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Developing a knowledge network for applied education research to mobilise evidence in and for educational practice

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**ABSTRACT**

**Background:** The importance of ‘evidence-informed practice’ has risen dramatically in education and in other public policy areas. This article focuses on the importance of knowledge mobilisation strategies, processes and outputs. It is concerned with how these can support the adaptation and implementation of evidence from research and professional knowledge to inform changes in educational practices. It presents a case study of the Knowledge Network for Applied Education Research (KNAER), a tripartite initiative in Canada involving the Ontario Ministry of Education, University of Toronto and Western University and 44 KNAER-funded projects.

**Purpose:** The purpose of the article is to analyse the developing approach towards supporting knowledge mobilisation by the KNAER provincial partners through the governing body of the Planning and Implementation Committee and strategic and operational work of the university teams, and also the knowledge mobilisation strategies, challenges and successes of 44 KNAER projects.

**Design and methods:** We utilised a qualitative case study approach to investigate the Knowledge Network for Applied Education Research’s (KNAER) approaches to developing knowledge mobilisation over four years (2010–2014). To explore the work of the KNAER provincial partners, we analysed 17 meeting notes from the Planning and Implementation Committee and 9 notes from the university KNAER partners’ meetings. To explore the knowledge mobilisation strategies, challenges and successes of KNAER-funded projects, we analysed the 44 knowledge mobilisation plans, 141 interim reports and 43 final reports submitted by projects. To further investigate the experiences of KNAER projects during their implementation, we analysed responses from 21 people from 19 KNAER projects who participated in a facilitated discussion about their experiences.

**Results:** The Planning and Implementation Committee’s role involved three core responsibilities: (1) Approving knowledge mobilisation proposals submitted to the KNAER; (2) Ensuring that collaborative partnerships were developed at the local, provincial, national and international levels; and (3) Approving the KNAER operational and strategic plan. The university partners have taken on the roles of operational management, strategic leadership, and research and...
knowledge mobilisation expertise. KNAER projects varied in their knowledge mobilisation strategies, challenges and successes. ‘Exploiting Research’ projects focused on establishing connections and engaging communities of practice with people relevant to the project’s focus, creating an analysis of needs, designing or producing a relevant knowledge mobilisation product with the purpose of improving practice, monitoring the results or impact of the new product and sharing the dissemination process and results with others. ‘Building or Extending Networks’ projects engaged in creating or extending existing networks, developing a needs-based or gap assessment and producing appropriate products and dissemination processes based on the results gathered. ‘Strengthening Research Brokering’ projects organised steering committees to guide their work and gathered information via a literature review or by collecting information from stakeholders and then served as research brokers by collecting and mobilising relevant knowledge to inform practice. ‘Visiting World Experts’ projects developed knowledge mobilisation plans for host experts’ visits, involving establishing partnerships with networks, including universities and schools, and utilising social media and communication processes for knowledge mobilisation products.

Conclusions: KNAER included aspects of linear, relationships and systems models for connecting evidence and practice. Looking forward, KNAER is seeking to further advance a systemic approach. A systems model is in preference to linear models – which focus on evidence production only without attention to mobilisation or uptake of research, and/or relationships models – which may develop networks, but do not attend to capacity and resource barriers that need to be addressed for systemic and sustainable knowledge mobilisation.

Introduction

This article focuses on the importance of knowledge mobilisation strategies, processes and outputs and how these can be used to support the adaptation and implementation of evidence from research and professional knowledge to inform changes in educational practices. Drawing on concepts of linear, relationships and systems models (Best and Holmes 2010), we examine the case of the Knowledge Network for Applied Education Research (KNAER) in Ontario, Canada, to discuss approaches to the governance and implementation of a system-wide knowledge mobilisation network and the strategies, challenges and successes of knowledge mobilisation projects.

Evidence-informed practice and knowledge mobilisation

The importance of ‘evidence-informed practice’ has risen dramatically in education and in other public policy areas (Davies, Nutley, and Smith 2000; Nutley, Walter, and Davies 2007; Sharples 2013). Nevertheless, debates about the concepts of ‘evidence’, ‘policy’ and ‘practice’ and the interconnections between these continue (e.g. Davies and Nutley 2008; Nutley, Walter, and Davies 2007; Nutley et al. 2010). For example, Nutley et al. (2010, 133) explain:

Definitions of EBPP (Evidence-Based Policy and Practice) range from a fairly narrow definition of its meaning – a movement that promotes the use of systematic reviews of research studies aimed at assessing the evidence of health and social policy interventions and the translation of these into evidence-based intervention programmes, tools and guidelines – to broader,
all-encompassing views about what it represents (Nutley, Walter, and Davies 2007) … we defined EBPP in broad terms as an approach that helps people to make well-informed decisions about policies, programmes, projects and practices by putting the best available evidence at the heart of policy development and implementation.

Questions about the nature, quality and relevance of evidence in education have been particularly pronounced since the 1990s (Dagenais et al. 2012). While responses have been mixed, the subsequent years have seen substantially increased attention to research use in education practice (Bell et al. 2010; Campbell 2016; CUREE 2007, 2011; Nelson and O’Beirne 2014) and policy (Brown 2013; Gough et al. 2011). One approach to improving the quality of evidence in education has focused on methods. An emphasis on the scientific methods of randomised control trials using experimental designs has been promoted as the ‘gold standard’. This can be observed, for example, within the USA legislation of No Child Left Behind or in debates about education evaluation in England (Goldacre 2013). It has been accompanied by activity to increase the scientific rigour of research in education to identify ‘what works’ (Slavin 2002), including increasing attention to establishing systematic reviews and evaluations of the effectiveness of interventions. However, alongside advocates of particular methods, there have also been critiques. The emphasis on a particular scientific form of systematic review, developed in clinical research sciences, has been critiqued for its capacity to address emerging and complex policy questions where there may not be an established evidence base (Boaz et al. 2008). Rather than using experimental research designs or systematic reviews to identify what works and apply this evidence on a large scale across an education system, some critics have suggested the need to value the unique nature of education and embrace the diversity, subjectivity and agency of teachers and students (Olson 2004). Notions of hierarchies of method and evidence have been criticised for being unrealistic and underplaying the wide array of types of evidence that influence education practice, such as professional knowledge, practical experience, parent and student voice, public opinion, media, and political perspectives. Indeed, Dagenais et al. (2012, 286) define evidence-based education as ‘the synergistic integration of the best available empirical evidence and professional wisdom in making decisions’. As Sharples (2013, 7) explains:

What is evidence–informed practice? When trying to clarify what we mean by evidence–based practice perhaps it is easier to start by saying what it isn’t. Evidence–based practice is not ‘cook book’ teaching or policing, nor should it be about prescribing what goes on from a position of unchallenged authority. It is about integrating professional expertise with the best external evidence from research to improve the quality of practice. It is important to remember that there is a huge amount of experiential knowledge that is not captured by research …

Miller and Pasley (2012) go further to suggest that education is essentially a practice-driven field where professional knowledge dominates.

The term ‘knowledge mobilisation’ has emerged to conceptualise ‘the active and dynamic process whereby stakeholders (e.g. researchers, practitioners, policy makers and community members) share, create and use research evidence to inform programming, policy, decision-making and practice’ (Malik 2016, 11). Mobilisation implies social interaction and iterative processes of co-creating knowledge through collaboration between and among researchers, decision-makers and practitioners (Cooper 2014; Phipps and Morton 2013). This activity can take place individually, in groups, through networks and at a system level to inform decisions and practices with the ultimate goal of improving educational outcomes (Briscoe et al. 2016; Campbell et al. 2014).
Hence, a key debate is how to get evidence *into* practice and vice versa. Writing in the field of healthcare, Best and Holmes (2010) summarise three predominant models for knowledge to action processes:

- **Linear models** in which research is produced and then made available for users in a mainly one-way relationship;
- **Relationship models** (such as network and partnership models) that build on linear models but focus on enhancing relationships between and among researchers and practitioners to facilitate the development and mobilisation of research and practice connections;
- **Systems models** that move away from linear processes and involve a more complex process involving interaction, co-creation and implementation of evidence throughout all levels of a system, plus identifying and addressing barriers to mobilising research and practice knowledge for evidence use.

In this article, we examine the adaptation of linear, relationships and system models to mobilise and apply evidence in educational practice, through a case study of the KNAER.

**The Ontario education system and research and evaluation strategy**

Within Canada, education is a provincial level responsibility. The province of Ontario is responsible for an education system involving almost 5000 schools administered through 72 school districts and 11 school authorities. The Ontario Ministry of Education is the provincial government department responsible for the development and delivery of policies, programmes and practices to achieve the government and ministry’s goals of achieving excellence, ensuring equity, promoting well-being and enhancing public confidence.

An Ontario Research Strategy was initiated in 2005 by the Ministry of Education and later expanded to be the Ontario Research and Evaluation Strategy. It has six key components:

- **leading** the ministry’s research agenda to coordinate and manage ministry research and evaluation activities to support provincial education goals;
- **applying** research and evaluation to support evidence-based policy and programme decisions and practices;
- **building** individual and organisational *capacity* to access, use and conduct research and evaluation;
- fostering research collaboration through *networking and partnerships* between and among ministry staff, and researchers and educators across Ontario, to address priority research and evaluation needs;
- **communicating/mobilising** well-validated bodies of knowledge so that they can be used to shape education policy and practice; and
- **contributing** to the provincial, national and international body of research knowledge about educational policies, programmes and practices. (Ontario Ministry of Education 2012).

In order to realise the Strategy, a range of initiatives and activities have been undertaken, with a common emphasis on developing capacity to mobilise, understand and apply research for educational improvement, including the KNAER.
The knowledge network for applied education research (KNAER)

Launched in 2010, the KNAER was established through a tripartite agreement with the Ontario Ministry of Education and two research-intensive universities: University of Toronto and Western University. The KNAER is the first initiative of its kind in Ontario that features a government–university collaboration focusing on knowledge mobilisation in education. The KNAER’s mission is to engage with groups of practitioners and researchers to facilitate the development and dissemination of advanced knowledge, through the application of education research, extending to effective practices in classrooms, schools and school boards, as well as provincially. The KNAER also supports knowledge brokering to facilitate and lead the spread of established and new evidence through networks across Ontario and beyond (Briscoe et al. 2016). Utilising four priority areas identified by the Ontario Ministry of Education to improve student outcomes, the KNAER carried out its mandate in 2011 through a call for knowledge mobilisation proposals in four areas: exploiting available research, building/extending networks, strengthening research brokering and world-leading researcher visitations. Forty-four projects were funded, involving over 150 partners.

Methods

We utilised a qualitative case study method to investigate the KNAER’s approaches to developing knowledge mobilisation activities. Our inquiry can be considered a case study in terms of Cresswell’s (2007) definition where a bounded case is explored ‘over time, through detailed, in-depth data collection involving multiple sources of information … and reports a case description and case-based themes’ (2007, 73, emphasis in original). Data informing this case study was collected over four years (2010–2014) and focuses on two levels of the development, implementation and experiences of the KNAER.

Ethical considerations

Interviews with expert researchers and project leads (P.L.) required approval from each academic institutions’ Research Ethics Board. All participants were presented with a letter of information that outlined the purpose of the study, participant involvement, guarantees of anonymity in any public reporting or publishing and assurances that they could withdraw from the research process at any point. Participants were required to sign a consent form signifying their willingness to participate and their understanding of the study parameters.

Process of analysis

We investigated the work of the KNAER provincial partners (the Ministry, University of Toronto and Western University) involved in the overall governance of KNAER through the Planning and Implementation Committee (PIC). Seventeen Planning and Implementation Committee meeting notes (between 15 November 2010 and 20 September 2013) plus nine meetings of the University of Toronto and Western University KNAER Co-Directors and team members were analysed. This document analysis included a content and theme-based four-step approach. This involved (i) identifying content and main themes; (ii) assigning codes to the
themes; (iii) classifying responses under the main content and themes and; (iv) integrating themes and responses into the overall findings (Kumar 2014). Specifically, the analysis included identifying content from the Planning and Implementation Committee’s notes that indicated how the Planning and Implementation Committee approached knowledge mobilisation, what elements made up their strategic plan, what key activities were undertaken, and what strategic and operational approaches university partners engaged in to fulfil the goals of the KNAER. This content was then integrated into the larger themes such as the work of university partners, reported in the findings section of this article. In addition, we have used Google analytics to explore the number of users and page views for the KNAER website, http://www.knaer-recrae.ca/, and Twitter analytics to track number of followers and Twitter activity for the KNAER account, @KNAER_RECRAE.

In addition to investigating the work of the KNAER provincial partners, we also explored the challenges and successes of 44 KNAER-funded projects. This exploration included analysis of the 44 knowledge mobilisation plans submitted by KNAER projects at the commencement of the initiative and 141 interim reports submitted by each Project Lead. Each knowledge mobilisation plan included:

- an overview of the project,
- budget request,
- project lead,
- partnership information and qualifications, and
- relevant experience and expertise of those involved in the project.

A project work plan that included a statement of objectives, focus/alignment with Ministry priorities, partnerships and any connection to previous research was also submitted. The 141 interim reports included:

- accomplishments,
- next steps,
- challenges and
- success stories.

The knowledge mobilisation plan and interim reports were analysed using Kumar’s (2014) four-step process mentioned previously. The section headings from the knowledge mobilisation plans and interim reports informed the classifying of responses for the first step of the analysis process. For example, we identified the overview of the project from the knowledge mobilisation plan and the accomplishments, next steps, challenges and success stories as the content and main themes from the interim reports. These themes were then coded further using similar theme headings, such as accomplishments and challenges. The content within each theme was further coded into smaller more specific themes. For example, the theme coded as overview of the project was further coded for the sub-themes, project goals and project outputs. The theme, challenges, was further analysed with more focused sub-themes coded as project structure challenges and project process challenges.

To further investigate the experiences of KNAER projects during their implementation, each Project Lead was sent an invitation via email to participate in a virtual discussion about networking. In total, 21 people participated from 19 of the 44 projects, of which five contributed to more than one session. Data were collected through eight web conferences using the Blackboard interface, one face-to-face interview, one phone interview and five written
submissions. All sessions were recorded and transcribed for analysis. The data were collected between 9 November and 3 December 2012.

Participants were provided with three main questions before the sessions:

1. What networking strategies (e.g. relationship building, dissemination of knowledge products, network creation, network expansion) are working well within your network?
2. Other than time and funding, what challenges are you experiencing with your networking?
3. How can we make connections to education organisations (e.g. schools, boards, professional associations, universities and government) to access, share, understand and use research-based knowledge?

In order to learn from the overall experiences, we analysed 43 Final Reports submitted by the KNAER projects, which included:

• information about projects,
• an outline of the action plan that included activity/output,
• knowledge mobilisation products, events, networks and efforts,
• additional impact measures,
• challenges,
• success stories/accomplishments, and
• recommendations.

To supplement our analyses, we reviewed an independent evaluation conducted of the KNAER (McGuire, Zorzic, and Frank 2014) and a report conducted to review the first phase (2010–2014) of KNAER (Campbell et al., 2014).

Findings

In this section, we discuss the knowledge mobilisation strategies, success and challenges of the provincial KNAER partners and of the 44 KNAER projects.

The work of the provincial partners: leading a network to mobilise evidence

Roles and activities of the planning and implementation committee (PIC)

The Planning and Implementation Committee was established to support the overall governance of the KNAER. The Planning and Implementation Committee consisted of senior representatives from the three KNAER partnership organisations, including the Ministry of Education, University of Toronto and Western University. The Planning and Implementation Committee’s official role included three core responsibilities: (1) Proposals: Approving research and knowledge mobilisation proposals submitted to the KNAER; (2) Partnerships: Ensuring that collaborative partnerships were developed at the local, provincial, national and international levels; and (3) Planning: Approving the KNAER’s operational and strategic plan. In March 2012, the Planning and Implementation Committee also outlined specific functions for itself that included: priority setting, establishing a vision, sustainability of the KNAER projects, leveraging money spent to achieve maximum value, overseeing the evaluation of the KNAER and interpreting the results of an evaluation.
In terms of project proposals, the Planning and Implementation Committee was involved in the open call for project proposals, and in reviewing and approving proposals once submitted. Specifically, the Planning and Implementation Committee developed criteria for external reviewers, reviewed recommendations from universities to accept or reject proposals, and made final approval decisions. It also engaged in troubleshooting challenges that arose during the proposal process.

The Planning and Implementation Committee was instrumental in supporting collaborative partnerships at the provincial, national and international levels. In September 2012, a working group was established to examine the networking and partnerships of the 44 projects. Findings from this working group indicated that project networks had facilitated knowledge flow and collaborative inquiry, knowledge products were used to develop networks, and that social processes (including the development of trust between partners) played an important role in developing and expanding networks.

The Planning and Implementation Committee’s role in planning was critical as it included not just operational and managerial aspects, but also strategic leadership. When it became clear that a lack of knowledge and skills concerning knowledge mobilisation itself within the education sector could potentially limit the effectiveness of the KNAER projects, the Planning and Implementation Committee agreed that more knowledge mobilisation resources, training, and support was needed for projects. The strategic plan included: (1) targeted education foci for the KNAER; (2) knowledge mobilisation of the KNAER; (3) impact of the 44 KNAER projects; and, (4) evaluation and impact of the KNAER.

**Work of the university partners**

The university partners took on the roles of operational management, strategic leadership, and research and knowledge mobilisation expertise. ‘Operational management’ refers to the tasks and managerial activities associated with many of the procedural aspects of the KNAER. Probably the most intensive operational management aspect in which the universities engaged was the call for proposals, project selection process, signing, initiation and maintaining of the contractual agreements between the KNAER and the 44 individual projects.

‘Strategic leadership’ refers to the purposeful exercise of influence over the KNAER, the Ontario education system, and research communities. Strategic leadership was developed through initially supporting and ensuring the success of the 44 KNAER projects and then eventually utilising these 44 projects to think about how to continue building capacity within the Ontario education sector. The university partners enacted the KNAER vision and mission by building a collaborative working relationship within the Planning and Implementation Committee and making sure that the KNAER vision came to fruition through identifying shared short-term goals and constantly communicating the KNAER’s purpose in different formal and informal opportunities. Both university partners spent considerable time and effort researching and learning from this initiative. The insights gleaned have been utilised to strengthen the individual projects throughout the KNAER and at the higher, organisational level in leading the provincial initiative.

An informal working group involving the university partners developed to establish and revise a knowledge mobilisation plan for the overall KNAER initiative. These knowledge mobilisation approaches included: (i) disseminating information on knowledge mobilisation and related strategies to the education sector in Ontario and beyond, (ii) supporting and
building relationships and capacity with KNAER Project Leads and (iii) promoting KNAER project products. While there were many components to the various KNAER knowledge mobilisation plans, we briefly highlight three approaches.

**Toolkit and brochure.** An online toolkit was created to showcase the work of the KNAER projects and to make their products widely available to the public. This toolkit was developed in a way that made it easy for users to find items of a particular topic or that were directed at a particular age group. It has since been modified from its original version to also make it searchable by keyword and item type. The toolkit uses external links as much as possible to link back to a project’s individual website or where they have chosen to host their items. This gives the user the chance to explore the project’s own website and discover even more tools and resources related to their same topic of interest. In addition, a KNAER brochure was produced to provide background information on the KNAER, knowledge mobilisation information, the types of projects that were funded, the kinds of resources that were produced and how users can further connect with the network and its members.

**Twitter.** Twitter has become a viable social media tool for the KNAER. KNAER Twitter strategies included both linear and relationship approaches. The linear approach involved a static method, tweeting (pushing out) KNAER project products and promoting events. The KNAER Twitter strategy also attempted to build connections and facilitate relationships. It did this through connecting products and Project Leads with other stakeholders in similar areas and promoting the use of knowledge mobilisation strategies in the education sector. At the time of writing, the KNAER twitter account had over 3,000 followers.

**KNAER website**

The original KNAER website functioned as an information resource for those interested in applying for funding. Once the funding was awarded to the 44 projects, the website shifted into a portal for projects to obtain report templates, information about deadlines and documents, and other administrative functions. In 2013, the KNAER website was repurposed from a repository of project documents and general initiative information to a website which features regularly updated information, such as upcoming events, new blog entries, names of intermediaries with whom to connect and a live Twitter feed. The blog section continues to gain momentum as Project Leads write about their completed projects, available resources and future-related work. The website also acts as a knowledge broker to connect people to tangible outputs created by KNAER projects and the KNAER, such as the toolkit, and provides the public with plain language project summaries and cross-links with many of the networks involved in the KNAER.

**KNAER projects’ knowledge mobilisation strategies, challenges and successes**

The KNAER funded 44 projects aligned with at least one of the four priority areas: teaching and learning; equity; engagement; and transitions (see Figure 1). The KNAER funding emphasised four categories of knowledge mobilisation (see Figure 2): effective exploitation of available research; building or extending networks; strengthening research brokering work; and/or visits by world-leading researchers.
As part of their contract with the KNAER, projects were expected to fulfil a set of agreed upon deliverables, including outputs customised specifically for their initiative. ‘Outputs’ are any product or activity created by a project that was intended to mobilise knowledge to stakeholders and/or a wider audience. These outputs were meant to help extend effective practices into classrooms, schools and school boards. Overall, 1,084 outputs were produced by the 44 KNAER projects. Table 1 shows the number of outputs created by projects in each category. The types of outputs most frequently created were videos, presentations, lesson plans, summaries and workshops in an array of engaging and informative formats. The least produced outputs included data visualisations, list-servs, radio usage, books and eBooks, and web repositories.

**Figure 1.** The 44 KNAER projects grouped by priority area (percentages). Source: Campbell et al., 2014.

**Figure 2.** The 44 KNAER projects grouped by category of funding. Source: Campbell et al., 2014.

**Table 1.** The KNAER projects’ outputs by funding category.

<table>
<thead>
<tr>
<th>Category</th>
<th>Exploiting research</th>
<th>Building/extending networks</th>
<th>Knowledge brokering</th>
<th>World-leading scholar visitations</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of outputs</td>
<td>424</td>
<td>162</td>
<td>409</td>
<td>89</td>
<td>1084</td>
</tr>
</tbody>
</table>

As part of their contract with the KNAER, projects were expected to fulfil a set of agreed upon deliverables, including outputs customised specifically for their initiative. ‘Outputs’ are any product or activity created by a project that was intended to mobilise knowledge to stakeholders and/or a wider audience. These outputs were meant to help extend effective practices into classrooms, schools and school boards. Overall, 1,084 outputs were produced by the 44 KNAER projects. Table 1 shows the number of outputs created by projects in each category. The types of outputs most frequently created were videos, presentations, lesson plans, summaries and workshops in an array of engaging and informative formats. The least produced outputs included data visualisations, list-servs, radio usage, books and eBooks, and web repositories.
Using information from the submitted interim and final reports, we now describe the knowledge mobilisation strategies used by the projects, highlight successes and recount the challenges that projects encountered within each of the KNAER four funding categories.

**Category 1: exploiting research**
Projects in this category created knowledge mobilisation strategies that aimed at taking existing research and connecting it to practice, policy or other specific stakeholders in ways that were meant to be useable and accessible.

**Strategy.** Most projects within this category followed a similar knowledge mobilisation strategy, which involved: establishing connections and engaging communities of practice with people relevant to the project’s focus, creating an analysis of needs based on evidence collected from or by the community of practice, designing or producing a relevant knowledge mobilisation product with the purpose of improving practice, monitoring the results or impact of the new product and, finally, sharing the dissemination process and results with others.

While all 13 projects had a similar knowledge mobilisation plan, the content or approach within the plan was not always the same. The project titled *Knowledge Mobilisation to Close the Gap Between Principles and Practices in Assessment for Learning in Mathematics Education* included an exceptional approach. The project coordinators wanted to educate teachers in a way that would result not only in their learning various techniques, but also in real changes to their beliefs and their practices. Therefore, professional learning opportunities were facilitated in ways that communicated not only pedagogy, but also used members’ insights, combined with research about conceptual change, to construct professional learning experiences. The impact that these experiences had on teachers was monitored. According to the project’s final report, participants conveyed that the project’s process for facilitating professional learning allowed them to move from surface to deep learning and make changes in practice. This project exemplifies the need for knowledge mobilisation strategies that not only focus on processes and products of knowledge mobilisation but also include processes that promote conceptual change.

**Challenges.** Projects funded to utilise available research more effectively faced a unique challenge. Researchers and practitioners reported that thinking about how to use research in different ways was, in itself, a new challenge for them. Many identified having to first shift their focus to how communities of practice operate and redefine the expectations of the project. For example, many researchers predominantly write for an academic audience accustomed to determining how the research largely informs theory rather than practice. Connecting one’s findings to how practitioners might utilise them in practice required a shift in language use that is specific to practitioners and reflects their daily work experiences.

**Successes.** Successes in this category can be considered in a number of ways. First, by the substantial number of outputs: of the 13 projects, 12 presented at conferences, one project completed a book chapter, and many projects published articles in both peer-reviewed journals and professional journals. Another way success was determined by the Project Leads was that they were able to extend their reach. For example, the coordinators of the project entitled *The Use of Data Visualisation Techniques to Share and Apply TDSB Research*
Findings were approached by the Higher Education Quality Council of Ontario (HEQCO) to assist in the development of an infographic. Five other groups also approached this project to conduct additional presentations. Other successes included the changing mindset in terms of professional learning. All project participants thought about professional learning beyond involvement in the one-day workshop to implement innovative ways to interact and learn, including online knowledge building, social networking and collaborative working.

Category 2: building or extending networks
Projects in this category focused on building or extending networks in order to further the reach of existing research. These projects were tasked with identifying priority areas, identifying what capacity exists within those areas and how more capacity can be built through the use of networks.

Strategies. Not surprisingly, all six projects exhibited similar knowledge mobilisation efforts including: creating or extending existing networks, developing a needs-based or gap assessment, and producing appropriate products and dissemination processes based on the results gathered. Half of the projects created new partnerships within existing networks, while the other half sought to strengthen existing partnerships within their network. In all cases, projects connected with an already established network and used their membership base to recruit participants for their project.

Once those projects that were establishing new networks created professional learning groups, a needs-based assessment was completed to decide what needed to be mobilised. For those projects that were extending their network, literature reviews or action research projects were used to determine the needs of professional learning communities. The purpose of these assessments was to conduct gap assessments, establish the projects’ outputs and meet the goals of the projects in building or extending further research that was needed in specific priority areas. Products were created based on the information gathered. These products were using online mediums (mostly websites) to enable end-users to implement or ‘use’ the product. Follow-up discussions, using online tools, were conducted to determine how the products were received.

Of course, advanced knowledge mobilisation strategies need more than products alone, but products are nevertheless important for effective knowledge mobilisation strategies. Even though the projects funded in this category were expected to build and extend networks, they also generated numerous products, for example: digital working papers, videos of guest speakers/lecturers, toolkits, online newsletters, blogs, websites and lesson plans. These products were connected to a more elaborate knowledge mobilisation plan for networking for a particular purpose. For example, the project entitled Exploring Learning and Differentiated Instruction for the Difficult to Learn Topic of Grade 6 Fractions using Teacher-Coach-Researcher-Developer Networking demonstrated an exemplary knowledge mobilisation action plan focused on four main tasks: (i) building teacher capacity through learning opportunities focused on connecting research to practice, (ii) creating a knowledge mobilisation product to allow for widespread dissemination of the primary and secondary research, (iii) examining the teaching and learning for a particular topic/subject through a literature review and action research with teachers and students and, (iv) unpacking the process through which the work was completed in school boards, as well as developing a more precise understanding of the necessary facilitation skills and knowledge for greater impact on student learning.
Challenges. The major challenge for projects that focused on building or extending networks was time. Most projects indicated that outputs took much longer to produce than originally anticipated, particularly when they were of an innovative nature. Other time limit challenges were: (i) delays in receiving research ethics approvals; (ii) scheduling conflicts due to heavy workloads and differing school year calendars that pushed projects into the following year; (iii) limited access to key gatekeepers at school boards and other organisations, which meant that projects had to spend considerable time trying to gain access to key influential people; (iv) not enough time to build trusting relationships; and, (v) delays in, or changing plans to, implementation into other school boards and with stakeholders.

Successes. The overarching success theme was access and connection to others. Projects reported that the use of learning communities to build and extend networks allowed for sharing, discussions and networking between participants and groups who were unlikely to communicate had the KNAER project not connected them. For example, the project entitled Knowledge Mobilisation, Early Learning Research and Online Learning created a learning community for researchers, early childhood educators, teachers and principals to connect in the area of early childhood education research. The variety of stakeholders involved allowed for rich discussions, multiple perspectives and deeper understandings. Some projects were able to work with policy-makers and influence policy.

Category 3: strengthening research brokering
The projects funded in this category were expected to connect researchers with one another or with organisations interested in similar research in order to utilise existing resources and expert knowledge, as well as expand impact.

Strategies. In order to strengthen research brokering, many of the projects first organised steering committees to guide their work. The next step was to gather information, mainly through either conducting a literature review on a specific topic or by collecting information from stakeholders through activities, such as discussion forums and surveys. Once a gap in practice was identified, the projects served as research brokers by collecting and mobilising relevant knowledge to inform practice. For example, the project entitled How Can a Multidisciplinary Team Take the Knowledge and the Research Results of a Proven Evidence-Based Initiative and Mobilise this Knowledge to Strengthen Tier 1 Instruction in Reading Across Kindergarten Teachers and ECE Staff provided a succinct overview of the general knowledge mobilisation plan used in this category. The project first formed a multidisciplinary team that acted in an advisory capacity for decision-making throughout the entire project. Next, this project included innovative knowledge mobilisation strategies to engage participants. One example of such a strategy was the TWO-WAY Scheduled Weekly visits, a process wherein either teacher visited a mentor’s classroom or the mentor visited the teacher’s classroom. A member of the multidisciplinary team for modelling and coaching accompanied each visit. During one of the project’s seminars, a ‘Bring “n” Brag’ strategy was promoted. This was a strategy to share an idea that was implemented and represented a promising practice. Lastly, the project designed a logo to represent the importance of their topic. Project members believed the logo helped to capture the essence of the project’s goals and objectives.

As part of their knowledge mobilisation plans, projects in this category also capitalised on the use of media. For example, the project titled It’s the Method that Counts: Using Case
Studies and Problem-Based Learning to Teach Science and Other Disciplines created and promoted a discussion through a Facebook group where interested teachers could join and post comments. The project entitled Beyond the Council Meeting: Mobilising Research for Effective Parent Engagement was one of the few projects that used extensive print and radio media coverage as part of their strategy.

**Challenges.** Even though the projects created a substantial number of outputs, they encountered a number of operational challenges during the process including: coming to a consensus between partners in terms of the knowledge to be shared; dealing with differing views about project topic areas; balancing busy schedules of partners with completing project goals; and a lack of project topic knowledge on the part of participants and stakeholders.

**Successes.** Many of the successes for projects in this category involved the building of lasting networks with different stakeholders for continued knowledge brokering. Success stories generally focused on the effective use of intermediaries to connect research to practice: for example, working with teachers’ federations.

**Category 4: visiting world experts**
The projects in this category invited experts recognised for their scholarly work in high-priority education areas to Ontario to share their knowledge with various stakeholder groups and with the larger education sector.

**Strategies.** At first glance, it appeared that all projects in this category utilised a simple knowledge mobilisation plan, which included hosting visiting scholars who were required to fulfill the following: give at least three talks or seminars that were open to the general public to attend, perform media work, hold a one-day seminar or master class with researchers and graduate students, and meet with key stakeholder groups and research networks. However, it appears that project funding was used to support a part of a larger knowledge mobilisation effort than that which already existed in most of the projects. First, projects either established partnerships with recognised networks or forged new networks and usually included a cross section of partnerships. Each project involved at least one school board and one university as partners. Prior to organising the events, all projects connected with potential partners to bring awareness of the expert’s research for end-users.

Not surprisingly, all the projects’ main knowledge mobilisation strategies focused on ways to mobilise the visiting experts’ knowledge. Activities involved workshops, guest lectures, research days, seminars, small group discussions and panel talks. The most common activity was guest talks. The use of traditional media (i.e. press releases, newspaper articles, radio, TV) was the least utilised knowledge mobilisation strategy. However, all projects in this category utilised social media outlets and communication processes established by the partners, such as their websites and blogs.

**Challenges.** Since the expert visits were generally short in duration, maximising the benefits of these visits was a common challenge for projects in this category. For example, traditional media was often difficult to contact and therefore to utilise; short timelines for visits meant not all interested schools and organisations were able to participate; working out how to sustain the project – especially what sustaining an expert visit involved – was
a challenge. In addition, some projects reported scheduling issues and had to reduce the number of activities due to time constraints.

Successes. While projects in this category received modest amounts of funding for the shortest time period, it appears that a number of these projects were engaged in more complex models of knowledge mobilisation in comparison with projects in other categories. This increased complexity may be due to the visitations being part of larger, already established knowledge mobilisation efforts. For example, the project entitled *Putting Theory into Practice: Finding Paths to Students’ Engagement and Equity* demonstrated how knowledge mobilisation strategies were more than a linear model with end-products, but rather engaged end users to discover problems of practice, consider solutions through evidence and apply these possible solutions. The project utilised the expert’s visit to generate interest among teachers and to establish action research projects that would involve education researchers, graduate students and teachers. In total, eighteen teachers submitted proposals and five were selected for funding.

Conclusions

The first generation of approaches to connect evidence to practice was linear, with the assumption that external experts produce the evidence and it is then disseminated for practitioners to implement (Best and Holmes 2010). This thinking can still be seen if a focus is only on increasing educators’ access to evidence that they are expected to then apply in practice. Increasing access to quality research as well as presenting and packaging such research in accessible forms is important; this approach is a necessary first step. However, it is insufficient to achieve the full potential of evidence-informed practice, which requires mobilising knowledge through interactive processes of knowledge co-creation, sharing and application between and among researchers, practitioners and policy-makers. This has led to a second generation of knowledge-to-action models, referred to by Best and Holmes (2010) as relationship models, which emphasise the development of networks and partnerships. There are many advantages to relationship models and approaches, compared to a focus only on disseminating and packaging research. These advantages include, for example, developing linkages and partnerships between and amongst practitioners, researchers and policy-makers; raising awareness of research and practice knowledge; increasing engagement in and with research; engaging in capacity building to support knowledge mobilisation; and providing support for implementing evidence-informed practices (Cooper 2013, 2014). However, relationship models may still function on an assumption – if not the intent – that the main relationship is research-to-practice rather than, importantly, also valuing and enabling practice-to-research knowledge exchange led by educators (Tseng 2012). Hence, the third generation of approaches proposed by Best and Holmes (2010) are systems models which seek to engage organisations and individuals across the system to address challenges to, as well as support for, developing evidence-informed practices. In their research on evidence-informed education policy, Gough et al. (2011) developed a model of the ‘evidence production-to-use system’ which includes evidence production, mediation and use (as identified in previous models), but adds, importantly, stakeholder engagement, research on the actual processes and outcomes of evidence-informed policy, and system-wide engagement. They explain that ‘The evidence informed system itself … encompasses all of the elements
… as a whole system, which is qualitatively different from examining the components on their own’ (Gough et al. 2011, 23). Nevertheless, very few examples of systems models exist in practice.

The KNAER can be best described as adopting a three-in-one model that included aspects of a linear, relationships and systems approaches with periods where some model features were more emphasised than others. Initially, the KNAER adopted a linear approach with some relationships characteristics. The work of the Planning and Implementation Committee and the university partners focused on approving, funding and implementing numerous projects that aimed to transfer knowledge to practitioners through the dissemination of research-based products (such as research summaries and lesson plans) at events (such as one-day workshops or lectures), and through networks (online and in person). In the first 18 months, the KNAER tended to focus on producer-push strategies, rather than user-pull strategies – that is, ‘knowledge’ was primarily understood as ‘research knowledge and data,’ which was expected to be transferred in one predominant direction: from producer – usually an academic researcher – to users that were almost exclusively education practitioners and expected to be taken up in practice within a relatively short period of time. The Planning and Implementation Committee was initially consumed with operational tasks, such as creating a proposal system, designing the call for knowledge mobilisation proposals, managing the adjudication process, setting up contracts and agreements with individual project institutions and the governance and monitoring of expenditures. Analyses of the first sets of interim reports and data from virtual discussions with KNAER Project Leads indicated that the general education sector and KNAER projects had limited knowledge about effective knowledge mobilisation and partnership building, as well as limited skills and resources to successfully develop and execute focused knowledge mobilisation plans that could impact practice in schools and classrooms. As is a common concern with relationships models, the KNAER projects experienced wider system barriers to knowledge mobilisation that had not been considered at the beginning. For example, providing knowledge mobilisation training, helping projects develop focused strategic, operational and evaluation plans and facilitating connections among KNAER projects with other networks and intermediary organisations had not been a primary focus of the work of the Planning and Implementation Committee at the beginning of KNAER. However, these activities emerged as areas of priority need over the experience of the initial KNAER projects.

A second stage of the KNAER in year two (2012) emerged, in which the university partners became more involved in relationship building and knowledge mobilisation supports for projects, and the overall KNAER (involving elements of a relationship and systems approach). From this point forward, the KNAER team took a more active approach to providing knowledge mobilisation support to the 44 projects and education sector. In short, the KNAER team realised that knowledge mobilisation capacity building among the projects and within the education sector was an important next step, as KNAER projects needed to move beyond producer-push strategies if they were going to have impact. It could be argued that the KNAER projects emphasised different knowledge mobilisation models because of how the categories in the call for proposals were structured. Projects in Categories One (Exploiting Available Research More Effectively) and Four (Visits by World-leading Researchers) demonstrated a linear model approach to knowledge mobilisation. Projects in Categories Two (Building or Extending Networks) and Three (Strengthening Research Brokering) approached knowledge mobilisation more from a
relationship model. As funding for the 44 projects was coming to an end in 2013, projects were generating numerous and varied knowledge mobilisation outputs and attention turned to how best to support projects in continuing their knowledge mobilisation work beyond the projects’ funding. The KNAER team next began a strategy where the KNAER project managers from each university engaged in ongoing conversations with individuals from projects. This was in order to, again, encourage them to think beyond traditional dissemination practices and extend their knowledge mobilisation strategies – for example, by extending their networks, and building and deepening partnerships that could be sustained over the long term. It became clear that while KNAER was intended as a system-wide initiative, systemic capacity and sustainability had not been fully achieved and would need to be explicitly part of the purpose, structures and strategies of the next phase of KNAER (Campbell et al., 2014).

Looking forward, the KNAER is seeking to further advance a systems approach. This is being developed by establishing large thematic knowledge mobilisation networks to generate and apply evidence in and for practice. This approach stands in contrast with isolated or linear models to evidence production and/or dissemination or relationships models that build connections, but do not necessarily attend to systemic and sustainable knowledge mobilisation by addressing barriers of capacity and resources required to use evidence in and from practice (Campbell et al., 2014). Blending the importance of quality products, collaborative relationships, commitment to developing capacity and addressing challenges system-wide are crucial to the mobilisation of research and professional knowledge genuinely for evidence-informed practice.

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