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Mobilising research knowledge in education

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The field of knowledge mobilisation (KM) addresses the multiple ways in which stronger connections can be made between research, policy and practice. This paper reviews the current situation around knowledge mobilisation in education. It addresses changing understandings of KM, considers some of the main issues in conducting empirical research in the field, and looks at the state of activity to promote and increase KM, offering commentary and suggestions in each area.

Keywords: research utilisation; knowledge mobilisation; policy; practice

Introduction

The concept of knowledge mobilisation (hereafter referred to as KM) refers to the multiple ways in which stronger connections can be made between research, policy and practice. KM is a growing field of interest not only in education but in all areas of social policy (Cooper, Levin, and Campbell 2009). All over the world governments, universities, school systems and various other parties are looking at new ways to find, share, understand and apply the knowledge emerging from research, leading to increasing conceptual and empirical work to understand how this can be done.

This paper provides an overview of some key areas of current thinking about knowledge mobilisation in education. It addresses the changing understandings of KM, considers some of the main issues in conducting empirical research in the field, and looks at the state of activity to promote and increase KM, offering commentary and suggestions in each area. Such a broad scope runs the risk of overgeneralisation. However the paper is grounded in several years of work of the Knowledge Mobilisation Research Team at OISE (www.oise.utoronto.ca/rspe), which includes empirical work, conceptual work, practical activity and many connections with other researchers doing related work, primarily in education but with considerable attention to related work in other fields, notably health.

What is 'knowledge' and what is 'mobilisation'?

Much of the writing about KM in all fields remains theoretical or conceptual, focused on different ideas of what knowledge mobilisation is and how it works. Both the central ideas in the concept – knowledge and its use – have multiple legitimate meanings. Much debate in the literature concerns these different ideas about knowledge and its application.

Our team's primary interest is in knowledge deriving from formal research, by which we mean studies using widely accepted, systematic and established formal processes of inquiry. However this is certainly not the only kind of knowledge, or even the most prevalent, affecting policy and practice in education. People's beliefs and actions are affected by various kinds of

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'knowing', including knowledge of which the bearers are probably unaware (Tavris and Aronson 2008; Stanovich and West 2008). Nor is this something to be bemoaned. The argument in this paper is that the findings of formal research could and should make a greater contribution to schooling, but informal personal and social knowledge will always continue to be dominant in human organisations for many reasons.

Research has the potential to continue to increase the effectiveness of education systems as more is learned about desirable and undesirable practices. The knowledge emerging from research is not always correct, and is subject to revision as time goes on but it still, in our view, provides both good grounds for many practices and, just as importantly, can be a counterbalance to the emphasis on practitioner knowledge or conventional wisdom, both of which are regularly found later, based on systematic inquiry, to be incorrect or even harmful. For example, research has pointed to desirable practices in teaching of literacy (e.g., special issue of Educational Researcher 2010), to effective ways to engage and motivate students (National Research Council 2003), or to practices of assessment for learning (William 2009) as ways of improving student outcomes. Recent work by Hattie (2009) or Marzano (2003) provide very useful summaries of some of this knowledge.

None of this is to suggest that research provides recipes that can be blindly applied to schools. In many areas, there is simply not enough clear research knowledge to guide practice. Moreover, the effective use of research always requires application in particular settings by skilled people. In most professions, that combination of a strong knowledge base and individual skills in its application is precisely what creates and supports professional status and authority.

The idea of the 'use' of research has multiple dimensions. Several different typologies of research use have been proposed, going back at least to Weiss (1979). Nutley, Walter, and Davies (2007) provide an excellent review of this discussion. Clearly, research can and does have impact in varying ways, most of which do not involve direct application in a short time frame. In most cases the effects of research are indirect and gradual, typically occurring over time as idea get taken up and mediated through various social processes.

Research impact is, then, shaped by the larger social and political context. Think of the impact of research on current policy and practice in areas such as smoking, seatbelt use, exercise, recycling, energy conservation, and so on. In all these cases, action came when there was sufficient consensus to prompt societal as well as individual action. In other cases, however, consensus does not arrive, and in that case research findings may be subsumed in political conflict.

How does knowledge mobilisation happen?

In 2002–2003 I was a visiting scholar at the Social Sciences and Humanities Research Council of Canada working with President Marc Renaud to help SSHRC develop its interest in knowledge mobilisation. I have had a lifelong interest in the connection of research evidence to policy and practice going back to my early activity as a school board member in Winnipeg, and then continuing through a variety of work with school districts, provincial governments, NGOs, international agencies and universities. In the background paper I wrote for SSHRC (later published as Levin 2004) I developed a model of knowledge mobilisation as shown in Figure 1. At the time I thought this model was a temporary effort to identify some of the dynamics involved and to give a clearer shape to the main components, since the literature was still quite simplistic. However six years later the model remains reasonably practical and has been used by quite a few others, including Nutley et al. (2010) and the European Commission (Levin 2008b).

The key feature of the diagram is the idea of three kinds of contexts for the use of research – one in which research is produced, one in which research is used, and a third that consists of

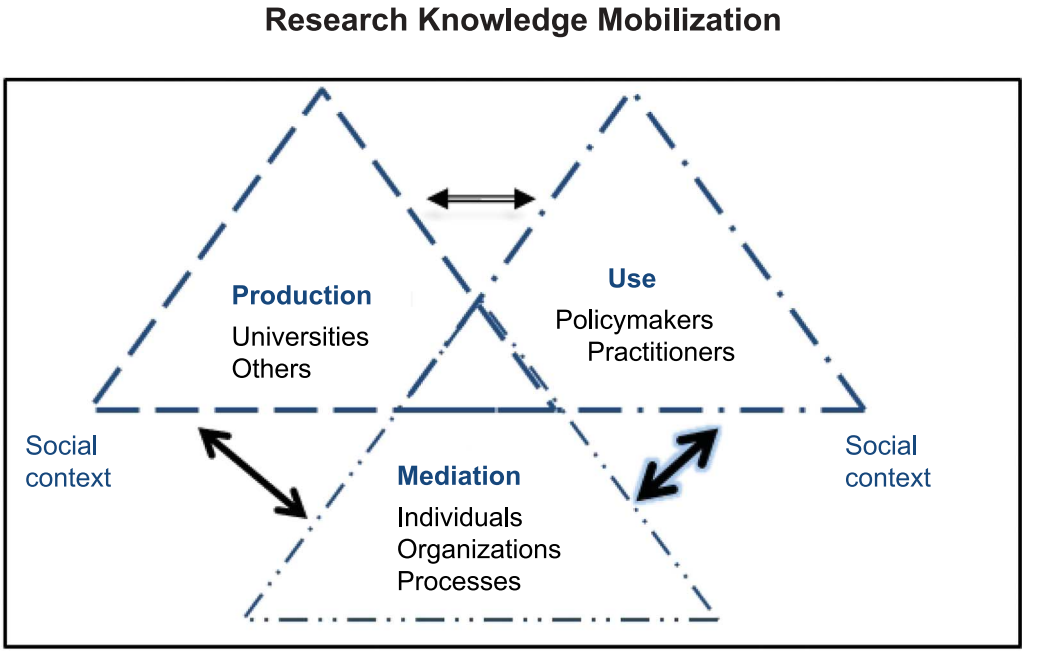

Figure 1. Research knowledge mobilization.

all the mediating processes between the other two. The many connections between these contexts are represented by the two-way arrows of varying thickness. The contexts are not the same as organisations; some people and organisations operate in two or even all three of the contexts. Graduate students are one example but there are many others; universities, for example. Further, within each context, there are also multiple dynamics at play; many other models of KM or other similar terms are primarily focused on dynamics within one or other of the contexts (e.g., Estabrooks et al. 2006; see also the RSPE website which contains quite a few different conceptual models). Most of these models are based in systems theory, with varying connections and feedback loops between parts of the system.

The simple idea that research would have direct effects on policy and practice has long been abandoned by those who study these issues, even though it may still be held by some researchers, who seem surprised or even dismayed that their work is not immediately adopted into policy or practice. In the last few years several other ideas about KM have become increasingly well supported from a variety of sources. These include:

- Educators are interested in research. Although some critics attack education as a field particularly prone to valuing belief over evidence (e.g., Whitehurst quoted in Hess 2007), studies (Cordingley 2008; Biddle and Saha 2002; Levin, Walter, and Davies 2009; Landrum et al. 2002) indicate that educators express a strong interest in knowing more about research findings. They are critical of research in various ways but they are interested.

Moreover, it turns out that practice in other fields, such as medicine, also falls far short of being entirely consistent with research findings (Graham et al. 2006; Maynard 2007). So education is not as different from other professions as is sometimes made out.

- In every field, interpersonal relationships and social contexts are the key to shaping policy and practice. As noted earlier, people are more influenced by their own experience and by their colleagues than they are by external evidence (Cordingley 2004; Mitton et al. 2007).

> At the core of evidence use are interpretive processes whereby individuals and groups make meaning of evidence in ways that are profoundly shaped by their preexisting beliefs and practices and day-to-day limits on how they direct their attention. (Coburn, Honig, and Stein 2009, 86)

As a corollary, research products such as reports or research briefs, or even practice guidelines, while potentially valuable, do not have very much independent impact (Bhattacharyya, Reeves, and Zwarenstein 2009; Nutley, Percy-Smith, and Solesbury 2003). Research has impact through when it becomes part of other social processes (Gawande 2007).

- The overall research enterprise in education remains small and weak, especially relative to the size of the sector (Levin 2008a). KM efforts in the education sector are also quite limited. Many research institutions do little to share their research (Sa, Li, and Faubert in press). Universities, the most important single source of research in education, generally do quite a poor job, especially at the institutional level, of sharing their findings or their implications. Where this work is done in universities, it is primarily the result of efforts of individual faculty members or research units. Organisations that have an explicit focus on KM, such as think tanks, tend to have much more developed processes for sharing their research (Sin 2008).
- Most education delivery organisations, such as schools and districts, have very weak capacity to find, share, understand and apply research (Coburn, Honig, and Stein 2006; Levin et al. 2009). Even where compelling research evidence is available, the systems for bringing it into practice are poorly developed. Neither individual schools nor most districts or local authorities have much capacity in these areas. The same is true of many ministries of education, which seem to have weak infrastructures for bringing research into the policy process (although steps are being taken in a number of jurisdictions to improve this situation – see OECD 2007).
- Significant barriers to better KM exist in both the context of research and the context of practice or policy. These barriers are well described in many studies over the years so need not be rehearsed here (for fuller discussions see Bransford et al. 2009; Estabrooks et al. 2003; Hemsley-Brown 2004; Nutley, Walter, and Davies 2007; Mitton et al. 2007). Barriers include skill issues (such as being able to convey findings in plain language, or to read quantitative data results), resource issues (lack of time, access to materials), and reward systems (little push in the university to provide research relevant to educators and little push in the schools to read research). Another way to read these barriers, however, is that they indicate the lack of priority given to knowledge mobilisation both in research producing and research consuming organisations. After all, nobody in a university or a school would suggest that we cancel classes because we don't have time to teach, or that we do not issue paycheques because it's too complicated to calculate all the deductions. New activities are typically subject to a set of constraints that existing activities in the same organisation do not have, even if the new activities are demonstrably more important or more valuable.
- Most of what people know about the evidence on education issues comes indirectly, through various third parties and mediators who put original research into forms that are

more useful or powerful for practitioners. However while there is increasing attention in the literature to mediators (Cooper 2010; Levin 2008b), there is still not a good sense of what this category comprises. Many different people and organisations act as mediators of research knowledge, from individual practitioners in their own work settings or researchers to a whole range of think tanks, lobby groups, professional organisations, and other bodies. Much remains to be learned about how mediators do their work, though it evidently involves a variety of practices from writing to speaking to network building to working with the media.

- Access to research has been dramatically changed by new technologies, primarily the internet. Almost anyone now has access to huge amounts of research information (and of course other kinds of information) on virtually any topic. Not only is the original research itself much more accessible, but the net has also led to a proliferation of mediators, as anyone can now put up a communication of any kind on any topic claiming to provide views informed by research. Moreover, what might be called legitimate producers and mediators of research, such as universities or NGOs or professional bodies rely increasingly on the internet both as their source of material and their prime vehicle for dissemination, about which more is said later.

The above points provide cause for both optimism and concern. More research is more available in more formats than ever before. Yet if people are chiefly influenced by their colleagues and experience, if most of their knowledge comes indirectly, and if both the sharing and applying mechanisms are weak, it is highly unlikely that we are getting the maximum benefit from research in education.

It is then entirely unsurprising to find that although the interest in empirical evidence is considerable, there are large gaps between what that evidence tells us and common practice in schools in at least some areas. One can think of issues such as retention in grade, or student assessment practices, or student engagement, or teacher expectations, or tracking and streaming as examples where a great deal of practice is inconsistent with a considerable and consistent body of research evidence (Levin 2010; Hattie 2009; Marzano 2003).

The above findings represent a considerable advance on the state of knowledge even a dozen years ago. However there is much still to learn about every aspect of KM, and in particular about what steps, if any, would increase the impact of important research findings both in policy and practice. These issues will be discussed further in the final section of this paper.

Challenges in studying KM

As indicated earlier, interest in knowledge mobilisation as a field of research is growing, not only in education but in other fields as well. Researchers working on these issues are increasingly connected, both within and across home disciplines. New journals have been created, new degree programs are being offered by universities around the world, many conferences are held all around themes of research–practice connections, and the literature in terms of articles and books has increased dramatically. The Campbell Collaboration has been created as a social service analogue to the Cochrane Collaboration around systematic reviews of evidence in health. A Google search using 'research practice schools' done in May 2010 for this paper turned up more than 130 million hits, a dramatic increase from the 20 or so million generated by the same terms about 18 months earlier. The same search restricted to Canadian sites turned up 3.3 million hits. Just to give a sense of the scope, the first page of 10 hits on this search included sources as diverse as nursing, engineering, public health, school readiness, design art and mental health. A Google Scholar search with the same terms turned up 2.3 million hits. It is now impossible for any scholar to keep up even partly with the volume of work being generated.

KM is also an area that offers fruitful interdisciplinary connections. Many of the issues are very similar whether one is studying education, health care, social policy or even science policy. There is room for much useful collaboration among researchers in these various fields, though at present such collaboration remains relatively uncommon and disciplinary boundaries continue to be primary. For example, in my own university there are teams working on KM issues in medicine (at least two different teams), social work, nursing, and education.

Despite the rapid increase in scholarly work, a common concern in much of the writing about research in KM remains the methodological challenges of studying the sharing and use of research, whether in education or other fields (Nutley, Walter, and Davies 2007). The challenge is rooted in part in the previously noted multiple concepts of what constitutes 'research' and what constitutes 'use'. The more one moves away from the idea of use being visible directly and immediately through behaviour, the more difficult it is to know what impact research is having on policy or practice. The more one thinks of KM as a property of organisations, or of networks of people and organisations, rather than of individuals, the harder it is to study the phenomenon.

Researchers have often relied on self report either of attitudes or behaviours through surveys and interviews. For example, the very useful work done by Canadian research teams headed by Rejean Landry (e.g., Amara, Ouimet, and Landry 2004; Belkhodja et al. 2007), a political scientist now at a business school, and by John Lavis (e.g., Lavis 2006; Lavis et al. 2003), in health both rely primarily on surveys of researchers and research users.

These methods have contributed to advancing knowledge but they have important limitations. One cannot have great confidence that self-reports of behaviour will be consistent with external observation of the same behaviour, while self-reports of beliefs are subject to considerable social desirability influences (Dobbins et al. 2007; Davies and Nutley 2008). People's behaviour can be quite different from their professed beliefs and people may be unaware of those gaps (Argyris and Schon 1978). Even more, people often simply do not know the origins either their beliefs or their behaviour. It can be very difficult to trace the source of our thinking and even more difficult to determine the role of empirical evidence. Our beliefs and attitudes are created through complex combinations of reading, thinking, experiencing, and discussing with others (Tavris and Aronson 2008).

Another approach has been to use case study methods, including quite a few recent self-reports on KM projects of various kinds (e.g., Manion et al. 2009; Alexanderson et al. 2009). Case studies have the advantage of emphasising organisational rather than individual factors, but they have the disadvantage of small numbers and of focusing attention on specific contexts rather than common factors across settings, so it is often hard to know what lessons to take away from a case report.

Both teaching practice and education policy formation are complex activities, making the challenge even greater. As someone who has held senior management positions in education, I can say with confidence that real policy choices are almost always the result of some combination of formal knowledge, personal experience, political considerations and the interpersonal dynamics of the organisation, all of which change over time. So the task of distinguishing the influence of empirical research in this mélange is daunting if it is even possible.

The same is true of teachers or school leaders. Their work occurs to them as a whole, in which ideas about teaching are also affected by the larger climate of the classroom and of the school, by particular students, and even by the time and day. So a teacher might generally favour a particular instructional approach, perhaps even based on research evidence, but whether it gets used at any particular point is likely to be subject to a range of influences in ways teachers themselves may not realise. In this fluid situation, can teachers sort out the impact on their practice of a particular piece of evidence? And if they do not know, how can researchers know?

These problems are not unique to research on knowledge mobilisation; they are the same challenges faced by researchers in many areas of social science. Hence the reliance in KM research on case studies, interviews, and surveys of various parties – the same tools used to study many other complex social phenomena, but with the same limitations.

If good ways to manage this problem were evident they would already have been adopted. However some suggestions can be made and are being incorporated into our team's studies.

- Focus more on organisational processes, structures and contexts rather than individual attitudes or actions, since it appears that the former are more powerful shapers of KM than the latter. Of course individuals matter, but their actions are shaped in important ways by their organisational contexts.

  > The conclusions from empirical research, in both education and nursing, confirm that the main barriers to knowledge use in the public sector are not at the level of individual resistance but originated in an institutionalised culture that does not foster learning. (Hemsley-Brown 2004, 462)

- Gather data on specific behaviours and practices rather than on generalised attitudes. While any self-report has limitations, self-reports of behaviour, especially if data are gathered from multiple respondents, are likely to yield a clearer picture of real practice than are self-reports of general attitudes. For example, asking when and how often research is discussed at principals' meetings seems a more useful question than asking principals if research is important in their work.

  Posing such specific questions, and even observing practices will get both easier and more effective as we learn more about KM processes. For example, growing evidence that organisational dynamics have more effect on practice than do research reports allows researchers to focus more attention on those interpersonal processes and structures (Levin et al. 2009).
- Work with real issues and examples. Asking people about instances where they used research, or asking about their knowledge about specific issues and then probing the role of research in those issues, seem more fruitful approaches than asking generally about research without linking it to any specific issue or occasion.
- Triangulate data by getting the perspectives of multiple parties (preferably in the same organisations) or by asking similar questions at different times as a check on validity of responses.
- Look for more opportunities to use control groups or data over time so as to have some independent verification of claims about the role of research.

These steps will not by any means eliminate the challenges; studying the causes of human behaviour will always be an uncertain activity. However as more empirical studies are conducted with more sophisticated methods, we can expect our knowledge base to improve, yielding further improvements in methodology.

Changing practices in knowledge mobilisation

The growing interest in KM shows up in many ways (described more fully in Cooper, Levin, and Campbell 2009). Amara, Ouimet, and Landry (2004) identify three modes of research sharing: science push (in which research producers try to disseminate their work more effectively); demand pull (in which users seek out relevant research), and interactive approaches in which producers and users work together. All three of these approaches are being used by multiple actors.

Governments are giving increasing attention to 'evidence-based decision-making' including establishing new policies and organisations to this end. International agencies such as the OECD

or the World Bank are trying to strengthen their own use of evidence and to assist member countries in doing so. An OECD report on the issue (OECD 2007) described initiatives in a number of countries to make more use of research evidence in education. England has been a leader in a number of these areas (e.g., Cordingley 2008; Pollard 2010). Ontario has also developed a provincial education research strategy that appears to have impact (Campbell and Fulford 2009). Gradually, the infrastructure to support better use of evidence in education is being built, at least in some countries.

Research organisations such as universities are also making efforts to strengthen the role of KM through revised policies and new institutional practices (Sa, Li, and Faubert in press). In particular, multiple ways of using new technologies are being explored to support dissemination of research although, as noted earlier, much of this work depends on the initiative of individual researchers rather than universities as institutions. Third party research organisations such as think tanks or foundations tend to be much more active in this work than traditional research providers such as universities because mobilising knowledge is often their central purpose.

The impact of all these initiatives remains largely unknown but there are grounds for caution, particularly in regard to producer push approaches. A vast amount of effort is going to creating websites and virtual interaction spaces. There are now so many websites, so many discussion lists, and so many competing sources of information, that it is hard to see how more of them will be helpful; few people have the problem of too much free time and not enough websites to visit. At the same time, we are learning about the relative ineffectiveness of research products such as reports in terms of changing behaviour, suggesting that research producers should invest more in creating interpersonal connections. This is one of the reasons our team is studying the use of research resources on web sites (Qi and Levin 2010; Edelstein, Levin, and Leung 2010). Our initial findings suggest that these efforts are not well grounded in the research on effective practice and are still, at least in most universities, a fairly low priority (Sa, Li, and Faubert in press).

Also, as discussed earlier, one reason that producer push does not have more impact in education is the weak capacity of most schools and school systems to find, share and apply research, so that even where there is strong evidence, application will tend to be weak.

Various professions, including education, are stressing 'evidence-based practice'. Professional practices in this regard vary, but most professions issue various kinds of guidelines to their members on the basis of emerging research (Adams 2009; Dobbins et al. 2007; Steinfeld, Coffman, and Keyes 2009). However as noted earlier there is consensus that guidelines alone are insufficient; take-up of guidelines is highly variable, depending primarily on other factors that shape practice.

> Systematic reviews from healthcare give robust evidence that the provision alone of consensus recommendations, educational materials and guidelines is usually insufficient to change practice. Guidelines were found to effect practice change only when supported by active implementation strategies, specifically reminders, incentives, peer review, marketing and educational interventions. (Nutley, Percy-Smith, and Solesbury 2003, 13)

One challenge to professions is that their clients now have much more access to information (albeit of varying quality) through the internet, so clients will often show up with their own research findings. Since clients typically have only one issue to address, while practitioners have a great many, it is not unusual for clients to know more about current evidence on a topic than does the professional. For example, a medical patient with a particular health issue can arrive to see a doctor having spent many hours reading about their problem on the internet, including the published medical literature as well as the many self-help groups and other sites. Pressure of that kind from clients, even if the sources are not reliable, is likely to push professionals to reconsider their access to current research.

In a recent summary of various efforts to change practice to be more consistent with research, Nutley, Walters and Davies (2009) define five spheres of action for interventions: Dissemination of materials and findings; interaction (links and collaborations between the research and policy or practice communities); social influence (using experts and peers to inform); facilitation with technical, financial, or organisational supports; and incentives and reinforcement such as audits or financial incentives to reinforce appropriate behavior. Various combinations of these ideas are being used in various places, including in school systems.

Assessing the impact of these various initiatives presents another challenge to research. It is vital to learn what sorts of interventions or actions are most likely to increase the take-up of research in policy and practice settings. In some ways this work is easier than efforts to understand or trace the role of research, since one is here primarily interested in whether various interventions produce changes in practice that can be observed through studies using traditional research control mechanisms. However there are so many factors affecting practice in areas such as education that singling out the impact of one factor is always difficult.

When it comes to the impact of interventions, health researchers have led the way, with many studies of different kinds of interventions intended to change the behaviour of providers such as doctors or nurses. Although many of these interventions have not yielded much result, the corpus of work as a whole is slowly leading to conclusions about the kinds of activities that do affect people's beliefs and behaviours in lasting ways. No individual intervention type is universally effective (Graham and Tetroe 2007). Simply providing knowledge appears to be quite ineffective (Nutley, Percy-Smith, and Solesbury 2003; Adams 2009). However other kinds of intervention are also limited, including incentive systems such as audits. Multiple interventions, sustained over time, appear to be required to change practice.

Education systems have not done this work in a systematic way. For the most part, KM activity in schools, school systems and central agencies such as state education agencies is modest and low priority. Of course the same is true of the research enterprise in education, which in comparison to health is small, fragmented and disorganised.

The general conclusion, then, is that the many efforts to strengthen knowledge mobilisation in education and other fields are slowly yielding evidence on their relative effectiveness, but that the goal of changing practice remains daunting.

Conclusion

This brief tour of the state of knowledge mobilisation work yields several conclusions, both general and for the education system.

First, we are learning a great deal from the many initiatives underway and from the growing amount of research. Understanding has improved significantly even in the last few years, and the capacity to undertake KM of various kinds has also expanded considerably. It is no surprise that activity is running ahead of knowledge; indeed, it could hardly be otherwise.

Second, the focus of KM work and research should be on organisations and their practices more than on individual policy makers or practitioners. KM is largely a matter of the way organisations operate, which deeply affects the way individual practitioners or policy-makers work. This view also implies more attention to interpersonal processes both within and among organisations. The central role of research mediators of various kinds needs much more exploration to learn about the most effective ways to connect research to practice in organisations.

Third, research on KM requires continued improvement in terms of more sophisticated methods, and also even more sharing among researchers in different fields and parts of the world. KM research must itself adopt KM principles and practices to ensure greatest impact. The

necessary networks of researchers are only now being created, while interdisciplinary work remains challenging in terms of funding and communication.

Fourth, education systems need increased take-up capacity – that is, the capacity in schools and school systems to find, share and apply research knowledge to a greater extent and in a more disciplined way than now exists. This need not involve great efforts or resources; modest interventions could have useful effects, and that is probably where attention should start.

There are strong grounds for optimism about the potential role of research in policy and practice in education. The increasing effort and growing research capacity and understanding offer much promise for yielding improvements in education in ways that benefit students and are satisfying to professional educators.

Notes on contributor

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