2 Louder than Words: Review and comparative analysis of knowledge mobilisation models

José Manuel Torres, OECD

This chapter provides an overview of some dominant models of knowledge mobilisation. First, it compares and contrasts these models using the three approaches of thinking described by Best and Holmes: Linear, relationship and systems. Second, the chapter highlights some additional, more recent models that focus on a specific aspect of research dynamics. The last section builds on these models and presents recommendations to capture the research dynamics at play within the complex interactions of education research, policy and practice. These recommendations may inform the development of a future model which could ultimately enhance student and professional learning.

Introduction

Understanding the links between education research and its use in policy and practice is important to frame efforts to increase the impact of research. Substantial research has been done to conceptualise and model knowledge mobilisation over the past two decades. It is now timely to map the evolution of this field and identify major developments and current shortcomings.

The literature presents a large number of sometimes confusing concepts describing knowledge mobilisation, its different elements and the contexts in which it develops. Gough and colleagues refer to "knowledge mediation" defined as "connections between evidence production and use with the overt purpose of bringing together producers and users of evidence" (Gough et al., 2011, p. 23[1]), Cooper uses "knowledge mobilisation" and defines it as "intentional efforts to increase the use of research evidence […] in policy and practice at multiple levels of the education sector" (Cooper, 2014, p. 29[2]).

In line with this diversity of definitions, multiple conceptual frameworks on knowledge mobilisation have been developed. The focus of the models and the sectors for which they were developed differ, with health and education being the most common. As with definitions, some frameworks cover the relationships between research production and research use while others centre their analyses on the relationships between research, practice and policy. The lack of agreement on terminology, conceptual framing and the elements composing them was identified more than 10 years ago as one of the main challenges to enhancing knowledge mobilisation efforts (Levin, 2008[3]).

These frameworks have evolved over time to capture more of the complexity of educational research systems. They have shifted from presenting one-way processes, with research as a generalisable product, to considering the system as a whole. This system is characterised by different elements influencing one another. Nevertheless, this evolution has not converged towards a general framework of knowledge mobilisation, articulating each local framework within a larger framework (Nokes, 2009[4]). Nor has it resulted in a universally agreed model outlining the nature of research-based practice and policy (Gough, Maidment and Sharples, 2018[5]). The feasibility of converging on such a model is highly unlikely due to the complexity of educational ecosystems and the specific interests that different stakeholders may choose focus on.

The aim of this chapter is to identify the strengths of existing frameworks and the shortcomings they may still have despite their evolution. The analysis of different knowledge mobilisation models provides an overview of how depicting complexity in education research systems have evolved over time. It also sheds light on the relative importance assigned to each element in the models. Ultimately, this will help us think about knowledge mobilisation in new ways and this thinking will inform initiatives aimed at reinforcing research production and use.

First, the chapter provides an overview of selected models of knowledge mobilisation, analysing and comparing them using three conceptual approaches described by Best and Holmes (2010[6]). Next, it presents some additional models that focus on specific aspects of research dynamics that provide new perspectives on knowledge mobilisation. The last section proposes recommendations emerging from the analysis of existing models to capture the complexity of educational research dynamics in policy making and teaching practice and inform the development of a clearer vision of knowledge mobilisation.

Conceptual approaches: An analytical lens

The different conceptualisations of interactions between research, policy and practice on one side, and research production and its use on the other, determine their relevance and shape efforts to improve their outcomes (Best and Holmes, 2010[6]). Finding an appropriate model for knowledge mobilisation can

ultimately contribute to harnessing the use of research evidence in both policy making, and school and teaching practice.

Best and Holmes (2010[6]) characterised three ways of thinking about research-policy-practice links: The linear model, the relationship model, and the systems model. The former two have already been analysed in earlier OECD work (2000[7]).

The *linear model* presents one-way processes in which knowledge is a generalisable product and the use of it depends on "effective packaging". Knowledge is produced by researchers, disseminated to users, and incorporated into practice and policy. This model assumes that these phases or processes follow a logical successive and dependent order, an assumption reflected in the language used to describe these phases (e.g. "knowledge transfer", "research uptake"). While Figure 2.1 gives a simplistic representation of a linear model of knowledge mobilisation with three phases, in more detailed models these phases can go up to seven: production, validation, collation, dissemination, adoption, implementation, and institutionalisation (OECD, 2000[7]).

Figure 2.1. Knowledge mobilisation linear model

Source: OECD (2000[7]), *Knowledge Management in the Learning Society*, https://doi.org/10.1787/9789264181045-en.

With research knowledge production being isolated from research use in policy and practice, these linear knowledge transfer models have been refuted since at least the late 1970s (Lave and Wenger, 1991[8]). One argument is that one-way research transfer processes (i.e. research "passing" from producers to users who implement it) do not adequately explain what happens in reality (Levin, 2013[9]). A second argument is that the assumption of a linear model has led to "a gap between the communities of researchers and decision-makers, [failing] to interact and understand each other" (Langer, Tripney and Gough, 2016, p. 49[10]). Far from being an orderly exercise, "knowledge processes" tend to have feedback loops and overlaps between them. Thus, a more accurate representation would be interactive modelling, where connections and interdependencies between components influence one another at different points.
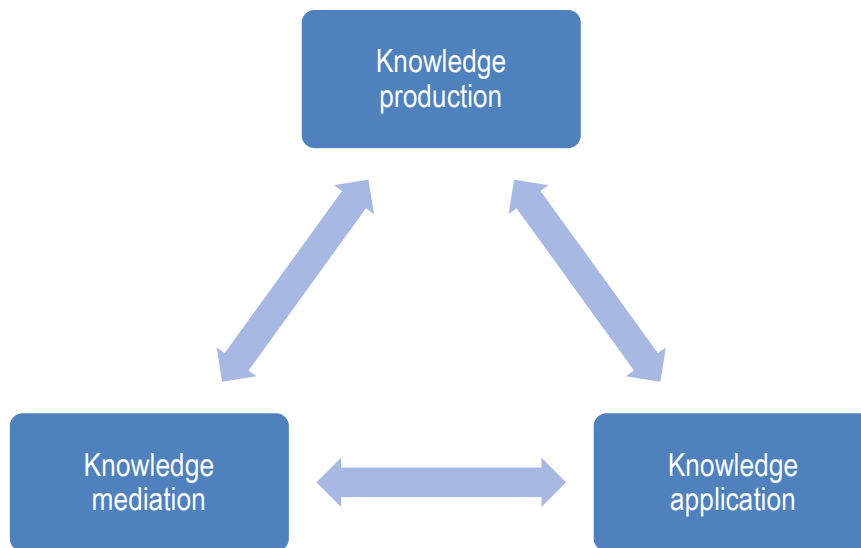
The *relationship model* focuses on the connections and interactions between either actors using knowledge or processes related to its production and use. This model still takes into account linear processes such as dissemination and diffusion of knowledge. It also stresses the influence that partnerships and networks of actors with similar concerns can have on the sharing of knowledge. In this approach, knowledge can come from multiple sources – either research or theory, policy or practice – and its use will depend on the effectiveness of the processes and relationships developed.

In this conceptualisation, knowledge users such as teachers have a more engaged role in knowledge production. It also accounts for the active contribution research producers can make to knowledge mobilisation processes. These processes of transfer and integration can, in turn, lead to the creation of new knowledge. Figure 2.2 presents a simplified version of knowledge mobilisation through the lens of this more sophisticated way of thinking, with the interaction between the elements in the system being one of its most relevant characteristics (OECD, 2000[7]).

Finally, the *systems model* builds on and extends the diffusion, dissemination and relational processes of the former models. It builds on both systems theory and complexity theory, which postulates that systems consist of individual actors who create relationships among each other, which in turn are formed in

response to feedback. New structures and behaviours emerge as a result of actors' actions and interactions (Snyder, 2013[11]). Self-organisation, the emergence of patterns and multi-directional flows of knowledge are thus inherent to systems models. Here, the presence of constant feedback loops and the understanding of the roles, actions and contexts of key stakeholders, and how they shape – and are shaped by – the system are key.

Figure 2.2. Knowledge mobilisation relationships model

Source: OECD (2000[7]), *Knowledge Management in the Learning Society*, https://doi.org/10.1787/9789264181045-en.

Systems theory sees systems (e.g. the education research system) as containing interdependent components, structured in a hierarchical order. Organisations within these systems are also interdependent and must maintain permeable boundaries in order to receive, transform and export knowledge. During these processes, systems engage in negative and positive feedback loops. These feedback loops serve to correct errors or improve the system as a whole or one particular element of it. These different processes allow a whole system to be greater than the sum of its parts (Lai and Huili Lin, 2017[12]).

This type of model considers the presence of multiple sources of knowledge and interrelated circuits of knowledge linking locally generated knowledge to knowledge developed through more systematic coordination. All the relevant stakeholders actively participate in the production and/or the use of knowledge. Researchers, practitioners, policy makers and other actors influence one another, directly and indirectly, within dynamic systems.

Through the systems lens, strategies to coordinate the use of research knowledge have to take into account all the key actors and factors that could affect processes in educational systems. The success of these strategies will depend on their coordination across multiple levels; skills and capacities of the actors; the existence of leadership spread across various actors; the effectiveness of communication channels; and well-placed structures of accountability. It is the interdependencies of these elements that make it difficult to capture the complexity of education research dynamics in a model.

Three ways of thinking about knowledge mobilisation – linear, relational and systems – guide the analysis of the selected frameworks in this chapter. This point hides an important caveat: That a model is a simplified description of a system and/or its processes. When the system it depicts is highly complex, certain elements are not represented or minimised and some others are emphasised. The models

representing knowledge mobilisation, and the elements their authors chose to include, have an impact on which, and how, different actors within the system are represented and where the efforts will be focused (Sharples, forthcoming[13]). Thus, it must be recognised that an analysis of the evolution of these depictions also maps changes in the *perceptions* of the education research system and the components of it that are most valued.

Knowledge mobilisation models

The next two sections will briefly present the four selected models, and compare and contrast them. The selected frameworks and models reflect the evolution of knowledge mobilisation perspectives over time. Rather than a comprehensive review, the following four models have been selected because they are widely cited, highly recognised by leading experts in the field and/or add a new perspective and elements to consider on the subject.

The section starts with a brief description of each model, which is followed by a more in-depth analysis summarised in Table 2.1.

Knowledge-transfer strategy framework

Lavis and colleagues (2003[14]) provide an organisational framework for a knowledge-transfer strategy in both the applied health and economic/social policy sectors, represented by Figure 2.3. This framework considers five elements, which are laid out in the form of answers to the following questions.

- What should be transferred to decision makers? **The message**

  Research organisations have to transfer actionable messages coming from a broad body of research and not simply from a unique study. The authors highlight that not all research can or should have an impact. The work can help with identifying problems, generating hypotheses, and developing new methodologies rather than solely informing decision making.

- Whom should research knowledge be transferred to? **The target audience**

  The clear identification of a target audience is key. The audience, its environment and the decisions they face define the specific strategy for the message's transfer. Thus, the target audience directly affects the nature of other elements in the framework. The authors describe four types of audience: General public or service recipients; service providers; managerial decision makers; and policy decision makers. These different audiences with their different characteristics and objectives influence the format in which the message is delivered.

- Who should transfer research knowledge? **The messenger**

  The messenger can be an individual, group or organisation. What is most important is that the messenger has credibility in this role as this can affect the potential success of knowledge-transfer strategies. Building this credibility is time-consuming and skill-intensive, and having the right messenger for a particular strategy depends on the capacity of other elements of the framework. For instance, a credible messenger who is known among policy makers in the health sector would not be the best choice for transferring research knowledge to teachers.

- How should research knowledge be transferred? **Knowledge transfer processes and supporting communications infrastructure**

  Regardless of the target audience, active rather than passive engagement processes are the most effective. One-way processes such as "producer-push" efforts that are, for example, led by research producers who push research out into policy or practice (Davies, Powell and Nutley, 2015[15]) are less desirable than "user-pull" approaches in which, for example, research users reach out to researchers to obtain information (Davies, Powell and Nutley, 2015[15]). Bi-directional processes

that place value on what research producers and users can learn from each other are optimal for generating an actual change in decision-making cultures, regardless of the audience. The mode of interaction between actors requires significant attention and, consequently, so does the communications infrastructure that supports it.

- With what effect should research knowledge be transferred? **The evaluation**

  The expected results and measurement of a knowledge-transfer strategy's outputs depends on the target audience, its objectives, and the types of processes analysed. In the case of education, the objective could be changing a particular teaching practice (or the practice of a health professional in the original focus) whereas for policy makers, it could be informing debate on the selection of a possible course of action.

Figure 2.3. Knowledge-transfer strategy framework
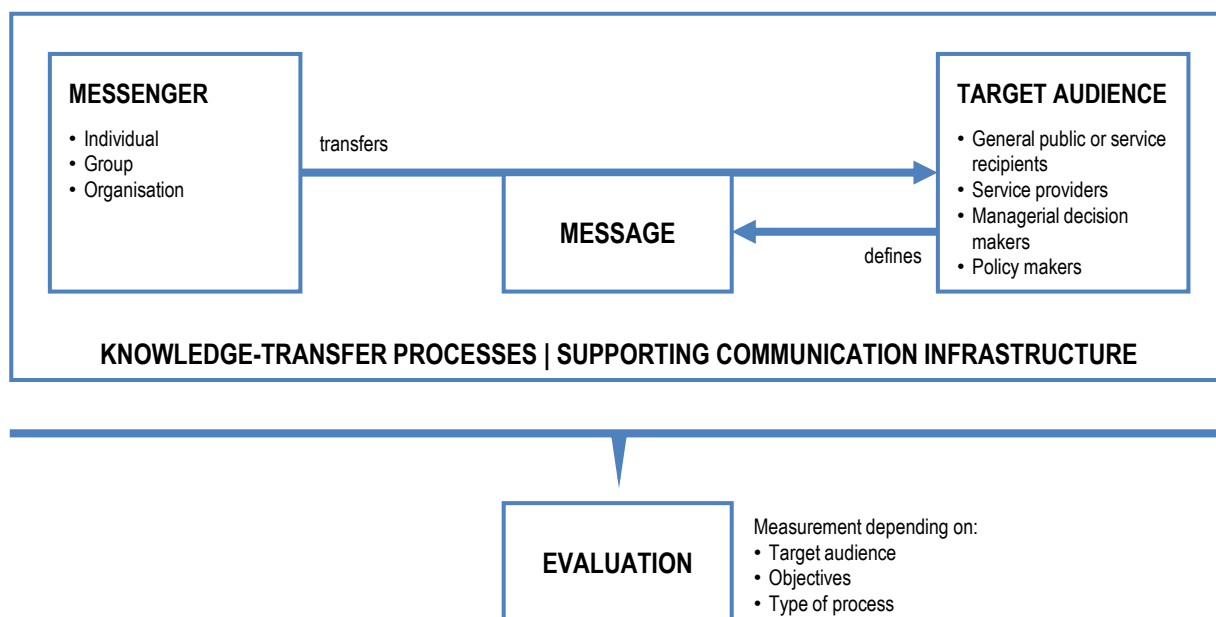
Source: Own elaboration, based on Lavis, J. et al. (2003[14]), "How can research organizations more effectively transfer research knowledge to decision makers", *The Milbank Quarterly*, Vol. 81/2, pp. 221-248.

Knowledge-to-action framework

Graham and colleagues (2006[16]) offered a framework to elucidate the key elements of the knowledge-to-action (KTA) process in the health sector with *action* encompassing the use of knowledge by practitioners, policy makers, patients, and the public. This framework is represented in Figure 2.4.

Conceptually, the KTA process is divided into two main components: Knowledge creation, represented in the figure by the funnel, and the Action cycle, with each of them comprised of ideal phases. However, the authors acknowledge that the actual process is complex and dynamic, and the hierarchy and limits between the components and their phases are fluid and permeable, occurring in sequence or simultaneously and influencing each other.

In this framework, knowledge is mainly research-based but also includes other forms of knowing such as experiential knowledge. The Action cycle represents the activities and processes related to the use or application of knowledge.

Figure 2.4. Knowledge-to-Action framework: Knowledge creation and Action cycle

Source: Crockett, L. (2017[17]), "The Knowledge-to-Action Framework", https://medium.com/knowledgenudge/kt-101-the-knowledge-to-action-framework-7fbe399723e8 (accessed on 27 August 2021), based on Graham, I. et al. (2006[16]), "Lost in knowledge translation: Time for a map?", http://dx.doi.org/10.1002/chp.47.

Knowledge creation

The knowledge creation component of the KTA framework considers the major types of knowledge that exist and can be used. It starts with the phase of knowledge inquiry, which represents the broad body of primary research or information of variable quality, relevance and accessibility. The next phase, knowledge synthesis, represents the aggregation of existing knowledge through the identification, appraisal, and synthesis of studies or information relevant to specific questions. This synthesis often takes the form of systematic reviews, including meta-analysis and meta-synthesis. Lastly, the third phase considers the creation of knowledge tools or products such as synopses, practice guidelines and decision aids, which aim to present knowledge in clear, concise, and user-friendly formats to ideally influence what research users do.

Knowledge producers can adapt their activities to the needs of potential users in each of the phases, tailoring their research questions to address the problems identified by users or customising the message for the different users.

Action cycle

The authors consider the Action cycle of the KTA framework as a process leading to the implementation of knowledge, representing the activities needed for this application. These phases, summarised in

Figure 2.4, are dynamic and can influence each other, leading to permanent feedback between them. They can also be influenced by the knowledge creation phases.

Research knowledge mobilisation model

Levin (2004[18]) developed a framework on research impact in the education sector, which would later be used by several authors to conceptualise knowledge mobilisation and later formed the basis of Levin's own knowledge mobilisation model. In this framework, the author considers research impact to have four core elements.

First, the context of research production. This includes what and how research gets done, who does it, and the communication activities undertaken. It assumes that the production is mainly located in the academic world but that it also takes place in a variety of organisations.

Second, the context of research use. This includes governments, educational organisations, teachers, the school community, students and all contexts that have an interest in the application of research. It considers the views, capacities and structures enabling these organisations to find, understand and use research or limiting them.

The framework emphasises all types of connections and interactions between these two contexts – direct or mediated; formal or informal; face-to-face or digital; strong or weak – which should enhance impact over time. These connections tend to happen through third-party mediation – the third element. This extends to varying degrees in both directions as research production and mediation can be influenced by research use. The author suggests that the contexts of mediation and use are larger than the research production context, as they bring together a wider set of institutions, organisations and individuals.

Finally, these three elements are situated in a larger social context – the fourth element – which is itself in constant flux. This suggests that the actions of research producers and users, while important, are not the only ones affecting ideas and social practices. Furthermore, a variety of people and organisations work in both research production and use contexts, with individuals moving between research posts and educational practice.

Levin (2011[19]; 2013[9]) would later present his research knowledge mobilisation model based on the above-mentioned framework. It represents three overlapping contexts: The production of research; use of research; and all mediating processes between these two (see Figure 2.5). In Levin's model, which is based on systems theory, knowledge mobilisation happens where two or more of these contexts interact.

These contexts do not refer necessarily to structures or organisations but, rather, to functions. The model acknowledges that some people and groups can operate in more than one context, which is why the triangles in the representation overlap. Within each context there is a wide range of connections and feedback loops with other parts of the system. The multiple organisational and personal connections between the contexts are represented by two-way arrows of different thicknesses, indicating the strength or the intensity of these relationships.

While research production mainly (though not only) takes place in academia, research use considers both policy and practice settings such as schools and governmental organisations where the knowledge can be applied. Research mediation considers all the individuals or organisations attempting to connect research production and use such as think tanks, lobby groups, the media and professional organisations.

The three contexts and the knowledge mobilisation processes taking place among them are influenced by institutional and organisational settings, and the social context in general. The structure of the system – e.g. the institutions, legal constraints and governance arrangements – also strongly shapes the mobilisation of research knowledge.

Figure 2.5. Research Knowledge Mobilisation model
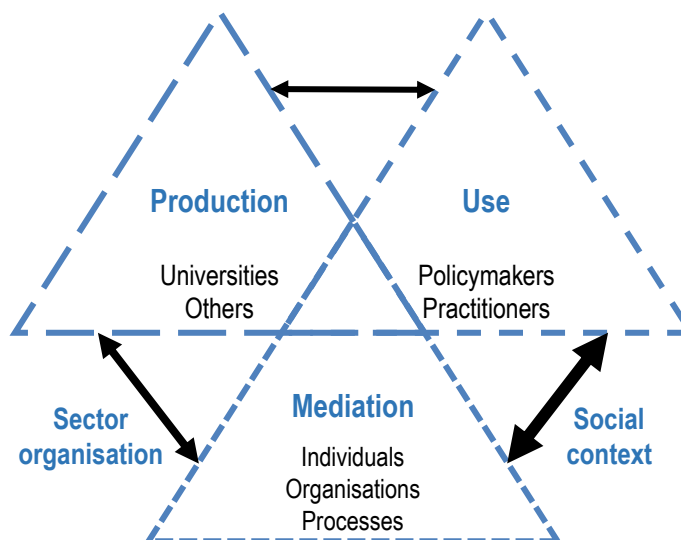
Source: Levin, B. (2013[9]), "To know is not enough: Research knowledge and its use", http://dx.doi.org/10.1002/rev3.3001.

Evidence use analytical framework

Gough and colleagues (2011[1]) developed a first framework to classify activities linking research evidence with policy making. Their model focuses on components already described by some of the other selected frameworks. In particular, it refers to the production of evidence, its use, and the mediation between these two as outlined by both Graham and colleagues, and Levin.
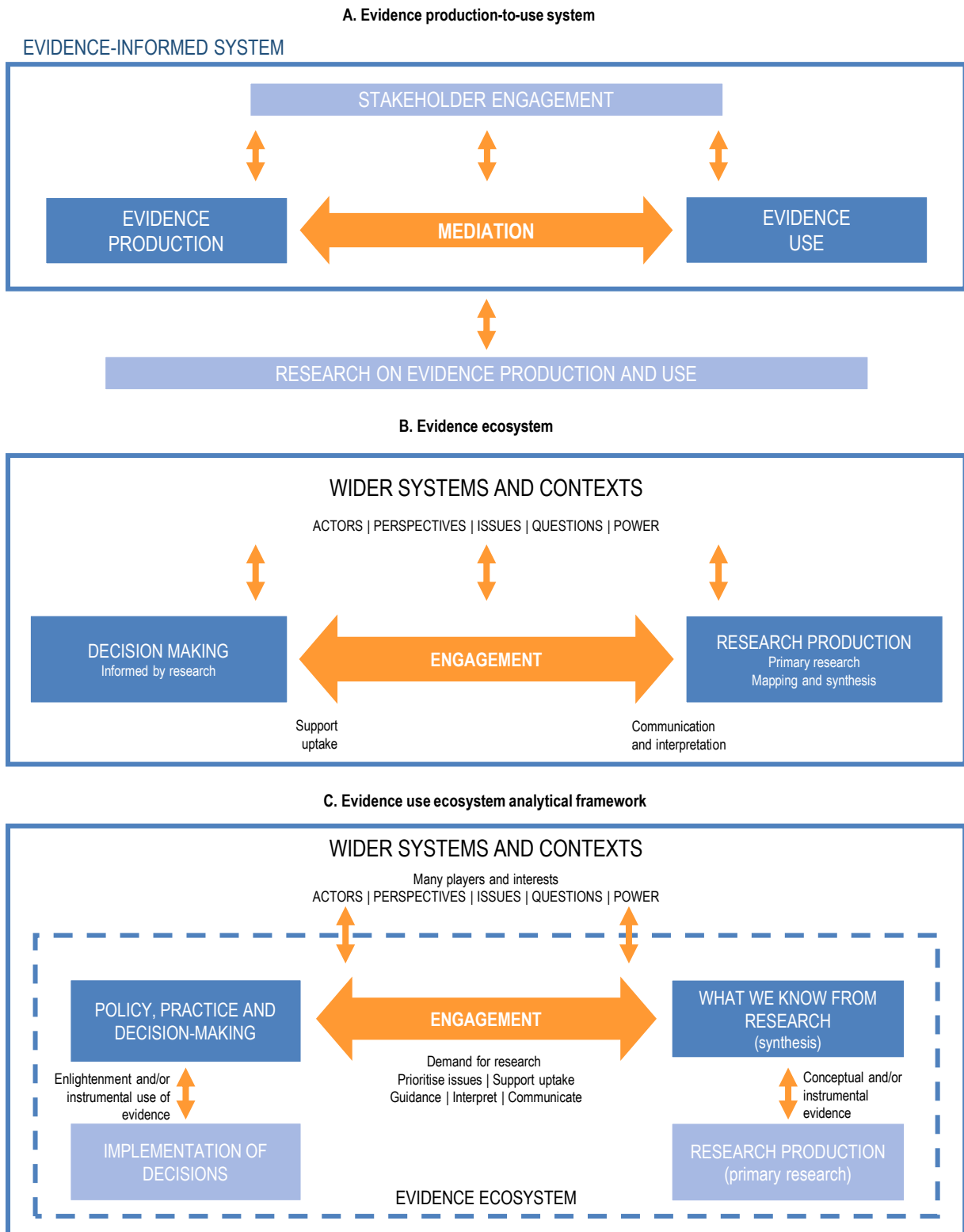
The production of evidence includes not only *producing* relevant research but also *enabling* its production (e.g. individual and organisational conditions that facilitate the research production) and *communicating* its results. The use of evidence encompasses the direct use – i.e. the change of policy makers' behaviour and ultimately of policy itself – and the indirect use – i.e. the shape of policy makers' knowledge and attitudes. Mediation of evidence refers to the connections that bring together evidence producers and users. These are all processes that may occur at the individual, organisational and structural or system level.

Although the terms "producers" and "users" could imply a linear, unidirectional flow of information, the authors highlight that these relationships occur in multiple directions. In this sense, evidence users are active constructors of knowledge and not just passive recipients of the work of research producers. Despite the fact that the three components – evidence production, mediation and use – are usually shown as separated in models, the authors highlight that they are commonly intertwined. To reflect these complexities of the system, Gough and colleagues added three other dimensions:

- Engagement of stakeholders other than evidence producers and users that may be involved in the process, such as civil society organisations, employers' organisations, social partners and the media.
- Recognition that the components of the model work together as a system, emphasising the importance of coordinated and effective interventions.
- Research on evidence production and use itself, which informs the processes occurring within the system and its continuous improvement.

The framework developed by Gough and colleagues has evolved over time, and this evolution is discussed below and represented by Figure 2.6.

Figure 2.6. Evidence use ecosystem framework

A. Evidence production-to-use system

EVIDENCE-INFORMED SYSTEM

STAKEHOLDER ENGAGEMENT

EVIDENCE PRODUCTION

MEDIATION

EVIDENCE USE

RESEARCH ON EVIDENCE PRODUCTION AND USE

B. Evidence ecosystem

WIDER SYSTEMS AND CONTEXTS

ACTORS | PERSPECTIVES | ISSUES | QUESTIONS | POWER

DECISION MAKING
Informed by research

ENGAGEMENT

RESEARCH PRODUCTION
Primary research
Mapping and synthesis

Support uptake

Communication and interpretation

C. Evidence use ecosystem analytical framework

WIDER SYSTEMS AND CONTEXTS

Many players and interests
ACTORS | PERSPECTIVES | ISSUES | QUESTIONS | POWER

POLICY, PRACTICE AND DECISION-MAKING

ENGAGEMENT

WHAT WE KNOW FROM RESEARCH
(synthesis)

Demand for research
Prioritise issues | Support uptake
Guidance | Interpret | Communicate

Enlightenment and/or instrumental use of evidence

Conceptual and/or instrumental evidence

IMPLEMENTATION OF DECISIONS

RESEARCH PRODUCTION
(primary research)

EVIDENCE ECOSYSTEM

In 2018, Gough and colleagues (2018[5]) adapted this model to analyse the work undertaken by the United Kingdom's What Works Centres, enlarging its scope to evidence-informed policy and practice. Graphically, the swap between the two components of research production, commonly on the left, and the research use, commonly on the right, forces a new consideration of their non-linear relationship. As most countries read from left to right, the previous configuration emphasised a "research push" interpretation in which produced knowledge comes first and should inform decision making in practice and policy. The later model inverses the perspective to put greater emphasis on pull mechanisms and adopts a systems view indicating various interacting elements.

Regarding research use, the authors distinguished between use by policy makers and practitioners, directly making and implementing the decisions ("decision making" in the figure) and use by the Centres. This latter use acts as an enabler of the former, supporting individuals and organisations in the policy and practice contexts to use research ("supporting uptake" in the figure).

The dotted lines surrounding the core elements of the system, represented in a later work by Gough and colleagues (2019[20]), signifies two levels to the framework: On one hand, the narrow evidence ecosystem with engagement between research production and research use; on the other, the broader socio-political system and context within which the evidence ecosystem sits. The use of the term "ecosystem" points to a dynamic figure, with different components affecting each other, directly or indirectly, and with positive and negative feedback loops. Both systems affect the decisions made in policy and practice, the research produced and the connections and influences between these two.

Comparative analysis

Through the lens of the conceptual approaches developed by Best and Holmes (2010[6]), this section will analyse the above presented models. Table 2.1 summarises the main characteristics of the frameworks and sheds light on the evolution of the conceptualisation of knowledge mobilisation.

Table 2.1. Comparative analysis of knowledge mobilisation models

Author(s)	Lavis et al.	Graham et al.	Levin	Gough et al.
Name	Knowledge-transfer strategy framework	Knowledge-to-Action framework	Research Knowledge Mobilisation model	Evidence use ecosystem analytical framework
Year(s)	2003	2006	2004 – 2013	2011 – 2019
Academic relevance	1 467 citations	4 606 citations	949 citations (4 articles) Widely considered by experts.	123 citations (3 articles) Widely considered by experts
Sector	Health, Socio-economic sectors	Health	Education	Education
Context	Policy and Practice	Policy and Practice	Policy and Practice	Policy and Practice
Generation (Best & Holmes)	Linear	Relationship	Relationship-System	Relationship-System
Core elements	Message; Actors	Knowledge creation; Knowledge use	Research knowledge functions: Production, Use and Mediation	Research production; Multi-level research use; Ecosystems
Elements' interaction	Isolated	Permeable	Overlapped	Intertwined and influenceable

Author(s)	**Lavis et al.**	**Graham et al.**	**Levin**	**Gough et al.**
Key actors	Messenger and Target audience (potential users)	Producers and Users (practitioners, policy makers, the general public)	Producers, Users and Mediators	Producers, Users, Mediators and other Stakeholders
Activities (Actors' roles)	Knowledge Transmission (messenger); Knowledge Application (user)	Knowledge Creation (producers); Knowledge Application (users)	Research production; Research use; Research mediation. (Actors can operate in more than one particular context)	Research production and communication (producers); Research construction and direct and indirect use (users); Bringing together producers and users (mediators); Engagement (stakeholders)
Contribution	Tailoring of the message to the audience. Presence of evaluation.	Fluidity and permeability of components allowing feedback loops.	Overlapping of functions. Influence of larger setting and social context.	Consideration of evidence-informed system as a whole and its influence.

Note: Number of citations according to Google Scholar on 12 May 2022.

The analysis compares the frameworks across a few key characteristics. The first five rows of the table provide some basic information. The row "generation" refers to the Best and Holmes' conceptual approach that is reflected in the framework. "Core elements" refers to the elements that are at the centre of each considered model. "Elements' interaction" captures the relationships between the core elements. "Key actors" points to the actors identified as playing a role within the models, while "activities" depicts the roles assigned, if any, to each of these actors. Finally, "contribution" summarises the main outputs and novelties from the reviewed models.

Core elements and their interaction

Each of the presented models has a different set of core elements. These and their relationships indicate which "generation" of knowledge mobilisation they belong to.

The first difference is the way in which the models describe knowledge. Lavis and colleagues do not feature the "functions" of knowledge (production, use); rather they focus on the "message", a product to be formatted to fulfil the target audience's requirements by the "messenger". To a certain extent, this corresponds to a partial and static version of the "mediation" element of Levin's model, focused exclusively on the translation and formatting of knowledge. Graham and colleagues favour the terms "knowledge creation" and "action" (used as the title of their model) while the two most recent models prefer the terms "production" and "use". This vocabulary, while different, can be seen as roughly corresponding (i.e. production-creation and use-action), with some nuances. Creation has creativity as its root while production has product. The former perhaps more naturally implies the combination of different knowledge types (research and experiential) while the latter can be more easily associated to something thought to be used (as a product). On the other end, "use" could be much broader than "action" once we acknowledge that research can shape attitudes and knowledge, even when its use cannot be explicitly captured by discrete action.

The second difference relates to the relationships between the core knowledge elements. In Lavis et al., the message connects two groups of actors (messenger and target audience); however, research production and its use are clearly isolated from each other. In Graham et al.'s framework, knowledge creation is at the centre, surrounded by stages of action that may occur simultaneously. The fluidity and permeability of creation and action stages generate permanent feedback loops. In Levin and in Gough et al., production and use are connected through mediation, although quite differently. In the former, the three components appear to be equal whereas in the latter, the representation suggests that mediation is more of a process (rather than a knowledge activity) that connects production and use.

An additional difference is the explicit presence (or not) of knowledge mobilisation (or similar) in the models. Whereas Graham et al.'s model simply neglects it, Lavis et al. recognise the presence of knowledge transfer processes and that bi-directional efforts are considered to be more effective. Levin and Gough and colleagues consider knowledge mediation or engagement as core elements in their frameworks. Levin's mediation function regroups some of the connections between the contexts of research production and research use. It overlaps with and is influenced by these contexts. Gough et al.'s mediation component – later renamed "engagement" – also refers to the connections bringing together evidence producers and users.

Key actors and their roles

The studied frameworks also differ on how they represent – if at all – the actors involved in the knowledge mobilisation processes and the roles assigned to them.

The early-2000s conceptualisation of Lavis et al. identifies two main groups: The messenger and the target audience, and the potential users, with the former being key to the success of the transmission of the knowledge. Research producers are not considered, and research users are only considered as indirectly defining the communication strategy of the product – the knowledge – for its correct transfer.

For their part, Gough et al. identify producers and users of evidence as relevant actors, although they highlight that these actors are not necessarily the same in every sector and that actors can perform a variety of different roles. Research users can be active constructors of knowledge whereas research producers should be aware of the context of the users. Furthermore, Gough et al. recognise the presence and relevance of other actors who influence the evidence ecosystem in the wider systems and contexts surrounding production and use.

Graham and colleagues and Levin do not depict the actors as the central components of their models. Instead, Graham and colleagues consider knowledge creation and use processes, and Levin considers functions as the core elements. Whereas Graham et al. do not specify which actors are meant to be engaged in each process, Levin acknowledges that actors can be related to more than one context, and so their functions can overlap. Rather than a standard model focused on the relationships between the actors – an *actor-relationships model* – both frameworks are more of a *function-relationships model*, focused on the interactions and the influences between the functions. This allows consideration of actors beyond a single context, not solely linked to their prescribed primary function.

Generating knowledge mobilisation: linear, relationship and systems perspectives

The analysis of these four selected knowledge mobilisation models allows the evolution of the conceptualisation of this field to be traced over time.

There is a general move away from linear ways of thinking and towards relationship and system approaches. Although the evaluation of all the components as a whole in Lavis and colleagues' model may implicitly point to one of the main characteristics of a systems perspective, it is only with Gough and colleagues' model that the evidence ecosystem is explicitly attempted to be considered in its entirety. This system influences, and is influenced by, the different elements considered in the model, generating multiple and constant feedback loops.

Nevertheless, representation of some of the elements is highly influenced by linear and relationships ideas. Production and use of evidence are strongly differentiated with no overlap between them except in Levin's model. These functions tend to represent the relationship between research production and research use as a unidirectional or a bi-directional one, with research production commonly being independent from research use. This falls short of acknowledging and representing the multiple relationships within the system in practice.

Over time, there is also a stronger consideration of the contexts and wider systems surrounding the educational evidence ecosystem. Once again, both Lavis and colleagues, and Levin suggest it in their models but it is Gough and colleagues who make explicit this "two-level" system and the influence they have on the evidence ecosystem. This multi-level system characteristic, with system and sub-systems, has been also described as "nested" or "layered" (Sharples, forthcoming[13]).

Some of the selected authors have abandoned the process-product modelling, i.e. an input (research evidence) and an outcome (practices or decisions), with processes linking both. The former exclusive focus on "push" processes has now included the "pull" processes. Thus, the relationships shift from unidirectional to bi-directional. Some models even consider relationships as multi-directional, as is the case in the frameworks of both Levin and Gough and colleagues. Actors and contexts in these conceptualisations relate to each other in different ways and with different purposes.

Models have also shifted from a focus on actors to a focus on contexts and functions. Authors have recognised that functions can be fulfilled by different actors and that actors can belong to different contexts. This enriches the conception of both actors, contexts and functions by avoiding a one-dimensional characterisation of the actors. Frameworks range in terms of their level of detail and comprehensiveness from the specificity of Gough and colleagues' to the simplicity and broad potential use of Levin's.

It should not be the aim of frameworks to fully represent the complexity of systems, although non-linear models are able to capture complexity more effectively (Sharples, forthcoming[13]). However, there is room to improve the present conceptualisations of knowledge mobilisation. Models still struggle to jointly represent the different functions of the education research system and the different contexts in which they operate. They often lack consideration of the education research system as a whole and neglect the larger system surrounding the former. Additionally, the frequent segregation between the identified functions could suggest that the system and its elements are somehow perceived as isolated. These gaps may result in the need for strategic coordination being overlooked.

Whereas the reviewed frameworks attempt to capture the complex nature of knowledge mobilisation – with varying degrees of success – other models focus on some specific dimensions of the education research system. The same way the analysis of a cross-sectoral exercise can generate key lessons for the education sector (see Chapter 6), the analysis of models beyond knowledge mobilisation can provide useful insights and a new perspective towards this subject. The following section discusses models directly or indirectly related to knowledge mobilisation.

Other models relevant for understanding knowledge mobilisation

Scholars have developed knowledge mobilisation-related frameworks focused on particular aspects and processes of knowledge mobilisation. Such processes include, for example, the use of evidence by decision makers or teachers and the relationship between evidence and innovation. These conceptualisations can provide a different perspective when thinking about knowledge mobilisation, and may solve some of the shortcomings that the above-mentioned frameworks present. It is not the intention of this section to provide a thorough analysis of these frameworks. Rather, the section aims to highlight aspects that may enhance the understanding and conceptualisation of knowledge mobilisation in education systems.

Langer, Tripney and Gough (2016[10]) developed a conceptual framework of how evidence-informed decision making (EIDM) occurs. The authors define EIDM as the process in which multiple sources of information, in particular the best available research evidence, are consulted prior to making a decision to plan, implement and/or alter policies, programmes and other services. These interventions have the ultimate objective of changing behaviour through the use of evidence. The EIDM framework, represented in Figure 2.7, highlights the complexity in the use of evidence in decision making, characterising it not as

a straightforward action or function but, rather, as a process influenced by multiple factors such as intervention types and levels; mechanisms; and intermediary behavioural outcomes. Furthermore, this framework breaks with the dominant focus of thinking in knowledge mobilisation: research production (Levin, 2013[9]).

Figure 2.7. Evidence-informed decision-making framework
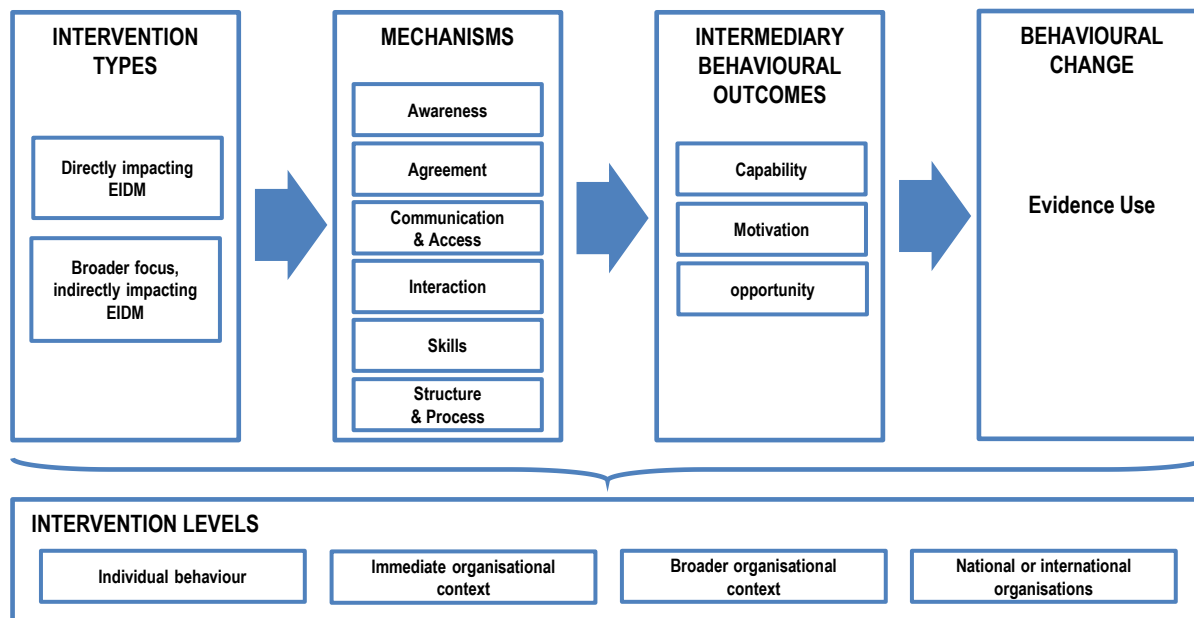
Source: Own elaboration based on Langer, L., J. Tripney and D. Gough (2016[10]), *The Science of Using Science: Researching the Use of Research Evidence in Decision-making*, http://eppi.ioe.ac.uk/cms/Portals/0/PDF%20reviews%20and%20summaries/Science%20Technical%20report%202016%20Langer.pdf?ver=2016-04-18-142648-770.

Cain (2015[21]) proposed a framework on teachers' use of research evidence. According to the author, teachers, faced with a research text, have the options to plainly ignore it, use it in different ways and with different objectives, or reject it after discussion. To illustrate this, Cain identifies three "voices." Teachers' own voice – the "first voice" – is composed of their values, previous experiences and ways of thinking and acting. Colleagues' voices act as a "second voice", often sharing some of the teacher's values. Research acts as a "third voice" in teachers' discussions, providing an external view often very different to the other two voices. The literature has shown that the first two voices are more important sources for teachers than the third one (Nelson and O'Beirne, 2014[22]; Nelson et al., 2017[23]). To become part of the discussion and influence the content and ways of teachers' thinking, knowledge from research has to be linked with knowledge from the other voices. This framework, represented in Figure 2.8, gives another insight into the use of evidence, considering the intentions and objectives of the potential user – in this case, the teacher.
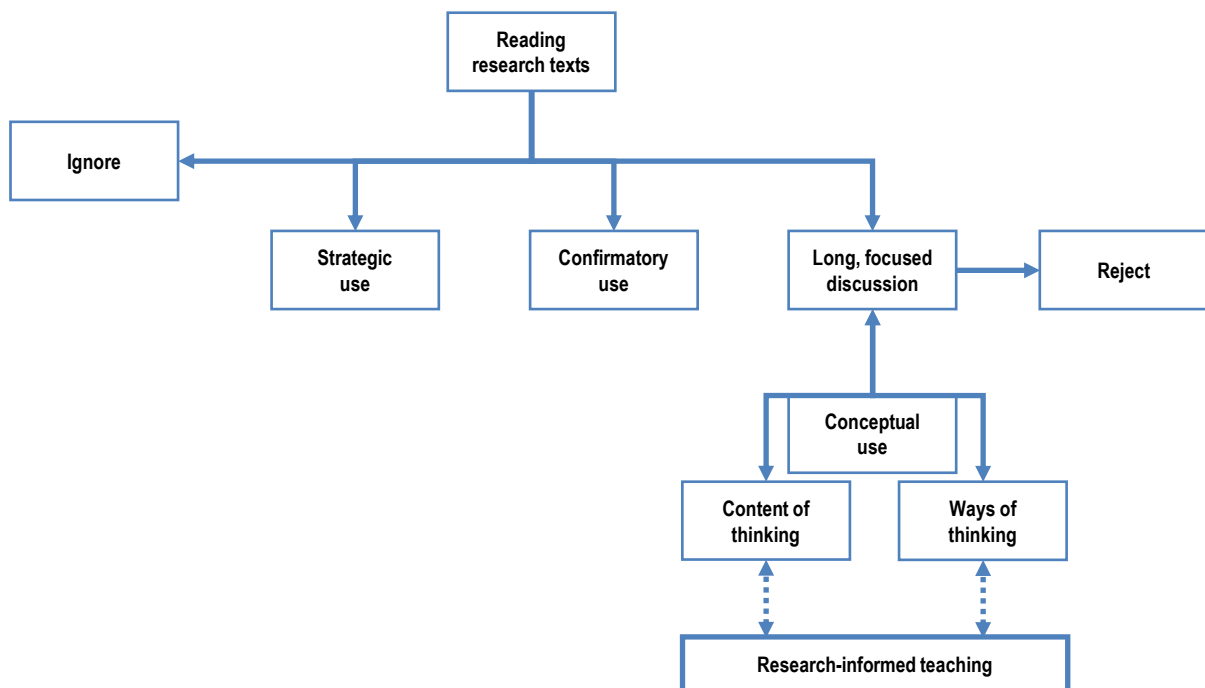
Rickinson and colleagues (2020[24]) developed a conceptual framework defining and elaborating what "quality use of research evidence" means in education. The emphasis here is on factors that enable the "thoughtful engagement and implementation of appropriate research evidence" (Rickinson et al., 2020, p. 6[24]). Chapter 9 deeply describes these elements. Rickinson et al. emphasise components at the individual, organisational and system levels, all represented in In the format of an OECD working paper, Révai proposed a representation of the knowledge dynamics around evidence and innovation in the education sector, represented in Figure 2.10. This work aims to "repair" the broken link in education between knowledge mobilisation for evidence and knowledge construction for innovation. It notes that policy questions today tend to relate to scaling innovation efforts or to increasing evidence use instead of acknowledging that the two often do and, indeed should, go together. The knowledge dynamics model

builds on existing innovation models in education. These traditionally begin with teachers diagnosing a situation, identifying their needs and challenges, and formulating these issues explicitly in terms of what additional knowledge they would need. This process may be facilitated by either knowledge brokers or researchers (as actors external to the school or internal such as teachers or school leaders) who can provide this external knowledge. Teachers then translate this into practice, adapting it to their context. Experimentation leads to the readjustment of practices and the creation of new knowledge. Thus, this knowledge mobilisation process involves knowledge creation, solving a practice-based problem by innovation. This new knowledge is consolidated and ideally diffused or disseminated, systematised and integrated into existing knowledge.

Figure 2.9, each of which can support quality research use and the interactions between the actors. These components and interactions influence, and are influenced by, multiple factors. By taking this approach, the framework implicitly adopts a systems approach.

In the format of an OECD working paper, Révai (2020[25]) proposed a representation of the knowledge dynamics around evidence and innovation in the education sector, represented in Figure 2.10. This work aims to "repair" the broken link in education between knowledge mobilisation for evidence and knowledge construction for innovation. It notes that policy questions today tend to relate to scaling innovation efforts or to increasing evidence use instead of acknowledging that the two often do and, indeed should, go together. The knowledge dynamics model builds on existing innovation models in education. These traditionally begin with teachers diagnosing a situation, identifying their needs and challenges, and formulating these issues explicitly in terms of what additional knowledge they would need. This process may be facilitated by either knowledge brokers or researchers (as actors external to the school or internal such as teachers or school leaders) who can provide this external knowledge. Teachers then translate this into practice, adapting it to their context. Experimentation leads to the readjustment of practices and the creation of new knowledge. Thus, this knowledge mobilisation process involves knowledge creation, solving a practice-based problem by innovation. This new knowledge is consolidated and ideally diffused or disseminated, systematised and integrated into existing knowledge.

Figure 2.8. Research-informed teaching theory

In the format of an OECD working paper, Révai (2020[25]) proposed a representation of the knowledge dynamics around evidence and innovation in the education sector, represented in Figure 2.10. This work aims to "repair" the broken link in education between knowledge mobilisation for evidence and knowledge construction for innovation. It notes that policy questions today tend to relate to scaling innovation efforts or to increasing evidence use instead of acknowledging that the two often do and, indeed should, go together. The knowledge dynamics model builds on existing innovation models in education. These traditionally begin with teachers diagnosing a situation, identifying their needs and challenges, and formulating these issues explicitly in terms of what additional knowledge they would need. This process may be facilitated by either knowledge brokers or researchers (as actors external to the school or internal such as teachers or school leaders) who can provide this external knowledge. Teachers then translate this into practice, adapting it to their context. Experimentation leads to the readjustment of practices and the creation of new knowledge. Thus, this knowledge mobilisation process involves knowledge creation, solving a practice-based problem by innovation. This new knowledge is consolidated and ideally diffused or disseminated, systematised and integrated into existing knowledge.

Figure 2.9. Quality Use of Research Evidence (QURE) framework
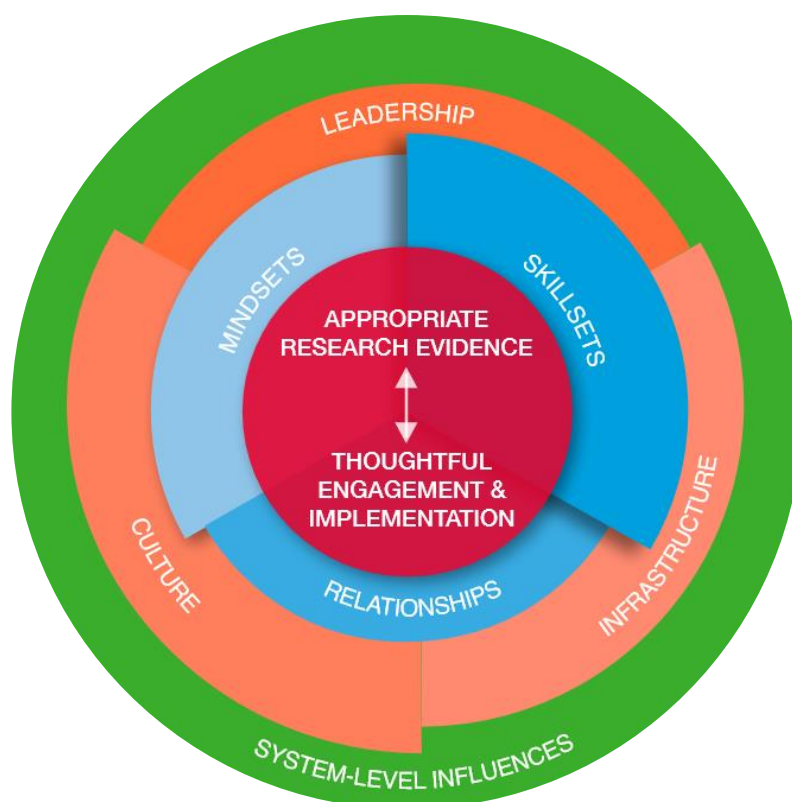
Figure 2.10. Knowledge dynamics in the evidence-innovation ecosystem
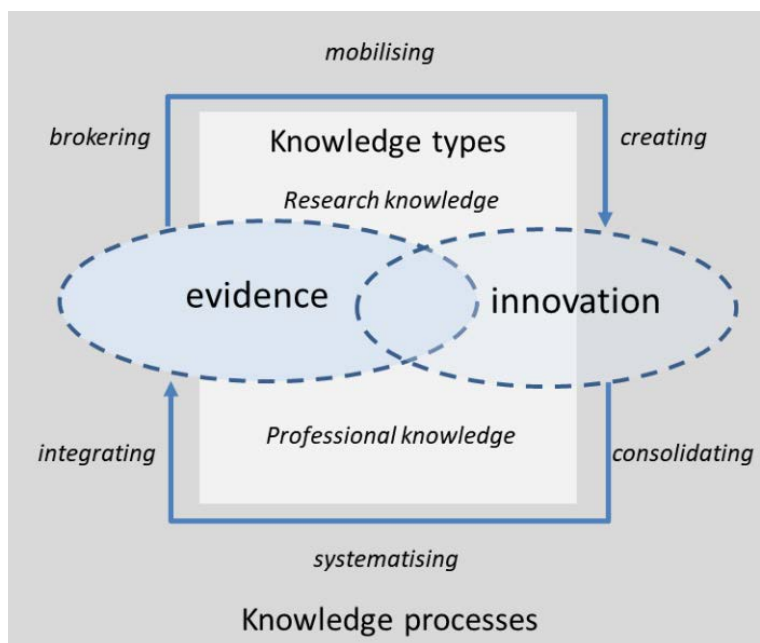
Source: Révai, N. (2020[25]), "What difference do networks make to teachers' knowledge?: Literature review and case descriptions", https://dx.doi.org/10.1787/75f11091-en.

These specific models provide fresh insights that may be complementary to the conceptualisation of knowledge mobilisation contained in the previously analysed models. For example, Langer and colleagues identified a concrete objective of knowledge mobilisation, which is commonly omitted in the related literature. Furthermore, the authors recognised and classified multiple factors, at multiple levels, affecting this outcome. Related work by Rickinson and colleagues, focused on how these factors influence the quality of the use of research. Whereas the recognition and classification of these causal mechanisms is one of the novelties of both models, the definition of quality use is an original contribution by Rickinson et al.'s study. For its part, Cain focuses on the teachers' perspective and considers the multiple sources of knowledge that teachers have, beyond research alone, and how research may influence the content and ways of teachers' thinking. Finally, Révai provides a perspective on how research is closely linked to innovation and how knowledge mobilisation in education can be influenced by other systems.

Table 2.2 summarises these models and the new perspectives they provide to the conceptualisation of knowledge mobilisation.

Table 2.2. Analysis of knowledge mobilisation-related models

Author(s)	**Langer, Tripney and Gough**	**Cain**	**Rickinson et al.**	**OECD (Révai)**
Name	Evidence-Informed Decision-Making framework	Research-Informed Teaching theory	Quality Use of Research Evidence framework	Knowledge Dynamics Model
Year(s)	2016	2015	2020	2020
Sector	Cross-sector	Education	Education	Education
Context	Policy and Practice	Practice	Practice	Practice

KMb specific aspect	Evidence use by decision makers	Research use by practitioners (teachers)	Research evidence use by practitioners	Evidence creation, mobilisation, innovation and use
Core elements	Interventions types and levels; Mechanisms; Behavioural outcomes and change.	Types of research use in school practice.	Core components (Evidence and Engagement); Enabling components (Individual- and Organisational-level); System-level influences.	Research, Innovation, Knowledge processes: mobilisation, brokering, creation, systematisation, integration.
Contribution	Identification of an ultimate objective. Influence of multiple factors.	Focus on teachers' perspective and work. Multiple sources of knowledge.	Influence of multiple factors enabling engagement with research evidence. Definition of "quality use".	Joint consideration of research and innovation. Knowledge mobilisation as knowledge creation.

Note: The row "KMb specific aspects" contains the terms "evidence", "research" and "research evidence". These terms are used by the authors of each model and taken to be interchangeable for the purposes of the analysis. For a definition of "research" in the *Strengthening the Impact of Education Research* project, see Chapter 1.

Towards a new approach

For over two decades, scholars have conceptualised and modelled knowledge mobilisation in diverse ways. These efforts have substantively evolved in terms of their sector of origin, focus, components and approaches, among others. Yet, there are still some shortcomings which may have important repercussions on initiatives that try to address deficits of research production and use.

Linear and relationship thinking still have a considerable influence on the representation of knowledge mobilisation processes. For example, consideration of the education research system as a whole and the existence of systems and sub-systems are commonly neglected elements in knowledge mobilisation models. Furthermore, the various elements in focus – whether functions or contexts – tend to be depicted as removed from each other, with a certain degree of mutual influence but without a clear idea of their interdependencies and overlaps. This artificial separation hampers a holistic vision and overlooks the need for any strategic coordination.

More recent knowledge mobilisation models tend to exclusively focus on research knowledge. While considering the entire spectrum of knowledge sources within a single model is unfeasible, it is important that future efforts recognise that research evidence is not the sole source of educational practitioners' and policy makers' knowledge. Their decisions are also affected by other types of knowledge, gained for example through professional experience or via exchanges with colleagues.

Most of the frameworks analysed in this chapter omit the main objectives that systems aim for. Committing to a specific goal, representing it graphically and putting it in writing can allow education systems and their actors to keep the ultimate goal in sight. In this case, if we think of educational research as something that has indirect and slow impact on student learning, this latter may appear as an unreachable goal on the horizon. And no matter how far we go, we can never reach that horizon. But that is the exact purpose of this seemingly unreachable goal: To make us move forward (Galeano, 2012[26]).

Framing the conceptual discussion on knowledge mobilisation is important because it shapes our understanding of what can be done to improve it. The way the education research system is conceptualised can drive thinking into new directions and break with traditional and outdated notions and practices. This includes moving away from one-way "push" approaches, the division between components and the one-dimensionality of actors. Future conceptualisations should represent a systems approach to research dynamics in education and try to address some of the limitations of previous models. Importantly, they should aim to drive the discussion forward and generate new ideas about reinforcing research production and use.

The dialogue between experts should continue and be extended to other actors who can bring fresh perspectives to this discussion. A shared language and understanding would ease the flow of information and collaboration between those specialised in knowledge mobilisation. Because of this, there is a strong interest in developing a new model collaboratively that can address the shortcomings identified above and drive an improved understanding of research dynamics in education. A new model, collectively developed, would make the different efforts in this field more efficient, and ultimately enhance student and professional learning.

References

Best, A. and B. Holmes (2010), "Systems thinking, knowledge and action: Towards better models and methods", *Evidence and Policy*, Vol. 6/2, pp. 145-159, https://doi.org/10.1332/174426410X502284. [6]

Burns, T. and F. Köster (eds.) (2016), *Governing Education in a Complex World*, Educational Research and Innovation, OECD Publishing, Paris, https://doi.org/10.1787/9789264255364-en. [27]

Cain, T. (2015), "Teachers' engagement with research texts: Beyond instrumental, conceptual or strategic use", *Journal of Education for Teaching*, Vol. 41/5, pp. 478-492, https://doi.org/10.1080/02607476.2015.1105536. [21]

Cooper, A. (2014), "Knowleedge mobilisation in education across Canada: A cross-case analysis of 44 research brokering organisations", *Evidence & Policy*, Vol. 10/1, pp. 29-59, https://doi.org/10.1332/174426413X662806. [2]

Crockett, L. (2017), "The Knowledge-to-Action Framework", medium.com, https://medium.com/knowledgenudge/kt-101-the-knowledge-to-action-framework-7fbe399723e8 (accessed on 27 August 2021). [17]

Davies, H., A. Powell and S. Nutley (2015), "Mobilising knowledge to improve UK health care: learning from other countries and other sectors – A multimethod mapping study", *Health Services and Delivery Research*, Vol. 3/27, pp. 1-190, https://doi.org/10.3310/hsdr03270. [15]

Galeano, E. (2012), "¿Para qué sirve la Utopía?", https://www.youtube.com/watch?v=GaRpIBj5xho (accessed on 3 May 2022). [26]

Gough, D., C. Maidment and J. Sharples (2018), *EPPI-Centre*. [5]

Gough, D., J. Thomas and S. Oliver (2019), "Clarifying differences between reviews within evidence ecosystems", *Systematic Reviews*, Vol. 8/170, https://doi.org/10.1186/s13643-019-1089-2. [20]

Gough, D. et al. (2011), *Evidence Informed Policymaking in Education in Europe : EIPEE Final Project Report*, EPPI-Centre, Social Science Research Unit, Institute of Education, University of London. [1]

Graham, I. et al. (2006), "Lost in knowledge translation: Time for a map?", *Journal of Continuing Education in the Health Professions*, Vol. 26/1, pp. 13-24, https://doi.org/10.1002/chp.47. [16]

Lai, C. and S. Huili Lin (2017), "Systems theory", in *The International Encyclopedia of Organizational Communication*, Wiley, https://doi.org/10.1002/9781118955567.wbieoc203. [12]

Langer, L., J. Tripney and D. Gough (2016), *The Science of Using Science: Researching the Use of Research Evidence in Decision-making*, EPPI-Centre, Social Science Research Unit, UCL Institute of Education, University College London, http://eppi.ioe.ac.uk/cms/Portals/0/PDF%20reviews%20and%20summaries/Science%20Technical%20report%202016%20Langer.pdf?ver=2016-04-18-142648-770.   [10]

Lave, J. and E. Wenger (1991), *Situated Learning: Legitimate Peripheral Participation*, Cambridge University Press, Cambridge, https://doi.org/10.1017/CBO9780511815355.   [8]

Lavis, J. et al. (2003), "How can research organizations more effectively transfer research knowledge to decision makers", *The Milbank Quarterly*, Vol. 81/2, pp. 221-248.   [14]

Levin, B. (2013), "To know is not enough: Research knowledge and its use", *Review of Education*, Vol. 1/1, pp. 2-31, https://doi.org/10.1002/rev3.3001.   [9]

Levin, B. (2011), "Mobilising research knowledge in education", *London Review of Education*, Vol. 9/1, pp. 15-26, https://doi.org/10.1080/14748460.2011.550431.   [19]

Levin, B. (2008), "Thinking about knowledge mobilization", A discussion paper prepared at the request of the Canadian Council on Learning and the Social Sciences and Humanities Research Council.   [3]

Levin, B. (2004), "Making research matter more", *Education Policy Analysis Archives*, Vol. 12/56, p. 12, https://doi.org/10.14507/epaa.v12n56.2004.   [18]

Nelson, J. et al. (2017), *Measuring Teachers' Research Engagement: Findings from a Pilot Study*, Education Endowment Foundation, London, https://educationendowmentfoundation.org.uk/public/files/Evaluation/Research_Use/NFER_Research_Use_pilot_report_-_March_2017_for_publication.pdf.   [23]

Nelson, J. and C. O'Beirne (2014), *Using Evidence in the Classroom: What Works and Why?*, National Foundation for Educational Research, Slough, https://www.nfer.ac.uk/publications/impa01/impa01.pdf.   [22]

Nokes, T. (2009), "Mechanisms of knowledge transfer", *Thinking and Reasoning*, Vol. 15/1, pp. 1-36, https://doi.org/10.1080/13546780802490186.   [4]

OECD (2009), *Working Out Change: Systemic Innovation in Vocational Education and Training*, Educational Research and Innovation, OECD Publishing, Paris, https://doi.org/10.1787/9789264075924-en.   [28]

OECD (2000), *Knowledge Management in the Learning Society*, OECD Publishing, Paris, https://doi.org/10.1787/9789264181045-en.   [7]

Révai, N. (2020), "What difference do networks make to teachers' knowledge?: Literature review and case descriptions", *OECD Education Working Papers*, No. 215, OECD Publishing, Paris, https://doi.org/10.1787/75f11091-en.   [25]

Rickinson, M. et al. (2020), *Using Evidence Better: Quality Use of Research Evidence Framework*, Monash University, Victoria, Australia, http://monash.edu/education/research/projects/qproject (accessed on 1 September 2021).   [24]

Sharples, J. (forthcoming), "Developing a systems-based based approach to research-use in education: The case of the EEF and the deployment of teaching assistants".   [13]

Snyder, S. (2013), "The Simple, the Complicated, and the Complex: Educational Reform   [11]
  Through the Lens of Complexity Theory"*, OECD Education Working Papers*, No. 96, OECD
  Publishing, Paris, https://doi.org/10.1787/5k3txnpt1lnr-en.