

**EVIDENCE
FOR LEARNING**



Getting Evidence Moving in Schools (GEMS)

Research Framework

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Executive summary

About this resource

- This document presents a framework for understanding the different factors that are involved in mobilising research evidence in schools through professional learning.
- The framework was developed as part of Evidence for Learning's Project GEMS, and was informed by prior studies of research use and professional learning.
- It is intended as a resource to support the evaluation and implementation of multi-school initiatives to strengthen the mobilisation of research evidence in practice.
- Potential users therefore include system leaders, school improvement partners, knowledge brokers, school leaders, professional learning providers and evaluators.

Understanding the framework

- The framework follows the stages of research evidence mobilisation from the design of professional learning approaches, through to implementation in professional learning within schools and subsequent use in classrooms.
- It draws attention to activities across different levels of the mobilisation process: the professional learning level, the school level, and the educator and student level.
- It brings together different inputs (e.g. professional learning design), processes (e.g. school-based mobilisation strategies) and outcomes (e.g. impacts on educators).
- It also highlights the influence of different enabling conditions related to the research evidence, the wider system, the school contexts and the educators.

Using the framework

- The framework needs to be viewed as a starting point for further work, as a resource to adapt for new contexts, and as a tool to support iterative improvement over time.
- It can support the planning and conduct of mixed-method evaluations of initiatives focused on research mobilisation in schools, particularly ones involving professional learning.
- It can also inform the design and implementation of improvement initiatives within schools, particularly in relation to formulating plans and judging readiness.
- Most importantly, what is provided here are resources and ideas to work with as starting points rather than tools to use 'off the shelf'.

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1. Introduction

This section explains the background to this document, and then outlines its aims, intended audiences, evidence base, and structure.

1.1 Background

There are growing expectations internationally that schools and school systems will use research evidence to underpin and inform their improvement efforts. Within Australia, there have been calls for the development of ‘a research-rich profession’, ‘an evidence-based approach’ and ‘a national evidence institute’.¹

These aspirations raise important questions about whether and how research evidence is used and applied in Australian schools – a topic that has been researched surprisingly little in Australia relative to other countries.²

Against this backdrop, *Project GEMS (Getting Evidence Moving in Schools)* is a three-year investigation, led by Evidence for Learning (E4L), into the use of research evidence in Australian primary schools. It explores how schools mobilise literacy and numeracy research through professional learning, and what factors help and hinder the use of research-informed practices in the classroom.

This document shares the research framework that was developed by Monash University Faculty of Education for use in Project GEMS. The initial version of this research framework was used to inform the GEMS research investigation, which involved surveys, interviews, observations and documentary analysis with participating school leaders and teachers. The analysis and findings from the GEMS research investigation, which was carried out by the Centre for Evidence and Implementation (CEI), will be reported separately in early 2021.

Our focus here is on sharing the GEMS research framework as a potential resource for others to use and adapt in their own work around research-informed improvement in schools.

1.2 Aims

This document presents a framework to understand the mobilisation of research evidence in schools through professional learning. It has three main aims:

¹ White, S., Nuttall, J., Down, B., Shore, S., Woods, A., Mills, M., and Bussey, K. (2018). *Strengthening a research-rich teaching profession for Australia*. Melbourne/Canberra: ACDE/ATEA/ACDE

Australian Productivity Commission. (2016). *National education evidence base*, Report no. 80. Canberra: Productivity Commission

² Prendergast, S. and Rickinson, M. (2019). Understanding school engagement in and with research. *The Australian Educational Researcher*, 46(1), 17-39.

1. To provide an overview of the different factors that are involved in mobilising research evidence in schools through professional learning.
2. To inform the planning and conduct of research, evaluation and monitoring for similar kinds of initiatives in the future.
3. To support the design and implementation of current and future projects and initiatives related to research mobilisation in education.

It is important to emphasise that understandings about the mobilisation and use of research evidence in schools are still developing, particularly in Australia. What we outline here, therefore, is an initial attempt to distil the factors that seem to be important in a way that can help to guide future thinking about project evaluation and project implementation.

There are a number of key terms that recur throughout the document.

By *research evidence*, we mean evidence generated through systematic studies undertaken by universities or research organisations and reported in books, reports, articles, research summaries, training courses or events.³

By *research mobilisation*, we mean the process of integrating research evidence into practice, which requires specific effort, over time, working with others, and involves much more than telling people about research findings.⁴

By *research use*, we mean the process of actively engaging with and drawing on research evidence to inform, change and improve practice.⁵

By *research-informed practice*, we mean practice that is informed by research evidence alongside other forms of evidence such as educators' professional knowledge.⁶

1.3 Audiences

This document is intended as a resource for education professionals who are leading or undertaking multi-school initiatives to strengthen the mobilisation of research evidence in practice, particularly through professional learning. This might include:

- system/jurisdiction leaders who are developing and facilitating research-informed improvement initiatives amongst schools within a sector or jurisdiction;
- school improvement partners who are working with networks of schools on aspects of research engagement;
- knowledge brokers who are looking to support the mobilisation of research evidence and research-informed practices across groups of schools;

³ Nelson, J., Mehta, P., Sharples, J. and Davey, C. (2017). *Measuring teachers' research engagement: Findings from a pilot study*. London: Education Endowment Foundation.

⁴ Levin, B. (2013). To know is not enough: Research knowledge and its use. *Review of Education*, 1(1), 2-31.

⁵ Coldwell, M., Greaney, T., Higgins, S., Brown, C., Maxwell, B., Stiell, B., Stoll, L., Willis, B., and Burns, H. (2017). *Evidence-informed teaching: an evaluation of progress in England*. London: Chartered College of Teaching.

⁶ Brown, C. (2018). *EvidenceED: Achieving evidence-informed policy and practice in education*. Bingley, UK: Emerald.

- school leaders who are working in their schools or in partnership with other schools on research-informed improvement initiatives;
- professional learning providers who are seeking to foster engagement with and use of research-based practices in different schools; and
- evaluators who are wanting to generate insights into progress and impacts with research mobilisation across several schools.

For all of these groups, it is important to make clear that what is provided here are resources and ideas for them to work with as starting points rather than tools for them to use 'off the shelf'. In other words, they will require considerable further development and adaptation to be relevant for any one user's particular area of interest and context of work.⁷

1.4 Evidence base

The development of the GEMS research framework was informed by a series of key ideas from the recent international literature on research use, implementation and professional learning. As detailed in Appendix 1, the underpinning literature included studies that provided insights into: the nature of research evidence relative to other forms of evidence and the importance of appropriate research evidence; the different forms of research use in practice; the barriers and enablers that affect the use of research evidence in school contexts; the characteristics of quality use of research evidence; and the key features of effective professional learning (see Appendix 1 for more details).

The development of the GEMS research framework also benefited from suggestions and feedback from the CEI research team who used the framework as part of the GEMS research investigation. In addition, early versions of this resource were shared with selected project partners and stakeholders for feedback and revision.

1.5 Structure

Following this introductory section, the rest of this paper:

- introduces the GEMS research framework and unpacks its different levels and enablers (Section 2); and
- discusses how it can be used both an evaluation tool and as an implementation resource (Section 3).

In addition, there is a summary of the framework's underpinning literature (Appendix 1) and further information about potential data collection instruments (Appendix 2).

⁷ The *Evidence-informed teaching: Self-assessment tool for schools* is one tool that might help school leaders consider their current use of evidence. See Stoll, L., Greany, T., Coldwell, M., Higgins, S., Brown, C., Maxwell, B., Stiell, B., Willis, B. and Burns, H. (2018a) *Evidence-informed Teaching: Self-assessment tool for schools*. London: Chartered College of Teaching.

2. Introducing the framework

This section introduces and explains the GEMS research framework, initially through an overview of the framework as a whole and then in more detail in terms of the mobilisation levels and the enabling conditions.

2.1 Overview of the framework

It is important to recognise the origins of this framework within the GEMS project. Its original purpose was to help to make sense of, and collect data on, the various components and influences that were involved in a three-year project focused on mobilising literacy and numeracy research evidence through professional learning with staff in primary schools. The structure of the framework is therefore reflective of the nature of the GEMS project.

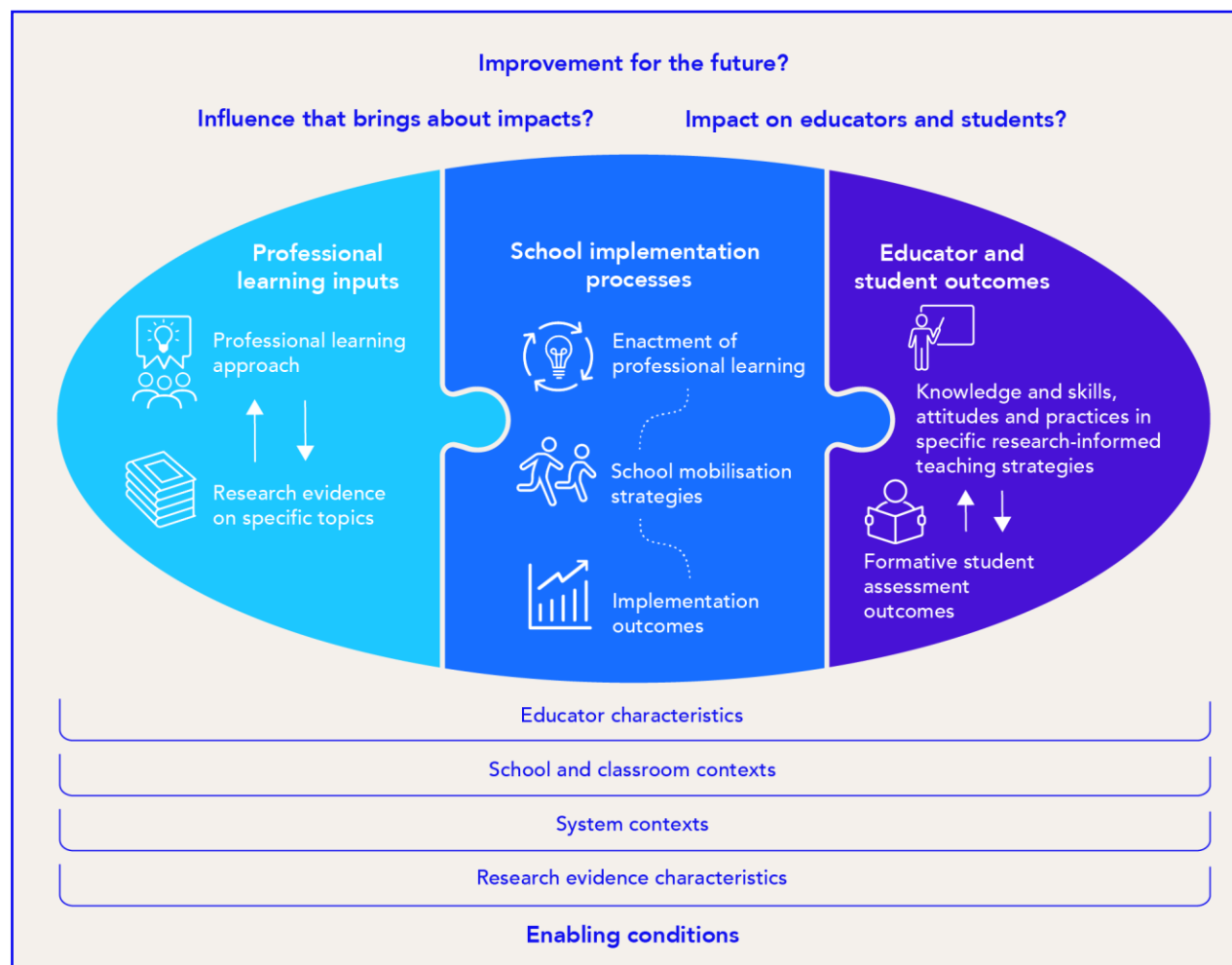
In broad terms, the framework follows the stages of research evidence mobilisation from the role of specific research evidence in the design of professional learning approaches, through to its implementation in the professional learning in schools and then its use in classrooms. So moving from left to right in Figure 1, the framework encompasses:

- **different levels** – research mobilisation starting in the *professional learning level*, moving into the *school level* and then into the *educator and student level* in classrooms;
- **different inputs, processes and outcomes** – the design of professional learning approaches using research evidence on specific topics (*inputs*), through to the enactment of professional learning and the mobilisation of research within the school (*processes*) and into the possible impacts on educators and students (*outcomes*);
- **different enabling conditions** – the potential influence of *the evidence*, the *wider system context*, the *school and classroom contexts* and *the educators* involved; and
- **different evaluative aspects** – coverage of project *impacts* (what works), project *influence* (how impacts come about) and project *improvement* (what next).

As with many framework visualisations, Figure 1 is a simplification of a number of complex and inter-linked processes and influences. It is important to bear in mind that, while simple visuals can be helpful for the purpose of conceptual clarification, they must not be taken literally. For example, the boundaries between different levels would be expected to be much more interactive and fluid in practice than the diagram overleaf suggests. Similarly, the relationships between program inputs, implementation processes and educator outcomes are likely to be far more complex and less linear than shown overleaf. In addition, the role and relative importance of different enabling conditions would be expected to vary considerably between different settings. Recognising and remembering this real-world complexity is an important part of understanding and using this framework.

With this in mind, we will now unpack some of the detail that sits within the different levels and the different enabling conditions within the framework.

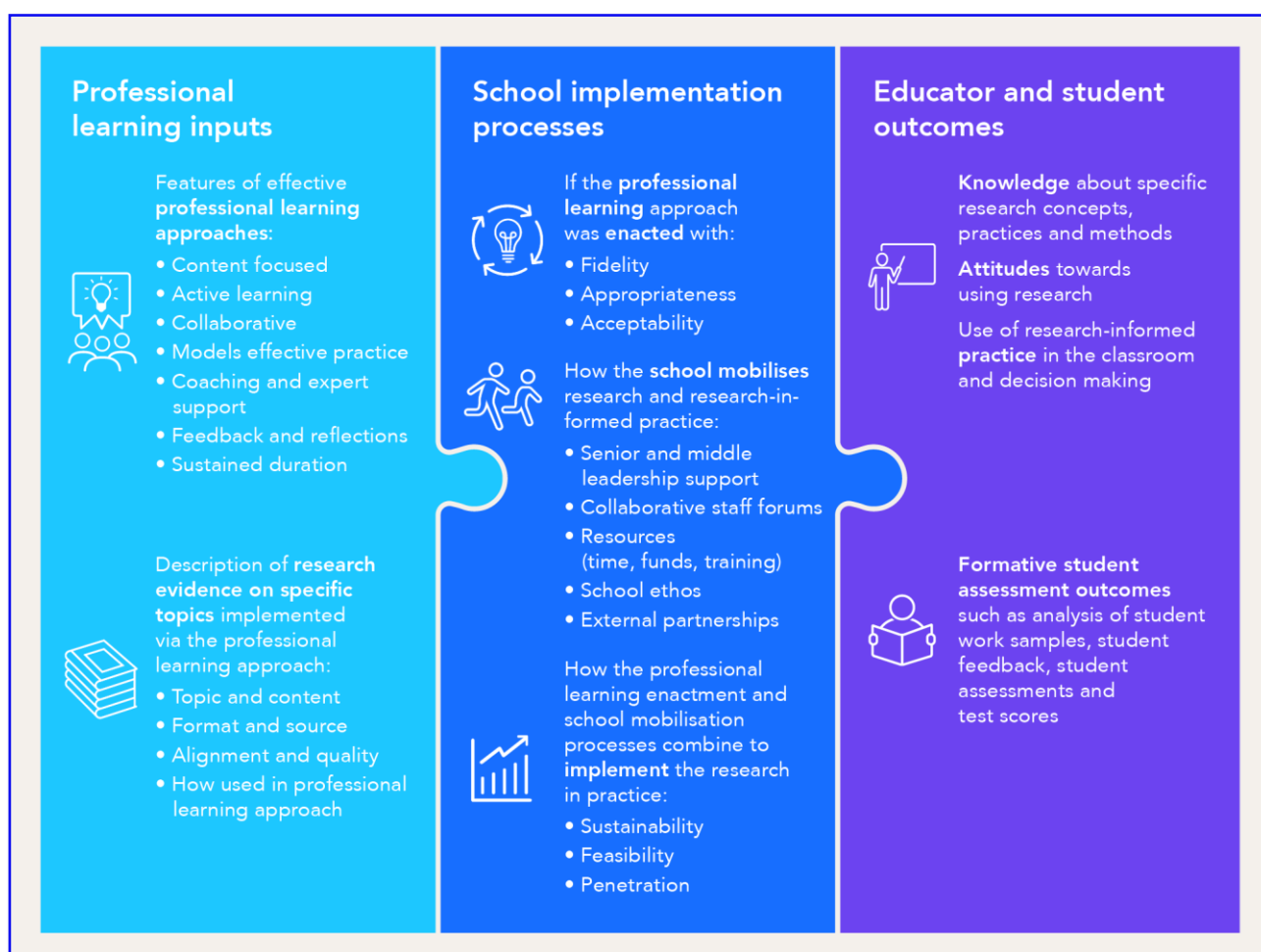
Figure 1: The GEMS research framework



2.2 Unpacking the mobilisation levels

This part of the framework is about viewing the research evidence mobilisation process in terms of a number of interlinked layers, all of which may have a bearing on how a teacher or leader eventually makes use (or not) of research evidence and research-informed practices. These layers are: the professional learning level, the school level, and the educator and student level (Figure 2).

Figure 2: The different levels in the research mobilisation process



Professional learning level (inputs)

The professional learning level is about focusing in on **program inputs** – the nature of the professional learning approaches and the nature of the research evidence on specific topics used within those approaches. The GEMS project involved professional learning approaches that drew on specific literacy and numeracy research evidence and so there were two main program inputs.

The **nature of the professional learning** can be understood in terms of the features of effective professional learning. One recent synthesis of research on this topic, for example, identified seven features of professional learning that are effective in terms of bringing about ‘changes in

teacher practices and improvements in student learning outcomes⁸. These features highlight the need to ask questions about:

- the content (is there a focus on teaching strategies associated with specific curriculum content such as mathematics, science, or literacy?);
- the learning activities (is there an emphasis on active learning that engages teachers directly in designing and trying out teaching strategies?);
- the approach to collaboration (is there space for teachers to share ideas and collaborate in their learning, including in job-embedded contexts?);
- the focus on effective practice (is there a sharing of what best practices look like by using practical examples, models and modeling?);
- the use of coaching (is there expert support focused on sharing content and evidence-based practices that are specific to teachers' individual needs?);
- the role of feedback and reflection (is there time for teachers to think about, receive input on, and make changes to their practice through reflection and feedback?); and
- the duration (is there adequate time to learn, practise, implement, and reflect upon new strategies that facilitate changes in their practice?)⁹.

It is also important to consider the **nature of the research evidence on specific topics** used within the professional learning approach. This draws attention to the nature and role of research evidence within the design and content of the approach. Issues for consideration here include:

- the focus of the research evidence in terms of its topic and content;
- the type of research evidence in terms of its format and source;
- the nature and quality of the research evidence in terms of its evidence base; and
- the nature of how it is used within the professional learning approach.

School level (implementation processes)

The school level is concerned with **implementation processes** – the enactment of the professional learning, the mobilisation of research and research-informed practices within the school, and the eventual implementation outcomes within school practice.

The **enactment of the professional learning** draws attention to the way in which the professional learning approach is enacted in schools in partnership between the facilitators and school

⁸ Darling-Hammond, L., Hyler, M. E. and Gardner, M. (2017). *Effective Teacher Professional Development*. Palo Alto, CA: Learning Policy Institute. (p. v)

⁹ Darling-Hammond, L., Hyler, M. E. and Gardner, M. (2017). *Effective Teacher Professional Development*. Palo Alto, CA: Learning Policy Institute. (pp. v-vi)

leaders, and experienced by the participants. Therefore, drawing on ideas relating to implementation effectiveness¹⁰, this is about asking questions about:

- the 'fidelity' of delivery (whether it is delivered as intended, in adherence with original aims and quality standards);
- the perceived 'appropriateness' of content (participants' perceptions of its relevance, fit, compatibility and usefulness for their contexts and needs); and
- the perceived 'acceptability' of the approach as a whole (participants' satisfaction with its content, delivery, credibility and so on).

The aim here is to build up an understanding of the professional learning not just as a approach that is designed in a particular way (as discussed at the professional learning level), but also as a dynamic interaction involving specific facilitators, school leaders and participants within particular school-level contexts.

Another important consideration at the school level is whether and how research evidence and research-informed practices are mobilised within the school. This component of **school mobilisation strategies** underlines the influence of organisational context on research use in schools. This is about probing into the extent to which engagement with and use of research and research-informed practices are supported and encouraged within the school. Studies of research use in schools¹¹ suggest the importance of factors such as:

- senior leadership support for, and modelling of, research use across the school;
- middle leaders helping other staff to access, understand and apply research ideas;
- collaborative forums in which staff can discuss research and how to use it in context;
- resources in terms of time, funds, and training to support research engagement;
- research engagement being embedded within the ethos of the school; and
- partnerships with external researchers, coaches and other research-engaged schools.

The final component at the school level is the **implementation outcomes**, which come about as a result of the enactment of the professional learning and the school mobilisation strategies. Getting clearer about implementation outcomes¹² involves paying attention to:

¹⁰ Proctor, E., Silmere, H., Raghavan, R., Hovmand, P., Aarons, G., Bunger, A., Griffey, R. and Hensley, M. (2011). Outcomes for implementation research: Conceptual distinctions, measurement challenges, and research agenda. *Administration and Policy in Mental Health* 38, 65-76.

¹¹ Dyssegaard, C., Egelund, N. and Sommersel, H. (2017). *A systematic review of what enables or hinders the use of research-based knowledge in primary and lower secondary school*. Copenhagen: Danish Clearinghouse for Educational Research.

Stoll, L., Greany, T., Coldwell, M., Higgins, S., Brown, C., Maxwell, B., Stiell, B., Willis, B. and Burns, H. (2018). *Evidence-informed teaching: Self-assessment tool for schools*. London: Chartered College of Teaching.

Cain, T. (2019). *Becoming a research-informed school: Why? What? How?* London: Routledge.

¹² Proctor, E., Silmere, H., Raghavan, R., Hovmand, P., Aarons, G., Bunger, A., Griffey, R. and Hensley, M. (2011). Outcomes for implementation research: Conceptual distinctions, measurement challenges, and research agenda. *Administration and Policy in Mental Health* 38, 65-76.

- the 'feasibility' of research-informed practices (the extent to which practices can be successfully used or carried out within the context);
- the 'penetration' of research-informed practices (the level of integration and embedding of practices within the context); and
- the 'sustainability' of research-informed practices (the extent to which practices are maintained or institutionalised within the context).

Educator and student level (outcomes)

The third level of the research mobilisation process is concerned with impacts on educators and students.

In relation to **educator outcomes**, the focus is on examining whether there are changes in educators' knowledge, attitudes and practices around using research and research-informed practices in teaching or leading literacy and numeracy. This involves probing into changes in educators':

- knowledge – such as about specific research concepts, research-informed practices or research methods;
- attitudes – such as towards different kinds of evidence and the idea of research-informed teaching; and
- practices – such as the use of specific research-informed practices within the classroom, and/or the use of specific research evidence in decision-making.

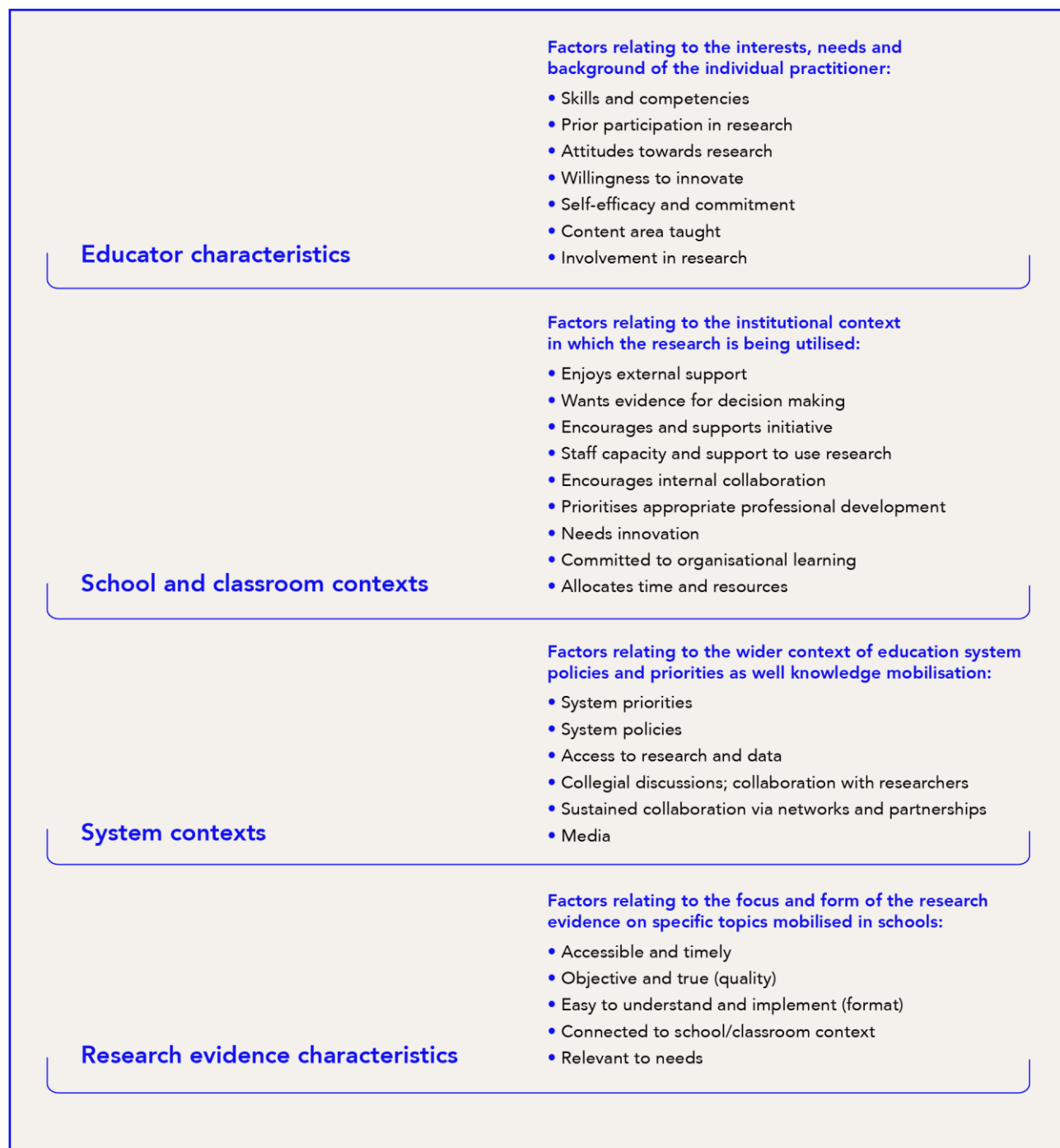
In relation to **student outcomes**, it is important to examine whether there are changes in student learning and performance related to the focus of the professional learning approach. This might take the form of analysing student work samples, student feedback, student assessments and/or test scores. Where appropriate, this evidence can be used as indication of how the research evidence mobilisation is playing out in students' classroom experiences.

Educator knowledge, skills, attitudes and practices can influence student outcomes, and in turn, educators may adjust their knowledge, skills, attitudes and practices based on their students' learning and outcomes.

2.3 Unpacking the enabling conditions

This part of the framework is about focusing on the different factors that influence the research mobilisation process. As shown in Figure 3, these enabling conditions concern the characteristics of: the educators; the school and classroom contexts; the system contexts; and the research evidence.

Figure 3: The different enabling conditions in the research mobilisation process



The importance of these different kinds of influences has been highlighted by numerous studies of enablers and barriers of research use in schools. A synthesis of the findings of 24 such studies, for example, provides a helpful elaboration of the kinds of issues to consider in relation to each of these four enabling conditions (Table 1). While these are based on research conducted in various countries, it should be noted that many similar influences were observed in a recent

Australian study of 67 Catholic schools in Melbourne.¹³ In addition, in relation to the ‘wider context of support’, there is increased emphasis on the need for system-wide (evidence ecosystem) approaches to improving evidence use in schools and increased recognition for the (often limiting) impact of other system influences such as accountability policies and improvement priorities.¹⁴

Table 1: Factors affecting the use of research in schools (based on Dagenais et al., 2012¹⁵)

Enabling condition	Main focus	Specific considerations
<i>Nature of the research evidence</i>	Factors relating to the focus and form of the research evidence on specific topics mobilised in schools	<ul style="list-style-type: none"> • Accessible and timely • Objective and true • Easy to understand and implement • Connected to school/classroom context • Relevant to needs
<i>Nature of the wider context of support</i>	Factors relating to the wider context of education system policies and priorities as well as knowledge mobilisation between researchers and research users	<ul style="list-style-type: none"> • System priorities • System policies • Access to research and data • Collegial discussions; collaboration with researchers • Sustained collaboration via networks and partnerships • Media
<i>Nature of the school context</i>	Factors relating to the institutional context in which the research is being utilised	<ul style="list-style-type: none"> • Enjoys external support • Wants evidence for decision making • Encourages and supports initiative • Staff capacity and support to use research • Encourages internal collaboration • Prioritises appropriate professional development • Needs innovation • Committed to organisational learning • Allocates time and resources
<i>Nature of the individual practitioner</i>	Factors relating to the interests, needs and background of the individual practitioner user.	<ul style="list-style-type: none"> • Skills and competencies • Prior participation in research • Attitudes towards research • Willingness to innovate • Self-efficacy and commitment • Content area taught • Involvement in research

¹³ Prendergast, S. and Rickinson, M. (2019). Understanding school engagement in and with research. *The Australian Educational Researcher*, 46(1), 17-39.

¹⁴ Sharples, J. (2013). *Evidence for the frontline*. London: Education Endowment Foundation.

Godfrey, D. and Brown, C. (Eds.) (2019). *An ecosystem for Research-engaged Schools*. London: Routledge.

¹⁵ Dagenais, C., Lysenko, L., Abramai, P. C., Bernard, R. M., Ramde, J. and Janosz, M. (2012). Use of research-based information by school practitioners and determinants of use: A review of empirical research. *Evidence & Policy*, 8(3), 285-309.

Taken together, these different factors and their related specific considerations underline the reality that research mobilisation is shaped not only by the research and the research user but also by the organisational context and the wider system context.

3.4. Summary

- The GEMS research framework depicts the various components and influences that are involved in mobilising research evidence within schools through professional learning.
- It draws attention to activities at different levels of the mobilisation process: the professional learning level, the school level, and the educator and student level.
- It also highlights the influence of different enabling conditions related to: the educators, the school and classroom contexts, the system contexts, and the research evidence.

3. Using the framework

This section moves on to how to use the framework – starting with some general principles, and then some more specific suggestions about using it as an evaluation resource or as an implementation resource.

3.1 General principles of use

There are three guiding principles that are important to bear in mind in relation to using the framework. These reflect the fact that the GEMS research framework needs:

- to be used as a *starting point*;
- to be *adapted* to new contexts; and
- to be used *iteratively*.

Use it as a starting point

It is important to view this framework as a starting point for further work rather than as a finished product for immediate application. The framework points you toward the thinking and the work that needs to be done – but it *does not* do this thinking and work for you.

So for someone wanting to design and implement a research mobilisation initiative, this framework could be helpful as a loose structure with which to think about the different components and how they might interact but it will not tell you exactly what needs to be done to create a new initiative. Similarly, for someone looking to evaluate an initiative, this framework could help to flag up possible research questions to ask and data collection methods to use but it will not tell you exactly what needs to be done to evaluate your initiative.

The framework, then, will be most effective if used as a broad set of open guidelines, rather than a tightly defined set of procedures. It provides a common set of questions and areas for consideration to inform your own specific planning. It is a preparatory tool that aims to structure how you set about the design, implementation or evaluation of research-informed school improvement initiatives.

Adapt it to your context

As well as viewing the framework as a starting point to work with, it is also important to see it as a resource to adapt. It is designed to be at its most effective when it is altered, adjusted and modified to fit the specific project and school contexts that you are working in.

The power of the framework lies not in how closely it is followed, but rather in how carefully it is adapted. Given the framework was originally designed for the GEMS project, the framework would only be helpful to those looking to design and implement or evaluate other initiatives if they had a clear view on how similar and/or different their work is to that of the GEMS project. Using the framework, then, requires thinking about what needs adjusting in relation to the

specific types of evidence being used, the form of professional learning being implemented, and the kinds of schools, educators and students who will be involved.

Use it to support iterative improvement

Finally, it is important to recognise that this framework is intended to be used iteratively. It encourages a focus not only on impact (what works), but also on influence (how impacts come about) and improvement (what next).

Quite rightly, many people will approach the design, implementation or evaluation of research mobilisation initiatives in schools with questions about outcomes and what works. And this is reflected in the framework's focus on impact in terms of educators' knowledge, attitudes and practices and student-level evidence. In addition, though, the framework is designed to encourage thinking about questions of influence alongside questions of impact. That is, to think about the implicit factors that can clarify and explain how impacts come about. These allow you to address the important matters of 'why' something worked (or not).

Building on this, the framework is also designed to push you toward thinking about 'what next?' i.e. questions of improvement. Delineating the implementation of any initiative in terms of three different levels (and the many components within each level) is intended to give you a toolkit for focusing on specific areas and aspects of future improvement.

Taken together, these three general principles provide an orientation for using the framework both as an evaluation resource and as an implementation resource.

3.2 The framework as an evaluation resource

Reflecting its origins within the GEMS research investigation, the framework can be used as a tool to support the evaluation of initiatives focused on research mobilisation in schools, particularly those involving professional learning.

It can be used to investigate different aspects of such initiatives. In particular, it was designed to be able to:

1. examine the **impact** of research evidence mobilisation through professional learning on educators' knowledge, attitudes and practices around using research and research-informed practices;
2. explore the **influence** of different layers in the mobilisation process, i.e. the evidence-based resources, professional learning processes, educator characteristics and school- and system-level factors; and
3. identify ways to **improve** the effectiveness of the research evidence mobilisation process in light of these influences, with a view to identifying enabling conditions that can support future work in this area.

Gaining evaluative insights into these different issues of impact, influence and improvement depends on a number of complementary data collection methods. As shown in Table 2, the GEMS project involved the collection of quantitative and qualitative data through a number of different processes. It should be noted that the insights generated in relation to impact within the GEMS project were formative and indicative as opposed to summative and conclusive. The GEMS project was not set up as an experimental or quasi-experimental study.

Table 2: Summary of research methods from the GEMS Project

Research Aims	Research Methods
Impact - Examine the impact of research evidence mobilisation through professional learning on educators' knowledge, attitudes and practices around using evidence and evidence-informed practices.	<ul style="list-style-type: none"> • Survey of professional learning participants (pre and post) • Interviews with professional learning participants • Observation of professional learning participants • Student-level evidence (where available)
Influence- Explore the influence of different layers in this mobilisation process, i.e. the research evidence on specific topics, professional learning processes, educator characteristics and school- and system-level factors.	<ul style="list-style-type: none"> • Documentary analysis of research evidence used in schools and within professional learning approaches • Survey of professional learning participants (pre and post) • Interviews with professional learning participants and other staff • Observation of professional learning participants • Analysis of school documentation • Observation of professional learning sessions • Interviews with professional learning providers
Improvement - Identify ways to improve the effectiveness of the research evidence mobilisation process in light of these influences, with a view to identifying supporting conditions for future work in this area	<ul style="list-style-type: none"> • Survey of professional learning participants (post) • Interviews with professional learning participants and other staff • Observation of professional learning sessions • Interviews with professional learning providers

These data collection processes were, of course, selected and shaped to meet the specific needs of the GEMS Project, which involved three different professional learning providers, each working with a group of 7-10 schools in relation to a particular aspect of teaching and/or leading primary school literacy or numeracy. As suggested earlier, these processes will not necessarily be equally relevant or perfectly suited to the evaluation of other initiatives in different contexts. However, the ways in which they were used in the GEMS project may well be informative for the design and conduct of data collection processes within other evaluations. To this end, Table 3 provides information about the purposes of different research methods in relation to the GEMS research framework, and how they were used in the GEMS Project.

Table 3: Details of research methods related to the GEMS research framework

Methods	Purposes	Use in GEMS Project
Survey	To generate quantitative and qualitative data about: (i) the nature and extent of educators' knowledge, attitudes and practices relating to the use of research and research-informed practices before and after the professional learning (PL); (ii) the nature of school context and its support for research use; and (iii) educators' views of the PL provision.	- All educators who took part in the GEMS PL approaches were surveyed before and after the professional learning. - The survey questions were based on the validated NFER/EFF 'Research in schools' survey ¹⁶ (see also Appendix 2), with additional questions tailored to the specifics of the PL approaches.
Interview	To generate qualitative data about: (i) PL participants' views of and satisfaction with the PL provision, and its impact on their knowledge, attitudes and practices, including if and how they had been able to mobilise the research evidence in practice; (ii) the views of other staff (who did not take part in the PL) on school context and if and how other staff have been able to mobilise research in practice; and (iii) PL providers' views on the process and impacts of research mobilisation within different schools.	- One-day visits were undertaken to all schools that were involved in the GEMS project after the PL. - Semi-structured interviews (individual, pair and/or group) were undertaken with staff (teachers and leaders) who had taken part in the PL and with other staff who had not taken part. - Online semi-structured interviews were undertaken with representatives of each of the three PL providers.
Observation	To generate insights into: (i) the nature and focus of the PL, and the presentation and use of research evidence during the approaches; and (ii) the nature of school and classroom contexts, the implementation of research-informed practices in lessons or meetings, and concrete examples to explore with educators during interviews.	- A selection of PL sessions (off-site and in-school) were observed, enabling notes to be made about what was occurring, and content and delivery to be discussed informally with facilitators and participants. - During school visits, observations were undertaken of lessons and/or meetings using a simple template designed to provide examples to discuss with educators in more detail during interviews.
Documentary/ Data analysis	To gain insights into: (i) the research evidence within the PL approach (by analysing the research evidence on specific topics used); (ii) the school context and its support for research use (by analysing school documents such as strategic plans, key policies, etc.); and (iii) the formative impacts on students (by analysing student work samples, assessment and/or test scores related to the specific areas of research-informed practice).	- Research evidence used within the PL approaches were collected and analysed as program inputs. - Demographic and attainment data for each school, as well as information provided by the schools about their context, PL priorities and use of research, was collected and analysed in relation to school context - Schools were invited to provide aggregated student assessment data linked to the specific areas of research-informed practice but very little was available to analyse in relation to formative student impacts.

¹⁶ Poet, H., Mehta, P. and Nelson, J. (2015). *Research Use in Schools: Survey, analysis and guidance for evaluators*. Slough: National Foundation for Educational Research.

Nelson, J., Mehta, P., Sharples, J. and Davey, C. (2017). *Measuring Teachers' Research Engagement: Findings from a pilot study*. London: Education Endowment Foundation.

Two additional general points are worth highlighting about the data collection processes used within the GEMS project as they are likely to be useful for others considering a similar approach.

Firstly, the power of the above methods came through **their use in combination**. So, for example, the observations of educators who had taken part in the professional learning was helpful in highlighting concrete classroom practices to explore in more detail in the interviews with those same educators. This suggests that the use of this framework as an evaluation resource will be more effective if a mix of different research methods are retained and they are operationalised in connected ways.

Secondly, all of the above methods became far more illuminative when they were **focused on the specific**. For example, the surveys and the interviews were much more valuable when the questions honed in on educators' knowledge, attitudes or practices relating to very specific aspects of literacy or numeracy teaching. In other words, the devil really was in the details. This suggests that those using the framework to evaluate other initiatives would do well to focus down on as narrow and specific research-informed practices as possible.

3.3 The framework as an implementation resource

While originally developed for research and evaluation purposes, the GEMS framework also has potential for use in relation to the design and implementation of initiatives. Recent years have seen increased emphasis on the ways in which schools and school systems develop and put new interventions into practice. This has been in response to concerns that 'new ideas are often introduced with too little consideration for how the changes will be managed and what steps are needed to maximise the chances of success'.¹⁷

Guidance from Evidence for Learning identifies four main stages in the implementation process – explore, prepare, deliver and sustain.¹⁸ It is the second of these where the GEMS framework has perhaps the most potential to be helpful. This 'prepare' stage is about creating a clear implementation plan, judging the readiness of the school to deliver that plan and then preparing staff and resources. There are a number of ways in which the GEMS framework could support these kinds of processes for initiatives involving research mobilisation and professional learning.

The detail that is embedded within certain components of the framework (such as the features of effective professional learning approaches, or the aspects of school mobilisation strategies) could be helpful in thinking about 'the active ingredients' that make an intervention work. To be clear, and echoing points made earlier, the GEMS framework will not tell you what the active ingredients are for your specific intervention, but they will provide a list of possible issues and ideas to consider and some indication of why they could be important.

¹⁷ Sharples, J., Albers, B., and Fraser, S. (2019). *Putting evidence to work: A school's guide to implementation*. Melbourne: Evidence for Learning. (p. 3)

¹⁸ Sharples, J., Albers, B., and Fraser, S. (2019). *Putting evidence to work: A school's guide to implementation*. Melbourne: Evidence for Learning. (p. 5)

Along similar lines, the way in which the framework unpacks and operationalises different kinds of implementation outcomes (such as feasibility, penetration and sustainability) and educator outcomes (such as knowledge, attitudes and practices) might well be helpful in responding to the task of ‘defining clear implementation outcomes and robust and pragmatic measures’. Once again, though, this is not a case of the framework providing easy answers, but rather examples of how different outcomes within GEMS were defined and then investigated.

Another area where the GEMS framework could be of benefit is in relation to ‘assessing the degree to which the school is ready to implement the innovation’. The different enabling conditions within the framework (in particular the nature of the practitioners and the school context, but also the nature of wider context of support and the research evidence) could be helpful in thinking through different areas that represent likely enablers and possible barriers.

Finally, the different levels and enabling conditions within the framework as a whole, coupled with its focus on impact, influence and improvement, could help reinforce the iterative nature of designing, implementing, evaluating and redesigning initiatives. As the Evidence for Learning guide asserts:

Successful implementation happens in stages and unfolds over an extended period of time. It is not a single event that takes place when the decision to adopt a new teaching practice is made, or on the day when training begins. Schools’ implementation processes begin before this adoption decision and last for a long time after.¹⁹

3.4 Summary

- The framework needs to be viewed as a starting point for further work, as a resource to adapt for new contexts, and as a tool to support iterative improvement over time.
- It can support the planning and conduct of mixed-method evaluations of initiatives focused on research mobilisation in schools, particularly ones involving professional learning.
- It can also inform the design and implementation of improvement initiatives within schools, particularly in relation to formulating plans and judging readiness.

¹⁹ Sharples, J., Albers, B., and Fraser, S. (2019). *Putting evidence to work: A school's guide to implementation*. Melbourne: Evidence for Learning. (p. 8)

Appendix 1: Underpinning literature summary

The development of the GEMS research framework was informed by a series of key ideas from the recent international literature on research use and professional learning. This Appendix provides an outline of these key ideas, alongside their implications for the GEMS research framework. As summarised in Table 4, these ideas relate to five key questions underpinning the GEMS research framework.

Table 4: Summary of underpinning literature and implications for the GEMS research framework

Key Question	Key Ideas	Implications for GEMS research framework
What is research evidence?	<ul style="list-style-type: none"> Practitioners use many different types of evidence. Quality evidence is not only about rigour but also appropriateness for intended use. 	<ul style="list-style-type: none"> Needs to be open to practitioners using research evidence alongside other evidence Needs to consider the appropriateness of the research evidence for the context of use.
What is evidence use?	<ul style="list-style-type: none"> Research evidence can be used in many different ways (e.g. conceptual, instrumental and strategic). Using research is an active process that is social in nature and built upon sophisticated learning. 	<ul style="list-style-type: none"> Needs to be alert to the possibility of research evidence being used in varied ways by different educators in different contexts. Needs to recognise the social dimensions of practitioners' research use, and respect the two-way, iterative nature of research mobilisation.
What are the enablers and barriers of use?	<ul style="list-style-type: none"> Research use is shaped by various factors relating to: (i) the research itself, (ii) the individual user, (iii) the school context, and (iv) the wider context (system) of support. 	<ul style="list-style-type: none"> Needs to consider the multiple influences on how practitioners are making use of research in schools – in particular, school context and school-level mobilisation factors and wider system contexts.
What is quality use of evidence?	<ul style="list-style-type: none"> The idea of quality evidence use encompasses quality of evidence <i>and</i> quality of use. Quality evidence use requires skilled educators and supportive organisations/ systems Quality evidence use develops gradually within the specifics of practice. 	<ul style="list-style-type: none"> Needs to examine the appropriateness of the evidence that is used, and the thoughtfulness with which it is used. Needs to recognise that research mobilisation in schools is likely to need individual, organisational and system-level support Needs to be sensitive to the subtle ways in which the use of evidence in schools can develop over time and within context.
What is effective professional learning?	<ul style="list-style-type: none"> Effective professional learning is content-focused, active, collaborative, sustained and includes effective practice, coaching, and feedback. 	<ul style="list-style-type: none"> Needs to pay careful attention to professional learning content, focus, teaching approach, learning processes, and duration.

What is research evidence?

Any initiative seeking to improve the mobilisation of research in practice needs to recognize that **research evidence is just one of many different types of evidence** that practitioners will be drawing upon. While researchers may think of 'research' and 'evidence' interchangeably, studies show that for school leaders, teachers and decision-makers, 'evidence' often includes much more than 'research' (Tseng, 2012, Rickinson et al., 2017). For example, Earl (2015: 148) describes how using evidence in schools can involve 'attending to published research, gathering local data, referring to experts, considering personal experiences, social network analysis and big data analytics, just to mention a few'. Similarly, Asen et al. (2013: 40) highlighted six different types of evidence use in US school boards: research, experience, testimony, data, example, and law/policy.

These studies suggest that the GEMS research framework needs to be open to the use of research and research-informed practices happening in connection with other forms of evidence.

Key here is the concept of 'appropriate evidence'. This emphasises the context-specific nature of what practitioners might consider to be quality evidence. From a research perspective, evidence quality is about methodological rigour. But from a research use perspective, evidence quality needs to be about appropriateness as well as rigour. As such, research evidence needs to be: (i) appropriate for the issue under consideration, (ii) appropriate for the context in which it will be used, and (iii) appropriate for the use to which it is going to be put. As Nutley et al. (2013: 6) reason: 'Evidence quality depends on what we want to know, why we want to know it and how we envisage that evidence being used'.

These arguments suggest that the GEMS research framework needs to attend to both the rigour of research evidence, and its appropriateness for the context and nature of use.

What is evidence use?

Research evidence can be used in many different ways, and will vary considerably from case to case. It is important not to view evidence use as an overly straightforward process, and therefore fail to take account of the complexity and richness of different uses. One well-established categorization from Estabrooks (2001: 283–4) draws distinctions between:

- **Instrumental** evidence use – which 'implies a concrete application of research, where the research has often been translated into a material or usable form' and 'is used to direct specific decisions and/or interventions';
- **Conceptual** evidence use – where 'research may change one's thinking but not necessarily one's particular action ... In this kind of research utilization, research informs and enlightens the decision-maker'; and
- **Symbolic** evidence use – which 'involves the use of research as a persuasive or political tool to legitimate a position or practice'.

This categorization illustrates the varied ways in which the same piece of research evidence might be used – for example, in ways that are **instrumental** (evidence providing answers), **conceptual** (evidence raising questions) and/or **symbolic** (evidence as ammunition). As Rickinson (2005: 23) puts it: 'The purposes for which research is used by practitioners are wide-ranging [and] can be about validating practice, challenging practice, prompting reflection about practice, stimulating research about practice or improving/changing practice'.

In view of these findings, the GEMS research framework needs to be alert to the likelihood of research evidence and research-informed practices being used in varied and nuanced ways by different educators in different contexts.

Regardless of which way it is being used, it is also important to recognize the complex and iterative nature of evidence use. Three characteristics emerge from the literature, suggesting that evidence use is ...

- an **active process** – involving active engagement and learning rather than passive reception and transfer. As Figgis et al. (2000: 347) contend: ‘Practitioners/policy-makers must not be thought of as passive receptacles patiently waiting to receive advice and insight from research and researchers. For too long the literature on research utilization and dissemination has implied a straight transmission model.’ (Figgis et al. 2000: 347)
- a **demanding process** – requiring skills and capacities that are relational as well as technical. As Earl and Timperley (2009: 3) put it: ‘Productive evidence-informed conversation [are] more than conversations with some attention to evidence [...] The qualities that are required in these kinds of conversations are having an “inquiry habit of mind”, considering a broad range of “relevant evidence” and engaging in “learning conversations” [based on relationships of respect and challenge].’
- a **social process** – developing with and through interactions with other colleagues and collaborators. As Cain (2015: 491) reasons: ‘Research texts can shape both what teachers think about and how they think. But to achieve this, there must be space for ‘long, focused discussions’, not only with the ‘third voice’ [of the research] but also with the ‘second voice’ of colleagues.’

As such, research use needs to be seen as a process of sophisticated professional learning rather than ‘merely bringing new information about what works to bear on professional practice’ (Cordingley 2004: 80). In other words, research use needs to be understood as a pedagogic issue rather than a transmission issue (Bell et al. 2002). Any piece of evidence does not speak for itself but needs to be engaged with, interpreted and contextualized for different professional settings and needs.

The above arguments make clear that the GEMS research framework needs to be sensitive to: the two-way, iterative nature of research mobilisation at every stage in the process; the gradual and challenging nature of using research in practice; and the interpersonal, relational dimensions of research engagement and use.

What are the enablers and barriers of use?

A well-established theme in the evidence use literature is the way in which **research engagement by front-line professionals is affected by a diversity of factors** (e.g. Nutley et al. 2007). Within the field of education, several research reviews (e.g. Rickinson, 2005; Bell et al., 2010; Dagenais et al., 2012) have shown how education practitioners’ engagement with research can be influenced by:

- the nature of the research being used;
- the nature of the individual practitioner who is using the research;
- the nature of the school context; and
- the nature of the wider context of support.

Table 1 (see Section 2.3) provides an elaboration of these different kinds of influences, drawing on Dagenais et al.'s (2012) review of 24 empirical studies. It should also be noted that many similar influences were seen in a recent Australian study of 67 Catholic schools in Melbourne (Prendergast and Rickinson, 2019).

The 'school context' and 'wider context of support' factors relate to a number of professional learning issues that can be explored in the GEMS research component. With the GEMS project involving professional learning, it is important to pay attention to the nature of the formal and informal professional learning surrounding the evidence use being researched. Research from the Education Endowment Foundation (EEF) indicates that 'light-touch' methods of disseminating good evidence (such as online research summaries, magazines, webinars and conferences) are not sufficient to materially improve teacher practice and in turn student learning (Lord et al., 2017). EEF's research suggests that a more targeted and structured approach is needed to disseminate evidence and support educators to use evidence to improve their practice.

Furthermore, in terms of 'school context', studies of research use in schools (Dyssegaard et al., 2017; Stoll et al., 2018a; Cain, 2019) highlight the importance of **school-level mobilisation factors** such as:

- senior leadership support for, and modelling of, research use across the school;
- middle leaders helping other staff to access, understand and apply research ideas;
- collaborative forums in which staff can discuss research and how to use it in context;
- resources in terms of time, funds, and training to support research engagement;
- research engagement being embedded within the ethos of the school; and
- partnerships with external researchers, coaches and other research-engaged schools.

Finally, in relation to the 'wider context of support', there is increased emphasis on the need for system-wide (evidence ecosystem) approaches to improving evidence use in schools and increased recognition for the (often limiting) impact of other **system influences** such as accountability arrangements and improvement priorities (Sharples, 2013; Godfrey and Brown, 2019).

These findings suggest that the GEMS research framework needs to recognise how research engagement can be shaped by multiple influences, and pay attention to factors relating to not only the research and the research user but also school-level mobilisation and the wider system context.

What is quality use of evidence?

Understandings of what 'quality evidence use' involves and means are still developing. There has been a lot of debate about what counts as quality research evidence (e.g., Spencer et al. 2003; Cook and Gorard 2007; Freeman et al. 2007; Nutley et al. 2013), but rather less about what counts as quality use of research evidence. This is changing as researchers have started to explore the issue of evidence use quality (e.g. Earl and Timperley, 2009; Farley-Ripple, 2015; Brown and Rogers, 2015; Rickinson et al., 2020a; b). Drawing on ideas from these studies, it is

possible to identify a number of key points about quality of evidence use. It is important to stress, however, that this is a developing area with emerging ideas rather than established findings.

One significant argument is that **any understanding of quality evidence use needs to include both quality of evidence and quality of use**. Several of the previously mentioned studies have helped to emphasize this point. Farley-Ripple's (2015) framework for 'depth' of evidence use, for example, identifies a number of dimensions with which to distinguish between 'simple' and 'complex' use of evidence. One of these dimensions relates to the nature of the evidence, but several of the others relate to the way in which that evidence is used such as how it is analyzed and how it is interpreted. Similarly, Earl and Timperley's (2009) articulation of the qualities that are required for 'productive evidence-informed conversations' includes one factor that is related to the evidence ('using relevant data'), alongside two others that are related to how the evidence is used in terms of mindsets ('inquiry habit of mind') and relationships ('relationships of respect and challenge').

Drawing on these studies, Rickinson and colleagues (2020b) have put forward a framework that characterises quality use of research evidence as: *the thoughtful engagement with and implementation of appropriate research evidence, supported by a blend of individual and organisational enabling components within a complex system*. This emphasises two inter-connected core components – 'appropriate research evidence' and 'thoughtful engagement and implementation'. These core components convey the kinds of aspirations or requirements that are involved in high-quality evidence use. The call for 'appropriate evidence' (as noted above) is about emphasizing the context-specific nature of quality evidence. Meanwhile, the emphasis on 'thoughtful engagement and implementation' reflects how 'using evidence is a thinking process' (Earl, 2015: 149) which demands a depth of engagement between the user, the research evidence and the way it is used.

These ideas suggest that the GEMS research framework needs to attend to both the appropriateness of the research evidence that is used and the thoughtfulness with which it is engaged with and implemented.

Another key argument is that **quality evidence use needs to be understood as being supported by individual, organisational and system-level factors**. This line of thinking has emerged from studies such as Davies' (1999) discussion of what would be involved in 'evidence-based education', Earl and Timperley's (2009) work on the qualities needed for evidence-informed conversations in schools to be productive, and Parkhurst's (2017) exploration of what is needed to support better use of evidence in government policy-making. Drawing on these and similar studies, Rickinson et al. (2020ab) have suggested that quality evidence use requires the support of:

- individual enabling components (skillsets, mindsets, relationships);
- organisational enabling components (leadership, culture, infrastructure); and
- system-level influences (evidence ecosystem).

Drawing on these ideas, the GEMS research framework needs to recognize that research mobilisation in schools is likely to require individual, organisational and system-level support.

Finally, it is important to recognize that **high quality evidence use develops gradually within the context of practice**. In other words, the use of evidence is tied up with the dynamics of the

practice within which the use is taking place and takes time to evolve. Brown and Rogers (2015) draw distinctions around whether and how frequently research findings are used 'within my day-to-day practice', whether research ideas are 'tailored' and 'adapted so that they can apply to a number of situations within my setting', and whether they are 'incorporated into my day-to-day practice in an automatic rather than conscious way'. This suggests that evidence use is not simply a case of using (or not using) research findings. Instead, there is a progression through several different possible gradations from '**non-use**' through '**orientation**', '**preparation**', '**novice**', '**competent**', '**proficient**', '**proficient +**' and eventually to '**expert**'.

Similarly, Stoll et al.'s (2018a, 2018b) self-assessment tool highlights three phases of development that schools or teachers may go through in developing evidence-informed teaching. These phases are: '**starting out**' (limited awareness of, engagement with and use of evidence-informed teaching), '**deepening**' (aiming to deepen awareness, engagement and use of evidence) and '**embedding**' (the most mature phase where more can always be done to ensure that evidence-informed practice becomes part of 'the way we do things').

These arguments suggest that the GEMS research framework needs to be sensitive to the subtle and nuanced ways in which the use of evidence in schools and classrooms can develop over time and within context.

What is effective professional learning?

The provision of professional development and professional learning opportunities for school teachers and leaders is a common feature within many education systems internationally. There is therefore long-standing interest in the impact of such processes, particularly as 'research has shown that many professional development initiatives appear ineffective' (Darling-Hammond et al., 2017: v).

There are, however, some studies that have provided insights into the **features of effective professional learning**. One recent synthesis of 35 such studies identified seven key features of professional learning approaches that are effective in terms of bringing about 'changes in teacher practices and improvements in student learning outcomes' (Darling-Hammond et al., 2017: v). These highlighted the importance of professional learning:

- **being content focused** – focused on teaching strategies associated with specific curriculum content such as mathematics, science, or literacy;
- **incorporating active learning** – engaging teachers directly in designing and trying out teaching strategies, and experiencing the same style of learning they are designing for their students;
- **supporting collaboration** – creates space for teachers to share ideas and collaborate in their learning, often in job-embedded contexts;
- **using models of effective practice** – providing teachers with a clear vision of what best practices look like by using practical examples, models and modeling;
- **providing coaching and expert support** – sharing expertise about content and evidence-based practices that are focused on teachers' individual needs;

- **offering feedback and reflection** – built-in time for teachers to think about, receive input on, and make changes to their practice by facilitating reflection and soliciting feedback; and
- **being sustained in duration** – providing adequate time to learn, practise, implement, and reflect upon new strategies that facilitate changes in their practice (Darling-Hammond et al., 2017: v-vi).

Other analyses of research on professional learning have identified similar kinds of features (e.g. Jensen et al., 2016; Combs and Silverman, 2016).

These syntheses suggest that the GEMS research framework needs to pay careful attention to the nature of the professional learning in terms of its content, focus, teaching approach, learning processes, and duration.

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Appendix 2: Examples of data collection instruments

Table 5 below provides examples of recently-developed data collection instruments (surveys and self-assessment tools and frameworks) related to research use in schools.

Table 5: Examples of data collection instruments related to research use in schools

Instrument type and location	Instrument name	Instrument purpose	References
Teacher research use survey (UK)	National Foundation for Educational Research (NFER) and Education Endowment Foundation's (EEF) 'Research in Schools' Survey	A baseline and outcomes survey to measure teachers' engagement with and use of research evidence in schools.	Nelson et al., 2017
School and district leaders' use of research survey (US)	National Centre for Research in Policy and Practice (NCRPP) 'Survey of Practitioners' Use of Research'	A survey to investigate principals' and district leaders' use of research in decision-making.	Penuel et al., 2016
School and teacher self-assessment tool (UK)	Chartered College of Teaching 'Evidence-informed Teaching Self-assessment Tool' (school and teacher version)	A self-assessment tool to help schools or teachers to evaluate their levels of interaction with evidence in terms of awareness, engagement and use.	Stoll et al., 2018a and 2018b
Quality use of research evidence framework (Australia)	Monash Q Project 'Quality Use of Research Evidence' (QURE) Framework	A conceptual framework to define and elaborate what 'quality use of research evidence' means for education and schools.	Rickinson et al., 2020

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