effective knowledge translation is implemented, a poor-quality strategy and infrastructure to support utilisation can prevent evidence-informed policy and practice from occurring. Characteristics of effective utilisation infrastructures and strategies that support evidence-informed policy and practice based on the literature review findings include: an intentional and evidence-based process of developing the infrastructure; incorporation of feedback loops into infrastructure; sustained funding to enable ongoing functionality and forecasting; and a quality knowledge management strategy.

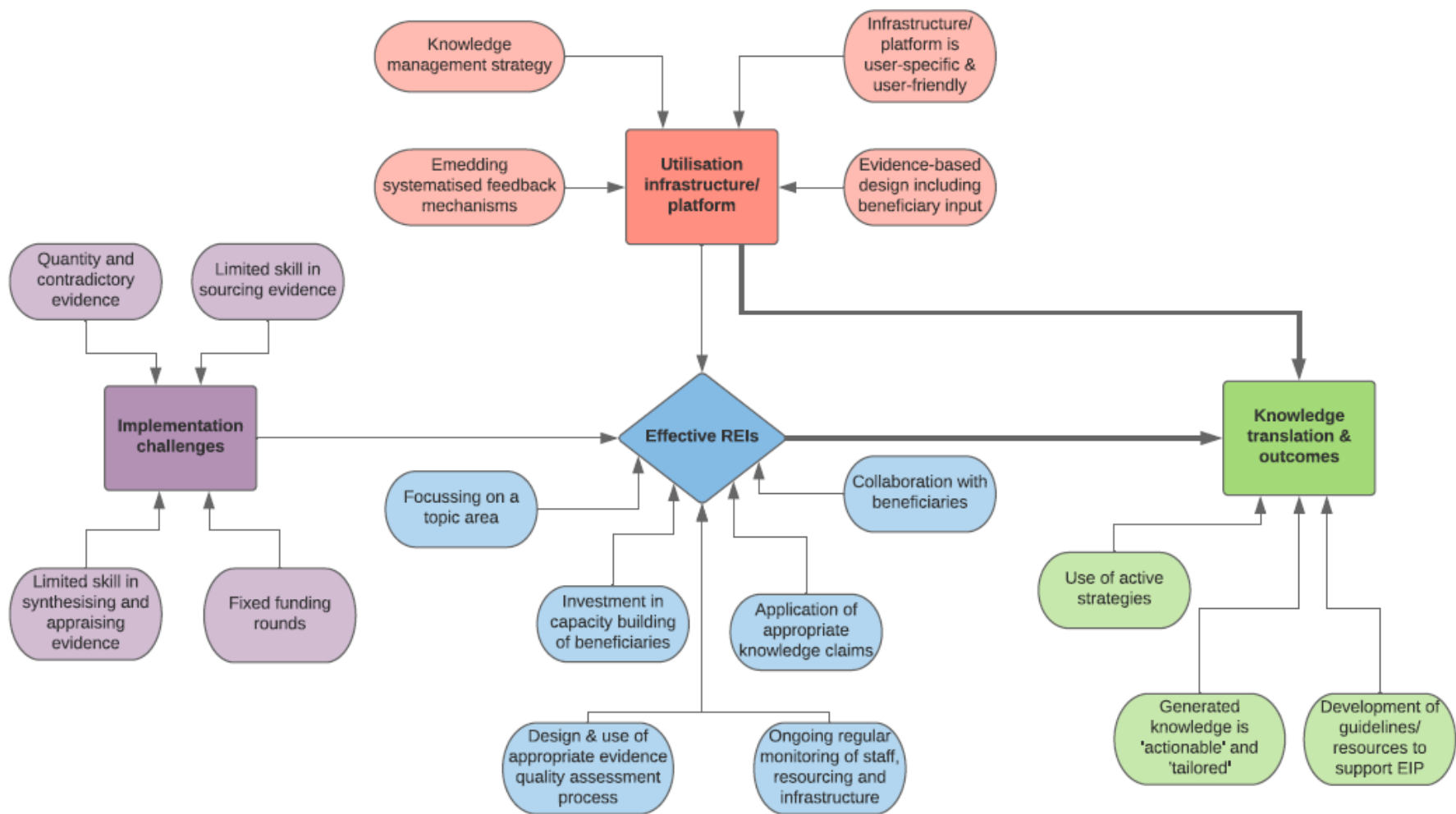


Figure 9: Role of maximising research utilisation in supporting EIP in reviewed research and evidence institutions

However, evidence did vary with respect to the level of consistency and strength for each of the themes associated with utilisation. The table below details an assessment of the strength of evidence associated with the findings in relation to utilisation that can support evidence-informed practice. As noted in the table, the evidence is variable overall, with strong evidence apparent for the importance of feedback, and moderate evidence for sustainability, practicality of user-platform and practitioner participation. The reviewed evidence did not include much detail about systematically assessing organisational barriers to utilisation.

Table 6: Strength of evidence for findings associated with utilisation

Theme	Key components	Emerging	Moderate	Comprehensive
Sustainability	<ul style="list-style-type: none"> • Strategic funding • Sustained funding model for long-term planning and functioning 			
Feedback	<ul style="list-style-type: none"> • Platform includes systemised feedback • Opportunity for users to provide feedback to REIs 			
Practicality of program	<ul style="list-style-type: none"> • Content is of practical relevance to users • Accessibility and efficiency of program, clear information provided 			
Organisational barriers	<ul style="list-style-type: none"> • Organisational barriers: culture; promotion; lack of qualified staff to deliver programs; communication channels 			
Participation of practitioners	<ul style="list-style-type: none"> • Practitioners' lack of awareness of platform • Participation is important for increasing the relevance, effectiveness and utility of decisions • Practitioners' lack of ownership, participation or availability 			

4.4.1. Evidence-based and intentional design of infrastructure

The reviewed literature on infrastructure and platforms that house synthesised evidence and knowledge translation products were largely software-based or internet-based platforms. Platforms that were identified as effective were designed using systems theory and information technology systems (Bain & Swan, 2011).

Furthermore, these infrastructures include the ability to be tailored to the individual user. This ensures that knowledge translation is specific and responsive to context and need, and increases the likelihood that the

user will continue to engage in the infrastructure if they are receiving information that is relevant to them and their practice (Bain & Swan, 2011; Dobbins, Decorby, et al., 2010; LaRocca et al., 2012).

On an operational level, a critical aspect to the design of utilisation infrastructure and platforms is to ensure there is controlled vocabulary within the system that is known to and used by the intended user(s). This is important for searching functionality and also for the feedback and social nature of effective utilisation infrastructures, as noted in more detail below (Bain & Swan, 2011). Essentially, controlled vocabulary is necessary for the infrastructures to be accessible and usable by the intended user group.

Finally, infrastructure designs that are more effective at supporting evidence-informed policy and practice include structural features for ease of use, including help boxes, search tips, relevant case examples of evidence-informed practice, policy and decision-making and easy access to technical support (Bain & Swan, 2011; Dobbins, Decorby, et al., 2010; LaRocca et al., 2012).

4.4.2. Feedback loops in utilisation infrastructure

The literature on the importance of feedback is well-developed and has been applied to the design of infrastructures that support knowledge translation and evidence-informed policy and practice. Infrastructure and platforms that include built-in feedback mechanisms can ensure that users are prompted to provide feedback, and this feedback is used to improve the infrastructure to ensure that it is more user-friendly and aligned to needs (Bain & Swan, 2011; Dobbins, Decorby, et al., 2010).

In addition to improving the infrastructures, users also need to contribute through feedback to the content/evidence housed by the infrastructure. This may be done by having discussion forums or options for

Box 4: Stakeholder Input into Research Priorities and Knowledge Utilisation Strategies

The Centre for Education Statistics and Evaluation (CESE) based in the NSW Department of Education is a centre that focusses on the generation and synthesis of education data, conducts evaluation and provides up-to-date and accessible information to support evidence-informed practice and decision-making. The CESE is required to report to the Minister for Education, and while their work is largely policy-driven, their governance structure includes an advisory council which is made up of experts whose role is to give independent advice and oversight of the operations of CESE in regards to alignment with strategic priorities the members of this council are appointed by the NSW Minister for Education (CESE, 2017).

As part of operations, CESE and other NSW Education departments consult with a range of stakeholders. Where the outcomes of these consultations suggest an area for further research should be prioritised and is warranted, the Minister for Education and CESE Advisory Council is informed and a decision is made on whether CESE can respond to the information needs identified by stakeholders (CESE, 2017). A set of criteria have been established to inform whether the Advisory Council will decide to invest in projects targeted towards addressing information needs. These criteria include:

- Alignment to government priorities
- Alignment to CESE purpose and key responsibilities
- Feasibility of the project and CESE capacity to undertake it
- Other considerations (funded by COAG, innovative project, project in partnership with other agencies)

In addition to the provision of stakeholder input into identifying information needs, the CESE have developed a variety of comprehensive tools designed to support evidence utilisation in practice:

1. *School Excellence Framework* which summarises effective practices based on research however the link to the research is not in the framework
2. *Evaluation Resource Hub* which includes a capacity development component, evaluation tools are explained and applied to practical education contexts
3. *Evaluation Repository* a library of evaluations, with accompanying judgements about the quality using an evidence hierarchy
4. *Effective Practices in Teaching and Learning* - this is a link to the Teaching and Learning toolkit based on the Education Endowment Foundation's resource and housed by Social Ventures Australia

Overall, there is a significant emphasis placed on, where possible, ensuring evidence generation and synthesis is informed by stakeholder information needs, and stakeholders are supported to use evidence in their context via the evidence utilisation tools.

users to upload case stories or their experiences of applying the evidence to their context. This supports effective knowledge management as it enables knowledge to be socialised if other users are able to comment and add to the case stories and experiences (Bain & Swan, 2011; Dobbins, Decorby, et al., 2010; WHO, 2003).

Therefore, there is a feedback loop from the user to the infrastructure designers, to those who review and synthesise the evidence, and then to the researchers gathering the evidence. Secondly, there is also a feedback loop through the infrastructure where users are able to talk to other users and share their knowledge and views on the evidence and, ideally, add to the evidence (Burns & Schuller, 2007; Dobbins, Decorby, et al., 2010).

To be deemed legitimate by teachers, any feedback system must meet the challenge of providing accurate, multi-sourced and multi-method feedback in an ongoing and timely manner for use at multiple levels in the school. (Bain & Swan, 2011, p. 682)

4.4.3. Sustained funding to enable forecasting

Critically, utilisation infrastructure and platforms can only be effective if there is sustained funding and resourcing for ongoing improvement and delivery. Technological change is constant, and ensuring the infrastructure keeps pace with updated technology specifications, and that recent evidence is uploaded with limited delay post-publication, is critical for ensuring ongoing use by the desired end-user (Bain & Swan, 2011; Dobbins, Decorby, et al., 2010).

Not only is it necessary for the utilisation infrastructure to keep pace with technology and evidence as it is becoming available, it is also important for the infrastructure to facilitate the monitoring of current and future information needs for policymakers and practitioners. For instance, identifying issues on the policy agenda and ensuring that evidence summaries are available on those issues is important for informing the policy debate and resulting policy decision or indecision (Bain & Swan, 2011; Burns & Schuller, 2007; WHO, 2011). However, operationally, this requires that the infrastructure and those staffing it remain current and responsive to needs, and utilise input from the user through a feedback mechanism to find out what those needs (current or future) may be. The ability to produce relevant evidence during or prior to a policy debate is also likely to increase utilisation in general, given that the issue is on the public's mind as well as policymakers, and hence it is an important opportunity for an institution to broaden its reach through an effective utilisation infrastructure or platform (Volmink et al., 2004). This is where, again, collaboration with the user, practitioners and policymakers is helpful.

4.4.4. Quality knowledge management strategy

Finally, effective utilisation infrastructure and platforms are based on quality knowledge management strategies. Briefly, knowledge management is the 'creation, capture, and use of records, databases, and other information to achieve organizational objectives' (Klinger & Sabet, 2005, p. 201). A transparent knowledge management strategy that is used to underpin a technological infrastructure or platform for research utilisation incorporates both the technical and social processes involved in knowledge translation. Therefore, it must embed active knowledge translation in line with a set of objectives set by the governing organisation or institution (Bain & Swan, 2011; LaRocca et al., 2012).

4.5. Summary of rapid synthesis findings

The rapid synthesis findings provide information about the current practice and recommended practice in the four function areas for institutions to conduct in the pursuit of supporting evidence-informed practice. The main findings for each question posed for the rapid synthesis are outlined in the table below. While the findings illustrated insights for all the posed questions, there was little information across all reviewed institutions about the detailed operationalisation of the functions, and consequently for this lack of detail there was also limited information about what ‘good practice’ looks like. Largely, this is likely because there are few research and evidence institutions across the sectors and countries examined that perform all four functions.

Table 7: Summary of synthesis findings

Question	Summary of findings
What is the effectiveness of REI at achieving evidence-informed practice?	Little evidence of the effectiveness of REIs was found in the sources reviewed. Of those sources that did report effectiveness, REIs impact was measured largely by use or access statistics to online platforms. While clinical medicine studies were not included in the synthesis, among sources reviewed, references were made to clinical contexts where evidence-informed practice was evident, and a direct impact was captured (e.g., reduced post-surgical infection rates).
What are the governance structures and characteristics of REI and how do they influence impact?	Among the REI reported in reviewed sources, and the case examples provided, the majority had an advisory council or committee represented by content experts, practitioners and other stakeholders. Also, many of them created a governance and reporting structure which maintained some distance with policymakers, for instance several had an executive officer or board that was independent from government. The influence of ‘independence from government’ was raised a number of times in reviewed sources, with authors claiming this was important because it would help to maintain the rigour of the evidence generation and synthesis process, and would ensure knowledge is disseminated in a balanced way, where the receiver obtains unbiased knowledge and is able to make an informed decision about how to use the knowledge to inform their practice. It was also suggested that the ‘reach’ of the knowledge dissemination may be greater if the institution can ensure that the knowledge being shared is unbiased.
What are the functions of REIs aiming to achieve evidence-informed practice and how do they influence impact?	<p>The synthesis of included sources clearly articulated four functions of REIs that support evidence-informed practice, including:</p> <ul style="list-style-type: none">• Generating evidence• Synthesising evidence• Knowledge transfer, brokering and management• Maximising utilisation of knowledge in practice environments

What is the functionality of REIs aiming to achieve evidence-informed practice and how does this influence impact?	The synthesis of included sources highlighted that the above four functions were necessary for REIs to have optimal functionality for supporting evidence-informed practice. While most reviewed REIs did not have all four functions, it was claimed that their effectiveness could be improved if they did.
What approaches/criteria/systems are used grade evidence in REI aiming to achieve evidence-informed practice and how do they influence impact?	While limited detail was given about the approaches/criteria/systems for grading evidence in reviewed REIs, of those that did report information there was a common theme that grading evidence for the purposes of informing practice needed to be more holistic than grading methods that may be used in systematic reviews and meta-analyses, such as the Cochrane Collaboration Risk of Bias tools, as an example. It was claimed that in addition to examining methodological risk, consideration about implementation cost and difficulty, as well as contextual concerns, were critical for the evidence synthesis to be useful and applicable to the practitioner. Several authors of studies agreed that synthesis methods need to be improved to meet this need, however the grading methods used by the Education Endowment Foundation were reported as an example that addresses a number of these recommendations. Finally, several authors agreed that the grading evidence process could be significantly improved if practitioners were involved in the process, to the point where they are making decisions and setting criteria for the quality of evidence.
What techniques/methods are used to collate and synthesise research by REIs aiming to achieve evidence-informed practice and do they influence impact?	Little information was found in reviews sources about specific techniques/methods used for research collation and synthesis, however systematic review techniques, and where possible meta-analysis, was favoured as an accurate approach to synthesise large bodies of evidence and generate actionable knowledge in the process.
What platforms are used to share knowledge in REIs aiming to achieve evidence-informed practice and how do these influence impact?	Of the few reviewed REIs that included information about knowledge sharing platforms, all utilised an online infrastructure, for many it was websites that users could log on to. However, a large proportion of knowledge sharing was reported to occur via more active methods such as email newsletters. Platforms that were ‘intentionally designed’, where the design of the platforms is driven by the intention that it will support evidence-informed practice, were reported to be more impactful at reaching desired audiences, and translating and disseminating knowledge in an accessible way.
To what extent does the user have an input into the platform and how does this influence impact?	The REI platforms reviewed that incorporated user input all noted the importance of this input in improving the actionability of knowledge and the applicability of knowledge to practice, often user input was valued in checking that the right language was being used to reach the intended audience. However, in a more procedural sense, user input was also valued with respect to platform design, checking whether the infrastructure was user-friendly and user-centric.

What approaches/methods are being used to support knowledge translation in REIs aiming to achieve evidence-informed practice and how do they influence impact?

The reviewed sources discussed a number of knowledge translation methods. There was universal agreement that active translation strategies were more effective at reaching the intended end-user, and reach could also be enhanced if a representative of the intended end-user was involved in the translation process. This involvement usually involved checking the language of the knowledge being disseminated, and advising on communication mediums that the end-user would use when making decisions about their practice, for instance, where educators go to get ideas and examples of lesson plans and assessment tasks. Active translation strategies, where the end-user has been involved in creating the knowledge translation product (newsletter, resource, webpage), were more effective at reaching and being relevant to the end-user.

4.6. Limitations to the current evidence base

The paucity of literature documenting the efficacy of evidence-informed practice in education has been referred to throughout this report. This is a significant limitation of the current evidence, particularly in education. Another under-researched area includes strategies to support research utilisation in education policy and practice. The focus on the literature reviewed in this synthesis was focussed on developing platforms that have large reach and are user-friendly, but beyond the 'platform', little knowledge exists about efforts to support beneficiaries to implement evidence-informed practice beyond practice guidelines. Finally, another significant limitation worthy of mention is examples of quality assessment criteria that are inclusive of all research methodology. Traditional approaches to quality assessment largely rely on identifying bias associated with study design and chosen methods. However, if all study methods are advocated to be included in evidence synthesis, traditional quality assessment approaches would have limited utility, therefore further examples of criteria that are more nuanced to allow for all study methodology, but still sensitive to check for rigour, are necessary. Finally, as has been documented, comparatively small amounts of Australian-based evidence were in this synthesis, and more research based in Australia will offer more contextually relevant evidence. This is not to suggest that international evidence is not relevant; however, local evidence will offer a richer perspective about what works in Australia and will be easier for beneficiaries to utilise in their practice.

5. Broader considerations for an educational institution in the Australian context

The description and explanation of the functions in the Evidence into Action Model are based on the findings of the rapid synthesis, and articulate quality functions and functionality under ‘ideal’ conditions. Thus, it is important to identify and discuss pertinent considerations for implementing and embedding an institution that performs these functions into the national Australian education context. The multilevel structures of our educational landscape encourage the development of diverse, and at times conflicting views about what represents good practice. Ensuring that structures and resources are in place that afford engagement with evidence and collaborate in ways that encourage and enable shared understandings. Subsequently, the utilisation-focused foundation of the institution will rely on a shared responsibility by the beneficiaries. It is acknowledged that what has been recommended is complex and has major repercussions for funding and accountability.

Governance

The findings of the literature review universally concluded that there is a need for evidence institutions to remain independent from and yet still have a connection to government (Trucano & Dykes, 2017). Independence is required for the institution to be considered apolitical, and ensure that outputs are considered trustworthy and without vested interest in a particular political position (UNESCO & European Commission, 2010). However, maintaining closeness to the government can facilitate collaboration with policymakers and accordingly result in more politically relevant and useful evidence generation and synthesis (Maeda, Norris Harrit, Mabuchi, Siadat, & Nagpal, 2012).

The tension between independence and connection with government is particularly relevant for Australia, where an institution would likely require government funding to continue to function sustainably. It should be noted that achieving a balance is considered possible—as an example, the Education Endowment Foundation (EEF) in the UK started with an initial £125 million grant from the UK Department of Education, and while there are contributions from other sources, this grant continues to support the foundation (Education Endowment Foundation, 2015). However, the institution, and its operations are not reliant on annual government funding and can operate independently from the Department of Education. This is in large part due to the functional governance board, where the institution is accountable to its board rather than the Department of Education. The EEF structure offers an example of how government involvement and independence is possible through a functional board.

Another example of a governance structure is also from the UK. The National Institute for Health and Care Excellence (NICE) receives annual funding by the Department of Health. However, its operations remain independent where priorities and decisions are made by a functional board with advisory input from the Citizen’s Council (Hawkins & Parkhurst, 2016). The Citizen’s Council is comprised of 30 members from the sector and public (Sorenson, Drummond, & Kanavos, 2008). Such leadership and governance structures help to mitigate the potential disconnect between funder goals and end-user needs while maintaining independence and receiving necessary funding sustainable functioning. Prioritising transparency, stakeholder participants and evaluation and accountability are all avenues to ensure independence is maintained with annual government funding (Sorenson et al., 2008).

Federalism and the Australian education context

Particularly relevant to the Australian context is the role that Federal Government and the State and Territory Governments would play in such an institution. Lessons from the US indicate that when there are relatively autonomous state governments, clear roles and responsibilities are critical (Abdul-hamid, Mintz, & Saraogi, 2017). Abdul-Hamid et al. (2017) notes:

It is important that state and county decision-makers support the strategy and that a committed group or steering committee be identified to carry the project forward. The steering committee

should have stakeholders from across the education system, consisting of both state and county officials, and teachers and principals.

It is also important for State and Territory Governments to have a role to play in contributing their contextual knowledge and expertise to the institution, which is critical for generating relevant evidence and supporting actionable knowledge translation to realise the goal of evidence-informed practice and policy. In addition, the other significant education sectors, namely Independent and Catholic Education, also have a role to play.

While the findings have illustrated the importance of collaborating with practitioners and policy-makers to support evidence-informed policy and practice, in the context of Australia, such collaboration can also help to ensure that all students and educators benefit equitably from evidence-informed policy and practice. Significant differences in educational outcomes exist for Indigenous and non-Indigenous students, those who experience socioeconomic disadvantage and those with language backgrounds other than English (Masters, 2016). However, significant differences also exist for educators working in urban compared with very remote schools, and those with different levels of professional qualifications and number of years of teaching in their access to quality professional learning. Therefore, it is critical that if implemented, the evidence institution sought to reduce, instead of perpetuating, such inequalities. It is evident that educators, schools and other stakeholder organisations will be at varying levels of readiness to engage in the collaborative process of generating, synthesising, translating, disseminating and using evidence to inform their practice.

Existing system supports

While there is not currently an institution that performs all the functions outlined in this report in Australia, there is a number of existing system structures and organisations that could support the development and functioning of such an institution, as well as evidence-informed policy and practice in education in general. Existing national education organisations, including but not limited to the Australian Curriculum Assessment and Reporting Authority (ACARA), the Australian Council for Educational Research (ACER) and the Australian Institute for Teaching and School Leadership (AITSL), have roles which could support the reach and functioning of an evidence institution. As an example, AITSL, with its considerable reach to practitioners and existing online infrastructure for translating knowledge and disseminating evidence, could feasibly contribute expertise or could co-host an evidence dissemination platform within their existing infrastructure. We note the discussion of management in the recent Productivity Commission (2016) report on evidence in education in which they recommended ACARA be the sponsoring body because of its current governance structure.

While ACARA, for example, has a governance structure where all players within the Australian education system are engaged, its primary function as an organisation however, is to support reporting at a national level that is based on assessment and judgement. It builds summative information reporting at broad level on the impact of our curriculum and instruction on one aspect of the learning lives of student's and the climate of schools. It is a generator of one form of evidence. However, to add the function of facilitating and supporting evidence informed practice would not only require a complete restructure but also a cultural shift in purpose, philosophy and paradigm preference which may interfere or detract from its' current critical function. This scenario may be true of our existing structures, whether private or public.

The governance structure of ACARA may provide a useful exemplar for the establishment of a governance for such an entity. Similarly, AITSL capacity and infra-structure that connects regularly with over 300,000 teachers can provide a template for connection and translation. While others such as SVA demonstrate that they are able to traverse the nature of public and private partnerships, it must be reiterated however, that not one of our existing structures can provide all that is required to ensure a true strategic platform to warrant the flow and connection of knowledge from its source to the classroom. Similarly, this holds true for Universities or commercial entities that often generate evidence but struggle to translate and encourage utilisation. As a number of stakeholders suggest 'this cannot be the same old same old' and importantly the governance structure will require a collaborative organisation that arises above political, economic and academic divisions, hence the notion of shared responsibility.

A body that is a connector or a backbone organisation that guides a true collective impact is The Victorian Comprehensive Cancer Centre. It provides a useful exemplar of a partnership model, that ensures there is one

body at the helm and one concrete organisation where stakeholders (patients, researchers, funders and policy makers) are drawn. The fundamental premise of the VCCC is that integrated 'organisations will gain far greater benefits in cancer more quickly than an individual organisation could achieve alone'. This does not mean separating the fundamental activities of an evidence-based institution, but more importantly connecting, supporting and housing the benefits of such partnerships.

The idea of collective impact (Kania & Kramer, 2011) is a beneficial framework for facilitating and achieving large-scale change as well as providing guidance for a governance structure. It is a structured and disciplined approach to bringing many organisations together to focus on a common agenda that results in long-lasting change. The figure below provides an illustrative example of the components of a collective impact structure.



Figure 10: A structure for a collective impact

Collective Impact and provides a five-part structured process for collective action. As detailed it involves developing a common agenda, common progress measures, mutually reinforcing, a culture of collaboration and communication, and a strong backbone organisation to manage the collaboration and understanding of impact. Collective Impact requires the development of evaluation methods among all involved parties to best understand the impact.

The nature of the evidence-informed institution established will need to ensure that the principles are upheld and strategic partnerships are formed, its governance will need to be functional and yet encourage collaboration. A guiding coalition will need to determine the functionality and accountability of any governance structure. Collective impact provides a useful foundation.

One notable common element to collective impact across sectors is public private partnerships (PPPs). While PPPs are not widespread in education they do exist and are often encouraged by governments. The World Bank defines a public private partnership as "a long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance"

Across the globe governments are making decisions to engage the private sector in the delivery and resourcing of certain aspects of education that may have previously been delivered by the public sector. There is a growing perspective that public-private partnerships can expedite certain improvements, not only by the quantity but the quality of education by maximising the advantages offered by the private sector. Governments that engage in such partnerships are generally driven by the goals improving quality and delivering education in the most cost-effective manner. A recent report demonstrated some relative gains in effectiveness and efficiencies as a consequence of public and private partnerships. However, it must be noted that there is not an abundance of evidence to demonstrate a generalisable positive impact. Furthermore, the review is related to developing countries. (Ark Education Partnerships Group, 2016). There is some suggestion that the establishment of an institution to increase use of evidence and data linking may benefit from such partnership with industry and the commercial sector. There is also a strong argument for exploring the worth of such PPPs.

Resourcing

As noted several times within this report, resourcing has been identified as a common concern for many similar institutions across many sectors. While the idea of shared responsibility for co funding and co-implementation has demonstrated some impact on research informed activities (Dobbins,2010). However, while we suggest a targeted resourced and self-funding approach for the institution we acknowledge that core funding for set up and infra-structure is key for ongoing sustainability. In attempting to understand the nature of this core funding is first important to note that in this rapid synthesis, no directly comparable current or historical institution or model akin to the national evidence institution recommended was identified. Therefore, the considerations for the funding of this institution have been informed by international institutions and some local institutions that perform some of the functions outlined in the Evidence into Action model.

In relation to the functioning of the recommended evidence institution, the categories of costs have been outlined in the figure below. The 'infrastructure' comprises the executive and governance of the institution, as well as its operations and daily functioning. The annual reports and financial statements from evidence institutions including EEF, AITSL, ACARA, ARC and SVA support these cost categories (EEF, n.da; EEF, n.db; EEF, n.dc; Commonwealth of Australia, 2017; AITSL, n.d; SVA, n.d.). While the reporting of these costs was often not broken down by categories, it was indicated that costs were associated were each of the categories outlined in the figure.

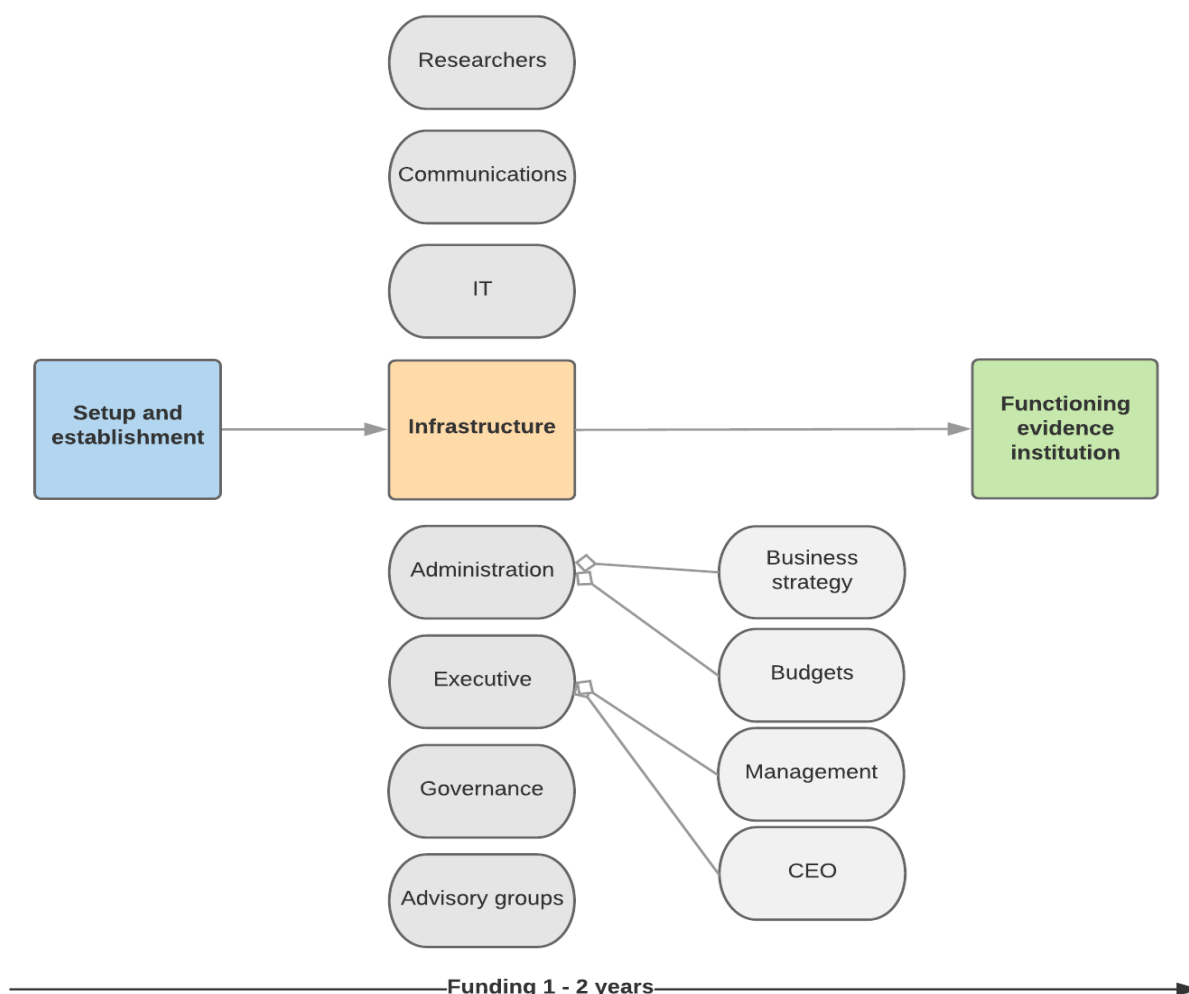


Figure 11: Cost categories

In the case of SVA and EEF, funding was distributed and focussed specifically on setup and establishment of the institutions, as both EEF and the component of SVA tasked with evidence-synthesis (Evidence for Learning) were new, and hence there were costs associated with setting up and establishment (SVA, n.d.).

In the case of EEF, specific operations funds were allocated in addition to the initial endowment given by the Department of Education (£125 million for use over 15 years). The partner trusts, Sutton Trust and Impetus Trust, gave instalments for the first three years of operation of EEF with the purpose of supporting setup and establishment and establishing the foundation with a high level of functioning to encourage other organisations to donate to the foundation. The table below provides the payments given by each of the partner trusts in the first three years of establishment (EEF, n.da; EEF, n.db; EEF, n.dc).

Table 8: Operational funds via EEF Trust Partners

Year	Funding source	Amount
2011-2012	Sutton Trust	£750, 000
2011-2012	Impetus Trust	£250, 000
2012-2013	Sutton Trust	£255, 000
2012-2013	Impetus Trust	£85, 000
2013-2014	Sutton Trust	£240, 000
2013-2014	Impetus Trust	£80, 000

As evident in the table, funds from the trust partners and indeed the initial investment by the government indicated an understanding of the need to front-load funds for establishment. For instance, the initial funding amounts from Sutton Trust and Impetus Trust in 2011-2012 were 51.5% greater than in 2013-2014. This idea of frontloading investment is used in other areas of education funding as well, and in fact was recommended in a recent Review of the Program for Students with Disabilities which was informed by the principles underpinning the needs-based funding recommended in the 2011 Gonski Review (O'Connor et al., 2015; Gonski et al., 2011). Frontloading investment is based on an understanding that not only will costs be higher in the earlier phases of establishing an institution, the returns and outputs are likely to be lower as operations are only just beginning.

Funding informed by needs and targets

In addition to front loading investment, setting key performance indicators (KPI) would also help to target funding and the work of the institutions. KPIs may also guide the budgeting process. For instance, in response to a literacy target set by the Department of Education in the UK, the government topped up the initial endowment by £10 million in 2012 (EEF, n.db). AITSL has also targeted the use and budgeting of funds towards enacting policy, for instance the TEMAG recommendations informed the work and funding of AITSL when they were released (AITSL, n.d).

The targets established for an institution independent from government should be based on identified need. This highlights the need for ongoing consultation with beneficiaries (policy makers, educators, researchers, school leaders), to ensure that the funding for the institution supports ability to be responsive to need, and the broader socio-political climate. Likely related to this, the periods for reviewing funding for EEF and AITSL as documented in annual reports appear to be relatively short, with government funding in the case of AITSL being reviewed annually. This makes recruiting and maintaining staffing difficult. Similarly, for EEF, top-up funding from government for specific policy priorities was also reviewed annually, however targets for policy impact were often set for a three-year period (EEF, n.db). Therefore, it is important to maintain the balance between ensuring funding is regularly reviewed to support agility and responsiveness and ensure that realistic expectations for timeframes in which targets can be met are applied. This necessitates a sophisticated approach to monitoring financial performance.

Pricing models for Australian government organisations

The Australian government costing framework for educational institutions such as ACARA and AITSL, utilises a cost-recovery pricing model largely, where funds are 'earmarked' for the implementation of a particular policy and related outcome (Department of Finance, 2015). Earmarked funding is similar to funding based on needs and targets, and such a model enables top-up funding to be embedded relatively easily to achieve specific policy outcomes, and this model is supported by the evidence gathered in the rapid synthesis (Tortora

& Steensen, 2014). Earmarking funding is widely conducted in other sectors, particularly international development (Tortora & Steensen, 2014). One example of earmarked funding in education in Australia, was the provision of funding for AITSL to act on the recommendations from the Teacher Education Ministerial Advisory Group (TEMAG), the proportion allocated is outlined in the table below (Commonwealth of Australia, 2017).

Table 9: Funding for AITSL in response to TEMAG

	2016-17 in \$'000	2017-18 in \$'000	2018-2019 in \$'000
AITSL response to TEMAG	4,300	4,100	3,700

However, funding for operations, and set-up and establishment costs are more difficult to estimate as available budgets have not itemised these costs, but, using publicly available information the proportion of funding spent on employees and the cost of supplier services, which could include the cost of maintaining online infrastructures or databases as an example of these functions are outsourced. Budget figures have been obtained from 2016 – 2018 (Commonwealth of Australia, 2017).

Table 10: Australian Government Budget 2017-18: ACARA

	2016-17 in \$'000	2017-18 in \$'000
Funds from government	13,797	15,291
Other funding sources	14,464	34,016
Employee costs (n=84[2016-17], 93[2017-18])	-13,147	-14,500
Suppliers costs	-14,485	-13,708
Balance	629	21,099

Approximately, 47% of total funding is spent on employee remuneration and 51% is spent on supplier costs for ACARA with 84 and 93 employees in 2016-17 and 2017-18 respectively. This leaves 2% of the remaining funding for all other costs (\$565, 220.00) in 2016-17. Within this year, the average cost per employee was \$156,511.00. For the next financial year, there was a large increase in funding from other sources and hence the proportion of total funding spent on employee remuneration was lower at 29.4%, and 28% on supplier costs, leaving a larger proportion 43% for operational costs (\$ 21,099,000.00) in 2017-18. In this financial year, the average cost per employee was like the previous year at \$155,913.98. Therefore, additional funding received was not spent on employees or suppliers.

For AITSL, who have different responsibilities to ACARA but receive somewhat similar proportions of government funding, the proportions of funding spent on employees and suppliers were similar to ACARA. In 2016-17, approximately 55% of funding was spent on employee remuneration, and 44% was spent on supplier costs, leaving 1.1% for all other costs (\$145,000.00). Within this year, the average cost per employee was \$131,678.57. For the next financial year, funding amounts were relatively consistent, and 59% of total funds were spent on employees, and 40% on supplier costs. Average cost per employee was also consistent at \$139,303.57.

Table 11: Australian Government Budget 2017-18: AITSL

	2016-2017 in \$'000	2017-18 in \$'000
Funding from government	12,061	11,861
Funds from other sources	1,350	1,376
Employee costs (n= 56)	-7,374	-7,801
Suppliers costs	-5,892	-5,304
Balance	145	132

To give an indication of education research funding, the Australian Research Council (ARC) budgets were examined. While ACARA and AITSL do commission some research and evaluation studies, it is not their remit to fund large programs of research. A review of the ARC budget and the National Competitive Grants Program Dataset was conducted to identify the number of discovery and linkage projects receiving funding across the financial years. It should be noted that while fellowships were included in the register they were funded by a combination of discovery and linkage funding and hence are not noted in the table below.

Table 12: Australian Government Budget 2017-18: ARC

	2016-17 in \$'000	2017-18 in \$'000	2018-2019 in \$'000	2019-20 in \$'000	2020-21 in \$'000
Discovery grants	482,502	493,858	494,856	512,711	523,737
	827 projects	830 projects	197 projects	ND	ND
Linkage grants	264,428	266,768	267,334	276,968	282,297
	237 projects	97 projects	56 projects	ND	ND
Departmental expenses	26, 262	25, 311	24, 913	24, 479	24, 306

While costs vary according to size and reach of each organisation, the above figures provide a starting point to estimate the potential cost of an evidence-based institution. Furthermore, there are lessons to be learned about setting targets, infrastructures and potential pitfalls of not realistically budgeting.

It is interesting to note there is little information about collaborative activities, other than most interviewees would suggest that “collaboration comes at a cost.”

Financial performance monitoring and accountability

While it has not been recommended for a national evidence institution to employ entirely market-oriented and competitive strategy, it has been recommended that the institution incorporate environmental forecasting. This also needs to be incorporated into financial performance monitoring and accountability, thus financial performance involves a combination of monitoring how funds are being used, as well as modelling future funding requirements to ensure that funders can be informed about top-up funding that may be needed for the target to be achieved within the specified timeframe. For this to occur, sophisticated financial analysis needs to be embedded in the infrastructure and functioning of the institution. In many ways, what is required is a well-developed executive that would be evident in a financial institution, such as an investment bank. While the goal for the institution should not be ‘profit’ in monetary terms, ‘profit’ can be thought of as evidence-based practice and improved student outcomes, and therefore making use of financial models and sophisticated modelling can be applied to forecast and predict additional resources that may be required to

achieve the desired impact. Approaches such as impact investing may also be applied, which is being utilised at SVA (SVA, n.d.).

Operationally, it would be important to embed a sophisticated and ideally independent group to ensure high quality financial performance monitoring, modelling and accountability occurs regularly throughout the operations - in addition to when external funders may commission external audits. EEF partners with Goldman Sachs as their independent group, which is responsible for financial monitoring and reports to the CEO and executive governance group (EEF, n.da; EEF, n.db; EEF, n.dc).

Table 13: Suggested costs of needs-analysis/environmental forecasting

Study types	Estimated costs
Evidence reviews	~\$80, 000.00
Developmental projects (pilot, feasibility studies, formative evaluation)	~ \$200, 000.00
Efficacy studies	~ \$500, 000.00
Effectiveness studies	~\$1, 000, 000.00

The Australian Paediatric Association, budgets \$200,000.00 per needs-assessment study. The Association conducts a Delphi study with Association members and key researchers and medical professionals across the country.

The Australian National Development Index has been awarded an Australian Communities Foundation Impact Fund for the purposes of establishing a community-research partnership to develop an index for social progress. The grant includes support establishment costs, and critically conducting a large scale national community engagement process. The funding for this project is delivered through the Impact Fund Grant, ARC grant and contributions from partners including the University of Melbourne comprising just over \$1 million (ANDI, n.da; ANDI, n.db).

Potential estimates of cost

It is suggested that the process of set up and development which will involve core funding, can be projected based on information from several like organisations. While size and total depth of the institution cannot be projected; there are a number of activities and functions that can be considered core and will need to occur. Estimates of cost can be made based from the review of other organisations and government costing sites; of course, these estimates are just conjectures. It is suggested that early implementation phase of the institution will follow a number of stages from set-up, trialling systems leading to a functional organisation. Figure 12 proposes a possible pathway.

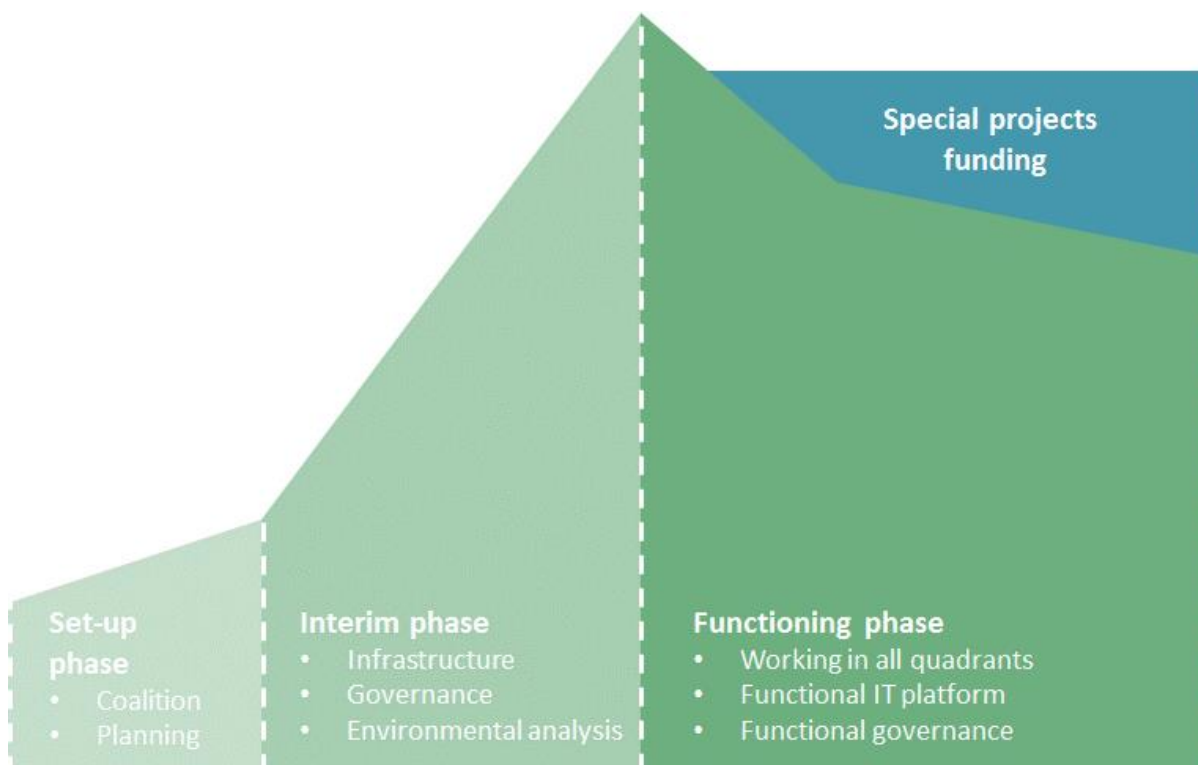


Figure 12: Resourcing model for a national evidence institution

To add value, the institution will need to respond to environmental demand, involve extensive sessions with states and key stakeholders. This cost must be determined according to the specific target, given the cost of needs-analyses, systematic reviews and potential models for translation and utilisation. As suggested, the institution, while being funded to carry out core task and specific initiatives, also has the potential to be a funder of projects; such as innovations, key research and specific support systems for schools. To this, we add the all-important implementation guides that ensure, via evaluation, that they actually make a difference in schools.

The institution like many other research and practice institutions will have the potential to collaborate, support and partner with other groups. It is therefore suggested that the institution set a key performance indicator as sourcing competitive or philanthropic funding.

To achieve a functional and eventually sustainable organisation, a targeted funding approach that is estimated based on environmental demand should be considered. While environment demand is key to utilisation, any organisation will require set up funds as well as ongoing infrastructure costs to ensure sustainability. Moving too quickly into applying a set of costs for organisational development and potential projects will waste valuable resources. Determining costs based upon a targeted plan for set up, infrastructure, specific projects and potential funding opportunities as a funder and 'funder' is essential. Ultimately, the funding allocated to the institute has to respect the different phases, whilst also allowing the institute to conduct its key functions and responsibilities.

6. Conclusions

This report has provided an overview of the findings of the rapid synthesis, as well as presented a model for an institution that supports evidence-informed practice and policy in Australia. This rapid synthesis has demonstrated that the evidence relating to evidence-based practice is variable in opinion, quality, and judgement of impact. However, it is clear that the idea of establishing an institution to support evidence-informed educational policy and practice is accepted as necessary.

To date, many institutions established internationally have yet to realise their full impact potential. We would argue that this is a consequence of a lack of evidence utilisation by the education sector. We have therefore suggested that Australia can be a leader in the establishment of an evidence-based institution that travels the gamut of implementation and impact on the educational sector. The rapid synthesis has identified research, policy and the perspectives of educators, alternative sectors and industry to collate several factors that appear to stimulate effectiveness and efficiency in evidence use within the sector.

These factors have been combined to propose the establishment and implementation of an institution designed to underpin educational practice, policy, research and community perspectives by providing not only rigorous information, but also translating this information into usable knowledge, and ultimately, impact on the learning lives of Australian students.

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9. Appendix A: Summary of Literature Reviewed

A summary of all peer-reviewed literature and grey literature sources is provided in this appendix. The inclusion criteria for reviewed studies includes;

Eligible studies

Rather than restrict the synthesis to specific study designs, the following secondary studies were included in the synthesis provided they included information relevant to the guiding questions:

- Systematic reviews and/or meta-analyses of REI's aiming to achieve EBP or EIP
- Narrative literature reviews of REIs
- Theoretical and/or position articles discussing the concept of REIs and their effectiveness
- Annual reports for REIs
- Implementation plans and/or REI policy documents
- Effectiveness studies on REIs

Types of REIs

The mapping exercise and process of sampling REI's to identify interview participants highlights the breadth of REIs that exist in education, health, and tourism sectors internationally. However, the literature on the effectiveness of these REI's is not particularly well-developed and therefore the synthesis will focus on studies and literature associated with REI's that include a stated aim to support EIP.

Countries

Studies and literature on REIs in education/public health [mental health, health promotion]/tourism [hotel/accommodation, experiences, flights and travel] based in the following countries and were included:

- USA
- Canada
- Australia
- New Zealand
- The United Kingdom and EU countries (excluding Finland)

Publication details

- Published after 2000
- Published in English language
- Study was conducted or REI is based in included countries
- Study or REI aims to achieve evidence-based or evidence-informed practice
- Study or REI reports on effectiveness OR governance OR functions and functionality OR grading evidence, OR evidence synthesis OR platforms OR knowledge translation

The information presented in the table below is intended for use by the Education Excellence Review Secretariat and the Department of Education of the Australian Government.

Table 14: Summary of reviewed literature

Author (year)	Title	Publication	Study design	Sector	Country	Authority	Accuracy	Coverage	Objectivity	Date	Significance
Bain et al. (2011)	Technology enhanced feedback tools as a knowledge management mechanism for supporting professional growth and school reform.	Educational Technology Research and Development	Pilot study	Education	NR	Y	Y	Y	Y	Y	Y
Dobbins et al. (2010)	A knowledge management tool for public health: health-evidence.ca.	BMC Public Health	Review of REI	Public Health	Canada	Y	Y	Y	Y	Y	Y
LaRocca et al. (2012)	The effectiveness of knowledge translation strategies used in public health: a systematic review (Structured abstract)	BMC Public Health	Systematic review	Public health policy	International [Canada, US, England, Norway]	Y	Y	Y	Y	Y	Y
OECD (2007)	Evidence in Education	OECD	Policy and commentary paper	Education	International	Y	NA	Y	Y	Y	Y
WHO (2003)	Guidelines for who guidelines	World Health Organization	Report	Health policy	International	Y	NA	Y	NA	Y	Y
Volmink et al. (2004)	Research synthesis and disseminating as a bridge to knowledge management: the Cochrane Collaboration	Bulletin of the World Health Organization	Report	Public health policy	International	Y	NA	Y	Y	Y	Y
Rosen, et al. (2004)	Australia needs a mental health commission.	Article	Review	Health	NZ	Y	Y	U	N	Y	Y
Drabble, et al. (2013)	Child Welfare Partnership for Research and Training: A Title IV-E University/Community Collaborative Research Model.	Article	Intervention	Social work	USA	Y	Y	Y	Y	Y	Y

Author (year)	Title	Publication	Study design	Sector	Country	Authority	Accuracy	Coverage	Objectivity	Date	Significance
Matchar et al. (2005)	Dissemination of Evidence-based Practice Center Reports.	Article	Intervention	Health	USA	Y	N/A	U	N	Y	Y
Mahoney (2009)	Evidence-based practice and research scholar's programs: Supporting excellence in psychiatric nursing	Article	Intervention	Health	USA	Y	Y	U	N	Y	Y
Bruns et al. (2016)	Fostering SMART partnerships to develop an effective continuum of behavioral health services and supports in schools.	Article	Review	Health	USA	Y	Y	Y	Y	Y	Y
Smits et al. (2014)	How research funding agencies support science integration into policy and practice: An international overview.	Article	Review	Health	Canada	Y	Y	Y	Y	Y	Y
Stetler et al. (2008)	Overview of the VA Quality Enhancement Research Initiative (QUERI) and QUERI theme articles: QUERI Series.	Article	Discussion	Health	USA	Y	Y	Y	N	Y	Y
Whitelaw (2010)	System Change and Organizational Capacity for Evidence-Based Practices: Lessons from the Field	Research Article	Systematic Review	Health	USA	Y	Y	U	Y	Y	Y
Holmes et al. (2012)	Translating evidence into practice: the role of health research funders.	Article	Intervention	Health	Canada	Y	Y	Y	Y	Y	U

Author (year)	Title	Publication	Study design	Sector	Country	Authority	Accuracy	Coverage	Objectivity	Date	Significance
WHO (2014)	A Policy Guide for Implementing Essential Interventions for Reproductive, Maternal, Newborn and Child Health (RMNCH): A Multisectoral Policy Compendium for RMNCH	Compendium	Systematic Review	Public Health	Multiple	Y	Y	Y	Y	Y	Y
Davidson et al. (2004)	A Primer on Current Evidence-Based Review Systems and Their Implications for Behavioral Medicine.	Journal Article	Case Studies	Mental Health	USA	Y	Y	Y	Y	Y	Y
Means et al. (2015)	Comparing rating paradigms for evidence-based program registers in behavioral health: Evidentiary criteria and implications for assessing programs	Journal Article	Case studies	Public Health	USA	Y	Y	Y	Y	Y	Y
King et al. (2009)	Interventions for improving the psychosocial well-being of children affected by HIV and AIDS.	Journal Article	Meta-Synthesis	Mental Health	UK	Y	Y	Y	Y	Y	Y
Forman et al. (2016)	Pragmatic recommendations to address challenges in disseminating evidenced-based treatment guidelines.	Journal Article	Policy paper	Mental Health	Canada	Y	Y	Y	Y	Y	Y
Dozois (2013)	Psychological treatments: Putting evidence into practice and practice into evidence.	Journal Article	Commentary/Presidential Address	Mental Health	Canada	Y	Y	Y	U	Y	Y

Author (year)	Title	Publication	Study design	Sector	Country	Authority	Accuracy	Coverage	Objectivity	Date	Significance
Cammy (2016)	Right at Your Fingertips: Important Web-Based Resources for Understanding Evidence-Based Practices	Journal Article	Other - review of online resources	Education	USA	Y	Y	Y	Y	Y	Y
Dozois et al. (2014)	The CPA Presidential Task Force on Evidence-Based Practice of Psychological Treatments.	Journal Article	Case Study	Mental Health	Canada	Y	Y	Y	Y	Y	Y
Fisher (2016)	The Social Care Institute for Excellence and Evidence-Based Policy and Practice	Journal Article	Case study	Public Health	UK	Y	Y	Y	Y	Y	Y
WHO (2013)	Transforming and scaling up health professionals' education and training: World Health Organization guidelines 2013	Other	Systematic Review	Education	Multiple	Y	Y	Y	Y	Y	Y
McVay et al. (2016)	The role of researchers in disseminating evidence to public health practice settings: a cross-sectional study.	Journal article	Survey	Public Health	USA	Y	Y	Y	Y	Y	Y
Weaver et al. (2005)	Bedside, classroom and bench: Collaborative strategies to generate evidence-based knowledge for nursing practice	Journal article	Meta-synthesis	Nursing Education	USA	Y	Y	U	U	Y	Y
Duchnoski et al. (2006)	Increasing the use of evidence-based strategies by special education teachers: A collaborative approach	Journal article	Case study	Education	USA	Y	Y	Y	Y	Y	Y

Author (year)	Title	Publication	Study design	Sector	Country	Authority	Accuracy	Coverage	Objectivity	Date	Significance
Ballou et al. (2017)	Lactation Skills Workshop: A Collaboration of the City of Dallas WIC and Local Hospitals.	Journal article	Case study	Health promotion	USA	Y	Y	Y	Y	Y	Y
Schaeffer et al. (2005)	Overcoming Challenges to Using Evidence-Based Interventions in Schools.	Journal article	Review	Mental Health	USA	Y	Y	Y	Y	Y	Y
Powers et al. (2011)	Supporting Evidence-based Practice in Schools with an Online Database of Best Practices.	Journal article	Case study	Education	USA	Y	Y	Y	Y	Y	Y
Haegerich et al. (2017)	Technical Packages in Injury and Violence Prevention to Move Evidence into Practice.	Journal article	Evaluation	Public Health	USA	Y	Y	Y	Y	Y	Y
Bellamy et al. (2006)	The Current State of Evidence-Based Practice in Social Work: A Review of the Literature and Qualitative Analysis of Expert Interviews.	Journal article	Review	Social work	USA	Y	Y	Y	Y	Y	Y
Tetroe et al. (2011)	What does it mean to transform knowledge into action in falls prevention research? Perspectives from the Canadian Institutes of Health Research.	Journal	Conceptual framework	Public Health	Canada	Y	Y	Y	Y	Y	Y
Armstrong et al. (2007)	The nature of evidence resources and knowledge translation for health promotion practitioners	Journal article	Evaluation study	Public Health	Australia	Y	Y	Y	Y	Y	Y

Author (year)	Title	Publication	Study design	Sector	Country	Authority	Accuracy	Coverage	Objectivity	Date	Significance
West et al. (2013)	Current Status of Evidence-Based Practice for Students with Intellectual Disability and Autism Spectrum Disorders	Journal	Case studies	Education	USA	Y	Y	Y	Y	Y	Y
Whitelaw (2010)	System Change and Organizational Capacity for Evidence-Based Practices: Lessons from the Field	Report	Case studies	Health promotion	USA	Y	Y	Y	Y	Y	Y
Farkas, (2007)	Bridging science to service: Using Rehabilitation Research and Training Center program to ensure that research-based knowledge makes a difference	Journal	Case Study	Mental Health	USA	Y	Y	Y	Y	Y	Y
Joseph et al. (2008)	The Pebble Projects: coordinated evidence-based case studies.	Report	Post-occupancy evaluation	Public Health	USA	Y	Y	Y	U	Y	Y
Liang (2011)	Evidence-Informed Managerial Decision- Making: what evidence counts? (Part Two).	Journal Article	Not clear	Public Health	Australia	Y	Y	Y	Y	Y	Y
Research on Educational Effectiveness (SREE), Society (2011)	Examining the Effectiveness of a Train-the-Trainer Model: Training Teachers to Use Pivotal Response Training	Report	Post-occupancy evaluation	Education	USA	Y	Y	Y	Y	Y	Y
McDermott et al. (2010)	Formation and Early History of The American Academy of Health Behavior.	Journal Article	Case study	Health Promotion	US	Y	Y	N	N	Y	U

Author (year)	Title	Publication	Study design	Sector	Country	Authority	Accuracy	Coverage	Objectivity	Date	Significance
Parnham (2008)	Chronic conditions guidelines: an introduction.	Journal Article	Case study	Health promotion	UK	Y	Y	N	N	Y	U
Simmons, (2015)	Constraints on evidence-based policy: insights from government practices.	Journal Article	Case study	Tourism	UK	Y	Y	Y	N	Y	Y
Hawkins et al. (2016)	The Good Governance" of Evidence in Health Policy"	Journal article	Theoretical	Multi-sectorial	UK, US, EU (research funded by European Research Council)	Y	Y	Y	Y	Y	Y
Kane (2016)	Connecting to Practice	Journal article	Position paper	Education	US	Y	Y	Y	Y	Y	Y
Cilenti et al. (2012)	Information-seeking behaviors and other factors contributing to successful implementation of evidence-based practices in local health departments.	Journal article	Case study	Public health	US	Y	Y	U	Y	Y	U
Boaz et al. (2008)	Does evidence-based policy work? Learning from the UK experience	Journal article	Case study	Education, health	UK	Y	Y	Y	Y	Y	Y
Moyer et al. (2015)	The US Preventive Services Task Force: What Is It and What Does It Do?	Journal article	Case study	Health promotion	US	Y	Y	U	U	Y	Y
Maeda et al. (2012)	Creating Evidence for Better Health Financing Decisions	Report	Guide	Health	International	Y	Y	Y	Y	Y	Y
Gavin (2016)	Building and Sustaining National ICT Education Agencies: Lessons from England (BECTA)	Report	Case study	Education	UK	Y	Y	U	Y	Y	Y

Author (year)	Title	Publication	Study design	Sector	Country	Authority	Accuracy	Coverage	Objectivity	Date	Significance
Assembly of Sixty- second WHO (2009)	WHO's role and responsibilities in health research Draft WHO strategy on research for health	Executive Board Session	NA	Health	International	Y	Y	Y	Y	Y	Y
UNDP, UNFPA, WHO, World Bank (2008)	Knowledge synthesis and transfer: a case-study	Report	Case study	Health	International	Y	Y	Y	Y	Y	Y
Michels et al. (2015)	Promoting better integration of health information systems: best practices and challenges	Report	Case study	Health	EU	Y	Y	Y	Y	Y	Y
WHO (2003)	Guidelines for who guidelines	Report	Development of guidelines	Health	International	Y	Y	Y	Y	Y	Y
Sorenson et al. (2008)	Ensuring Value for Money in health Care: The Role of Health technology and assessment in the European Union	Report	Case study	Health	Europe (Sweden, Netherlands, France, Germany, UK - section on Finland not coded)	Y	Y	Y	Y	Y	Y
WHO (2016)	Key enabling factors in effective and sustainable research networks Findings from a qualitative research study	Report	Literature review and interviews	Health	International (coded case study from Switzerland)	Y	Y	Y	Y	Y	Y

Author (year)	Title	Publication	Study design	Sector	Country	Authority	Accuracy	Coverage	Objectivity	Date	Significance
WHO (2011)	Innovation for health Research that makes a difference	Annual report	Annual report	Health	International	Y	Y	Y	Y	Y	N
UNESCO; European Commission (2010)	National Bioethics Committees in Action	Report	Case studies	Public health (ethics)	UK, Slovenia, Denmark, Belgium	Y	Y	U	Y	Y	U
Husein et al. (2017)	from compliance to learning: a system for harnessing the power of data in the state of maryland	Report	Case study	Education	US	Y	Y	Y	Y	Y	Y
Education Endowment Fund (2016)	Annual Report 2015/2016	Report	Annual report	Education	UK	Y	Y	Y	N	Y	N
ACER (2013)	Education Endowment Fund - England	Report	Case study	Education	UK	Y	Y	Y	Y	Y	N
Social Ventures Australia (2017)	Annual Financial Report	Report	Annual financial report	Education	Australia	Y	Y	Y	N	Y	N
Social Ventures Australia (2017)	SVA Annual Review 2016 - 2017	Report	Annual report	Education	Australia	Y	Y	Y	Y	Y	N
AITSL (2017)	Annual Report 2016-2017 - Australian Institute for Teaching and School Leadership	Report	Annual report	Education	Australia	Y	Y	Y	N	Y	N
Director of National Parks (2017)	Director of National Parks Annual Report 2016 - 2017	Report	Annual report	Tourism	Australia	Y	Y	Y	N	Y	N

Author (year)	Title	Publication	Study design	Sector	Country	Authority	Accuracy	Coverage	Objectivity	Date	Significance
ACER (2017)	ACER 2015-2016 Annual Report	Report	Annual report	Education	Australia	Y	Y	Y	N	Y	N
ACER (2015)	Corporate Profile	Report	Corporate profile	Education	Australia	Y	Y	Y	N	Y	N
CDC (2016)	Detailed Organisational Chart	Report	Profile	Health	US	Y	Y	Y	Y	Y	N
CDC (2016)	Office of Financial Resources Fiscal Year 2016 Annual Report	Report	Annual financial report	Health	US	Y	Y	Y	N	Y	N
OECD (2017)	About the OECD tourism committee	Report	Profile	Tourism	International (OECD)	Y	Y	Y	Y	Y	N
Mitchell Institute (2017)	Mitchell Institute Prospectus	Report	Profile	Education	Australia	Y	Y	Y	N	Y	N
Mitchell Institute (2016)	Annual Report 2015	Report	Annual report	Education	Australia	Y	Y	Y	N	Y	N
Moore (2016)	Towards a model of evidence-informed decision-making and service delivery	Working paper	Theoretical	Health	Australia	Y	Y	Y	Y	Y	Y
Peterson et al. (2015)	The clinical and economic value of health libraries in patient care	Review article	Review	Health	Australia	Y	Y	Y	Y	Y	Y
Colquhoun et al. (2016)	Evaluation of a training program for medicines-oriented policymakers to use a database of systematic reviews.	Journal	Evaluation	H	Multinational	Y	Y	Y	Y	Y	Y
Kubek et al. (2007)	Practical Communications: Innovative Methods for Disseminating Evidence-Based Practices and Building Community Consensus.	Journal	descriptive	health	USA	Y	y	y	n	y	y
Whitmer et al. (2011)	Launching evidence-based nursing practice.	Journal	descriptive	health	USA	Y	Y	Y	Y	Y	Y

Author (year)	Title	Publication	Study design	Sector	Country	Authority	Accuracy	Coverage	Objectivity	Date	Significance
Payne et al. (2015)	CDC's Health Equity Resource Toolkit: disseminating guidance for state practitioners to address obesity disparities.	Journal	Policy paper	Health	USA	Y	Y	Y	Y	Y	Y
Dadich et al. (2016)	Communication channels to promote evidence-based practice: a survey of primary care clinicians to determine perceived effects.	Journal	Cross-sectional survey	Public health	Australia	Y	Y	Y	Y	Y	Y
Holcombe et al. (2012)	Implementation of electronic chemotherapy ordering: An opportunity to improve evidence-based oncology care.	Journal	Intervention	Health	USA	Y	Y	Y	Y	Y	Y
Ferguson et al. (2013)	Stakeholder dialogue about evidence-based practice: An e-learning tool to facilitate discussion	Journal	Intervention	Health promotion	USA	Y	N	Y	Y	Y	Y
Smits (2014)	How research funding agencies support science integration into policy and practice: An international overview	Journal	Comparison study	Health	Multinational	Y	Y	Y	Y	Y	Y
Emshoff (2008)	Researchers, practitioners, and funders: Using the framework to get us on the same page	Journal	Policy study	Health	USA	Y	Y	Y	Y	Y	Y
Leffler et al. (2013)	Training in evidence-based practice across the professional continuum.	Journal	Case study	Education	USA	Y	Y	Y	Y	Y	Y

Author (year)	Title	Publication	Study design	Sector	Country	Authority	Accuracy	Coverage	Objectivity	Date	Significance
League et al. (2012)	Increasing nurses' access to evidence through a web-based resource	Journal	Case study	Health	USA	Y	Y	Y	Y	Y	Y

Table 15: Summary of reviewed grey literature

Author (year)	Title	Publication	Study design	Sector	Country	Authority	Accuracy	Coverage	Objectivity	Date	Significance
Social Ventures Australia (2017)	SVA Annual Review 2016 - 2017	NA	Annual report	Education	Australia	Y	Y	Y	Y	Y	N
AITSL (2017)	Annual Report 2016-2017 - Australian Institute for Teaching and School Leadership	NA	Annual report	Education	Australia	Y	Y	Y	N	Y	N
Director of National Parks (2017)	Director of National Parks Annual Report 2016 - 2017	NA	Annual report	Tourism	Australia	Y	Y	Y	N	Y	N
ACER (2017)	ACER 2015-2016 Annual Report	NA	Annual report	Education	Australia	Y	Y	Y	N	Y	N
ACER (2017)	Corporate Profile	NA	Corporate profile	Education	Australia	Y	Y	Y	N	Y	N
CDC (2016)	Detailed Organisational Chart	NA	Profile	Health	US	Y	Y	Y	Y	Y	N
CDC	Office of Financial Resources Fiscal Year 2016 Annual Report	NA	Annual financial report	Health	US	Y	Y	Y	N	Y	N
OECD (2017)	About the OECD tourism committee	NA	Profile	Tourism	International (OECD)	Y	Y	Y	Y	Y	N
Mitchell Institute	Mitchell Institute Prospectus	NA	Profile	Education	Australia	Y	Y	Y	N	Y	N
Mitchell Institute (2016)	Annual Report 2015	NA	Annual report	Education	Australia	Y	Y	Y	N	Y	N
Moore, T.G. (2016)	Towards a model of evidence-informed decision-making and service delivery	NA	Theoretical	Health	Australia	Y	Y	Y	Y	Y	Y

Author (year)	Title	Publication	Study design	Sector	Country	Authority	Accuracy	Coverage	Objectivity	Date	Significance
Moore, T.G.; Beatson, R.; Rushton, S.; Powers, R.; Deery, A.; Arefadib, N.; and West, S. (2016)	Supporting the Roadmap for Reform: Evidence-informed practice	NA	Case study	Health	Australia	Y	Y	Y	Y	Y	Y

