KNAER RECRAE

Knowledge Network for Applied Education Research

Réseau d'échange des connaissances pour la recherche appliquée en éducation

KNAER FINAL REPORT

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Contents

Contents ii
Figures iv
Tables iv
Executive Summary i
The Knowledge Network for Applied Education Research (KNAER) Final Report ii
What is the KNAER? ii
The Planning and Implementation Committee (PIC) ii
Work of the University Partners and KNAER Team ii
The 44 KNAER Projects iii
Project Outputs iii
Projects' Knowledge Mobilization Strategies iii
Collaboration through Partnerships and Networking iv
External Evaluation of the KNAER v
Utility of the KNAER: Recommendations Based on Analyses of the KNAER Tri-partite Agreement Deliverables v
Reviewing Evidence to Inform a Future Model(s) vi
Conclusions: Recommendations and Proposals for a KNAER Phase II viii
Part One: The KNAER Initiative 13
Introduction 14
What is the KNAER? 15
Roles and Activities of the Planning and Implementation Committee (PIC) 15
Work of the University Partners 17
KNAER "Team" KMb Plan 17
Toolkit and Brochure 18
Twitter 18
KNAER Website 20
The 44 Projects 21
Overview 21
Summary Analysis of Projects' Outputs and Knowledge Mobilization Strategies 22
Project Outputs 23
Analysis of Projects' Knowledge Mobilization Strategies 23

Collaboration through Partnerships and Networking 30
Relationship Building 31
Network Creation 31
Network Expansion 32
Dissemination of Knowledge Products 32
Network Challenges 32
External Evaluation of the KNAER 32
Conclusion and Recommendations: Utility of the KNAER 34
Deliverables in the Tri-partite Agreement 34
Part Two: Evidence to Inform Future Model(s) 37
Reviewing Evidence to Inform a Future Model(s) for KNAER Phase II 38
Review of Literature: Connecting Research, Policy and Practice through Mobilizing Knowledge for Evidence-Informed Education 38
Development of Models of Evidence-Informed Policy and Practice and Knowledge Mobilization 39
Three Main Models: Linear, Relationships, and Systems 39
Conclusions from the Review of Literature and Implications for Future KNAER Considerations 51
Views and Advice from National and International Experts 51
Strategic Planning Sessions 71
Conclusion 75
Part 3: Recommendations and Proposals for a KNAER Phase II 76
Recommendations for Continuation but Adaptation and Evolution of KNAER to KNAER Phase II 77
Evolution of KNAER 77
Adaptations to KNAER for Future Models and Actions 79
KNAER Phase II: Proposals for a Model 83
KNAER Timeline Diagram 90
References 102
Appendices 104
Appendix A – Work of University Partners: Activities 104
Appendix B – KNAER Brochure 107
Appendix C – Full list of KNAER Projects, Organized by Project Category 115

Appendix D – KNAER Project Output Types 118
Appendix E – Project Output Quantities, Organized by Project Category 119
Appendix F – Interview Questions 121

Figures

Figure 1: Proposed model for KNAER Phase II. ix
Figure 2. Overview of KNAER's Twitter activity from October 11, 2013 to October 22, 2014…19
Figure 3. KNAER Twitter Tweet history. 19
Figure 4. Summary of activity from April 2014 onward. 20
Figure 5. Sessions on KNAER website by country from February 2013 onward……21
Figure 6. Visitors to KNAER website by country from April 2014 onward. 21
Figure 7. 44 KNAER projects by priority area. 21
Figure 8. 44 KNAER projects by category of funding. 22
Figure 9. Original KNAER model (Source: ERESB, 2014). 84
Figure 10. Proposed model for KNAER Phase II. 85

Tables

Table 1. KNAER projects' outputs by funding category 23
Table 2. Pre-Year and Year 1 of proposed KNAER Phase II 91
Table 3. Years 2, 3 and 4 of proposed KNAER Phase II 94
Table 4. Year 5 of proposed KNAER Phase II 100

Executive Summary

The Knowledge Network for Applied Education Research (KNAER) Final Report

To review the utility of the KNAER, this Final Report provides:

- an overview of the purposes, mission, governance, and operation of the KNAER;
- analysis of roles and activities of the Planning and Implementation Committee (PIC);
- discussion of the work of the university partners for the KNAER; and
- analysis of the knowledge mobilization (KMb) strategies, successes and challenges of the 44 KNAER funded projects.

We conclude that KNAER has had high utility.

To inform recommendations for a future KNAER or other model(s), we draw on our analyses of the utility of the KNAER and also evidence gathered through:

- a review of relevant literature concerning KMb, research and practice connections and evidence-informed practice;
- interviews with nine experts in these fields; and
- a series of four strategic planning sessions with Ontario educators and researchers plus an online Twitter #KMbchat.

Our recommendation is the continuation but adaptation and evolution of the KNAER for a future model envisioned as KNAER Phase II.

What is the KNAER?

Launched in 2010, the KNAER is part of a larger Ontario Education Research and Evaluation Strategy. The KNAER was established through a tripartite agreement with the Ontario Ministry of Education, Western University, and the Governing Council of the University of Toronto. The purpose of the KNAER is to build, advance, and apply robust evidence of effective practices through research use, synthesizing state-of-the-art knowledge from existing bodies of evidence and facilitating networks of policy-makers, educators, and researchers working collaboratively to apply research to practice. The KNAER supports knowledge brokering to facilitate and lead the spread of established and new evidence through networks across Ontario and beyond.

The Planning and Implementation Committee (PIC)

The PIC consisted of senior representatives from the KNAER partnership organizations. The PIC's role has been the governance of the KNAER, including three core responsibilities: 1) Proposals: Approving collaborative research and KMb proposals submitted to the KNAER; 2) Partnerships: Ensuring that collaborative partnerships are developed at the local, provincial, national, and international levels; and 3) Planning: Approving the KNAER operational and strategic plan.

Work of the University Partners and KNAER Team

The university partners have taken on the roles of operational management, strategic leadership, and research and KMb expertise. A working group developed a KMb strategy for the KNAER, including: i) disseminating information on KMb, ii) supporting and building relationships

and capacity with KNAER Principals Investigators (PIs), and iii) promoting KNAER project products. Four main KMb strategies developed were:

- **KNAER Toolkit:** To more widely disseminate items produced by the KNAER projects, an online toolkit was created.
- **KNAER brochure**: A KNAER brochure was created to promote the KNAER project products and the overall KNAER initiative.
- **@KNAER_RECRAE Twitter account:** Over the past year, on average, the KNAER Twitter account sent out 8.47 tweets per day promoting various aspects of KNAER. The KNAER Twitter account currently has over 1,100 followers and gains an average of 150 new followers per month.
- **KNAER website**: The original website functioned as an information resource for those interested in applying for funding. Once funding was awarded, the website shifted into a portal for projects to obtain report templates, information about deadlines and documents, and other administrative functions. In 2013, the website was repurposed to feature regularly updated information such as upcoming events, new blog entries, names of intermediaries with whom to connect, a Twitter feed, and to act as broker connecting people with the KNAER projects and resources. The website has had over 8,700 visitors.

The 44 KNAER Projects

The KNAER funded 44 projects in four categories: effective exploitation of available research; building or extending networks; strengthening research brokering work; and/or visits by world-leading researchers. Projects aligned with at least one of four priority areas: teaching and learning; equity; transitions; and engagement.

Project Outputs

"Outputs" are any product or activity created by a project that was intended to mobilize knowledge to its stakeholders and/or a wider audience. Overall, 1,084 outputs were produced by the KNAER projects. The types of outputs most frequently created were videos, presentations, lesson plans, summaries, and workshops.

Projects' Knowledge Mobilization Strategies

Category 1: Exploiting Research (13 Projects)

KMb Strategies. Most projects followed a similar KMb strategy, involving: 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 KMb product with the purpose to improve practice, monitoring the results or impact of the new product, and sharing the dissemination process and results with others.

Challenges. Researchers and practitioners reported that thinking about how to use research in different ways was, in itself, a new challenge for them.

Successes. Successes were the substantial number of outputs produced, extending the reach of projects' work, and changing mindset around professional learning.

Category 2: Building or Extending Networks (6 Projects)

KMb Strategies. All projects exhibited similar KMb efforts: creating new or extending existing networks, developing a need-based or gap assessment, and producing appropriate products and dissemination processes based on the results gathered. New or existing partnerships were used to further develop networks. The projects generated numerous products connected to a KMb plan for networking for a particular purpose.

Challenges. The major challenge was time. Innovative approaches to developing products required more time than anticipated and projects also encountered a range of practical challenges concerning time for ethics approvals, participants' workload and schedules, gaining access to stakeholders, and time required to develop trusting partnerships and to move forward to implementation.

Successes. The overarching success theme was access and connection to other people. Projects reported the use of learning communities and engaging with stakeholders.

Category 3: Strengthening Research Brokering (19 Projects)

KMb Strategies. Most projects within this category exhibited similar KMb strategies, they organized steering committees to guide their work and gathered information via a literature review or by collecting information from stakeholders. Once a gap in practice was identified, the projects served as research brokers by collecting and mobilizing relevant knowledge to inform practice.

Challenges. Operational challenges encountered included coming to consensus across different partners about what knowledge was to be shared, balancing partners' time and workload to achieve project goals, and difficulties if the participants involved had a lack of project topic knowledge.

Successes. Successes involved building lasting networks with different stakeholders for continued knowledge brokering. Success stories generally focused on the effective use of intermediaries to connect research to practice.

Category 4: Visiting World Experts (6 Projects)

KMb strategies. The KMb plan for these projects included hosting visiting scholars. Projects either established partnerships with recognized networks or forged new networks, including universities and schools. Projects utilized partners' social media and communication processes to mobilize KMb products.

Challenges. Maximizing the benefits of short visits was a common challenge.

Successes. These projects built on and advanced already established KMb efforts.

Collaboration through Partnerships and Networking

There were 140 different partners of varying types involved in the projects. Over half (26 of 44) of the projects created new partnerships. All regions of Ontario had some degree of connection to a KNAER network and some networks extended nationally and/or internationally.

Relationship Building

PIs indicated the importance of developing intentional relationships with individuals or organizations with similar interests and/or to provide intended access. Substantial time and effort needed to be invested to make face-to-face opportunities happen.

Network Creation

For PIs who created new networks, having a strategic implementation plan regarding how to build a specific network was essential.

Network Expansion

PIs expanding existing networks indicated the importance of developing trusting relationships. Establishing collaborative teams with common goals and engaging in joint conversations was crucial.

Dissemination of Knowledge Products

PIs indicated that it was part of a network's responsibility to prepare the system for KMb products so people would be motivated to engage with and use the product.

Network Challenges

At the initial stages of the KNAER, PIs felt that they were mainly engaged in knowledge transfer and struggled with broader KMb for a mutual exchange of knowledge and learning. The success of networks could be contingent upon whether there was organizational support among the various partners.

External Evaluation of the KNAER

The Ministry of Education contracted Cathexis to conduct an external evaluation of the KNAER. The evaluation concluded there were four key outcomes concerning the utility of KNAER:

1) Large volume of KMb activities and outputs within short time period;
2) Culture shift in Ontario towards increased KMb;
3) Increased KMb capacity; and,
4) Development of partnerships.

The KNAER was described as "a trailblazing initiative" (McGuire et al., 2014, p. 9).

Utility of the KNAER: Recommendations Based on Analyses of the KNAER Tri-partite Agreement Deliverables

Tri-partite Partnership and the Role of University Suppliers

Recommendation 1: The Ministry's next planning steps for a future KNAER should also attend to decisions concerning what will happen after the end of the current KNAER Tri-partite Agreement, particularly for the KNAER work of the existing partners that would benefit from being sustained in the longer term, e.g. KNAER toolkit, resources, website, and Twitter.

Governance through the Planning and Implementation Committee (PIC)

Recommendation 2: We propose that a future KNAER continues to have a provincial governance structure, such as the PIC to bring together Ministry and provincial leads.

Recommendation 3: While highly successful overall, there remain recurring themes that require consideration upfront in the future work of a possible "KNAER Phase II" including attention to a clear, agreed-upon vision between members, as well as attention to the various roles and responsibilities of each partner.

Identify and Approve Applied Education Research and Knowledge Mobilization Projects in Support of Enhancing Practice

Recommendation 4: To learn from the experiences of the KNAER projects to inform future approaches to KMb, applied education research, and improved impact for enhancing practice. To consider, for example: the benefits of using professional learning communities to develop research-to-practice connections, the importance of actionable products such as professional resources for use by educators, and the need for training and guides to KMb for researchers.

Recommendation 5: To act on the future opportunities proposed in the external evaluation to: focus on development of quality KMb activities, provide sector-wide training on KMb, and leverage existing knowledge and resources from the KNAER.

Ensure Collaboration between Leading Provincial, National, and International Researchers

Recommendation 6: Include attention to the provision of guidance and supports for effective partnership working into future models and plans.

Recommendation 7: There is a need for provincial support for networking *across* projects and beyond and developing an overall Ministry-university partnership(s) to function as a "hub" or "knowledge broker" to connect individuals, organizations, and activities around shared priority interests and areas of evidence.

Recommendation 8: Design approaches to evaluate the impact of partnerships and networks in and through future potential models.

Reviewing Evidence to Inform a Future Model(s)

Review of Literature: Connecting Research, Policy and Practice through Mobilizing Knowledge for Evidence-Informed Education

While KNAER was – and remains – at the forefront of implementing approaches to KMb, research and practice connections and evidence-informed practice; a key consideration is that in four plus years since the inception of KNAER, thought leaders and researchers have further advanced their proposals for future models.

Three Main Models: Linear, Relationships, and Systems

We outline three predominant models for knowledge to action processes:

1) ***Linear models*** in which research is produced and then made available for users in a mainly one-way relationship;

2) ***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 KMb process;
3) ***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 KMb and evidence use.

Our review of the literature suggests that leading thinking and practice for connecting research and practice, advancing KMb and fostering evidence use now indicates the importance of an evidence-informed *system*, which includes networks and partnerships but also expands to focus on implementation and impact of KMb through co-learning, interaction and leadership throughout all levels of the education system and to addressing barriers to evidence use.

Recommendation 9: Our recommendation is that KNAER Phase II builds on the successes and identified challenges of the KNAER, while evolving towards a systems approach. We do not envisage a full ideal type systems model being feasible in the reality of an already well-developed range of activities and initiatives in Ontario; therefore, we propose investigating a hybrid model combining the best elements of relationships/network models while addressing previous challenges by integrating elements of a systems model. This could be characterized as a Networks Plus model moving towards an evidence-informed system.

Views and Advice from National and International Experts

We interviewed nine experts (3 in Canada, 6 international) on questions, including:

- *What types of networks support mobilizing research for evidence based professional learning and practice?*
- *What facilitates research mobilization throughout a system?*
- *What could the Ontario Ministry of Education and university partners do to effectively develop and support research and practice networks for mobilizing and applying research among researchers, educators and policy-makers?*

Ten suggested recommendations emerged.

Recommendation 10: For the Ontario Ministry of Education (and Government) to engage in and support partnerships to advance an evidence-informed education system.

Recommendation 11: Analyze the current status of an evidence-informed system for education in Ontario.

Recommendation 12: Clarify the purpose of KNAER Phase II and conceptualize the intended function.

Recommendation 13: Develop a specific focus and linked goals.

Recommendation 14: Provincial functions for KNAER Phase II include a continuing role for the Ministry and PIC.

Recommendation 15: Establish a KNAER 'Secretariat' involving the previous (and future) work of the provincial KNAER university partners.

Recommendation 16: Establish an Advisory Group for KNAER Phase II.

Recommendation 17: Development of networks with 'backbone' infrastructure and working with local communities of practice.

Recommendation 18: Provide longer-term funding (5-10 years).

Recommendation 19: Involve evaluation of KNAER Phase II from the beginning.

Strategic Planning Sessions

In taking these recommendations into consideration for a potential KNAER Phase II, it is also important to listen to and learn from our local stakeholders. We completed four strategic planning sessions – teachers, principals, Deans of Education, and Ministry-Faculty forum - and one Twitter #KMbchat. Overall, the suggestions from participants were highly consistent with recommendations based on our analyses of the KNAER and from our expert interviewees. There were two specific additional recommendations emerging.

Recommendation 20: Take account of the importance of: engaging educators' appropriately to value their voice, ideas and actions; further developing Ministry, university, provincial partner, board and school partnerships, including the Ministry providing overarching vision, universities engaging in longer-term partnerships for example with boards and provincial organizations; and engaging graduate students more fully.

Recommendation 21: The range of research topics identified suggest that educators' priorities and needs are influenced by provincial priorities and needs, yet contextualized to local situations and personal interests or needs. The key priority topics will be difficult to distill, rather our advice is that the Ministry should indicate priority areas of concern linked to specific goals – that have provincial and local relevance – as foci for the future work of the KNAER.

Conclusions: Recommendations and Proposals for a KNAER Phase II

Envisioning KNAER Phase II: Recommendations

We have formulated a set of recommendations for a future KNAER that will integrate the strengths of past successes while developing new structures, functions, capacities, activities and outcomes for a future model. We refer to this as KNAER Phase II.

KNAER Phase II: Proposals for a model

We reviewed a wide range of 'models' from practices in other contexts, countries and sectors. We did not find one ideal model. While drawing on evidence about 'relationships/networks' and 'systems' models, we propose a blended model building on – but adapting and advancing – the existing KNAER model, taking account of the recommendations identified in this report, and including consideration of potential future models identified and developed by the Education Research Evaluation and Strategy Branch.

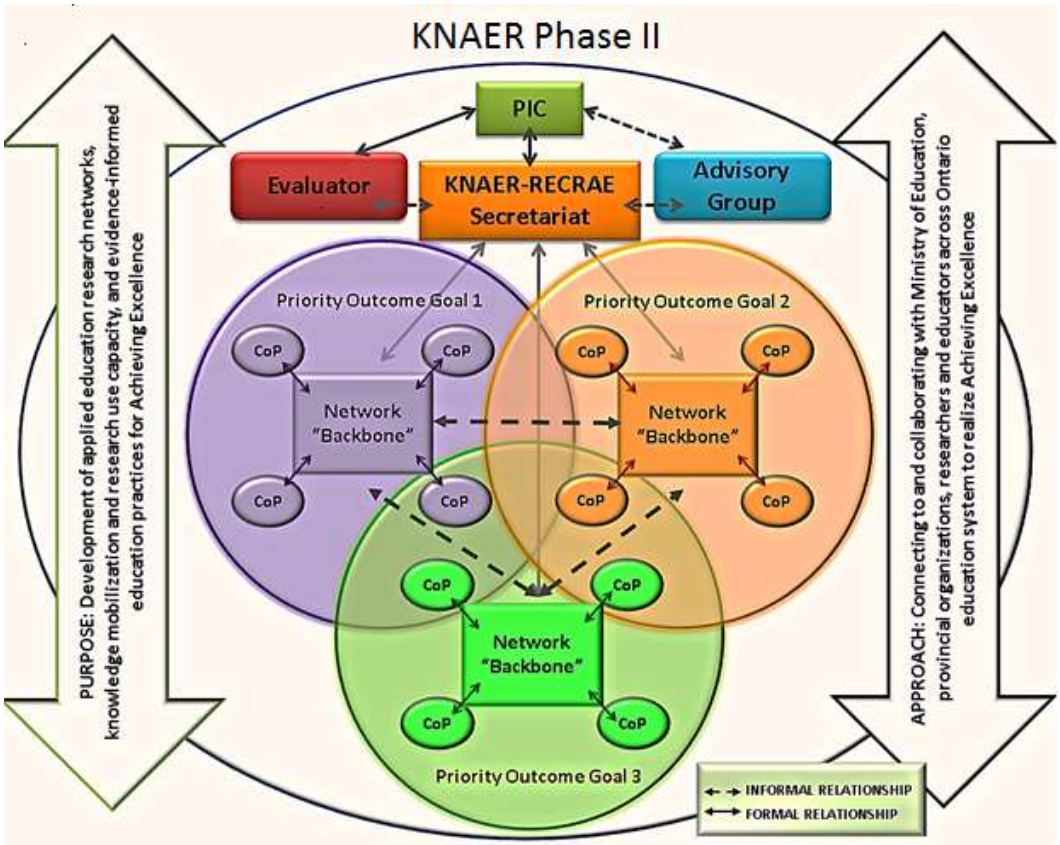

Figure 1: Proposed model for KNAER Phase II.

A Model for Partnerships, Networks and Systems

In Figure 1, we have graphically depicted KNAER as a system model with connections and interactions between all levels (and in the context of the Ontario education system).

Purpose of KNAER Phase II

We propose the purpose for KNAER Phase II is:

> **PURPOSE:** Development of applied education research networks, KMb and research use capacity, and evidence-informed education practices for Achieving Excellence

We suggest the following approach to be developed by KNAER Phase II:

> **APPROACH**: Connecting to and collaborating with Ministry of Education, provincial organizations, researchers and educators across Ontario education system to realize Achieving Excellence

Organization and Functions of KNAER Phase II: Provincial Level

Figure 1 includes four organizational units operating at the provincial level for KNAER Phase II: PIC; KNAER Secretariat; Advisory Group; and Evaluator.

Planning and Implementation Committee (PIC)

We propose that KNAER Phase II continues to have a provincial PIC with functions including: governance and oversight; provincial leadership and championing of KNAER generated activities;

oversight of funding and adjudicating criteria and selection of 'calls for proposals'; and developing an infrastructure and culture to support KMb, research and practice connections, and capacity for evidence use in education. We envisage the PIC would continue to involve senior Ministry of Education leaders and relevant officials, plus the partner(s) contracted to lead and deliver KNAER Phase II. Our proposal would be to also identify a 'network lead' for each priority area to be funded and for that lead to have a formal reporting to, and membership of, the PIC.

KNAER Phase II Secretariat

We propose reformulating the role of the university partners to establish a provincial KNAER Phase II Secretariat (or equivalent). Key roles include:

- Creating the conditions and providing the connective 'glue' for KMb between and among KNAER activities and partners
- Acting as a KMb expert with intermediary skills of facilitation, brokering, championing and a critical friend
- Providing capacity building on KMb and connecting research and practice for evidence-informed education

Activities to fulfill these roles include: communication; providing opportunities for connections between and among people, networks and activities; brokering research and practice connections; and providing tools and resources.

Advisory Group(s)

We propose that the Ministry and KNAER Phase II establish an Advisory Group. An early action of a newly formulated PIC would be to consider the most useful purpose, terms of reference and membership of this group.

Independent Evaluator

We propose that the Ministry should contract an independent evaluator from early in the development and implementation of KNAER Phase II.

Funding and Priorities for KNAER Phase II

Funding

Ideally, KNAER Phase II should be funded for a minimum of five years. We envisage anything less than three years as highly problematic. We have created an example timeline for a 5-year KNAER Phase II.

Priorities

Rather than funding 'projects', we propose that the Ministry funds a network(s) and communities of practice (CoP) to advance priority goals. It is important to identify focused, clear and specific priority outcome goals to be achieved. We propose that the Ministry lead on identifying priority outcomes that they would want KNAER Phase II to achieve. We would encourage a process where there are ADM 'champions' for each priority outcome.

Funding and Developing Networks and Communities of Practice for Priority Outcome Goals

The Network Backbone

We propose funding a backbone organization (or partnership of organizations) for each priority outcome goal network to be established. The organization(s) should be well established, have high credibility and strong provincial connections. The backbone organization's role is to provide expert leadership for the specific network priority area and to support the necessary coordination, collaboration, interactions, and capacity within and across local communities and activities, as well as provincially. The backbone organization would support mobilization and implementation of evidence and practices used or generated by local network projects more widely to support scale of implementation and impact. We propose each 'network backbone' should have an identified network leader(s).

Communities of Practice (CoPs)

As well as the overarching network, we propose funding 'communities of practice' (CoPs) involving educators and researchers collaborating on a shared priority to inform co-construction, co-learning, and use of evidence to inform educational practices connected to the larger network's priority goal. Criteria for the activities of CoPs could include attention to the features of effective KMb and partnership working from KNAER; e.g., use of collaborative professional learning communities, development of 'actionable' tools and resources, and ongoing interactions for genuine and appropriate partnership working. We propose designing a call for proposals with criteria of expected functions and activities, but flexibility to enable locally generated communities come forward with a variety of proposals for actions to meet identified needs.

To provide an illustration of how this model for KNAER Phase II could be operationalized, we have developed an outline five-year timeline of key implementation actions that is found in Part Three of this report.

Part One: The KNAER Initiative

Introduction

The contractual Agreement for the "Establishment, Management, Administration and Operation of the Knowledge Network for Applied Education Research (KNAER)" (October, 2010) between the Ministry of Education, the University of Western Ontario (Known as Western), and the Governing Council of the University of Toronto (OISE/UT) includes a requirement for the university partners to provide a KNAER Final Report including consideration of the utility of the KNAER and recommendations for the continuation of the KNAER and/or other models of Ministry of Education-university collaboration.

The original Agreement specified the following Deliverables:

> The KNAER Suppliers will establish, manage, administer, and operate the Knowledge Network for Applied Education Research. Key to the governance will require the Suppliers to address the following:
>
> - Provide governance through the Planning and Implementation Committee (PIC), consisting of three chairs that include the Assistant Deputy Minister French-Language, Aboriginal Learning and Research Division, and the Director and Associate Director of the KNAER. The PIC membership will also include the Assistant Deputy Minister, Student Achievement Division, the Director of the Education Research Evaluation and Strategy Branch, and two other members to be selected collaboratively by the Ministry and the Suppliers.
> - Identify and approve applied education research and KMb projects in support of enhancing practice. Note the Ministry will have the final right of approval regarding projects and initiatives of the KNAER.
> - Ensure collaboration between leading provincial, national, and international researchers, from a variety of institutions with a long-standing scientific interest in educational effectiveness that could lead/participate in using evidence-based research to guide decision-making, inform professional development and, ultimately, improve student achievement K-12.
> - Establish, as needed, other advisory committees to provide support and direction for the Planning and Implementation Committee including the operation and research agenda of the KNAER. (KNAER Agreement, 2010, pp. 19-20).

This Final Report includes discussion of the utility of the KNAER and recommendations arising from work connected to the first three deliverables above. Specifically, we provide: an overview of the purposes, mission, governance, and operation of the KNAER; analysis of the roles and activities of the Planning and Implementation Committee (PIC); discussion of the work of the university partners for the KNAER; an overview of the 44 KNAER funded projects; and lessons learned about development of partnerships and networking from the KNAER. The PIC decided that the fourth deliverable (establishing an advisory committee) was unnecessary in practice, and this deliverable is therefore not a focus in this Final Report. That said, the potential utility

of advisory committees in future models for the KNAER or Ministry-university partnerships is something that we revisit in our recommendations for models going forward. In addition to our own discussion, analysis, and recommendations arising from the current KNAER's utility, we review and comment on the findings from the external evaluation of the KNAER commissioned by the Ministry. As well as reporting on the current KNAER, this Final Report includes suggestions for models of Ministry of Education-university collaboration based on a review of the literature, the four strategic planning sessions, nine expert interviews, and a KMb chat conducted in September, 2014. We conclude with a summary of our consideration of the utility of the KNAER, emerging recommendations, and proposed models.

What is the KNAER?

Launched in 2010, the KNAER initiative is part of a larger Ontario Education Research and Evaluation Strategy. The KNAER was established through a tripartite agreement with the Ministry of Education (Ministry) and two research-intensive universities: Western University, and Governing Council of the University of Toronto (with the Ontario Institute for Studies in Education at the University of Toronto [OISE/UT] responsible with operationalizing this initiative). The KNAER is the first initiative of its kind in Ontario that features a government-university collaboration focusing on KMb in education.

The purpose of the KNAER is to build, advance, and apply robust evidence of effective practices through research conduction, synthesizing state-of-the-art knowledge from existing bodies of evidence and facilitating networks of policy-makers, educators, and researchers working collaboratively to apply research to practice. The KNAER also supports knowledge brokering to facilitate and lead the spread of established and new evidence through networks across Ontario and beyond.

The KNAER's mission, in consultation with the Ministry, engages in a dialogue with groups of practitioner/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.

Utilizing four priority areas identified by the Ministry (Teaching and Learning, Equity, Engagement, and Transitions) to improve student outcomes, the KNAER carried out its mandate in 2011 through a call for KMb proposals in four areas: exploiting available research, building/extending networks, strengthening research brokering, and world-leading researcher visitations. In addition to providing support to the individual 44 KNAER projects from conception to fruition (2011-2013), the PIC engaged in strategic management, organizational leadership, and research and mobilization efforts to promote and support the larger overall KMb initiative.

Roles and Activities of the Planning and Implementation Committee (PIC)

The PIC was established to support the overall governance of the KNAER. The PIC consisted of senior representatives from the three KNAER partnership organizations including the Ministry, OISE/UT, and Western University. The PIC's official role, as outlined in the tripartite agreement, has been the overall governance of the KNAER, including three core responsibilities: 1) Proposals: Approving research and KMb proposals submitted to the KNAER that are collaborative in nature; 2) Partnerships: Ensuring that collaborative partnerships are developed at the local, provincial, national, and international levels; and 3) Planning: Approving the KNAER's operational and strategic plan (Agreement, 2010, p. 3). In March 2012, the PIC 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 proposals, the PIC was involved in the open call for project proposals, and in reviewing and approving proposals once submitted. Specifically, the PIC 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 PIC was instrumental in supporting collaborative partnerships at the provincial, national, and international levels. In September 2012 the PIC established a working group 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 social processes (including the development of trust between partners) played an important role in developing and expanding networks.

The PIC's role in planning was critical as it included not just operational and managerial aspects, but also strategic leadership. The PIC's operational support for KNAER and the 44 projects included executive planning, decision-making and/or oversight of the 44 projects, and the role and activities of the two university partners. When it became clear that a lack of KMb knowledge and skills within the sector could potentially limit the effectiveness of the KNAER projects, the PIC agreed that more KMb resources, training, and support was needed for projects, which resulted in the creation of a number of KMb tip sheets, bookmarks, a working group to gather feedback from the sector about priority areas for KMb skills and capacity building in education, a toolkit, re-purposing the KNAER website, and a four-page brochure.

The PIC strategic plan included: 1) targeted education foci for the KNAER; 2) KMb of the KNAER; 3) impact of the 44 KNAER projects; and, 4) evaluation and impact of the KNAER (for more detail on these four areas, see the KNAER interim report). Our analysis suggests the PIC had significant utility when it came to: establishing, planning, managing, operating, and promoting the KNAER and its 44 projects; troubleshooting problems that arose while implementing the large-scale initiative; and generating KMb ideas to be used as the foundation for future planning of the KNAER.

Work of the University Partners

The KNAER exists as a tri-partite contract between the Ontario provincial government and two research-intensive Ontario universities. The tripartite governance structure has evolved over the past four years into a collaborative relationship between the three partners, where the partners have taken on the roles of operational management, strategic leadership, and research and KMb 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 in terms of initially supporting and ensuring the success of the 44 KNAER projects but eventually utilizing 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 KNAER PIC 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.

OISE/UT and Western are research–intensive universities; both are top-ten leading Faculties of Education in Canada. Each university joined the KNAER for differing expertise: OISE/UT for expertise in KMb, and Western for expertise in systems management and networking. These differences however became less distinguishable as the project evolved over time and with changes in leadership positions. The KNAER initiative is the first of its kind in Ontario (and indeed is unique internationally). Both university partners spent considerable time and effort researching and learning from this initiative. The insights gleaned have been utilized to strengthen the individual projects throughout the KNAER and at the higher, organizational level in leading the provincial initiative. The result has been development and delivery of a number of KMb activities and an active engagement in connecting back to research. An indicative list of the university partners' activities is included in Appendix A.

KNAER "Team" KMb Plan

An informal working group involving the university partners developed to establish and revise a KMb for the overall KNAER initiative. These KMb approaches included: i) disseminating information on KMb and KMb strategies to the education sector in Ontario and beyond, ii) supporting and building relationships and capacity with KNAER principals investigators, and iii) promoting KNAER project products. While there were many components to the various KNAER KMb plans, the main approaches (toolkit, Twitter, and the website) are briefly highlighted in this report:

Toolkit and Brochure

To more widely disseminate and take advantage of the multitude of items produced by the KNAER projects, an online toolkit was created. The toolkit was created to showcase the work of the KNAER projects and to make all tangible 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 directed at a particular age group and has since been modified from its original version to also make it searchable by keyword and item type such as activity or poster. 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. The toolkit consists of items such as videos, presentations, lesson plans, summaries, articles, resource packages, posters, and many more useful and easily accessible products. In addition to promoting the toolkit through online channels such as our website and social media outlets, a brochure was also produced to be distributed at education events.

A KNAER brochure (see Appendix B) was also created to promote the KNAER project products and the overall KNAER initiative. The brochure provides basic information on the KNAER including background information, KMb 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. The brochure has been an excellent tool for improving understanding about the KNAER and its function as well as informing different users on how they can participate in KMb in education themselves. The brochure is distributed at relevant events such as education conferences and presentations as well as display booths and at education buildings.

Twitter

Twitter has become a viable social media tool for the KNAER to disseminate KMb information, event information, KNAER project outputs, and to build relationships. 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 through connecting products and principal investigators with other stakeholders in similar areas and promoting the use of KMb strategies in the education sector.

For example, as Figure 2 demonstrates, over the past year (October 2013 – October 2014) on average, the KNAER Twitter account sent out 8.47 tweets per day promoting various aspects of the initiative such as project information, upcoming events, and toolkit resources. These tweets were further pushed out with approximately 1,572 retweets, 649 favorites, and 4,901 mentions. KNAER not only pushed out products and events using Twitter, but also tried to make connections with others by writing 288 replies, sharing 750 links, and retweeting tweets from approximately 695 other Twitter users.

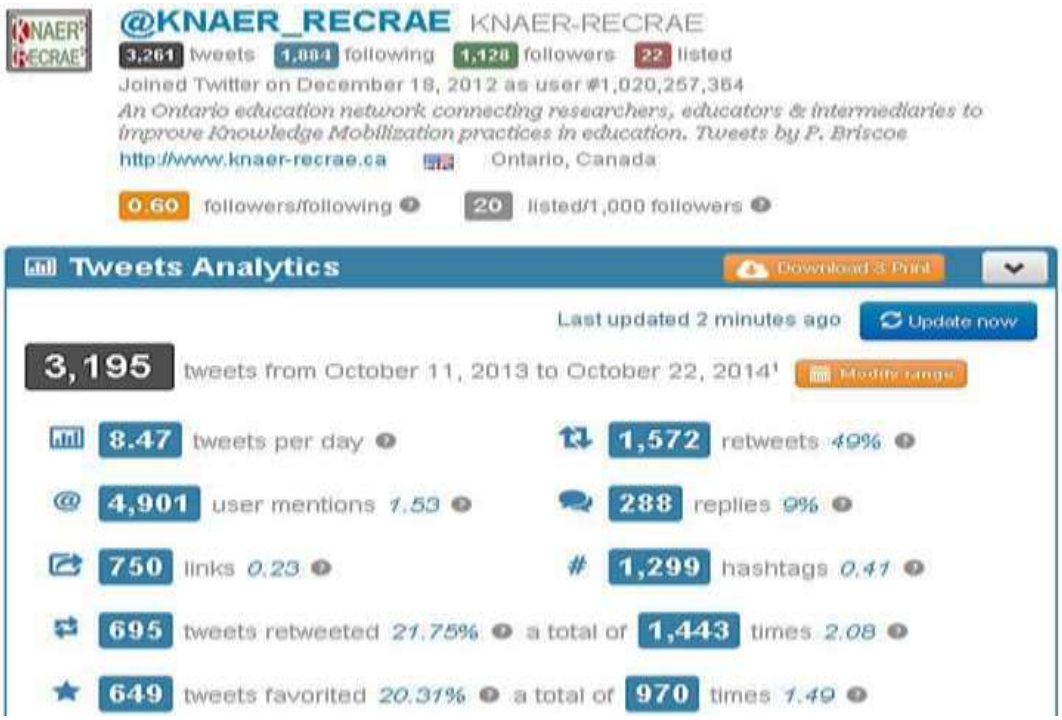

Figure 2. Overview of KNAER's Twitter activity from October 11, 2013 to October 22, 2014.

Views and Followership

KNAER's twitter views and followership continues to grow. There have been an increased number of total views[1] to the Twitter page, as well as increased followership. To date KNAER twitter has received 11,100 views. The account currently has over 1,100 followers from across the globe, and gains an average of 100 new followers per month. This is an increase of approximately 1650 followers since the April 2014 interim report when there were 250 followers. Figure 3 below shows our increased participation in social media using Twitter. Our account becomes more active each month:

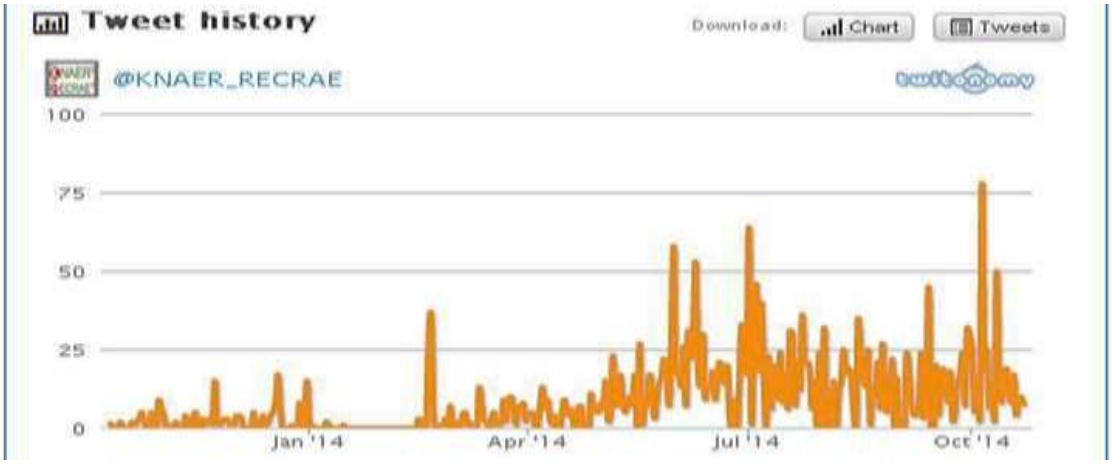

Figure 3. KNAER Twitter Tweet history.

[1] Total views represent the cumulative number of views to the Twitter page or to tweets by the KNAER in a specific time period.

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. There was a minimal amount of information available about the projects that were funded and a lack of engaging content which prompted the need for a new vision and a repurposing of the website. In 2013, the KNAER website was re-designed with a new function in mind and a new look for a fresh start. The 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 principal investigators (PIs) 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. The new website utilizes Google Analytics to track website activity. Figure 4 provides a summary of KNAER website activity.

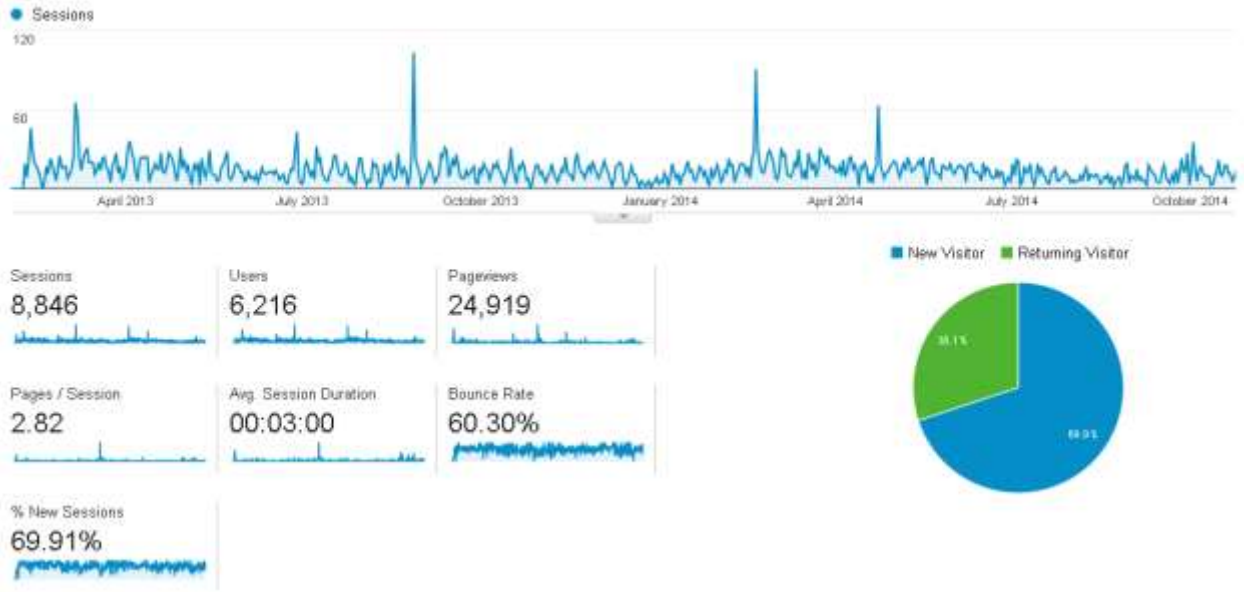

Figure 4. Summary of activity from February 2013 onward.

To date the KNAER website has had over 8,800 visits (a 40% increase since February 2013) with about 6,200 of those being unique visitors, and the remaining repeat visitors. Over 24,900 page views have occurred across the website (an increase of 39%). The KNAER website has a bounce rate of approximately 60%, which means that over half of the visitors to the site are visiting a single page and then leaving. This may account for why the average duration of time per visit is approximately three minutes. To encourage more multiple page visitations, a recent re-design of the website has occurred making the main page more user-friendly. At this point, the re-design has not been in place long enough to influence changes in user behavior. Most

visitors to our website are located in Canada, but there are also several visitors coming from the United States, the United Kingdom, and other countries around the world (see Figure 5).

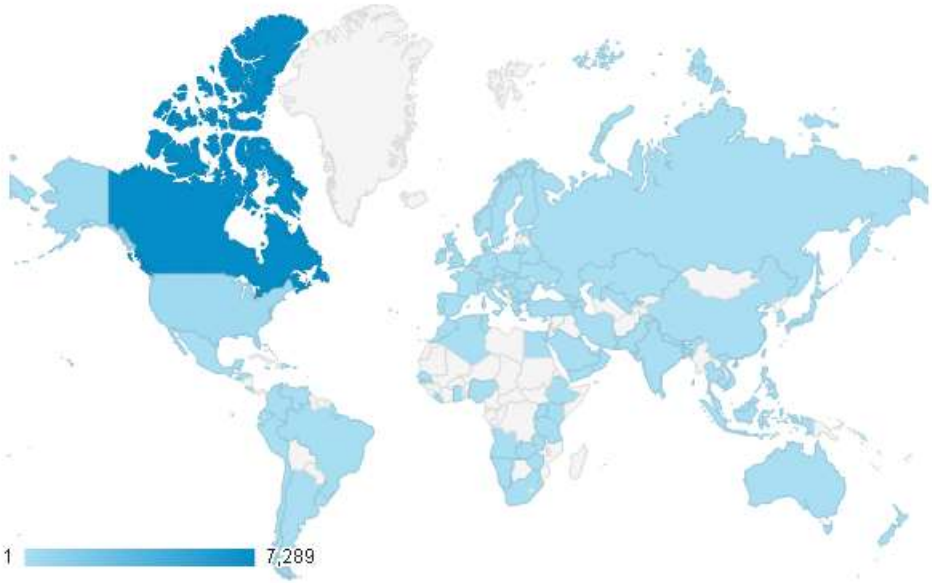

Figure 5. Sessions on KNAER website by country origin from February 2013 onward.

The 44 Projects

Overview

The KNAER funded 44 projects across Ontario, including 2 host institution projects (see Appendix C for a full list of projects). Projects aligned with at least one of the following four priority areas:

- Teaching and Learning
- Equity
- Transitions
- Engagement

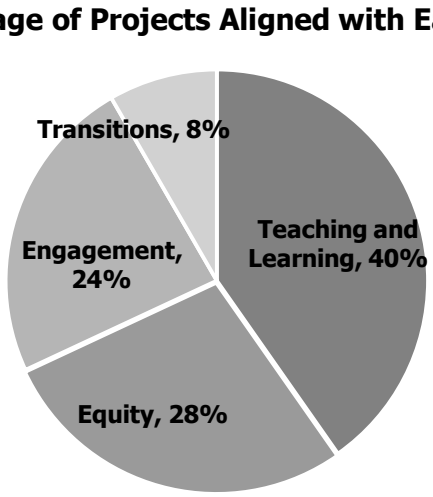

Figure 6. 44 KNAER projects by priority area.

Even though projects generally included more than one priority area, the largest proportion of projects indicated a focus on Teaching and Learning (see Figure 6). Within the above-mentioned Ministry priority areas, the KNAER projects concentrated on numerous education foci, including:

- Aboriginal Education
- Arts Education
- Classroom Management
- Early Childhood Education
- Education in the North
- English Language Learners
- Equity and Inclusion
- French-language Education
- Knowledge Mobilization
- Leadership
- Mathematics Education
- Mental Health
- Multi-modal learning
- Physical Health
- Science Education
- Special Education
- Stakeholder Engagement
- Student Identity

The KNAER funding emphasized four categories of KMb: effective exploitation of available research; building or extending networks; strengthening research brokering work; and/or visits by world-leading researchers (see Figure 7).

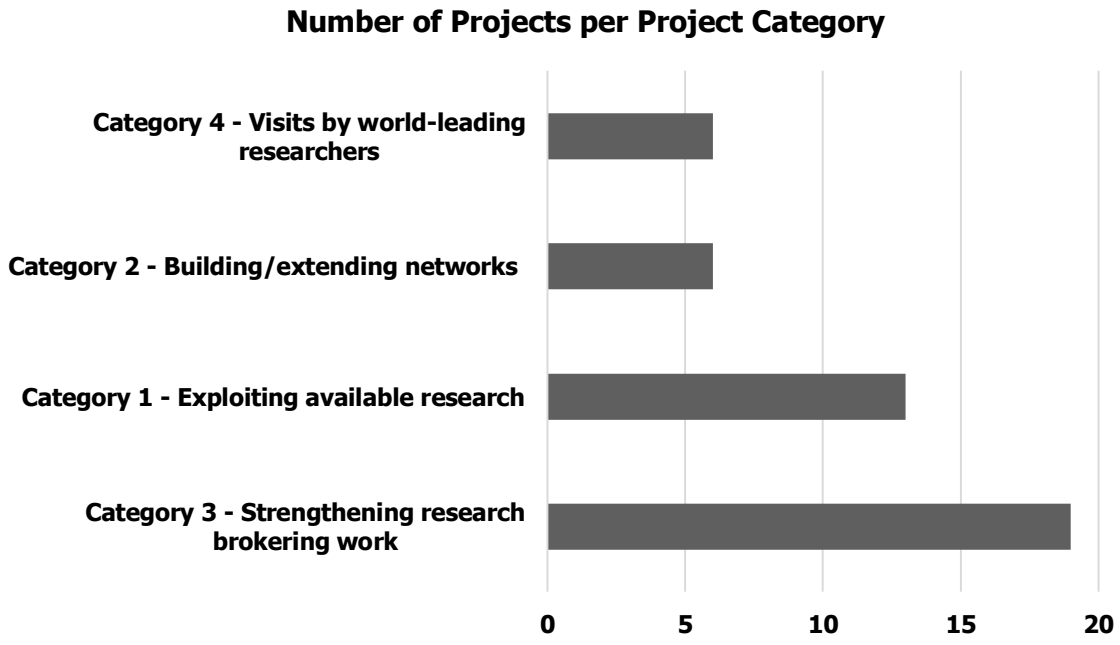

Figure 7. 44 KNAER projects by category of funding.

Summary Analysis of Projects' Outputs and Knowledge Mobilization Strategies

As part of reviewing the KNAER's utility, we present a brief summary of project outputs (see Appendix D for more detailed analysis) followed by detailed analysis of the various KMb strategies utilized by the KNAER projects.

Project Outputs

As part of their contract with KNAER, funded projects were expected to deliver on a set of agreed-upon deliverables including outputs customized specifically for their initiative. These outputs were meant to help extend effective practices into classrooms, schools, and school boards. "Outputs" are any product or activity created by a project that was intended to mobilize knowledge to its stakeholders and/or a wider audience.

Table 1. KNAER projects' outputs by funding category.

	Exploiting Research	Building/Extending Networks	Knowledge Brokering	World-Leading Scholar Visitations	Total
Total # of Outputs	**424**	**162**	**409**	**89**	**1084**

Overall, 1,084 outputs were produced by the 44 KNAER projects. See Appendix E for the table of project output quantities. Table 1 shows the number of outputs created by projects in each category. There were 61 different types of outputs identified, ranging in form from those considered to be traditional types of dissemination such as conference presentations and scholarly publications to more widely-appealing formats such as documentaries, learning communities, and plain-language summaries. 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 visualizations, list-servs, radio usage, books and eBooks, and web repositories. These outputs were generally large or difficult undertakings and/or required particular expertise that is not generally possessed by many people. See Appendix D for a full list of output types.

Analysis of Projects' Knowledge Mobilization Strategies

As part of reviewing the utility of the KNAER and lessons learned from the KNAER projects, using information from the submitted interim and final reports, we describe KMb strategies used by the projects, highlight successes, and recount challenges projects encountered within each of the KNAER four funding categories.

Category 1: Exploiting Research (13 Projects)

Projects in this category created KMb 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.

KMb Strategy. Most projects within this category followed a similar KMb strategy. The strategy involved a number of components, including: 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 KMb product with the purpose to improve practice, monitoring the results or impact of the new product, and finally, sharing the dissemination process and results with others.

The following table provides a comprehensive example of the KMb strategy described above from a project titled *Extending the Child and Youth Mental Health Information Network: Sharing Mental Health Information with Educators*.

1	**Establish Community of Practice (CoP)**		Create Community of Practice (CoP) (recruit from established networks) Identify learning needs of and resources needed by CoP Members Create communication tools for CoP Implement communication tools Evaluate CoP
2	**Engage CoP members to gather relevant information**		Orientation Action research – access background knowledge Needs-based assessment Literature review
3	**Design one or more information "products" in collaboration with CoP**		Create online tools for knowledge dissemination and KMb Introduce CoP to products Implementation processes (training)
4	**Develop and pilot implementation strategies**		Implement strategies Evaluate effectiveness of implementation strategies
5	**Share results**		Re-evaluate, make recommendations, and repeat the process

While all 13 projects had a similar KMb plan, the content or approach within the plan was not always the same. The project titled *Knowledge Mobilization to close the gap between principles and practices in assessment for learning in mathematics education* included an exceptional approach; this project incorporated a conceptual change theory. 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 engaged teachers in a conceptual change process. The project used members' insights combined with research about conceptual change to construct professional learning experiences, and monitored the impact these experiences had on teachers. 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 KMb strategies that not only focus on processes and products of KMb but also include processes that promote conceptual change.

Challenges. Projects funded to utilize 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, define, and redefine the expectations of the project. Below are examples from projects that demonstrate these challenges.

As one PI stated:

> The challenges that emerged for facilitators and teachers were both conceptual and logistical. At the conceptual level, we became very aware that people routinely enter professional learning experiences at different beginning points and with different views of the nature of the problem and of the necessary learning. These differences only emerge through targeted discussion and a willingness to be open about ideas and uncertainties. People do not always feel safe enough in a group to share their confusion, frustration or lack of understanding. In some cases, they are not even aware of it.

Another mentioned:

> Some participants centered on 'expectations' of the project. From the onset, a focus was placed on 'process' over 'product,' as it was the journey of the project experience and the exploration of an inquiry-based approach to learning around issues of environmental sustainability, social justice and global citizenship that was our priority. For some participants, accustomed to a product-oriented, or 'end goal' approach to teaching and/or learning, the fluidity of possibilities under project parameters was a challenge at times.

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 PIs was that they were able to extend their reach. For example, the coordinators of the project titled *The Use of Data Visualization Techniques to Share and Apply TDSB Research Findings* were approached by 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 around professional learning. All projects thought about professional learning beyond the one-day workshop to implement innovative ways to interact and learn. One such way is through the electronic communication system known as Pepper. This system offers a variety of specialized knowledge-building features and social networking tools to support sharing information, identifying key ideas, and progressively working to improve ideas, as a collaborative workspace for individuals.

Category 2: Building or Extending Networks (6 Projects)

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.

KMb Strategies. Not surprisingly, all six projects in this category exhibited similar KMb efforts that reflect the category description. These included: creating new or extending existing networks, developing a need-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. For example, the project titled *Knowledge Mobilization, Early Learning Research and Online Learning,* recruited members from a subject-specific conference attended by potential participants.

Once those projects that were establishing new networks created professional learning groups, a needs-based assessment was completed to decide what needed to be mobilized. 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 establish gap assessments, establish the projects' outputs, and meet the goal of the projects in building or extending further research needed in specific priority areas. Products were created based on the information gathered. These products were mobilized using various 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.

Advanced KMb strategies need more than just products, but products *are* important for effective KMb 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, online videos of guest speakers/lecturers, toolkits, online newsletters, blogs, websites, and lesson plans. These products were connected to a more elaborate KMb plan for networking for a particular purpose. For example, the project titled *Exploring Learning and Differentiated Instruction for the Difficult to Learn Topic of Grade 6 Fractions using Teacher-Coach-Researcher-Developer Networking* demonstrated an exemplary KMb action plan. This project's KMb plan focused on four main tasks, which could be considered an effective template for future KMb strategies. These tasks included: i) building teacher capacity through learning opportunities focused on connecting research to practice, ii) creating a KMb 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.

Our Kids Network: Taking Research to Practice was another exemplary project. This project was well established prior to the KNAER project and employed an effective KMb strategy involving: i) building positive assets across all community partners, ii) engaging youth in the work, iii) making data accessible and translating research into action. This project was very focused on collecting research and providing a direct link between the results and their programs. This project also conducted multiple surveys and focus groups that involved community and youth to assess the impact of its KMb efforts.

Challenges. The major challenge for projects 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, such as a digital paper. Other time limit challenges specific to this category were: i) delays in receiving ethics approvals; ii) scheduling conflicts due to heavy workloads and differing school year calendars (e.g., unavailability of trainers and/or participants during summer months) that pushed projects into the following year; iii) limited access to key gatekeepers at school boards and other organizations, which meant that that projects had to spend considerable time trying to gain access to key influential people; iv) not enough time to build trusting relationships; v) delays in, or changing plans to, implementation into other boards and stakeholders.

Successes. Of all the categories, this category appeared to have the most disparate kinds of successes. However, 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 titled *Knowledge Mobilization, Early Learning Research and Online Learning* created a learning community for researchers, early childhood educators, teachers, and principals to connect around 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. For example, the project titled *Exploring Learning and Differentiated Instruction for the Difficult to Learn Topic of Grade 6 Fractions using Teacher-Coach-Researcher-Developer Networking* influenced critical decisions of the Ministry of Education's Curriculum and Assessment Policy Branch (CAPB). Specifically, the information provided in this project influenced how the CAPB allocated money and time to ensure that resources were being developed to support educators. The project's action plan has also been incorporated into long-range planning for the CAPB.

Category 3: Strengthening Research Brokering (19 Projects)

The projects funded in this category were expected to connect researchers with one another or with organizations interested in similar research in order to utilize existing resources and expert knowledge as well as expand impact.

KMb Strategies. Again because of the funding expectations, most projects within this category exhibited similar KMb strategies. In order to strengthen research brokering, many of the projects first organized steering committees to guide their work. The next step was to gather information. Projects did this through either conducting a literature review on a specific topic, or by collecting information from stakeholders (teachers, researchers, principals, etc.) through activities such as discussion forums and surveys. Once a gap in practice was identified, the projects served as research brokers by collecting and mobilizing relevant knowledge to inform practice. For example, the project titled *How can a multidisciplinary team take the knowledge and the research results of a proven evidence-based initiative and mobilize this knowledge to strengthen Tier 1 instruction in reading across Kindergarten teachers and ECE staff, where applicable,* provided a succinct overview of the general KMb 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 KMb strategies to engage participants. One example of such a strategy is the *TWO-WAY Scheduled Weekly* visits, a process wherein either teachers visited a mentor's classroom or the mentor visited the teacher's classroom. A member of the Multidisciplinary Team for modeling and coaching accompanied each visit. During one of the project's seminars a "Bring'n Brag" strategy was promoted; a strategy to share an idea that was implemented, and represented a promising practice. Lastly, the project designed a logo (see below) 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 KMb plan, a number of projects in this category also capitalized on the use of media. For example, the project titled *Research Brokering in Education* (RBE) shifted its KMb strategy from a more traditional approach (such as disseminating information through our various websites) to an active strategy using social media, including weekly updates to highlight RBE products and the RBE website (final report). 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. This allowed for quick discussion between educators from all over Ontario.

The project titled *Beyond the council meeting: Mobilizing research for effective parent engagement* was one of the few projects that used extensive media coverage as part of their KMb strategy. The project used two media campaigns that involved articles and radio programs across Ontario (and British Columbia), broadcast from radio stations in Hamilton, Windsor, Toronto, Ontario-wide on Radio-Canada, and Vancouver, as well as print media in Toronto, Hamilton, and a Toronto Chinese-language daily. The second campaign introduced the project's product, a "parent involvement toolkit" that included multilingual tip sheets for principals, teachers, and parents, and was again featured in articles and radio programs across Ontario, including Toronto and London; The Star, the CBC, OMNI, Sing Tao, and Epoch Times attended

a press conference held by project coordinators, and reported on the research. This project also partnered with TVO Parents to release information and created a space on the TVO website: http://tvoparents.tvo.org/article/what-do-kids-need-be-successful.

Challenges. Even though the projects brokering research created a substantial number of outputs, they encountered a number of operational challenges during the process including:

- Coming to a consensus between partners around the knowledge to be shared;
- Dealing with various school boards that had differing views around 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.

For example, coordinators of the brokering project titled *Demographic Data and Student Equity* stated that school boards across the province were at different stages and had different views on how the analysis, collection, and reporting of demographic data should be conducted. Therefore, the project faced challenges trying to mobilize and generate knowledge across a wide spectrum of differential school board (and community) needs. The project team stated that they always needed to remain responsive and supportive to issues facing school boards in their unique school community contexts.

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, the project titled *Videos of Visual Artists in Greater Sudbury* was approved for Curriculum Services Canada (CSC) in June, 2014. The project included a catalogue of "instructional/learning resources" submitted for approval for use by school boards, schools, teachers, and educational and other non-profit organizations. This project also formed connections with OECTA, OSSTF, the CRR Sub-Committee of the Educational Services Committee, and ETFO.

Category 4: Visiting World Experts (6 Projects)

The projects in this category invited experts, recognized 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.

KMb strategies. At first glance, it appeared that all projects in this category utilized a simple KMb plan. This plan included hosting visiting scholars who were required to fulfill the following: give at least three public/sector talks or seminars, 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 in this category was used to support a part of a larger KMb effort that already existed in most of the projects. First, projects either established partnerships with recognized networks, or forged new networks and usually included a cross section of partnerships (e.g. between a university and schools). Each project involved at least one school board and one university as partners. Prior

to organizing the events, all projects connected with potential partners to bring awareness to the expert's research for end-users. For example, the project titled *Engaging Students through Collaborative Music Creation* partnered with two universities and two school boards in different geographical locations. Within the school board partnerships, both elementary and high schools were involved. Thus, a breadth of partnership capacity was established.

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

Challenges. Since the expert visits were generally short in duration, maximizing the benefits of these visits was a common challenge for projects in this category. For example:

- Media was often difficult to contact and therefore to utilize;
- Short timelines for visits meant not all interested schools and organizations were able to participate;
- Figuring out how to sustain the project, especially what sustaining an expert visit looks like, was a challenge; and
- Some projects reported scheduling issues and had to reduce the number 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 KMb than were projects in other categories. This increased complexity in KMb may be due to the visitations being part of larger, already established KMb efforts. For example, the project titled *Putting Theory into Practice: Finding Paths to Students' Engagement and Equity* demonstrates how KMb 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 utilized the expert's visit to generate interest among teachers, and to establish action research projects that would involve education researchers, graduate students, and teachers. The action research projects designed by teachers were funded from the project partners. Eighteen teachers submitted proposals and five were selected for funding.

Collaboration through Partnerships and Networking

One of the main goals of the KNAER initiative was to create networks and partnerships across Ontario that would increase the ability to share knowledge and to build connections between institutions and groups who do not often have the opportunity to work together. In determining the utility of the KNAER, we summarize and review evidence regarding the creation and support of networks and partnership across the province.

There were 140 different partners of varying types involved in the projects and many of them were involved in multiple projects. Partner types included:

- Colleges (7)
- Community Organizations (5)
- Education Centres (9)
- Education Consultants (2)
- Government (4)
- Health Organizations (14)
- Media Outlets (10)
- Networks (11)
- Parent Groups (3)
- Professional Associations (13)
- School Boards (41)
- Universities (21)

Over half (26 of 44) of the projects created new partnerships in their work, including entirely new relationships and also those that added a new partner to an existing network. The remaining 18 projects worked with partners with whom they had previously connections. All regions of Ontario had some degree of connection to a KNAER network and some networks went beyond Ontario, both nationally and internationally.

In 2012, the KNAER conferred with 21 projects' PIs to explore networking strategies and challenges encountered by projects. Feedback was collected from seven virtual discussion sessions, a phone interview, email responses, and a face-to-face interview. Strategies provided by participants can be divided into four general categories: relationship building; network creation; network expansion; and dissemination of knowledge products.

Relationship Building

PIs provided a number of strategies that were helpful for building relationships. These included, first, being mindful of with whom to build relationships. Relationships needed to be intentional with individuals or organizations with similar interests and/or provide some intended access, for example, to end-users. This meant connecting with people who were considered gatekeepers or connecting with existing established networks. Many PIs explained that the most desired way to build relationships was through face–to-face interactions, and that to make these face-to-face interactions meaningful there had to be a defined purpose. PIs reported that substantial time and effort needed to be invested to make face-to-face opportunities happen. A number of PIs mentioned using a scope-and-sequencing approach to build their relationships (e.g., build a sense of community, professional learning sessions, build knowledge to increase buy-in, set up steering committees with those involved by appealing to their interest, show case products, and involve many stakeholders). Lastly, a few individuals indicated that they used collaborative inquiry to gain feedback and direction on next steps from those involved in their network.

Network Creation

PIs who created new networks mentioned that, in hindsight, having a strategic implementation plan regarding how to build a specific network was essential. PIs mentioned that knowing how people were accessing knowledge was a key element in informing their plan.

Network Expansion

PIs expanding existing networks indicated the importance of not only building relationships, but also of developing trusting relationships. They also felt that it was vital to initiate exchanges through face-to-face interactions and that new members (individuals and/or organizations) be included at some point in the overall interactions of the network and other existing relationships. Establishing collaborative teams with common goals was considered crucial for the success of a network. PIs also indicated that in order to expand existing networks, opportunities needed to be created to engage in conversations with other project members in various forums such as conferences (professional and academic). Some PIs suggested cross-pollination between networks through posting to newsletters and blogs of other organizations as a strategy for reaching larger audiences and networks of interested people.

Dissemination of Knowledge Products

Networks funded by the KNAER were responsible for disseminating knowledge products. PIs indicated that it was part of network's responsibility to prepare the system for KMb products. This meant that people receiving the KMb products needed to be motivated to use, and interested in engaging with, the product.

Network Challenges

PIs mentioned a number of challenges they encountered with their KNAER project networks. At the initial stages of the KNAER, PIs felt that they were mainly engaged in knowledge transfer and struggled with broader KMb where there was mutual exchange of knowledge and learning. Some PIs indicated that while they were successful in creating networks with various organizations, the success of their network was contingent upon whether there was organizational support for the network among the various partners. For networks where there was little to no organizational support for networks partnership involvement fluctuated as individuals changed positions or because of changes within the partner organization. Some PIs who had relied on informal and personal relationships to develop or expand a network indicated that it became challenging to operationalize their intended KMb plan when there were few or no protocols or procedures in place to provide structure when implementing initiatives.

Overall, the KNAER's targeted use of networks allowed existing networks to increase their network partners and expand their end-user reach. It also provided the opportunity for new networks to develop and it provided all the networks with resources (financial and expertise) to advance their KMb strategies.

External Evaluation of the KNAER

The Ministry contracted Cathexis to conduct an external evaluation of the KNAER. The evaluation "focused on assessing the extent to which the KNAER contributed to enhancing KMb in the education sector from the perspective of those who had been involved in the initiative" (McGuire, Zorzi, & Frank, 2014, p. 2). Three overarching questions informed the evaluation: 1) To what extent has the KNAER achieved its original goals? 2) What other (unexpected) impacts resulted

from the KNAER? 3) What has been learned from the KNAER about furthering KMb in education? (McGuire et al., 2014, p. 2).

The overall conclusions of the Cathexis evaluation indicated that the KNAER has important utility. The KNAER is an ambitious, unique, and innovative attempt to mobilize knowledge and develop partnerships to apply research (McGuire et al., 2014, p. 9). Furthermore, the evaluation identified positive outcomes in terms of the KNAER's work to advance KMb and to develop partnerships and networks. Three key outcomes were identified related to increasing KMb and an important fourth outcome indicated substantial KNAER impact for the development of partnerships: 1) Large volume of KMb activities and outputs within short time period (McGuire et al., 2014, p. 20); 2) Culture shift in Ontario towards increased KMb (McGuire et al., 2014, p. 32); 3) Increased KMb capacity (McGuire et al., 2014, p. 33); and, 4) Development of partnerships (McGuire et al., 2014, p. 23). Our own analysis concurred with the Cathexis evaluation findings about the utility, outcomes, and impact of the KNAER related to goals for increasing KMb capacity and building or extending partnerships and networks.

In terms of providing evidence of impact for the Ministry's priority goals for student achievement, the Cathexis evaluation provided a summary of relevant examples, such as: changes in teaching and learning approaches, use of research and KMb in curriculum materials and teaching resources, changes in teachers' learning and spread of practices from the KNAER projects, contributions to students' well-being in projects focused on mental health, and contributions to achievement results (see McGuire et al., 2014, p. 30). While individual examples can be highlighted relating to student achievement, equity, and well-being, demonstrating a relationship between the KNAER projects and student outcomes is challenging and problematic given the nature, variety, and short-term duration of project funding.

We also concur with Cathexis on the importance of the university partners in providing a combination of central strategic leadership and KMb/research expertise, as well as operational management (McGuire et al., 2014, p. 33). Through the Tripartite Agreement, the provincial partners have provided an important role in leading, advancing, and developing KMb across the Ontario education and research communities. The university partners are identified in the evaluation report as playing a central role in collaborating with the Ministry for the overall governance and leadership of the KNAER, in providing KMb and research expertise as part of a central KNAER presence provincially and beyond, and in supporting the KNAER projects and their teams to manage, deliver, mobilize, and apply their projects' goals. We agree with the Cathexis evaluation conclusions that future possibilities for university partners could involve an enhanced role in further developing networks across partners, in mobilizing and leveraging knowledge, and in providing expert support and capacity building for KMb. In essence, we envisage this role as more akin to that of a "knowledge broker" – providing an infrastructure, support, and a capacity for mobilizing knowledge, developing partnerships and connecting networks, and supporting application and assessment of research impact – rather than as primarily the financial and operational administration of project contracts.

Conclusion and Recommendations: Utility of the KNAER

We conclude that the KNAER has had strong utility. We offer our conclusions and recommendations for future consideration connected to the four main deliverables included in the original Tripartite Agreement for the establishment and implementation of KNAER.

Deliverables in the Tri-partite Agreement

- ***Tri-partite Partnership and the Role of University Suppliers***

The original "Agreement" between the Ministry of Education, Western, and the Governing Council of the University of Toronto stipulated that the "KNAER Suppliers will establish, manage, administer, and operate the Knowledge Network for Applied Education Research." Our assessment – and that of the independent external evaluators – is that each partner in the tripartite arrangement has played a substantial role and contributed importantly to the utility of the KNAER. We commend and appreciate the Ministry for embarking on a large-scale innovation, in providing resources and supports for the development and implementation of the KNAER, and actively contributing to the planning, implementation, and ongoing development of the KNAER. Our view is that the university partners have fulfilled the expectations of contributing to the establishment, management, administration, and operation of the KNAER embodied in the above deliverable. Indeed, the role of the partners has expanded well-beyond the original description. We consider our main roles to have been – and to continue to be – strategic leadership, operational management, and provision of KMb and research expertise. Since the contract extension for the university partners (October, 2013), we have particularly increased our KMb about and for the KNAER, including: leverage existing resources, outputs, and knowledge from the KNAER projects; providing a toolkit and other resources about approaches to KMb; and communicating and mobilizing knowledge about the KNAER itself to further build partnerships and networks for research use.

Recommendation:

- The Ministry's next planning steps for a future KNAER should also attend to decisions concerning what will happen after the end of the current KNAER tripartite Agreement for the KNAER work of the existing university partners that would benefit from being sustained in the longer term, for example the KNAER toolkit, resources, website, and Twitter account.

- ***Governance through the Planning and Implementation Committee (PIC)***

The PIC has had utility as a forum for the three partners to discuss, develop, decide, and act on establishing, managing, administering, and operating the KNAER. The most significant activities of the PIC included: designing the call for proposals; reviewing proposals and approving projects for funding; encouraging and fostering partnership working at all levels (including between the Ministry and university partners); ongoing operational planning and management that involved significant work connected to project oversight, financial oversight, and the work of the KNAER provincially; and strategic planning for the initial KNAER and ongoing development of the KNAER,

including developing discussions and approaches concerning priorities, KMb capacity, evaluation, and impact.

Recommendations:

- Our analysis of the meetings and activities of the PIC indicate the importance of a provincial governance structure that involves strategic partnership(s) between the Ministry of Education and the KNAER university partners. We propose that a future KNAER – or alternative model – continues to have a provincial governance structure, such as the PIC to bring together Ministry and provincial leads to provide leadership, oversight, funding, and develop a culture and infrastructure for KMb, research and practice connections and evidence-informed practices across the Ontario education system.

- While highly successful overall, there remain recurring themes from the PIC's meetings that require consideration upfront in the future work of a possible "KNAER Phase II" including attention to a clear, agreed-upon vision between members, as well as attention to the various roles and responsibilities of each partner. There is a continued need to identify and focus on key priority areas/topics, to further build understanding and capacity for KMb, and embed evaluation and attention to impact from the outset.

- ***Identify and Approve Applied Education Research and Knowledge Mobilization Projects in Support of Enhancing Practice***

This deliverable has been fulfilled. Indeed, the level of interest and activity relating to the KNAER projects has far exceeded initial expectations. Twenty-six Letters of Intent, 80 external proposals, and 3 proposals from university partners were received and reviewed. Forty-four projects were approved and, based on analysis of Final Reports, have created over 1,000 products and/or activities intended to mobilize knowledge to projects' stakeholders and/or wider audiences. The projects have demonstrated high utility for stimulating and delivering a very large volume of activity to support KMb and research application across the Ontario education system. Relatedly, a culture and capacity for KMb and research use is growing – although further work to deepen, expand, and sustain such capacity is remains important.

Recommendations:

- To learn from the experiences of the KNAER projects to inform future approaches to KMb, applied education research, and improved impact for enhancing practice. To consider, for example: the benefits of using professional learning communities to develop research-to-practice connections, the importance of actionable products such as professional resources for use by educators, and the need for training and guides to KMb for researchers.
- To act on the future opportunities proposed in the external evaluation to increase: focus on development of quality KMb activities (including potentially larger, longer

term projects), to provide sector-wide training to develop understanding of and skills for KMb, and to leverage the existing knowledge and resources from the KNAER.

- ***Ensure Collaboration between Leading Provincial, National, and International Researchers***

The KNAER has had high utility in the development of partnerships and networks. Importantly, these collaborations have extended beyond researchers to a wider range of education, community, and other groups. Our analysis indicates that 140 partners were formally involved with the 44 KNAER projects. Over half of these were new partnerships, while others connected to – and often expanded or deepened – existing partnerships. Lessons from project PIs indicate the importance of attention to relationship building, network creation, network expansion, and the ways in which to mobilize knowledge and research effectively through networks.

Recommendations:

- Include attention to the provision of guidance and supports for effective partnership working into future models and plans (as consistent with the external evaluation recommendations).
- In addition to attending to partnerships within projects, there is a need for provincial support for networking *across* projects and beyond, for example through: continued development of social media networks, opportunities for in-person networking, and developing an overall Ministry-university partnership(s) to function as a "hub" or "knowledge broker" to connect individuals, organizations, and activities around shared priority interests and areas of evidence.
- Design approaches to evaluate the impact of partnerships and networks in and through future potential models.

Part Two: Evidence to Inform Future Model(s)

Reviewing Evidence to Inform a Future Model(s) for KNAER Phase II

The original tripartite agreement included that the KNAER Final Report would provide:

> Recommendations for the continuation of KNAER and or other models for Ministry of Education-University collaboration.

In discussions for an extended contract and revised interim and final reporting requirements, the Education Research Evaluation and Strategy Branch (ERESB) requested that the KNAER university partners:

> Plan, prepare for and conduct up to 5 strategic planning/consultation sessions, including an initial strategy session and 4 larger, purposeful consultations with key individuals and organizations (provincial/national/international) regarding the recommendation of KMb models for a go forward Ministry-university partnership(s).

This section of our Final Report provides an overview of the work we have conducted to investigate future possibilities and models for KNAER and/or Ministry-university partnerships. We draw on three main sources of evidence:

1. A review of relevant literature concerning evidence-informed education, connecting research, policy and practice, partnerships and networking, and KMb;
2. Interviews with local, national and international experts at the forefront of latest thinking and approaches to improve research use, develop research-practice networks and partnership, mobilize knowledge, and create evidence-informed systems; and,
3. A series of strategic sessions with Ontario stakeholders to seek advice on priorities and possibilities for advancing research-practice networks and KMb.

We summarize the main themes and findings from each of the above and then provide recommendations arising for a future model for KNAER Phase II.

Review of Literature: Connecting Research, Policy and Practice through Mobilizing Knowledge for Evidence-Informed Education

A concern for evidence-informed policy and practice to improve decisions, actions and outcomes has become common in education as well as in other sectors of public policy. There is a long-standing interest in improving research utilization for improvements in policy and practice; however, the content of the debate, the identified approaches to be used, and evidence on the effectiveness of various approaches has evolved over time. In this section, we review relevant literature to identify key current evidence, debates and suggestions for advancing evidence-informed education through research-practice connections and KMb. Importantly, while KNAER was – and remains – at the forefront of implementing such approaches in practice; a key consideration is that in the four plus years since the inception of KNAER, thought leaders and researchers in the area of KMb and research use have further advanced their arguments and proposals for future models. We highlight below this evolution to inform an evidence-informed approach to envisioning KNAER Phase II.

Development of Models of Evidence-Informed Policy and Practice and Knowledge Mobilization

Over the last 30 or more years, a shift has taken place in conceptualizing the process of evidence-informed policy and practice from one-way linear knowledge transfer models focusing on the dissemination of research findings to inform practice, to a current emphasis on complex non-linear models of KMb, social interaction and evidence-systems (Brown, 2012; Nutley, Walter and Davies, 2007) often involving the multidirectional flow of knowledge in which different kinds of knowledge are mobilized to improve both the quality of research and the use of research in policy making and practice. These more recent models tend to advocate the use of dynamic social processes and advocate for greater interaction, communication, and feedback between research, practice, and policy communities. We outline the main models of approaches to evidence informing policy and practice below.

Three Main Models: Linear, Relationships, and Systems

Best and Holmes (2010) summarize what they describe as the "three generations of thinking" about knowledge to action processes:

1) ***Linear models*** in which research is produced and then made available for users in a mainly one-way relationship;
2) ***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 KMb process; and,
3) ***Systems models*** that move away from linear processes to a more complex process involving interaction, co-creation and implementation of evidence throughout all levels of a system, plus identifying and addressing barriers to KMb and evidence use.

Best and Holmes (2010) outline the research evidence that led to this evolution in thinking in the healthcare sector:

> The ways in which many of us involved in health system improvements think about research, policy and practice interactions have changed markedly over the last five years, powered by our realisation of the following:

- Typical practice change from knowledge translation or KTA [knowledge-to-action] activities is only about 8–15% (Grimshaw et al, 2001; Crowley et al, 2004). The results from past ways of thinking just are not good enough.
- If we want more evidence-informed practice, we need more practice-informed evidence (Green, 2006).

Evolution of KMb models:

Research studies on the barriers and facilitators of KMb have led to a shift away from linear models that have shown limited effectiveness, towards more complex models that place emphasis on interaction, ongoing knowledge exchange, shared learning, collaboration and the implementation (rather than dissemination) of knowledge.

- The above is as true for policy as it is for practice: KTA as conceptualised thus far does not fit with the underlying politics of health policy making (Mitton et al, 2007).
- Health service problems are best seen as embedded in systems, the dynamics of which we need to understand in order to solve problems (Leischow et al, 2008; Huang et al, 2009).
- There is a growing consensus that the critical issues related to health and health system improvement relate less to the dissemination or diffusion of evidence, and more to its implementation (Glasgow and Emmons, 2007; Green et al, 2009). Implementation is much more complicated than dissemination or diffusion, given the increasing specialisation in both academia and practice – and the concomitant increase in new communities with their own professional languages, traditions and goals (Lervik et al, 2007) (p. 92).

Although the above evidence is from the field of healthcare, where KMb research has a longer history and is more prolific, the concerns raised apply more broadly to *system* improvement and share similarities with concerns raised in literature focused on education system improvement. Of note also is that at the time of KNAER's original inception relationship models of networks and partnerships were dominant in the KMb and evidence-informed practice literature; now the strengths but also limitations of network and partnership models are informing the next generation of systems models for evidence-informed practice.

We outline the features of the three main models – linear, relationships, systems – below.

Linear Models

Linear models have, until recently, been prolific within knowledge transfer, translation and mobilization literature and practice. However, their effectiveness has been challenged by many researchers (Brown, 2014; Davies, Nutley & Walter, 2005; Greenhalgh & Wieringa, 2011; Tseng, 2012, 2013). Many have argued that the ineffectiveness of such models results from their excessively narrow conceptions of the "knowledge" needing to be mobilized and what the process of "mobilization" entails. For example, linear models tend to include the following underlying assumptions:

- "Knowledge" refers to research knowledge and data;
- Knowledge is a product;
- Knowledge is generalizable across contexts;

Main purpose and function of linear models:

To transfer data and research knowledge to practitioners and policy makers by packaging and disseminating it to these groups.

KMb assumptions of linear models:

- "Knowledge" refers to data and research evidence;
- Knowledge is a product;
- "Mobilization" refers to the one-way transfer of knowledge from research producers to users;
- The dissemination of knowledge will lead to its use in practice and policy

- Knowledge can be moved from production to practical use through predictable and manageable stages;
- Mobilization is primarily a one-way process, from research producer to research user;
- Successful outcomes largely depend on the effective packaging and communication of research knowledge; and,
- The dissemination of research/data using computing technologies is often emphasized (Best & Homes, 2010, pp. 146-7).

Beyond Linear Models of Research to Practice: The Rise of Complex Knowledge Mobilization

KMb researchers and practitioners have often challenged the narrow conceptions of "knowledge"- primarily from research rather than also professional knowledge - and "mobilization" – as a rational, one-way process - found within linear models. Rather knowledge is generally now considered a combination of evidence from research, evaluation and data with professional knowledge and expertise.

How to mobilize different kinds of knowledge effectively has been a topic of much discussion in KMb literature. Cordingley (2008) argues that merely disseminating evidence to practitioners does not allow them to understand the knowledge deeply enough in order to use it. Turning evidence into practice, Cordingley writes, requires that educators have "an intimate, multi-layered grasp of an idea or strategy from research in all its complexities…" p. 43). This, she argues, requires professional learning to support educators understand what the evidence is, why it is important, how to use it practically, and how to identify and challenge current beliefs (or "tacit knowledge") that may conflict with new evidence (pp. 42-43). When asked why they do not use research more in practice, principals and teachers in the education sector have often pointed out that research evidence is not always easily accessible, clearly communicated, relevant to practitioner/policy maker needs, or do not include explicit practical guidance for educators and policy makers about how research findings can and should be implemented (Biddle & Saha, 2002; Landrum, Cooke, Tankersley, & Fitzgerald, 2002).

Broadening conceptions of "knowledge" and "mobilization":

Narrow conceptions of knowledge and mobilization found within linear models have been challenged as inappropriate. In complex models "knowledge" and "mobilization" are understood to be broad terms.

Knowledge, in complex non-linear models, may refer to research knowledge but also to the knowledge possessed by practitioners, policy maker, service users, and other stakeholders. And *mobilization* may refer to strategies that move beyond dissemination strategies to increase the multi-directional flow of knowledge between diverse stakeholders, often by increasing social interactions between these groups.

Many KMb researchers and practitioners also believe that the mobilization process must involve mobilizing knowledge *to* researchers, rather than simply mobilizing research knowledge *from* researchers. The importance of improving research quality, relevance, usefulness, clarity and accessibility has led to the creation of knowledge exchange models that move beyond disseminating research to "research users" to focus on the strategies that facilitate the exchange

of knowledge between researchers, practitioners, policy makers, as well as service users. The importance of social processes to mobilize knowledge rather than linear models to apply research is emphasized by Nutley et al. (2007) who outline five key mobilization strategies – *dissemination, interaction*, *social influence*, *facilitation*, *incentives* and *reinforcements* (p. 132) – four of which involve tapping into relationships and social processes. Furthermore, it is important to also consider not only knowledge *exchange* but importantly opportunities for knowledge *co-creation* in which practitioners and policy makers actively participate in conducting research, or consider research findings together along with practitioner and policy maker knowledge to arrive at the best possible decisions in specific practical contexts (Greenhalgh & Wieringa, 2011; Nutley & Davies, 2014).

In short, complexities in the KMb process overlooked by linear models have led researchers to develop more complex non-linear and dynamic models. These recent models tend to view knowledge less as a product to be distributed and more as the result of a process of communicating, discussing, interpreting, and combining research evidence with other types of knowledge and information.

Relationship Models (Networks and Partnerships Models)

Rather than fully replacing linear conceptions, complex models build upon earlier models – for example, dissemination strategies are still considered an important part of the KMb process, although make up only one component. Complex non-linear models tend to broaden the focus from dissemination to relationship building, knowledge exchange, and continuous learning and feedback within KMb systems.

Main purpose and function of network and partnership models:

To increase the multi-directional flow of knowledge between and among researchers, practitioners, policy makers (and other stakeholders) by encouraging and supporting the development of meaningful long-term relationships between these groups.

This next era of models, are described by Best and Holmes (2010, p.147) as *Relationship Models* where relationships are seen as the primary means for mobilizing knowledge:

> Relationship models incorporate the linear model principles for dissemination and diffusion, and then focus on the interactions among people using the knowledge. The emphasis is on the sharing of knowledge, the development of partnerships and the fostering of networks of stakeholders with common interests (Graham et al, 2006; Lomas, 2007). In the relationship model, knowledge is seen to come from multiple sources (research, theory, policy, practice), not

KMb assumptions of network and partnership models:

- "Knowledge" is a broad concept, referring to research evidence, but also to practitioner, policy maker, and service user knowledge, as well as new knowledge co-created through discussions between diverse groups;
- "Mobilization" requires more than research dissemination. Ongoing interactions between diverse stakeholders play a critical role in KMb.

> just from the researcher. Its use depends on effective relationships and processes (Best et al, 2008a) (p. 147).

Relationship models prioritize the development of *partnerships and networks*. These models have informed the development and practice of the KNAER and are also informing future considerations. For example, the Ontario Ministry of Education's Education Research and Evaluation Strategy Branch (ERESB, 2014) has conducted a literature review on network models of KMb which identifies and defines three network models with potential for the next phase of the KNAER or future models:

1. ***Communities of Practice:*** are groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an on-going basis. Usage of the term is very diverse. Sometimes it is used to refer to a virtual community or informal group sponsored by an organization to facilitate knowledge sharing or learning.
2. ***Knowledge Hubs:*** a centre or focal point for the exchange of knowledge, support, development and ideas.
3. ***Thematic Networks:*** a form of social organization connected with the building and maintenance of relationships with a wide range of individuals, group and institutions that share common interests, goals or expertise. (pp. 8-9).

From their review of the literature, ERESB (2014) indicate interest in the development of thematic networks. According to their review, the purpose/objectives of thematic network models are to:

- Strengthen links within communities of practice;
- Allow individuals to gather and gain access to information;
- Facilitate sharing and exchange of knowledge and resources; and,
- Organize and create knowledge in flexible ways (p. 20).

Borrie et al. (2005, as cited in ERESB, 2014) outline the main success factors for thematic networks:

- Self-assessment: provide evidence of progress during its life;
- Visibility: it is of paramount importance that the results of such a big effort… are brought to the attention of the whole community (students, enterprises, academic and professional associations, teachers);
- Aggregates: Simultaneous running of Thematic Network projects in similar areas of knowledge supports the opportunity of creating aggregates of Thematic Networks. TNs should identify joint initiatives worth establishing, for example a joint discussion Forum, so as to enhance networking and take advantage of cross-fertilisation, comparing opinions on issues of high priority; and,

Key practices, activities and processes of relationship models:

- Most effective networks have a clear focus related to the needs of a specific population;
- The focus chosen must make sense to all those involved to encourage buy in;
- Stakeholders have clear and agreed upon goals and roles;
- Networks must have sustained collaboration over time;
- Continued Professional Development (CPD) is an important KMb strategy to advance evidence use in networks;
- Multiple connections/links exist between stakeholders to facilitate dialogue, shared learning, build trust, exchange knowledge, collaborate, and develop common aims;
- Collaborative activities and practices facilitate the creation and use of knowledge;
- Feedback loops exist between stakeholders to mobilize knowledge in multiple directions;
- Sufficient infrastructure and resources exist to maintain relationships over time;
- Mechanisms are in place to coordinate activities;
- Power is distributed.

- Networking: Offers long-lasting beneficial effects in the direction of mutual recognition.

Key practices and processes in a network model tend to focus on enhancing collaboration in order to generate and apply knowledge, and key activities tend to include: connecting, exchanging, collaborating, and shared learning. Best and Holmes (2010, pp. 142-143) outline six key factors that exist in effective collaborative networks:

- *Clear common aims.* It often takes time and cycling through direction setting, action and trust building to build the superordinate partnership-level goal, common language and aims to enable and sustain a productive partnership.
- *Trust.* This essential foundation builds on itself over time with success, often starting with modest, low-risk initiatives.
- *Collaborative leadership.* Effective inter-organisational partnership requires sustained, engaged leadership and a shift in leadership style from 'command and control' leading and managing to facilitating and empowering, from delegation to participation.
- *Sensitivity to power issues.* In an inter-organisational partnership, each partner brings different resources to the table. Effective collaboration requires careful negotiation of expectations and ground rules for decision making.
- *Membership structures.* Shared understandings about what the collaboration involves and formalised rules, roles and structures enable participation. Both governance and task structures are important. The evidence shows the need for effective coordination infrastructure with agreed action strategies, and sufficient resources, capacity and role clarity to support good communication and management functions. Because membership often is dynamic and changing, continuing work is essential to sustain the shared understanding and common focus. Effective coordination structures speed uptake of innovations.
- *Action learning.* Effective collaborations continuously improve through feedback loops and reflective shared learning (pp. 142-3).

Similar features of effective partnerships have been identified in the education sector. For example, an Ontario Education Research Panel (OERP) commissioned study (Yashkina & Levin, 2006) on school-university collaborative research found the following factors support effective partnerships:

- mutual interest;
- clear expectations;
- shared goals;
- respect and trust in the other party;
- flexible research design;
- willingness to experiment with research roles;
- adequate allocation of time and resources;

Advantages of relationship models:

- Increase interaction and trust between diverse stakeholders;
- Increase knowledge exchange and shared learning – leading to higher quality, relevant, useful research evidence and greater potential for evidence to be used in practice and policy making.

- long-term commitment;
- support and recognition from the administration; and
- shared power and ownership of research.

Additionally, a systematic review of networks in education conducted by Bell, Jopling, Cordingley, Firth, King, and Mitchell (2006) found that:

- The most effective networks have a clear focus, usually one that can be related to the needs of a specific sector of the community. The evidence also suggests that failure to identify a focus that makes sense to everyone involved is linked to weaker outcomes. Those involved in establishing networks need to consider the process for clarifying and agreeing a focus and deciding whether it should relate to specific groups;
- The evidence shows that continued opportunities for sustained collaboration encouraged improvements in teaching, learning and achievement. Policy-makers need to consider how to exploit the benefits of networking;
- The opportunities that are being created and promoted need to be sustained over time;
- The evidence shows that collaborative CPD [continuing professional development] and learning are the principal vehicles for knowledge transfer, for building network ownership and securing depth of involvement; and,
- Policy-makers supporting and promoting networks should pay particular attention to using networks to expand CPD possibilities and expectations and to ensuring that CPD is also harnessed strategically to build and sustain networks (p. 65).

Limitations of relationship models:

- Focuses on building relationships but may neglect other barriers that prevent knowledge from being taken-up in practice;
- Implementation and impact of knowledge are often secondary considerations;
- Relationships can be difficult to maintain over time;
- Evaluating the impact of relationships on practice can be challenging.

Several advantages to using relationship models – including use of networks and partnership – are commonly highlighted in KMb literature (Best and Holmes, 2010; ERESB, 2014; Gawande, 2008; Nutley, Walter & Davies, 2007; Nutley and Davies, 2013; Tseng, 2012, 2013):

- increasing interaction and trust between research, practice, and policy making communities;
- facilitating the exchange of knowledge not only from researchers to practitioners and policy makers but from practitioners and policy makers to researchers, which can then be used to improve the quality, relevance and usefulness of research findings and evidence-based resources;

- facilitating discussion and dialogue between researchers, practitioners, and policy makers that can deepen understanding of research findings and how they can be effectively applied within local contexts;
- increasing practitioner and policy maker understanding of the research process, including its advantages as well as its limitations; and
- increasing researcher understanding of the practice and policy making process, including the competing information, demands and local realities that practitioners/policy makers face on a daily basis.

Nevertheless, although relationship models are an important step forward from earlier linear models, they have been criticized for not taking into consideration the full range of barriers that can hinder the KMb process. The ERESB (2014) review of network models found that building and maintaining meaningful relationships often proved difficult and, while the ultimate goal is to build relationships that have long term positive impact on practices and policies, one drawback is that they do not tend to focus on the implementation of knowledge or evaluating direct impact on practice and outcomes.

Systems Models

A more recent development is the conceptualization of KMb as a "systems" process. For example, the OECD (2004) has created an approach to reviewing a country's Research and Development (R&D) system in education:

> The purpose of the OECD review of a national educational R&D system is to assess the extent to which it serves its function of creating, collating, distributing and applying the knowledge on which practitioners and policy makers can draw… the R&D system which, if it functions properly, will produce high quality research that contributes to the knowledge base of policy makers and practitioners and may be applied by them to improve the education service within a country (p. 4).

Systems frameworks and models go beyond earlier conceptions of KMb and evidence use by viewing KMb as a system in itself that connects and coordinates multiple individuals and organizations at different levels over the long term and on an ongoing basis in order to have a direct impact on outcomes. Gamble (2012) writes that a systems approach:

> …includes giving more attention to "system gaps" (as opposed to evidence gaps), better aligning

KMb assumptions of systems models:

- "Knowledge" is a broad term that includes research, practitioner, policy maker, service user knowledge, as well as other forms of knowledge;
- KMb is a system in itself involving ongoing, complex, dynamic and long-term relationships, practices, activities, and processes between key stakeholders at every level;
- Gaps in the KMb system can prevent knowledge from being created, shared, and used in practice;
- "Mobilization" involves identifying and addressing the wide range of KMb system gaps that prevent the multi-directional flow of knowledge and its use.

the needs and interests of researchers and practitioners, focusing on systems that allow for continuous learning and adaptation, and implementing methods that enable real-time feedback about what is working, for whom, under what conditions and at what cost (p.2).

A systems approach to KMb proposes that initiatives that ignore wider system influences will be less successful than those that account for them from the beginning. While systems approaches move beyond linear dissemination and relationship approaches, they do so by building on, rather than rejecting, useful elements of these other models. According to Best and Holmes (2010, p.150 - 153), systems models:

- focus on changing service delivery and policy development;
- understand the term "knowledge" to apply to more than data and research evidence; including knowledge from research users as well as explicit and tacit knowledge;
- collaboration and co-production of knowledge is critical;
- KMb needs to be coordinated across organizations;
- leadership is critical and "needs to rely more on facilitation and empowerment, self-organising structures, participatory action and continuous evaluation" (p. 151) as well as leadership outcomes such as:

"(1) direction: widespread agreement in a collective on overall goals, aims and mission; (2) alignment: the organisation and coordination of knowledge and work in a collective; and (3) commitment: the willingness of members of a collective to subsume their own interests and benefit within

Key practices, activities processes of systems models:

- Stakeholders are involved at every level;
- KMb policies and activities are aligned, connected and coordinated at multiple levels;
- KMb is seen as ongoing and long-term;
- Multiple activities exist at every level;
- Activities at multiple levels are coordinated;
- Opportunities exist for interaction and links between diverse stakeholders, the exchange of knowledge and skills, shared learning, collaboration and knowledge co-creation;
- KMb objectives and priorities are clear;
- There is long-term political and financial support for KMb;
- There is a focus on organizational KMb capacity building;
- KMb networks at different levels are encouraged and supported;
- Leaders at every level are actively engaged;
- Leadership may be distributive and collaborative;
- Evidence informed tools are used in frontline service;
- Quality assurance mechanisms are in place;
- Evidence search and syntheses mechanisms are in place;
- Evidence is relevant to practitioners/policy makers/service users/other stakeholders and is communicated in clear and useful ways;
- KMb activities are monitored and evaluated and used for future planning;
- KMb is recognized as a field of study and used to inform planning and activities.

the collective interest and benefit" (p. 152);
- Networks at the individual, inter-unit and inter-organisational level are critical; and,
- Strategic communications is used to increase mutual understanding.

Likewise, Carr-Harris' 2014 review of four system models and frameworks (Davies et al., 2011; Gough et al., 2011; NHS Scotland, 2012; OECD, 2004) found that each of these systems models/frameworks included many or all of the following key features:

Scope

The KMb process involves:

- All key organizations and individuals (e.g. leaders within organizations or within the community) at multiple levels of a system are expected to participate in KMb activities and processes;
- The key stakeholders expected to participate in the KMb system included:
  - Government organizations/institutions and staff at multiple levels;
  - Research institutions and organizations at the local, national and international levels;
  - Practitioner education and training institutions;
  - Professional organizations and federations;
  - Community organizations; and,
  - Knowledge brokers.

Process

The KMb process:

- aims to align and coordinate KMb activities at multiple levels;
- is ongoing and involves short, medium, and long-term objectives;
- involves multiple KMb activities at every level of the system;
- is complex and non-linear;
- involves opportunities for knowledge exchange and co-creation;
- recognizes that knowledge can be used in different ways;
- has concrete objectives and priorities and targets reflect this; and,
- KMb tools and approaches are used and embedded in frontline service.

Strategies

KMb strategies include:

- clarifying what "knowledge" and "mobilization" means when creating policies and strategies to support KMb;
- ensuring there is political and financial commitment to KMb over the long term;

- researchers, practitioners, policy makers, and service users have opportunity to exchange knowledge and skills;
- researchers, practitioners, policy makers have opportunities to collaborate, interact and develop links with each other;
- focus on building organizational capacity for KMb, including aligning structures, processes, and culture around KMb;
- networks are encouraged, supported and used to facilitate KMb at all levels of the system;
- leaders throughout the system are actively engaged and committed to KMb;
- quality assurance mechanisms are in place;
- mechanisms exist to search and synthesize evidence and combine evidence from different stakeholders;
- evidence is communicated in ways that make it clear and useful for those needing to use it;
- monitoring and evaluation mechanisms are in place to ensure KMb activities are having the desired impact and results are used to inform future KMb planning; and,
- recognizing KMb as a field of study and using KMb research results to inform KMb planning and activities (Carr-Harris, 2014, pp. 14-18).

Advantages of systems models:

- Identifies and address multiple barriers that hinder KMb throughout a system;
- KMb is maximized at every level and between levels;
- KMb impact and improving outcomes is one of the primary goals and is considered from the beginning.

Best and Holmes (2010) argue that although a systems approach to KMb may not be appropriate in every situation, "using a systems lens from the outset ensures that all key factors that might affect the [KMb] process are taken into account when developing intervention and evaluation strategies" (p. 149).

As systems models are relatively new, there has not yet been a full evaluation of their limitations in practice. One concern is the feasibility of implementation of a full systems model in practice. A systems model requires buy-in and active participation from a considerable number of stakeholders (including leaders and key organizations throughout a system), the ongoing connection and coordination of stakeholder efforts, and a significant and ongoing time commitment as well as resources.

Limitations of systems models:

- practical limitations of feasibility of realizing model
- requires buy-in and active participation from numerous stakeholders (including leaders and key organizations throughout a system);
- requires the ongoing connection and coordination of stakeholder efforts at different levels;
- requires a significant and ongoing time commitment as well as resource.

Conclusions from the Review of Literature and Implications for Future KNAER Considerations

Our review of the literature suggests that leading thinking concerning connecting research and practice, advancing KMb and fostering evidence use is now indicating the importance of an evidence-informed *system*, which includes networks and partnerships but also expands to focus on implementation and impact of KMb through co-learning, interaction and leadership throughout all levels of the education system and to addressing barriers to evidence use. As we discuss further in Part 3 of this report, KNAER has evolved over time and includes elements of linear, relationships and systems models.

Recommendation:

- Our recommendation is that the KNAER Phase II or future models of KMb for connecting practice and research in Ontario build on the successes and identified challenges of the KNAER (see Part 1), while evolving towards a systems approach. We do not envisage a full ideal type systems model being feasible in the reality of an already well-developed range of activities and initiatives in Ontario; therefore, we propose investigating a hybrid model combining the best elements of relationships/network models while addressing previous challenges by integrating elements of a systems model. In shorthand, this could be characterized as a Networks Plus model moving towards an evidence-informed system.

We investigate this emerging model further in our discussions with key experts and Ontario stakeholders below. In Part 3, we will bring together our evidence to formulate and propose a new KNAER Phase II model.

Views and Advice from National and International Experts

As part of our strategic discussions considering lessons learned from the KNAER and future possibilities, we decided to conduct interviews with national and international experts in the fields of research-practice connections, evidence-informed policy and practice, research use, and KMb. We interviewed nine experts. Three were from Canada and six were international. Three experts work primarily in education, one works in education as part of inter-disciplinary research, and six work in the general field of KMb or evidence-informed policy and practice or in other sectors (business, health, children's services). We used a semi-structured interview format (Appendix F) to ask questions derived from discussions with ERESB and the KNAER PIC about future models, our own experience from assessing the KNAER, and key themes identified in the literature. Below we outline themes arising from our interviews plus suggestions for the future development of the KNAER or alternative models in Ontario.

Developing Networks for Knowledge Mobilization and Evidence-Informed Education

Consistent with KNAER being a Knowledge *Network* and the Ministry's interest in the potential development of future networks, we asked our expert interviewees their advice on: *"What types of networks support mobilizing research for evidence based professional learning and practice?"*

As indicated in Part 1 of our analyses of the utility of the KNAER and the literature review in Part 2, a key feature of networks is that they can develop relationships for research and practice connections. One interviewee explained that for KMb, relationships and interactions are critical:

> My experience is that it's all about interaction. Whether that is, webinars, or workshops, or communities of practice … the thing that promotes understanding is that interaction with other people who have similar interests and experience. (Expert #1)

However, the intended outcome is not 'interaction'; importantly, there needs to be a common area of focus for research and action:

> I suppose what I have found over that time is that we have moved more closely in collaboratively working with people over different sectors with a sort of problem focus, rather than a… specific push or pull strategy... So I think the idea that there is collective focus on an issue or problem and then pulling on different kinds of evidence… [to] understand and come up with ideas what you might do differently…. I think that this is more helpful than more push-pull type approaches. (Expert #2)

Just as KNAER PIs indicated great success with connecting to existing networks, interviewees indicated that it was important not only to identify and collaborate with existing networks but to foster and support emerging networks. Rather than a top-down network – structurally defined – the latest thinking from our experts indicated the importance of fostering 'communities of practice' or 'opportunities for collaborative learning':

> So some of the exciting work we see around knowledge mobilization is where agencies, typically brokering or intermediary agencies, are trying to support nascent or emerging networks that are communities of practice type organizations that are terribly informal and are about people who already have good reason to come together and discuss things, and are doing that in a very eclectic and inclusive way. So they are not doing it in terms of what's the research on this particular topic, they are doing it in terms of what are the issues that arise from this particular concern, and how might we get access to a variety of different kinds of expertise. So trying to support whether it exists or trying to seed those kinds of communities of practice, I think, is a very valuable thing to do, whereas having a sort of top down initiative that tries to invite people into a network tends to be much more stop/start, and it's something, I think, that is less readily supported and less readily seen as being something that will be avidly taken up. (Expert #3)

In such emerging practice, the role of KMb intermediaries – such as the KNAER – is not to simply 'push' research or to direct a network of activity, but to provide tools and resources to support collaborative learning:

> I just get anxious about everyone trying to build "A Community." What I think matters is that you build opportunities for collaborative learning that have the key ingredients and that you create the tools and protocols that enable that to have fidelity with the research and utilities of practice. (Expert #4)

It is important for intermediaries to connect, support and network across local communities or collaborative activities and to support their capacity and share learning on "how to" do this work:

> Helping people get the "how to" stuff to work, and what struck me [is] that people who are really talented at doing this work, a lot of what they know about doing it is tacit knowledge. So I think in these meetings when they are talking to colleagues in other places and when we, as facilitators, are pushing them, what we are able to do is sort of make explicit what their tacit knowledge is, and that's one way of trying to pull it out. So that's one possibility. (Expert #5)

And also to share learning and knowledge across the local activities, for example in the KNAER's case at a provincial level, to develop collective evidence on shared priorities:

> They've brought together different hospitals to focus on one or two very particular goals and they've had quite a bit of success doing it and the idea… is that by networking different places that have a shared goal, each place trying out different things to try to reach that goal, … because they're accumulating the learning from different sites together, then they can learn faster together…. There is a way in which people are spread out on their own trying to figure it out. So there is something about bringing together and coalescing the lessons learned that seems quite powerful? (Expert #5)

However, it is increasingly being proposed that the formation of 'networks', while important, are insufficient to fully connect research and practice for evidence-informed actions:

> But, I see on their own [networks] they're never quite enough… their either too broad, so it's a nice network and people get to talk about things but there's no real sort of substantial movement…or they may be some nice little exploratory mini networks and some relationship that are really productive within it, but again… what's the impact of that is really difficult. Or they're very focused on, sort of, these ideas of push and pull, you know, rather than trying to take issues forward, so it's a kind of hub for pushing information out there or for responding to demands. (Expert #2)

Developing networks essentially focuses on improving "linkages and exchanges" between and among research, policy and practice:

> Another model, of thinking about how you facilitate research mobilization through a system… a common one is to think of it in terms of linkage and exchange… that's probably the basis on which KNAER was set up, the idea that you need to improve linkages between… defined groups, different groups of people, producers, users, maybe dividing the user group into policy makers, practitioners, and then there are certain practices that you might undertake to improve those linkages and exchange… (Expert #6)

While these linkages and networks remain very important, consistent with our review of the literature and the utility of the KNAER, we were advised that leading thinking and practice for KMb is moving to the development of evidence *systems*.

Developing an Evidence-Informed System

As discussed in our analyses of the KNAER and in our literature review – and reinforced by our expert interviewees – networks are important for building interactions and relationships; however, they can primarily focus on identifying and developing linkages between researchers, practitioners, policy makers and access to evidence. This is increasingly being considered as necessary but insufficient if the goal is to support implementation of evidence-informed practices with impact on outcomes. Drawing from our review of literature and recognizing that Ontario values working as an education system, we asked our expert interviewees: "*What facilitates research mobilization throughout a system?"*

Systems approaches combine but expand on the strengths of networks to also add a more complex, dynamic and holistic range of relationships, practices and actions for longer-term development of evidence-informed practices. Systems approaches are multi-level considering provincial and local actions and interactions, including coordination across activities, collaboration, co-creation and co-learning. Importantly, current strengths in the system are utilized, while barriers are identified and addressed for advancing evidence-informed practice. Put simply, rather than asking 'how do we connect researchers, practitioners and policy makers to evidence' [network model], an example of a systems approach from the health sector in the UK began with the question: "how do we create a better knowledge ecosystem for local service delivery?" (Expert #2).

Systems approaches to developing evidence-informed practices are emerging as a priority for governments:

> But I think more recently, in terms of the strategy of policy makers, coming out of…Westminster, the English Government… They have begun to use system thinking ideas. So it's a much broader analysis of mapping the education system, thinking about where its strengths are, what its features are, what its strengths are, and its limitations, particularly in relation to this goal of improving, facilitating more evidence informed practices. (Expert #6)

A starting point, therefore, is to map, understand and analyze the current education system and its capacity for KMb and evidence use:

> I suppose the way I would approach it is to think about the different parts of the system. So I would think about the practices where you want to see evidence informed change take place. So the policy administrative and delivery components of it and think about trying to build new capacities, new capabilities and crucially demand within those communities. Then I would think about the research production processes and the environment where that is happening and try to analyze what are the incentives in that system for being engaged in more than just research production, but engaged in knowledge exchange activities. There's quite a lot that can be done there, but most crucially is the elements of connectivity or interactivity that bring people together in active dialogue around research. (Expert #3)

To further develop "connectivity and interactivity" across a system requires working "bottom up, sideways on and top down" to advance access to, and use of research, in policy and practice:

> So what we were trying to do was work bottom up, sideways on and top down and so we were definitely trying to work with the teacher associations and local authorities. We were definitely trying to work with all the national government agencies to help them model and express use of research and to get them in the habit of effectively illustrating the research underneath what they were doing and turning that into teacher friendly tools and materials, and we were also definitely trying to work bottom up with schools and with teachers. (Expert #4)

Systems approaches are complex, adaptive and innovative; they require time, trust and tolerance for errors as well as identification and spread of effective approaches. Approaches to KMb include the provision of research syntheses, summaries, tools, websites and resources. However, the expert interviewees indicated that providing research materials "may be a necessary component, but simply by itself it's not sufficient" (Expert #3). Systems models value "user pull" over "producer push" of evidence (as in the shift from linear to network models); but they go beyond these polarities to emphasize and facilitate ongoing collaboration, co-creation and co-learning among individuals, groups, organizations, and – vitally – within and across local and larger systems, for example in the KNAER's case working across school, board, university, and provincial networks.

Facilitation of KMb for evidence-informed systems is vital:

> So for me, knowledge mobilization is a facilitated event. It is not a passive dissemination or it is not a dissemination steroids. A lot of people think that knowledge mobilization is just fancy dissemination. (Expert #8)

Building on and deepening networks for systems change involves developing genuine and longer-lasting partnerships between and among researchers and educators:

> ... if researchers thought about it more as a two way street for learning… so it's not about research to practice pushing research out, [instead] it's a two way street. So it's also about researchers learning from practice and letting practice

> priorities and needs [inform] the research that was conducted in the first place… that would be really important because I think right now academic researchers, at least in my experience, too often think about the practice implications or anything about practice at the end of a study, which is "how can I get my findings out and share them and maybe hope that someone uses them?" But really what they should be doing is having many more conversations with practitioners on the front end in developing joint research agendas and have this iterative ongoing relationship with practitioners so that as they design their agenda, as they design specific studies, as they try to make sense of initial findings and to decide where to take the research, it's the constant practitioner input. I have a feeling ... that's where I would put my money on what's ultimately going to drive us towards a more effective system connecting research and practice… (Expert #5)

Ideally, joint working between and among educators and researchers would focus on shared priority interests, for example a problem of practice or collaborative inquiry that involves a need for research also:

> So the thing I think is often missing are opportunities for researchers is a specific group of researchers and a specific group of practitioners to come together on a regular basis on a jointly defined problem and working on it in iterative ways together over time…It is hard to work on knowledge utilization in a broad sense. I think folks need it to be anchored around a specific thing that they are concerned about, and for the researchers to say "well, I have expertise on that topic achievement gap, academic achievement gap," or math learning, whatever it is, and for the practitioners, whether it's the curriculum people who are choosing math curriculum or the math coaches who are coaching math teachers… or math assessment people… My sense is that people need something very firm to anchor… and so they are trying to solve some problem together over time… When that seems to work well, there is capacity being built on both sides and there is something new that emerges ... there's some kind of synergy that's involved, which is like a new capacity unto itself to connect and work on problems together using research as one part of that. (Expert #5)

In such approaches, practice and research partnerships involve identifying problems, posing questions, engaging in collaborative inquiry, and developing and/or accessing research in an iterative process rather than simply providing research on 'what works' for practice. The expert interviewees suggested that increasingly approaches to KMb for research and practice connections should engage in supporting conceptual understanding – for example, asking questions, inquiring, debating evidence – rather than only instrumental understanding – for example, providing research on a specific practice and expecting that to be put into practice as a technical activity.

Crucially, developing ongoing, interactive relationships among educators and researchers supports to develop understanding involves access to research *expertise* rather than simply a research report or other product:

> …what we need to be doing within the system is creating more and more opportunities for interactivity and engagement in a very problem driven and contextual kind of way. So we need access to research and research expertise as much as we need access to research summaries and products, but we need to do that in a way that the people can engage in discussion and dialogue and interpretation of those information resources in a very contextualized way and in a highly social way, as well. (Expert #3)

This suggestion was further emphasized by one of our experts who explained about an evaluation in the USA of effective approaches to research and practice partnerships:

> To peer inside the box of a couple of these partnerships and see what's really going on… initial findings suggest that when these partnerships have [researcher] inputs…that's not the predominant influence they have. What [influence research and practice partnerships] have in their role [is] in bringing a broader body of expertise on a subject matter, not "a" study, but for a broader judgment expertise on that research area… It's much more an advising role. What Carol Weiss would have called conceptually helping them think [about a specific topic or practice]. (Expert #5)

The development of evidence-informed systems recognizes that relationships among and between people and organizations are important – for example, the power of social and professional networks – and that evidence needs to integrate with educators' priorities, needs and activities. To illustrate, one expert commented on embedding evidence in school improvement planning processes:

> Whenever we do a talk to schools now… we don't start by talking about the research findings. We frame everything in terms of the school improvement model. It's identifying your priorities, thinking about options, thinking about change and implementation, evaluating and then kind of embedding things and then that goes kind of round, and the idea was that schools are doing it anyway, or should be doing it anyway. (Expert #9)

Consistent with our own experience with the KNAER, however, these partnerships, processes and practices do not simply happen; they require facilitation and support. KMb brokering and facilitation roles identified by our expert interviewees included:

- capacity building to support this work;
- incentivizing evidence-informed connections and practices throughout the system;
- facilitating connections between people who do not normally connect;
- linking identified research needs with relevant research and researchers;
- creating spaces, opportunities and events for exchange of ideas, dialogue, co-learning and action (in person and online); and,
- provision and brokering of accessible and usable research tools and products.

From KMb Networks to Evidence-Informed Systems: Suggestions for KNAER Phase II

Building on the above discussions and based on our expert interviewees' experiences, we discussed with them: *"what could the Ontario Ministry of Education and university partners do to effectively develop and support research and practice networks for mobilizing and applying research among researchers, educators and policy-makers?"*

Ten suggested recommendations emerged from our conversations with the nine experts. Below we outline these recommendations; in Part 3, we incorporate these recommendations, plus the other recommendations contained in Part 1 of this report, into a proposal for a KNAER Phase II.

Recommendation:

- For the Ontario Ministry of Education (and Government) to engage in and support partnerships to advance an evidence-informed education system.

The work of the Ontario Ministry of Education to advance access to, and use of, evidence – including the KNAER – was very well-regarded by our expert interviewees and had, in some instances, informed their own thinking and work. In return, advice for the Ministry included continuing to engage in and support partnerships for research and evidence-informed practice:

> And so one of the things that I often say to government agents, and partly because I was involved in government, is that you have to be a good partner. Good partners listen twice as much as they talk and they look for things that are mutually beneficial. What I mean by mutually beneficial is that it is not necessary that everybody gets the same things, but that people are clear about what are the requirements within the different sectors. So, I think that one of the things that would be really useful in terms of supporting and producing longer term impacts is to be really clear about what are the things that each of those people are interested in. What are researchers interested in? What are educators interested in? What are policy makers interested in? Be really clear in the communication about what that is, be clear about the time lines that people are engaged in, be clear about the incentive structures that people are involved in, and be clear about the infrastructures that are actually going to support the types of engagement that people actually want. (Expert #7)

As well as further developing partnership working, the Ministry (and Ontario) was encouraged to continue to be at the forefront of KMb and research-practice connections by utilizing latest thinking around developing an evidence-informed system.

Recommendation:

- Review and analyze the current status of an evidence-informed system for education in Ontario.

At the start of the KNAER, KMb models were primarily network models of improving connections between research production, intermediary functions, and research use, including developing

relationships among educators, policy makers and researchers. These important roles remain; however, the limitations of not also attending to the connections between this work and the overall larger education system are being acknowledged as future actions to implement and embed evidence-informed practices requires coordination, collaboration, co-creation and co-learning among and throughout all levels of the education system.

Ideally, further developing a systems approach begins with mapping, reviewing and analyzing the current system. As one expert explained, before getting into the details of the KNAER or future models, he would propose the following steps:

- Get a better understanding of the current context;
- What are the key things that people should be thinking about and doing;
- Determine who is already doing what;
- Determine which activities are aligned or misaligned with research use;
- Identify where are the gaps in the system;
- Look at what others have done (other education systems, other sectors).

Recommendation:

- Clarify the purpose of KNAER Phase II and conceptualize the intended function.

In the context of the larger Ontario education system, it was recommended that the Ministry (or PIC) identify and clarify the unique purpose of a potential KNAER Phase II:

> I think being clear about where your work fits in with the constellation of what's been going on is important. Being clear about your value proposition is important… the core questions of strategy are the following: What makes you unique? What gives you competitive advantage? What will sustain you over time?" (Expert #7)

We were encouraged to clarify purpose before moving to models or actions:

> Well my pet peeve is that people get very excited about how they're going to do it without a clear sense of what they're trying to do…. So I would say any strategy has to be tailored to what you're trying to achieve… And I would say that across the whole thing: there is a purpose first, methods second. (Expert #2)

This includes identifying the intended overarching purpose for in terms of outcomes and also the intended approach to KMb:

> …the advice would be to step back and think "what is your model of knowledge brokering, or which small set of models of knowledge brokering do you think are most appropriate for what you are trying to achieve," and then to try and to construct a strategy that builds up from those building blocks. (Expert #3)

Several models and 'archetypes' of KMb were discussed by the experts; however, in the end the particular approach needs to connect with the intended purpose and functions as relevant and applicable in the specific context of Ontario's education system and the Ministry's vision for *Achieving Excellence*.

Recommendation:

- Develop a specific focus and linked goals.

It is recommended that KNAER Phase II requires a specific, 'concrete' focus and linked priority goals to be clearly articulated. While the overall purpose of a KNAER Phase II may be to advance capacity for and use of evidence; we were advised that there needs to be a practical focus linked to intended outcomes:

> …clarity of purpose and focus really matters and it needs to be big enough to unite people across different contexts and specific enough to mobilize moral purpose and to enable evidence to be collected, not simply to evaluate impact, but for evidence to be the glue that holds the learning together from research…. that was actually one of the problems about many of the network learning communities [initiative in England]. Many of them had goals that were simply to be a network and they struggled. The ones that had a goal which was to close a gap for literacy for boys, or to build the social capital of white working class students in very vulnerable communities, … goals that a math teacher, a geography teacher, an English teacher, a nursery teacher, a (in our terms) year 6 teacher could all coalesce around, but were nonetheless specific enough for everyone to be collecting evidence and for everybody's evidence to be interesting to other people, and still be evaluated with perhaps some chance of pulling it all together. So clarity of purpose is really important… focus and themes really matter. (Expert # 4)

The experts varied in whether the detailed priority foci should come from the Ministry - "I would say specifically questions, policy questions, because this is Ontario sponsoring this". (Expert #8) – or should be locally developed or co-constructed.

Recommendation:

- Provincial functions of KNAER Phase II include a continuing role for the Ministry and the Planning and Implementation Committee (PIC).

Consistent with a complex, adaptive system for evidence-informed action, future functions for KNAER Phase II involve will need to involve multiple components linked to develop an infrastructure, culture and capacity for KMb evidence use provincially, for example:

> So you have to have some translation services so that, how do people access knowledge that already exists, so you have to have some sort of activity around that, as making the existing research accessible to a range of people, in a meaningful way and that is, you know providing painless translation for different kinds of stakeholders if you like. And then, you have to have some sort of, physical relationships and supporting interactions, but I think the component most people miss is that you have to have some sort of focus around what are we trying to

> achieve as a system? I think that's where, actually having some projects that focus on what are the real hot issues that are, that need to be addressed, and thinking through, how do address those and how do you provide the best evidence you can to address those is, is a better focus than always just focusing on building structure if you like. So many time limited projects that address core issues… the real sticky issues, these are the things we need the real problem focused, knowledge mobilization around, and then as long as sitting behind that you got a system that people have access to, make sure people have networking then, you kind of got the infrastructure to sit behind it and keep some of that moving along. (Expert #2)

These functions are important across the province and will require a combination of provincial governance and leadership in partnership with networks and groups across the province. Specifically at the provincial level through the Ministry and the potential work of a future PIC, functions suggested to be required were:

- Providing provincial **leadership** for to champion and develop of an evidence-informed system, KMb and capacity building for evidence use, and partnerships across and among educators, researchers and policy makers at all levels of the system
- **Incentivizing** and motivating individuals and organizations to engage in this work, for example by expectations, embedding the work in Ministry initiatives, encouraging connections in the work and performance of boards, schools and universities, and providing resources;
- **Funding** a KNAER Phase II and linked new call for proposals for provincial and local initiatives;
- Developing an **infrastructure and culture** to support KMb, research and practice connections, and capacity for evidence use in education.

In practice, with the governance and oversight of the PIC, we would envisage also many of the day-to-day provincial activities of a KNAER Phase II to rest with future provincial partners contracted to lead and deliver a KNAER Phase II; for example, building on the work of current university partners in the tripartite agreement.

Recommendation:

- Establish a KNAER 'Secretariat' involving the previous (and future) work of the provincial KNAER university partners.

In our discussions, we were advised of the importance of having a "Secretariat" or equivalent to manage the day-to-day development and operation of initiatives for research use and also to support connections across and among activities and networks:

> The evidence that's there [about research-practice networks] suggests strongly, that you have to have a good secretariat, that's really supporting all of the functions of helping people connect… (Expert #1).

Our understanding of the proposed concept of a "Secretariat" would be to formalize an operational structure between the PIC and any future funded local projects or networks. In

essence, over time, the work of the KNAER university partners has evolved to become a "KNAER team" that are in regular contact and work collaboratively to support and advance KNAER. This work could be formalized in an organizational arrangement, such as a "Secretariat", between the PIC and any future funded local networks or projects, with functions as KMb intermediary and broker.

Three overarching roles for the KNAER Secretariat were identified: being the 'glue' for KNAER and KMb; acting as KMb expert intermediary; and building capacity for KMb and evidence use:

1. **Creating the conditions and providing the connective 'glue' to between and among KNAER activities and partners to support KMb and research use across the province**

> …the role for your group, I think, is to be the glue (Expert #1).

> KNAER could be the place that creates those conditions, sets the conditions right. [KNAER] is the glue … you have got the glue between research and impact (Expert #8).

> …for complex social and environmental problems, we can't know what the ends results are going to be… so collective impact is based on this concept of emergence…our job is to create the right conditions. So, the right partners, the right opportunities, the right resources via people space, IT, whatever and let them go. And the impact will emerge. That is the emergence piece (Expert #8)

2. **Develop as a KMb expert with intermediary skills of facilitation, brokering, championing and a critical friend**

The KNAER Secretariat involves skills of facilitation, boundary spanning, providing KMb expertise and championing evidence use, and using this expertise to support and act as a critical friend to KNAER partners and activities.

- **Facilitation and boundary spanners**

> the skills and capacities of intermediary brokers is also very important and as yet really somewhat under-articulated in the literature of what do we want from people who we see as facilitators and boundary spanners and there I think the skills are very much about "softer" skills of persuasion and social capital building and energy and infusion and so on rather than technical skills. (Expert #3)

- **KMb and evidence use champions**

> The second thing, I think, is that they [teachers] need infectious others. Infectious like laughter rather than flu. So you need people who absolutely understand about the power of research use to enhance young people's experiences, and have got direct and concrete things to share and who are willing to role model and who are willing to walk between worlds a bit, to broker and champion practitioner use. (Expert #4)

- **External expertise and critical friendship to provincial and local networks and professional activities**

> I think nearly all networks and actually nearly all professional learning of whatever kind needs some externality to it. You need specialists to challenge orthodoxies and [to] put you in touch with practice elsewhere, make sure you don't get into "group think," and so it seems to me critical friendship…. You might have network theory a little, but you need some structured evidence based process that stops it all getting too introspective or cozy or complacent. So I think those would be things that I would say would be very important. (Expert #4)

3. **Provide capacity building on KMb and connecting research and practice for evidence-informed education**

Consistent with the Cathexis evaluation and our advice on KNAER, the importance of a future KNAER involving capacity building was indicated by the expert interviewees:

> So it is that concept that the researchers are producing the evidence, the networks are creating the context, but where is the facilitation? A part of the facilitation… is how are we building capacity at the level of our agencies and end users to be able to be able to interact with evidence? And so that might be a role for KNEAR is to do capacity building for engaging in evidence. (Expert #8)

The need to develop capacity for researchers to engage in KMb and research practice partnerships and also the need to develop educators' capacity to engage with research for evidence-informed education was identified. An example of capacity building was the use of summer schools:

> Still on the capacity building, one thing a number of the networks of excellence centers do is that they hold a summer school… often with trainees on knowledge translation or intellectual property protection… So, KNAER holding a summer institute…. why don't you give it to grad students who are sitting next to early policy professionals, or sitting next to practitioner professionals. So you are building their capacity and making connection with those networks connections. (Expert #8)

Importantly, capacity building had to extend beyond individuals to consider development of organizational, network and system capacity:

> I think you're right that the focus is on the network capacity rather than on the individual capacities and capabilities. So as we put a lot of effort in health care and various jurisdictions into training up practitioners about how to access electronic sources, how to search for the right kind of research based studies, how to critically appraise those studies, and I'm not persuaded that that in isolation really makes a huge amount of difference. What you want to do is to try and facilitate people to work collectively on this in an interactive and dialogical way so

> that you have practitioners who are, at least, sensitized to the possibilities of research and motivated, and that's an issue about changing the context when they work, but motivated and incentivized to look at these things and have access to people who can help guide them through that process as a collective effort. So what you are trying to build is system capacities rather than individual capacities and obviously that does involve providing some degree of training and support for individuals, but doing it in the context of a community of practice or a network of collaborators. So seeding projects that are co-productive in nature, for example, helping to provide opportunities for sustained interactivity… (Expert #3)

Activities to fulfil the above roles for a KNAER Secretariat include: communication; providing opportunities for connections between and among people, networks and activities; brokering research and practice connections; and providing tools and resources to support KMb, research and practice connections and evidence-informed educational practices.

- **Communication**

> our experience is that you need to have a really good communication strategy, but in addressing [move] toward system thinking… the kind of communication strategies, it's ongoing, hands on, intensive, keeping everybody in the loop, keeping everybody understanding what their supposed to do and why, that's incredibly important in complex systems, and needs to be at the heart of the overall strategy. (Expert #1)

- **Facilitate opportunities and provide fora for connections between and among people and organizations**

> So I really think an important role for KNEAR is going to be the facilitation space and it is not only making it just accessible on the web… Webinar is a tool. It is one of the tools. (Expert # 8)

> I think it's about some providing resource to allow it to happen. So there needs to be provision of venue or fora where people can meet and some means of understanding what it is that motivates people to attend those fora and what are they seeking to gain from it and then some careful supporting of the deliberative processes that allow you to consider sometimes quite diverse perspectives in those fora …. to provide an opportunity for an exchange of views that does connect with more formal forms of research evidence, but does give room to come to the table to other forms of knowledge such as experience and tacit knowledge and understanding of system constraints and so on, and it's doing that in a sensitive and inclusive way so that the experiences of the people in the room in doing that dialogue are such that they want to continue to do that and so I think that's the kind of set of activities I would be seeking to support. (Expert #3)

> But, a lot of what mediators do is provide opportunities, either they're like dating agencies… create opportunity for people to meet others they may not otherwise

> meet or they are about… responding to e-mail requests about, 'do you know who's doing work up in this area?' and then putting people in touch with other people that was the dating agency idea. Or they're about creating, hosting and facilitating spaces where productive conversations occur… that idea of exchange… in those forums. (Expert #6)

- **Connect with and share across local networks/projects/communities of practice**

> I think the system that we're talking about needs to be community owned… but then those local communities need to be networked with other communities around the province to continue to be learning from each other. You need to think how do I effectively support that shared learning. (Expert #1)

> So one role of KNEAR is to stay in touch with partners, to be able to collect that evidence and collect that data… facilitation. (Expert #8)

- **Broker research and practice connections**

> I think brokering. So I think knowing that there is a need over here and the capacity over here. And no one else will have that province wide sense that KNAER could have… (Expert #8).

- **Provide resources and tools to support KMb, research and practice connections, and evidence-informed education**

For example, producing research syntheses and summaries:

> when we are trying to develop research based tools and resources to move large scale academic research in practice We very rarely, if ever, use the research team themselves to do that because it's very, very hard to give up on the nuances to get deep enough into what's needed to get this started in complex, busy environments. So I think researchers need research brokers…. (Expert #4).

And brokering and providing signposts to quality resources:

> …brokers that support contact and directs and signposts, I think, are really, really important, as well. (Expert #9)

Recommendation:

- Establish an Advisory Group for KNAER Phase II.

Two of our expert interviewees suggested the importance of an Advisory Group. One commented on the need to have practitioners involved in advising on supporting research and practice activities:

> First of all, I don't think there is an education research project in the world where it's okay not to have an advisory group with a range of practitioners on it, and not just one token voice, enough of them to make a critical mass. (Expert #4)

A second interviewee commented on their use of a 'reference group' (of users) and an 'expert group' (of producers) being involved in co-developing KMb work in health, including online interaction as needed:

> Two of the keys that we use in our [realist review approach], that we recruit both an expert panel and a reference panel. The reference panel being the end users that are ultimately going to use this, at least the people that will oversee the use, and the expert panel being the people who are actually doing the work, currently and are most update with what the evidence tells you. And then it goes through a sequence of refining the research question, searching for the role of literature, generating preliminary conclusions and recommendations and so on. All of which is done collaboratively and we do most of that online… so it's a kind of intense, interactive, co-production, where everybody has a role at every stage… (Expert #1)

Recommendation:

- Developments of networks with 'backbone' infrastructure and working with local projects/communities of practice.

We heard a range of advice and examples from our expert interviewees about potential options for a KNAER Phase II involving 'knowledge networks for applied education research' provincially and locally. Examples included:

- Networks focused on provincial priorities contrasted with locally identified, emergent networks
- The need for a central network infrastructure but also the need to avoid 'mandating' people into prescribed structures
- The potential of emergent networks for communities of practice and collaborative learning
- The importance of connecting to existing networks, including provincial professional organizations
- Examples of teacher-led research networks, research schools' networks, and university-school partnerships in education (and a host of other examples in other sectors).

We propose that there is a way to bring these potentially contradictory suggestions together through the combination of a large network(s) with provincial reach and infrastructure – through a 'backbone' – with in-depth local collaborative activities, for example through 'communities of practice'.

The Network 'Backbone'

We learned of the concept of a 'backbone organization' which can be central to effective networks:

> a backbone organization spans the territory, because it connects out to all of the primary stakeholders. So it has an authority, whether that authority is legislative, moral. (Expert #8)

A backbone organization (or partnership of organizations) should be well established organizations, intermediaries or partnerships that have credibility and strong provincial connections. For example in education, this could be a provincial education association and/or a university. The 'backbone' organization's role is to play – for the specific network – many functions of the overarching KNAER Secretariat in facilitating, supporting, championing and enabling connections, capacity, communication and sharing across activities *within* the network and provincially. These organizations have reach and spread of influence beyond that feasible for a single project or local community of practice. Rather they would support mobilization and implementation of evidence and practices used or generated by local network projects more widely to support scale of implementation and impact.

For example:

> … the backbone organization for PREVNet for the healthy relationships training module were the three not for profit [organizations]: Scouts Canada, Red Cross, and Big Brothers, Big Sisters, so it's really three. … they were part of the research… but there is a community practice they formed around this question. So some researchers and individuals from those three not –for- profits and they found this thing [initiative trialed] worked…. they did a randomized control trial around it and they found that it worked and so that evidence was then dispersed became sort of… policy for those national organizations. It is one of the standard training offerings that local Red Crosses, Big Brothers Big Sisters would have available. And so by co-producing the evidence and co-producing the program and then having that well evaluated and then being adopted on a national scale that helped with the scaling. (Expert #8)

The 'backbone' was able to leverage and mobilize the research beyond an individual project.

Collaborative projects/communities of practice working within larger networks

The above example also required working with communities of practice. Our experts suggested the value of communities of practice and local collaborative learning opportunities:

> I think you need to rely largely on community practice, you need to let people coalesce around the questions that are important to them, and find ways to support them…I think that effective adaptation and implementation relies on a chance to actually do something you can't just talk about it and share ideas and thoughts. There have to be hands on projects where you can collaborate…. (Expert #1)

However, we were advised to focus, in-depth on a small number of collaborative projects/communities to examine and develop research and practice connections for an evidence-informed system:

> But what you need now, I think, are a few sentinel projects, that really are going to try to revisit the model and to think about what needs to happen to continuously improve and what needs to happen to scale up. And we don't know how to do that, it's going to have to be a learning process. It would be a mistake to expect all communities to do that all at the same time. I think you need to start with a few and then build on that. (Expert #1)

> Those who have seemed to have broken new and promising ground have maybe been a little more focused in working with one or two partners or a handful of partners…in quite in depth ways, almost as if they are demonstration sites. (Expert #6)

Recommendation:

- Provide longer-term funding (5-10 years).

There was general agreement that developing research and practice connections for mobilization of knowledge and use of evidence takes time and resources. We were given examples of health initiatives spanning more than a decade. We were told that the Education Endowment Foundation (EEF) in England is working on an anticipated 10-15 year timeline to fully assess impact. We were provided with an example of a health initiative in Alberta where it took eight years to initially identify, gather and begin to mobilize the research and only now, moving forward are they working on implementation. The federally funded Community-University Research Alliances (CURA) began as a three-year program; but in recognition of the time needed it became a five-year program with the possibility of renewal for further five-years for a total of ten years of funding. It was recognized that it is difficult to commit to multi-year funding, but we were advised it was critical:

> it is not the research that takes a long time, it is a culture change required that takes a long time. I think that is a really important piece, because if we are talking about a culture that privileges evidence in decision making that is reflective upon practice and allows for issues in practice to go back into the research cycle…. so that we have an ongoing system of asking questions, doing analysis, developing implementation… and then having new problems sets emerge from that so that we have an ecology. That takes time. I think that one of the challenges that governments run into is that they want things done quickly and they assume that things can be done quickly… I think that that's a problem. (Expert #7)

When asked for a specific recommendation, a funding period between five to ten years was advised as necessary to develop and sustain approaches to KMb, research and practice connections, and capacity for evidence use.

Recommendation:

- Involve evaluation of KNAER Phase II from the beginning.

Across our expert interviewees, the challenges and complexities of evaluation were noted. Indeed, it appears that the effective evaluation of KMb and evidence use has not yet been fully developed. One expert commented:

> We talked to over 50 agencies in detail and we asked them what they were doing around assessing impact and assessing the effectiveness of their work, the knowledge mobilization work, and we found precious little that you would really hold up and say "this is really providing cumulative new knowledge to the field about how impact happens." We had quite a lot of people who could articulate some of the difficulties and we had quite a lot of activity that was about trying to provide themselves with some reassurance that they weren't howling at the moon. But anything that looked like a systematic evaluation of complex programs of knowledge mobilization… it was pretty much absent. (Expert #3)

The difficulty and complexity of measuring impact was noted:

> I think that is an extraordinarily difficult problem to untangle and I don't think the field as a whole has really properly got to grips with that yet. … I don't think any agency has yet cracked how to do this, that complexity, that serendipity and that diversity of use, influence and impact. (Expert #3)

Including the need to clarify what 'impact' you are seeking to evaluate:

> I think people often don't distinguish between, but it's important, is whether they are evaluating impact or whether they are trying to evaluate the effectiveness of a particular strategy or mechanism for improving research use. (Expert #6)

Notwithstanding these challenges, partnering with an independent evaluator from the start of any project is important:

> …essentially people apply to do projects and then they are paired with an independent evaluator and then the developer and the evaluator work up an evaluation that works for everyone, and actually that works for everyone. We've had to evolve that process. Originally the evaluators were brought in at quite a late stage and they would spook the developer of the project and they would come up with a radical evaluation and scare people basically. So now we start that conversation very early on, even before any projects have been approved… it becomes much more a collaboration and it really works. I think that's been a kind of success generally. (Expert #9)

We see considerable potential in commissioning an independent evaluator to work from early in the implementation of a potential KNAER Phase II. In addition, there should be ongoing monitoring and reporting across organizations and activities funded through the Ministry for the KNAER.

Some potential approaches to formative and summative evaluation that were proposed include:

- **A developmental process evaluation framework with monitoring and feedback loops**

  I think that again going back to having a culture of wanting evidence that are monitoring systems that you build into your process that feeds back regular report, even if it is incomplete, that allows for adjustments, and adaptation, and utilization of emerging pieces is important, but it also builds the culture of having conversations about what is most valuable and what is emerging. (Expert #7)

- **Create and use a logic model**

  I think one useful step is to try to sit down and think what's your logic model, what are some of these pathways, and what are some of these intermediate variables that ought to be impacted by the things that you do and how might you start to look for those and start to build up a web of influences that you can track through from the initiatives that come from your organization, from your network, and how they might be rippling through the system. So that might be trying to follow up and figure out what proportion of people are you touching in some ways and how are their beliefs and attitudes changing as a result of their engagements with you? What would be some of the logical linkages between changes and beliefs and attitudes and potential behaviour changes and can we try that through more detailed research study. But it does require really quite sustained research efforts to follow these things through whether you are tracking forward from pieces of research and activities to see where they go or whether you are tracking back from a policy environment or a practice environment to try and look at the influences on current dynamics. There are significant pieces of empirical work and I think they are really quite non-trivial. (Expert #3)

  Those who seem to have made most progress have either respectively, or even better more prospectively, started to work with logic models of what it is they are trying to do, and why, and how they plan to do that, and why they're trying to do that, and then in that process, coming up with some well-articulated and supported indicators of steps on their journey that they might be having so they can say with some confidence in order to achieve one of our main goals, impacts we want to have, and this is how we see the issue, and things we want to do in relation to those issues, and these are our activities we would measure for each of those… intermediate outcomes that we have been able to observe… setting up the unique data collection systems to be able to gather those. (Expert #6)

- **Design an evaluation using mixed methods, including qualitative narratives and cases, as well as quantitative analyses**

Finally, our experts ranged on specific methods to be used. In all cases, quantitative data alone was considered insufficient to track processes and develop cases of KMb and evidence-informed

approaches. Mainly, mixed methods were suggested as necessary to combine assessment of outputs and outcomes and the processes involved.

In taking these recommendations into consideration for a potential KNAER Phase II, it is also important to listen to and learn from our local partners to adapt future proposals to meet the context, priorities and needs of the Ontario education system and individuals, organizations and communities locally.

Strategic Planning Sessions

As requested by ERESB and discussed with the PIC, we have completed four strategic planning sessions and one KMb chat to inform our analyses and recommendations for this Final Report. The sessions were as follows:

- **Teachers**

In collaboration with the Ontario Teachers Federation and the Teacher Learning and Leadership Program (TLLP), we hosted a KNAER strategic planning session for teachers during the TLLP Leadership Skills for Classroom Teachers training event. The KNAER session involved three focus groups with a total of 24 teachers.

- **Administrators**

In collaboration with the Ontario Principals Council (OPC), an invited KNAER strategic planning session was conducted with thirteen participants.

- **Deans of Faculties of Education**

We requested an opportunity to attend the Ontario Association of Deans of Education (OADE) involving Deans – or their representatives – from the 13 Ontario Faculties of Education.

- **Ministry of Education/Faculties of Education**

As part of the Ministry of Education/Faculties of Education Forum, we offered a KNAER strategic planning session with 12 participants.

- **KMb Chat**

As part of our commitment to KMb and engaging with a wider audience, the KNAER Directors co-hosted a Twitter #KMbChat, where participants engaged online in questions concerning KMb practices and future suggestions for KNAER. 20 Twitter users actively engaged in the #KMbChat.

Below we summarize the findings and arising recommendations from the KNAER strategic planning sessions relating to developing networks and systems for KMb and supporting educators and researchers to collaborate for evidence use in education.

Networks for Connecting Educators and Research

In considering the potential future development of research and practice networks in education, we started by asking teachers and administrators which *existing* networks they mainly participated in. For the teachers and principals we spoke with, the predominant 'network' they belonged to and interacted with involved personal and/or professional networks. The use of social media networks is becoming increasingly important for expanding educators' professional network. Not surprisingly, both principals and teachers spoke of a range of formal education networks across schools, at the board level, and through involvement in Ministry initiatives and related networks. These networks are primarily education networks connected to professional practice which may – or may not – include access to research.

Accessing and Using Research

When asked about accessing research, teachers and principals pointed to multiple strategies at different levels of the system supporting their use of research (for example, research publications and resources), including:

Individual Level

- Personal and professional informal networks
- Online sources, including websites, blogs and social media
- Publications, including research monographs and book clubs
- Attending conferences of personal interest
- Participation in KNAER projects, use of KNAER outputs, KNAER website and Twitter

School and Board Level

- Professional learning, for example collaborative professional learning and inquiry including access to locally developed research
- School board and school resources, including school meetings, board consultants and coordinators

Provincial Level

- Ministry resources, initiatives and events
- Provincial organizations' resources and activities, including principals' councils and teachers' federations
- Provincial conferences, including the Ontario Education Research Symposium and the Leading Student Achievement sessions

Universities

- Accessing libraries, attending talks and presentations
- Including being graduate students

Not surprisingly, key barriers to research use were:

- Time to access, read, share and use research
- Availability of research when decisions and actions are required quickly in practice
- Concerns about relevance and usefulness and linked need to integrate research into professional learning conversations and school practices

- Need for tips and tools to support understanding of research, evaluation and data
- Too much information available and need for quality syntheses and summaries

Improving Knowledge Mobilization for Research-Practice Connections

We asked participants to suggest approaches and practices for developing KMb to support research and practice connections. Participants in the KMb Chat suggested:

- The importance of collaboration, interaction, ongoing dialogue, and a sustained relationship between and among the people involved
- Supports for quality research and opportunities to engage in considering what counts as evidence
- Use of multiple formats to communicate research
- Investment in a longer-term strategy and initiatives to sustain KMb

Similarly, participants in the Ministry of Education – Faculties of Education Forum indicated the importance of funding to support researchers (and educators) in engaging in KMb and research-practice connections and the importance of development and sustaining regular educator-research connections and building partnerships. Participants indicated the need for capacity building to support researchers and educators engaged in this work. In addition, participants in the Ministry of Education-Faculties of Education Forum suggested the need for a social network analyses to identify and clarify what KMb already exists and, looking forward, to measure impact of KMb activities. For researchers, ensuring that they had intellectual property agreements to mobilize and communicate their work is important.

Principals' advice on how to improve KMb and research-practice connections included to:

- create more opportunities for principals' to have a voice, share information and have their ideas acted on
- engage with graduate students, particularly to enable teachers and principals in graduate school to share what they are learning about the latest research, plus also opportunities for graduate students to work with provincial education organizations to conduct research;
- improve connections between university and Ministry partners in informing research into provincial programs;
- facilitate learning about research on an ongoing basis, through different learning opportunities, many times a year, and in many different formats, including web conferences and/or a website that allows participants to archive their learning about research so that others can access this, and which also allows for web-conferences and discussions about research, blogging about research, and updates on what's of note in current research;
- encourage every board to have a partnership with a university and for boards and schools to have ongoing partnerships with research institutions/organizations, not just one-off projects;
- develop capacity among administrators and teachers about: identifying the best research available; where to access this research; and how to use the research most effectively and efficiently.

The suggestions from teacher participants were very similar about opportunities to engage in and with research. In particular, teachers were interested in support for teacher-led research and also for KNAER to partner with teachers and teachers' organizations. Teachers requested the development of "ready-to-use evidence-based resources" connected to their practice. With regard to the Ministry, teachers suggested that the Ministry could play a key role in providing an overarching vision and focus for research-practice activities.

Overall, the suggestions from participants were highly consistent with recommendations based on our analyses of the KNAER and from our expert interviewees. There were two specific additional recommendations emerging.

Recommendation:

- Attend to the importance of: engaging educators' appropriately to value their voice, ideas and actions; further developing Ministry, university, provincial partner, board and school partnerships, including the Ministry providing overarching vision, universities engaging in longer-term partnerships for example with boards and provincial organizations; and engaging graduate students more fully.

Priority Research Needs and Interests

ERESB and the PIC had expressed interest in the KNAER team identifying educators' future priority research needs. The responses we received on this question were voluminous, diverse, and contextualized. However, a key message is that the work and priorities of the Ministry are directly connecting to the priority needs and interests in the field. A summary of key topics proposed are:

- Well-being: physical safety, mental health
- Teaching and learning practices: collaborative inquiry processes, math, use of technology, range of assessment approaches (pedagogic documentation, portfolios), literacy, student engagement, teaching combined grades
- Equity and student diversity: learning disabilities and special educational needs, welcoming immigrant students, socio-economic status and education, analyses of student learning and motivation for different groups of students
- Parent engagement
- Principals' role, workload, and leadership practices
- Teachers' professional learning, professional practice, well-being, and teachers as researchers
- Full Day Kindergarten, Early Primary Collaborative Inquiry, and transitions into primary grades

Not surprising, at least one or more of the KNAER projects can be found in each proposed topic mentioned above.

Recommendation:

- As was demonstrated through KNAER I, the range of topics suggest that educators' priorities and needs are influenced by provincial priorities and needs, yet contextualized to local situations and personal interests or needs. It is also possible that the list of priorities will change based on immediate needs. In this context, the key priority topics will be difficult to distil, rather our advice is that the Ministry should indicate priority areas of concern linked to specific goals – that have provincial and local relevance – as foci for the future work of KNAER.

Conclusion

For our review of potential future models and needs, we were encouraged by a high consistency in the evidence discerned from our review of the literature, interviews with experts, and sessions with Ontario partners. There are, of course, differences in detail for different individuals, stakeholder groups, and contexts.

Our advice is that a future model – KNAER Phase II – should embody the ten recommendations arising from the expert interviewees and the two further recommendations identified from KNAER strategic sessions.

Part 3: Recommendations and Proposals for a KNAER Phase II

Recommendations for Continuation but Adaptation and Evolution of KNAER to KNAER Phase II

In this concluding section, as required as a deliverable for the KNAER Final Report in the Tripartite Agreement, we provide our:

> Recommendations for the continuation of KNAER and or other models for Ministry of Education-University collaboration.

Recommendation:

- Our recommendation is the continuation but adaptation and evolution of KNAER for a future model envisioned as KNAER Phase II.

Based on our analyses in Part 1 of this report, our previous Interim Report, and the Cathexis independent evaluation report for KNAER. Our conclusion is that KNAER has had high utility and has fulfilled the deliverable set out in the original Agreement. Indeed it became a highly active "trailblazing initiative" (McGuire, Zorzie, & Frank, 2014, p. 9). In this final Part 3 of the report, we trace the evolution of current KNAER and then integrate the recommendations throughout this report into a set of proposals for a model for KNAER Phase II and an illustrative timeline and action plan for implementation.

Evolution of KNAER

The KNAER initiative, set up as a knowledge network, was innovative and complex. Structurally, it consisted of two formal components: the PIC as a provincial governing body and the 44 funded KMb projects spread out across Ontario. In addition, as projects were approved and moved into start-up and implementation stages, all projects were managed and supported by the university partners on a day-to-day basis. This led to the emergence of a third informal structural level that became known as the "KNAER team" consisting of those in the universities that worked together on an ongoing basis to support and manage the 44 projects and KMb for the overarching KNAER.

In terms of its approach to KMb, the KNAER can be best described as adopting a three-in-one model that included aspects of a linear, relational, and systems approach with periods where some model features were more emphasized than others. Initially the KNAER adopted a linear approach, with some relational characteristics. The work of the PIC 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 year to 18 months, the KNAER tended to focus on producer-push strategies, rather than user-pull strategies - "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 be taken-up in practice within a relatively short period of time.

Linear approaches to KMb are not uncommon and have, until recently, been the norm within the education sector, as well as in other sectors. The KNAER was initially bound by a particular start and end date and limited funding expectations that had to be met annually with strategic reporting periods. In the first six to twelve months, the PIC was consumed with operational tasks, such as creating a proposal system, designing the call for KMb proposals, managing the adjudication process, setting up contracts and agreements with individual project institutions and the government and monitoring of expenditures. Analyses of the first sets of interim reports submitted between October, 2011 and June, 2012 and a later 2013 report developed from virtual discussions with KNAER PIs, indicate that the general education sector and KNAER projects had limited knowledge about effective KMb and partnership building, as well as limited skills and resources to successfully develop and execute focused KMb plans that could impact practice in schools and classrooms. As is a common concern with network models, the KNAER projects experienced wider system barriers to KMb that had not been considered at the beginning. For example, providing KMb training, helping projects develop focused KMb plans and evaluation plans, facilitating connections among KNAER projects with other networks and intermediary organizations in the Ontario education system, had not been a primary focus of the work of the PIC at the beginning of KNAER but these activities emerged as areas of priority need over the experience of the initial KNAER projects.

Through their day-to-day work with projects and through informal feedback from PIs as well as formal feedback provided by the projects in Interim Reports, the university partners grew increasingly aware of KMb "gaps," as well as the emphasis many projects were placing on product development and user push strategies, rather than more diverse strategies that move beyond traditional dissemination towards encouraging interaction and dialogue between stakeholders. In response, a second stage of the KNAER in year two (2012) emerged where, in addition to the managerial/organizational expectations and responsibilities that were part of the KNAER initiative, as well as the formal PIC and informal working group - later referred to as the "KNAER team" – emerged involving the university partners becoming move involved in relationship building and KMb 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 KMb support to the 44 projects and education sector. For example, the KNAER team: created supplemental resources for the 44 projects such as two KMb tip sheets and three bookmarks that explain the concept of KMb and provided tips on how to maximize KMb efforts; provided feedback to project investigators on their interim reports, including probing questions and suggestions for deepening KMb efforts; provided specific suggestions to projects on how to improve their particular KMb efforts, when requested; revised the KNAER website at the request of projects to display more pertinent information, such as a dropdown tab that described the concept of KMb and effective and ineffective strategies for KMb; and conducted presentations at both academic conferences and to education related groups such as MISA. In short, the KNAER team realized that KMb 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. Developing meaningful ongoing relationships and trust, as KNAER projects themselves were realizing, is

important for encouraging research up-take. This observation was noted several times by PIs within both Interim and Final Reports as well as in our online-consultations with project investigators on network development. The reality, though, was that these types of relationships were not always easy to create or maintain, especially with short-term timeframes.

As funding for the 44 projects was coming to an end (2013), projects were generating numerous and varied KMb products as demonstrated in Part One of this report and attention turned to how best to support projects in continuing their KMb work beyond the initiative's funding. The KNAER team next began a campaign where the KNAER project managers from each university engaged in ongoing conversations with individuals from projects to, again, encourage them to think beyond traditional dissemination practices and extend their KMb strategies, for example by extending their networks and building and deepening partnerships that could be sustained over the long-term. Virtual discussions were held to hear from both the KNAER projects and to connect projects to one another. The KNAER team facilitated a KNAER presence at multiple Ontario Educational Research Symposiums. During this time the team worked to build connections across KNAER projects, provided suggestions on how projects could extend and maximize their KMb efforts, as well as encouraging projects to discuss methods they were using to evaluate the impact of their KMb efforts.

Around this time the KNAER team also began to reconceptualization the KNAER website – to consider it as a tool to not only extend product reach but to also share and connect with others in the field. This was supported through a redesign, the introduction of a Twitter account and blogging which began in 2013 and still continues to build and expand today.

At the project level, the 44 projects began exhibiting multiple micro-models of KMb within the larger overall KNAER model. It could be argued that the projects emphasized different KMb 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 KMb. Projects in Categories Two (Building or Extending Networks) and Three (Strengthening Research Brokering) approached KMb more from a relationship model.

The overall KNAER (including the PIC, the KNAER team, and the 44 projects) has utilized KMb approaches connected to linear, relationship and systems approaches at different phases of the KNAER's evolution. By 2014, both successes and challenges of KNAER were apparent to the PIC and KNAER team, and there has been attention to investigating alternative models and approaches to both build on the success of KNAER while also addressing existing challenges for increasing KMb and research use for evidence-informed practice in Ontario's education system.

Adaptations to KNAER for Future Models and Actions

While successful overall, our assessment – and that of the Cathexis evaluation – is that a future evolution of (current) KNAER or an alternative model should take account the recommendations outlined in Part 1 of this report:

Role of University Suppliers

Recommendation 1:

- The Ministry's next planning steps for a future KNAER should also attend to decisions concerning what will happen after the end of the current KNAER tripartite Agreement, Particularly for the KNAER work of the existing university partners that would benefit from being sustained in the longer term, for example the KNAER toolkit, resources, website, and Twitter account.

Governance through the Planning and Implementation Committee (PIC)

Recommendation 2:

- Our analysis of the meetings and activities of the PIC indicate the importance of a provincial governance structure that involves strategic partnership(s) between the Ministry of Education and the KNAER university partners. We propose that a future KNAER continues to have a provincial governance structure, such as the PIC to bring together Ministry and provincial leads to provide leadership, oversight, funding, and develop a culture and infrastructure for KMb, research and practice connections and evidence-informed practices across the Ontario education system.

Recommendation 3:

- While highly successful overall, there remain recurring themes from the PIC's meetings that require consideration upfront in the future work of a possible "KNAER Phase II" including attention to a clear, agreed-upon vision between members, as well as attention to the various roles and responsibilities of each partner. The proposed KNAER Phase II model suggests a continued need to identify and focus on key priority areas/topics, to further build understanding and capacity for KMb, and embed evaluation and attention to impact from the outset.

Identify and Approve Applied Education Research and Knowledge Mobilization Projects in Support of Enhancing Practice

Recommendation 4:

- To learn from the experiences of the KNAER projects to inform future approaches to KMb, applied education research, and improved impact for enhancing practice. To consider, for example: the benefits of using professional learning communities to develop research-to-practice connections, the importance of actionable products such as professional resources for use by educators, and the need for training and guides to KMb for researchers.

Recommendation 5:

- To act on the future opportunities proposed in the external evaluation to increase: focus on development of quality KMb activities (including potentially larger, longer term projects), to provide sector-wide training to develop understanding of and skills for KMb, and to leverage the existing knowledge and resources from the KNAER.

Ensure Collaboration between Leading Provincial, National, and International Researchers

Recommendation 6:

- Include attention to the provision of guidance and supports for effective partnership working into future models and plans.

Recommendation 7:

- In addition to attending to partnerships within projects, there is a need for provincial support for networking across projects and beyond, for example through: continued development of social media networks, opportunities for in-person networking, and developing an overall Ministry-university partnership(s) to function as a "hub" or "knowledge broker" to connect individuals, organizations, and activities around shared priority interests and areas of evidence.

Recommendation 8:

- Design approaches to evaluate the impact of partnerships and networks in and through future potential models.

Envisioning KNAER Phase II: Recommendations

While we recommend a continuation of a future KNAER to build on the success of the current KNAER, we recognize also that there is a need to envision and develop a future model that is not simply the same as the KNAER designed and initiated almost five years ago. We have learnt considerably from the evolving experience of KNAER and we are now learning from the leading thinking in the relevant literature, from national and international experts, and current approaches, needs and priorities for our Ontario stakeholders and partners. As detailed in Part 2, we have formulated a set of recommendations for a future KNAER that will integrate the strengths of past successes while developing new structures, functions, capacities, activities and outcomes for a future model. We refer to this as KNAER Phase II.

The new recommendations – which further re-enforce and strengthen recommendations in our Interim Report – as outlined in Part 2 are:

Recommendation 9:

- Our recommendation is that KNAER Phase II or future models of KMb for connecting practice and research in Ontario build on the successes and identified challenges of KNAER, while evolving towards a systems approach. We do not envisage a full ideal type systems model being feasible in the reality of an already well-developed range of activities and initiatives in Ontario; therefore, we propose investigating a hybrid model combining the best elements of relationships/network models while addressing previous challenges by integrating elements of a systems model. In shorthand, this could be characterized as a Networks Plus model moving towards an evidence-informed system.

To develop KNAER Phase II, the following specific recommendations emerged from our conversations with relevant expert interviewees:

Recommendation 10:

- For the Ontario Ministry of Education (and Government) to engage in and support partnerships to advance an evidence-informed education system.

Recommendation 11:

- Review and analyze the current status of an evidence-informed system for education in Ontario.

Recommendation 12:

- Clarify the purpose of KNAER Phase II and conceptualize the intended function.

Recommendation 13:

- Develop a specific focus and linked goals.

Recommendation 14:

- Provincial functions for KNAER Phase II include continuing roles for the Ministry and PIC.

Recommendation 15:

- Establish a KNAER 'Secretariat' involving the previous (and future) work of the provincial KNAER university partners.

Recommendation 16:

- Establish an Advisory Group for KNAER Phase II.

Recommendation 17:

- Developments of networks with 'backbone' infrastructure and working with local projects/communities of practice

Recommendation 18:

- Provide longer-term funding (5-10 years).

Recommendation 19:

Involve evaluation of KNAER Phase II from the beginning.

Across our strategic planning sessions, we received advice that was consistent with developing a combination of 'network' and 'system' approaches to moving forward with an emphasis on the importance of collaboration, interaction, capacity building and supports for connecting educators and researchers to access and use evidence. In addition, arising from our KNAER sessions with Ontario educators, there were particular additional recommendations:

Recommendation 20:

- Attend to the importance of: engaging educators' appropriately to value their voice, ideas and actions; further developing Ministry, university, provincial partner, board and school partnerships, including the Ministry providing overarching vision, universities engaging in longer-term partnerships for example with boards and provincial organizations; and engaging graduate students more fully.

Recommendation 21:

- The range of topics suggest that educators' priorities and needs are influenced by provincial priorities and needs, yet contextualized to local situations and personal interests or needs. It is also possible that the list of priorities will change based on immediate needs. In this context, the key priority topics will be difficult to distil, rather our advice is that the Ministry should indicate priority areas of concern linked to specific goals – that have provincial and local relevance – as foci for the future work of KNAER.

We attempt to bring together and integrate all of the recommendations from Parts 1 and 2 of this report (as outlined above) into a proposed model for KNAER Phase II.

KNAER Phase II: Proposals for a Model

In our Interim Report and preparation for this Final Report we reviewed a wide range of 'models' from practices in other contexts, countries and sectors. In practice, we did not find one ideal model. Indeed, one of our expert interviewees commented that after researching 50 organizations engaging in KMb and approaches to evidence-informed practices, there is no one best model and that any 'model' will require adaptations in practice for specific purposes, contexts, approaches and priorities:

> a constant message that came at us and the agencies we spoke with was that they were aware of these model series and frameworks [in the literature] as a kind of backdrop, but many of them, they struggled to operationalize them or they used them in very informal ways. They didn't find them necessarily all that helpful as prescriptions for how they should develop a strategy and that was partly because they felt that they [frameworks] were somewhat often somewhat divorced from the nuts and bolts of reality, the specifics of the field that they were in. (Expert #3)

While drawing on evidence about 'relationships/networks' and 'systems' models, we propose a blended model building on – but adapting and advancing – the existing KNAER model (see figure 8), taking account of the recommendations identified in this report, and including consideration of potential future models identified and developed by ERESB (2014) in their work on *Research to Practice Thematic Networks: Contexts for Consideration* involving 'hubs', 'networks' and 'communities of practice'.

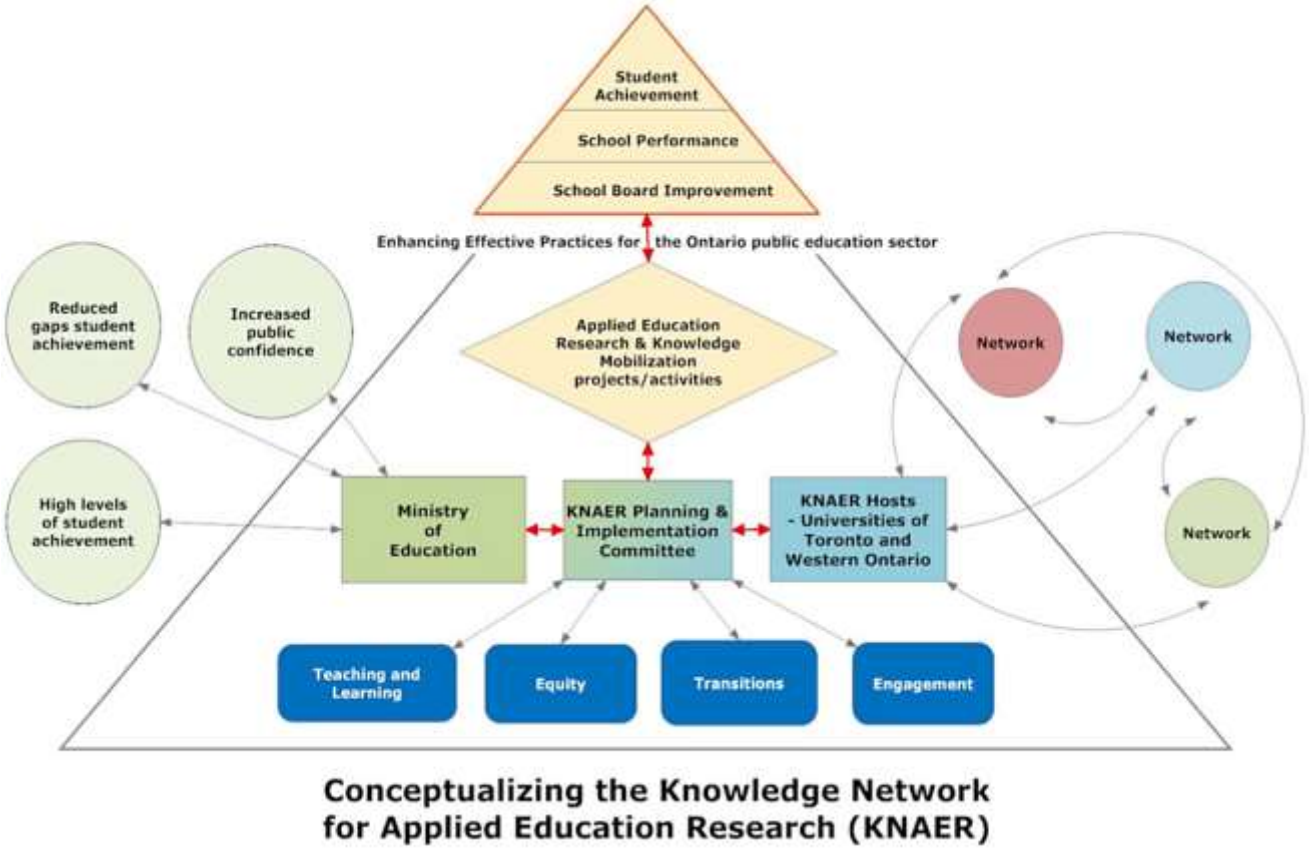

Figure 8. Original KNAER model (Source: ERESB, 2014).

We outline our conception of a schematic diagram for KNAER Phase II in Figure 9.

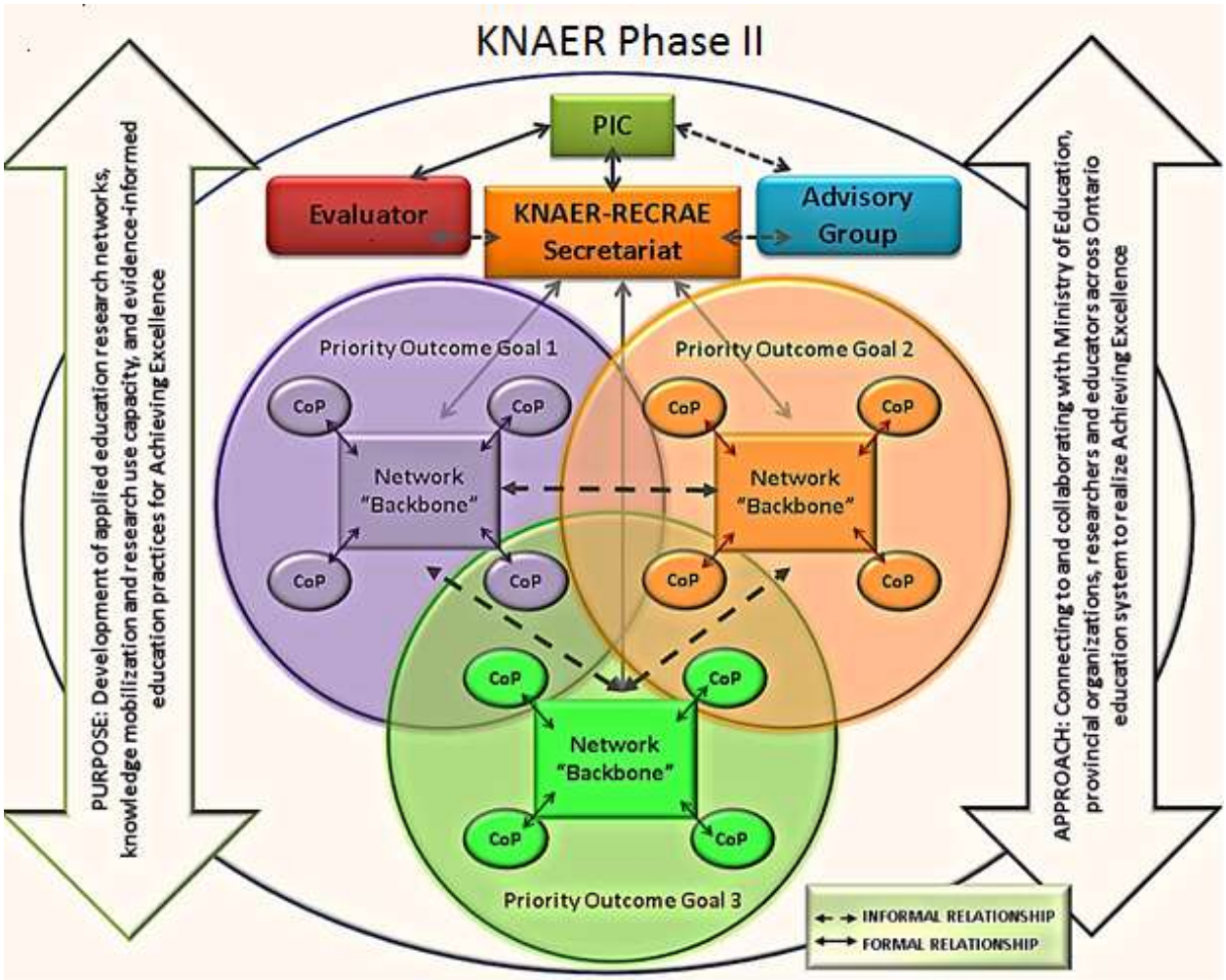

Figure 9. Proposed model for KNAER Phase II.

A Model for Partnerships, Networks and Systems

Connecting to latest thinking about the development of evidence-informed *systems* and interest in innovation literatures about eco-systems – rather than hierarchies – as fostering collaboration, innovation and improvement; we have graphically depicted KNAER as a systems models where there are connections and interactions between all levels, actors and agencies across the KNAER system (and in the context of the larger Ontario education system).

This proposal addresses recommendations #10 (For the Ontario Ministry of Education (and Government) to engage in and support partnerships to advance an evidence-informed education system) and #11 (Review and analyze the current status of an evidence-informed system for education in Ontario).

Purpose of KNAER Phase II

Clarity of purpose is essential to informing the future model, functions, operation, activities and intended outcomes of KNAER Phase II. In our conversations with the PIC members and ERESB, we have heard three main potential purposes for a future model:

- the development of thematic networks;
- mobilizing knowledge and building capacity for evidence use; and
- using evidence to inform improved educational practices and outcomes.

While complementary, these three purposes are distinct and link to different models and archetypes for KMb and evidence-informed systems. Rather than selecting one purpose, however, we have attempted to combine the three purposes in our definition below (and in Figure 2) and connected these to the renewed vision for *Achieving Excellence*:

> **Purpose for Phase II:** Development of applied education research networks, KMb and research use capacity, and evidence-informed education practices for Achieving Excellence

This combination of purposes results also in a proposed blended hybrid model bringing together the best elements of 'networks' and 'systems'. Relatedly, we suggest the following approach to be developed by KNAER Phase II:

> **APPROACH**: Connecting to and collaborating with Ministry of Education, provincial organizations, researchers and educators across Ontario education system to realize Achieving Excellence

These proposals address recommendation #12 (clarify purpose).

Organization and Functions of KNAER Phase II: Provincial Level

Figure 9 includes four organizational units operating at the provincial level for KNAER Phase II: Planning and Implementation Committee; KNAER Secretariat; Advisory Group; and Evaluator. We outline each below.

Planning and Implementation Committee (PIC)

We propose that KNAER Phase II continues to have a provincial PIC with functions including: governance and oversight; provincial leadership and championing of KNAER and related activities; oversight of funding and adjudicating criteria and selection of 'calls for proposals'; and developing an infrastructure and culture to support KMb, research and practice connections, and capacity for evidence use in education.

We envisage the PIC would continue to involve senior Ministry of Education leaders and relevant officials. Indeed, we propose that further linkages between the work of KNAER Phase II and alignment with Ministry initiatives should be developed and that relevant ADMs and the ERESB are important executive champions for this collaboration and work. We envisage that the PIC would also have membership from the partner(s) contracted to lead and deliver KNAER Phase II, equivalent to the current university partners for KNAER. In addition, the PIC may want to consider expanding its membership as shared ownership and distributed leadership are features of moving to a 'systems' approach. Our proposal would be to identify a 'network lead' for each priority area to be funded and for that lead to have a formal reporting to, and membership of, the PIC role to facilitate sharing knowledge and information from each network to provincial partners and also to co-design and adapt the future work of KNAER Phase II.

These proposals address recommendations #2, #3 and #13 (to continue PIC and to clarify roles and functions).

KNAER Phase II Secretariat

We propose building on and adapting the role of the university partners in KNAER (see Figure 9) and reformulating their role to establish a provincial KNAER Phase II Secretariat (or equivalent). The role of the university partners has evolved considerably over the period of KNAER and in meeting emerging needs and priorities from previous KNAER projects and across the province. With foresight, these roles and functions can be designed into the organization of KNAER Phase II.

We propose that key roles of the Secretariat include:

- Creating the conditions and providing the connective 'glue' to between and among KNAER activities and partners to support KMb and research use across the province
- Acting as a KMb expert with intermediary skills of facilitation, brokering, championing and a critical friend
- Providing capacity building on KMb and connecting research and practice for evidence-informed education

Activities to fulfil the above roles for a KNAER Secretariat include: communication; providing opportunities for connections between and among people, networks and activities; brokering research and practice connections; and providing tools and resources to support KMb, research and practice connections and evidence-informed educational practices.

These proposals address recommendations #4, #5, #6 (provide training, resources and guides for KNAER projects), #7 (act as hub or broker for networking across KNAER projects/activities) and #15 (establish KNAER Secretariat).

Advisory Group(s)

The original KNAER tripartite Agreement included an option to:

> Establish, as needed, other advisory committees to provide support and direction for the Planning and Implementation Committee including the operation and research agenda of the KNAER.

In practice, the PIC decided that an Advisory Group or committees was not necessary for the current KNAER.

We propose that the Ministry and future KNAER Phase II establish an Advisory Group. An early action of a newly formulated PIC would be to consider the most useful purpose, terms of reference and membership of this group linked to a work plan for KNAER Phase II. The advice received in our expert interviews and strategic planning sessions varied about exactly who should be on an Advisory Group, but it was clear that it is important to formally engage the

voices, ideas and actions of Ontario educators, relevant researchers/experts on areas connected to KNAER Phase II's purpose, and potentially provincial stakeholders.

As well as a formal Advisory Group, the PIC and Secretariat are encouraged to increase opportunities for interaction, engagement and advice from the Ontario Education Research Panel (OERP), provincial professional organizations, Ministry of Education branches, MISA PNC Executive Leads, and other relevant provincial and local stakeholders.

These proposals address recommendations #16 (Advisory Group) and #20 (engage educators and develop partnerships).

Independent Evaluator

We propose that the Ministry should contract an independent evaluator from early in the development and implementation of KNAER Phase II. Following the EEF model in England, this evaluator should work alongside KNAER Phase II provincial and local partners to develop a logic model, to provide formative feedback throughout the KNAER Phase II's work, and offer a final summative evaluation.

This proposal addresses recommendations #8 and #19 (include evaluation from early in process).

Funding and Priorities for KNAER Phase II

Funding

Ideally, KNAER Phase II should be funded for a minimum of five years. We envisage anything less than three years as highly problematic for establishing, delivering and evaluating the intended purpose of KNAER Phase II.

This proposal addresses recommendations #5 and #18 (longer-term funding).

Priorities

In considering what to fund, we concur with the Cathexis evaluation that fewer projects than undertaken previously in KNAER is desirable to enable funding of larger, longer-term activities, quality of practices, and potentially increase impact. In fact, as outlined below, rather than funding 'projects', we propose that the Ministry funds a network(s) and communities of practice to advance priority goals.

In funding this work, it is important to identify priority outcome goals to be achieved, which will in turn inform the criteria call for proposals, the activities funded, and evaluation of intended and realized impact. In our discussions with Ontario educators, a vast array of potential priority topics and outcomes was suggested. Perhaps encouragingly, the topics and outcomes were strongly influenced by, and connected to, provincial goals and initiatives. Indeed, we propose that the Ministry lead on identifying priority outcomes that they would want KNAER Phase II to achieve linked to *Achieving Excellence.* One approach would be to ask each – or several – Division(s) of the Ministry to identify one priority outcome where they have a need for research evidence connected to current or future educational practices. We would encourage a process

where there are ADM 'champions' for each priority outcome and that these Ministry champions would connect with both the PIC and Secretariat and, vitally, the Network leaders. In finalizing priority outcomes, it is clear that these outcomes need to be focused, clear and specific. An outcome of 'developing a research network' is too broad. Whereas an outcome of 'improving Aboriginal learners' literacy' would be more appropriate.

These proposals address recommendations #3, #13 (specific focus, goals and outcomes) and #21 (link to Ministry priorities).

Funding and Developing Networks and Communities of Practice for Priority Outcome Goals

As indicated in Part 2 and Figure 9, we propose developing an approach which combines both large provincial network(s) and local communities of practice working collaboratively on activities linked to the larger network. This may involve two calls for proposals: first, for the network 'backbone'; second, for local communities of practice within the network(s). In Figure 9, the Priority Outcome Goal networks deliberately overlap as we would encourage mobilization of knowledge, collaboration, interaction, and sharing of research and practices *across* networks and communities of practices as well as within.

This proposal addresses recommendation #7 (need for networking across priorities and projects).

The Network Backbone

We propose funding a backbone organization (or partnership of organizations) for each priority outcome goal network to be established. The organization(s) should be well established and have high credibility and strong provincial connections. These organizations have reach and spread of influence beyond that feasible for a single project or local community of practice. For example in education, this could be a provincial education association and/or a university.

The 'backbone' organization's role is to provide expert leadership for the specific network priority area and to support the necessary coordination, collaboration, interactions, and capacity within and across local communities and activities, as well as provincially. The backbone organization would support mobilization and implementation of evidence and practices used or generated by local network projects more widely to support scale of implementation and impact.

We propose each 'network backbone' should have an identified network leader(s) who would become a member of the PIC and who would collaborate with the Secretariat and across networks. We envisage that the KNAER Phase II Secretariat would provide capacity building, tools and resources for KMb, partnership development and research and practice connections for evidence-informed practice to support the work of each network leader and backbone organization. The Secretariat would also work with network leaders to facilitate connections and meetings across networks to leverage local knowledge and evidence for provincial sharing.

This proposal addresses recommendation #17 (backbone organization).

Communities of Practice (CoPs)

As well as the overarching network, we propose funding 'communities of practice' (CoPs) involving educators and researchers collaborating on a shared priority to inform co-construction, co-learning, and use of evidence to inform educational practices connected to the larger network's priority goal. Criteria for the activities of KNAER Phase II CoPs could include attention to the features of effective KMb and partnership working strategies, approaches, activities and products from KNAER (as outlined in Part 1, our Interim Report, and the Cathexis evaluation); for example, use of collaborative professional learning opportunities/communities, development of 'actionable' tools and resources, and ongoing interactions for genuine and appropriate partnership working. We were advised by our expert interviewees that communities of practice should be emergent not prescribed. Therefore, we propose designing a call for proposals with criteria of expected functions and activities, but flexibility to enable locally generated communities come forward with a variety of proposals for actions to meet identified needs (connected to the larger network and Ministry priority goals).

These proposals address recommendations #4 (features of effective KNAER Phase II project approaches) and #17 (formation of collaborative communities of practice).

We propose therefore that KNAER Phase II builds on the successes (and addresses the challenges) of the initial KNAER by integrating latest thinking on the attributes of effective 'network' and 'system' models while adapting to the context, needs and priorities of the Ontario education system provincially and locally. To provide an illustration of how this model could be operationalized, we have developed an outline strategic plan.

KNAER Timeline Diagram

Tables 2 through to 4 are a graphic demonstration of how we see the development of an evidence-informed hybrid system approach of KNAER Phase II might unfold under a five year plan (linked to Recommendation #18: *Provide longer-term funding (5-10 years*)). Based on feedback provided to the KNAER from the 44 project Interim and Final Reports, a literature review, expert interviews, a KMb Chat and strategic consulting, the tables illustrate how KNAER Phase II, as depicted in Figure 9, could be operationalized to provide a clearer planning procedure.

Pre-Year One

As demonstrated in the Interim Report, Cathexis evaluation and Part One of this Final Report, KNAER demonstrated great utility. Pre-Year One is structured to allow the Ministry time to attend to Recommendation #1 *(Decisions concerning what will happen after the end of the*

current KNAER tripartite agreement). Recognizing that it takes time to act upon recommendations made in this Final Report, we envision a five-month, Pre-Year One period as time to undertake suggested Recommendation #11 (*review and analyze the current status of an evidence-informed system for education in Ontario*) and Recommendation #12 (*clarify the purpose of KNAER Phase II and conceptualize the intended function*).

From an operational point of view and as experienced through the current KNAER, an effective evidence-informed hybrid-systems approach to KMb that fosters collaboration, innovation and improvement requires substantial start-up time. So we propose a five-month Pre-Year One period that would allow for Ministry decisions and approvals to occur and the development of the KNAER Phase II PIC as per Recommendation #14 (*Provincial functions of KNAER Phase II include continuing roles for the Ministry and PIC*).

This time period would allow for set up ahead of implementing a number of components of the initiative. Many of the administrative supports and structures required for the KNAER Phase II systems approach, such as: funding procedures, information packages, communication strategies, can be established before engaging in other components of the initiative.

Table 2. Pre-Year and Year 1 of proposed KNAER Phase II.

Year	**Pre-Year 1**	**Year 1**			
Time Period	*Nov 2014-Mar 2015*	*April –June 2015*	*July – Aug 2015*	*Sept – Dec 2015 (Fall)*	*Jan – Mar 2016 (Winter)*
Recommendations	**Recommendation 1**: *The Ministry's next planning steps for a future KNAER should also attend to decisions concerning what will happen after the end of the current KNAER tripartite Agreement, particularly for the KNAER work of the existing university partners that would benefit from being sustained in the longer term, for example the KNAER toolkit, resources, website, and Twitter account.* **Recommendation 11** (*review and analyze the current status of an evidence-informed system for education in Ontario*) and **Recommendation 12** (*clarify the purpose of KNAER Phase II and conceptualize the intended function*)		**Recommendation 14** (*Potential provincial functions of KNAER Phase II: Ministry and Planning and Implementation Committee (PIC)*) **Recommendation 2**: *The PIC to bring together Ministry and provincial leads to provide leadership, oversight, funding and develop a culture and infrastructure for KMb, research and practice, connections and evidence-informed practices across Ontario.* (Ongoing)	**Recommendation 13 & 21** (*development of a specific focus and linked goals*) **Recommendation 16** *Establish an advisory group for KNAER Phase II* **Recommendation 15**: *Establish a KNAER 'Secretariat' involving the previous (and future) work of the provincial KNAER university partners*).	**Recommendation 17** (*development of networks with 'backbone' infrastructure and working with local projects/communities of practice)* **Recommendation 19:** *Involve evaluation of KNAER Phase II from the beginning that also includes approaches to evaluate the impact of partnerships and networks* **(Recommendation 8)**

Ministry Activities	Ministry Decision & Approval	Call for overall KNAER Phase II		Agreement on priority goals (Process within Ministry)	Call for Network Backbones
		Selection (contracts)	Creation of PIC	Creation of Secretariat	
		infrastructure			
KNAER Secretariat				Communicate (and continue to communicate) these priority areas throughout KNAER initiative	Design and conduct call for Network Backbones
				Respond to outcomes of PIC meeting	Respond to outcomes of PIC meeting
					Respond to advisory board recommendations
				Set up Advisory Group	Deliver ½ day training around networks
					Respond to first external evaluation
					Facilitate professional learning opportunities for the network backbones
				Decide on and set up an online platform that will be used for continuous professional learning for the future KNAER Phase II professional learning sessions	
PIC			1st PIC meeting	2nd PIC meeting	3rd PIC meeting
Advisory Group				Advisory Group set up One meeting	1st meeting
Network Backbones					
Professional learning opportunities – network backbones					2, one-day professional learning sessions around networks facilitated by the Secretariat. This professional learning will continue through some type of online platform
CoP					

Networking KMb					
Social Media (Website, twitter and blogging)	Part of Secretariat launch to include: announcement on the KNAER front page, Twitter campaign, and a number of blogs	Call for KNAER Phase II announcement included on KNAER front page, twitter campaign, and a number of supporting blogs	Announcement of new PIC members KNAER front page, twitter campaign, and a number of supporting blogs	Announcement of priority goals for the KNAER Phase II AND Creation of Advisory Group through KNAER front page, twitter campaign, and a number of supporting blogs	Call for Network Backbones through KNAER front page, twitter campaign, and a number of supporting blogs
	Utilize KNAER 1.0 website for KNAER Phase II	Expand KNAER website as application portal			Expand KNAER website as application portal
	KNAER Phase II website will continue to a) push out end-user products, b) push out resources for KMb, c) communicate announcements connected to KNAER Phase II d) encourage connections between and among intermediaries and KNAER Phase II CoPs e) develop resources to support KMb f) act as a repository for interim and final reports from CoPs and Network Backbones				
Evaluator					1) Evaluate Start-up year

Year-One (Setting structures in place)

A number of elements need to be clarified before proceeding with Year-One activities. These include establishing the current status of the evidence-informed system for education in Ontario, a clear purpose and function for KNAER Phase II, and the PIC established. Once these items are clarified then the following steps should be taken. The first is time to allow for the *development of a specific focus and linked goals* (Recommendation #13). Second, form a KNAER Phase II Secretariat (Recommendation #15: *Establish a KNAER 'Secretariat' involving the previous (and future) work of the provincial KNAER university partners*). Third, *establish an advisory group* (Recommendation #16). Fourth, allow for the *development of networks with 'backbone' infrastructure and working with local projects/communities of practice* (Recommendation #17). Finally, establish *an ongoing evaluation process for KNAER Phase II from the beginning* (Recommendation #19) that includes *design approaches to evaluate the impact of partnerships and networks in and through future potential models* (Recommendation #8).

Years Two, Three, & Four

In terms of implementation, Years 2, 3, & 4 can be considered the time period when KNAER Phase II is functioning at full capacity. It is a time of ongoing continued support from the Ministry, PIC, secretariat (in university partnerships), advisory groups, network backbones and communities of practice. During this time the Ministry should expect development and expansion of networks and partnerships, an increase in producer push, but more importantly user pull as all components of KNAER learn and share from each other.

Professional learning supports. However, what is different among these three years is the focus on professional learning for KMb and how the Ministry, PIC, Secretariat (in university partnerships) and advisory group support professional learning. Because both the current KNAER's experience and the Cathexis external evaluation indicated that considerable education about KMb is still required within the education sector, the suggested professional learning is organized in a particular way. First, we suggest that professional learning target specific groups such as the network backbones and CoPs. For example, in **Year Two** the KNAER Phase II might want to consider targeting networking strategies for network backbones and employ more directed KMb strategies for communities of practice. During **Year 3** the KNAER Phase II might consider professional learning that is more collaborative: communities of practice within one priority area work together with their network backbone. As the various CoPs develop and engage within this initiative, professional learning in **Year 4** could take on a larger scale where the three backbone areas are sharing across the priority areas with the intention in **Year 5** to target expanding further into the education sector utilizing existing structures such as the OERS, MISA, the website, and twitter.

Table 3. Years 2, 3 and 4 of proposed KNAER Phase II.

Year	**Year 2**			
Time period	*April –June 2016 (spring)*	*July-Aug 2016 (summer)*	*Sept – Dec 2016 (fall)*	*Jan – Mar 2017 (winter)*
Recommendations	**Recommendation 4**: *To learn from the experiences of the KNAER projects to inform future approaches to KMb, applied education research, and improved impact for enhancing practice. To consider, for example: the benefits of using professional learning communities to develop research-to-practice connections, the importance of actionable products such as professional resources for use by educators, and the need for training and guides to KMb for researchers.* **Recommendation 5**: *To act on the future opportunities proposed in the external evaluation to increase: focus on development of quality KMb activities (including potentially larger, longer term projects), to provide sector-wide training to develop understanding of and skills for KMb, and to leverage the existing knowledge and resources from the KNAER.* **Recommendation 6**: *Include attention to the provision of guidance and supports for effective partnership working into future models and plans (as consistent with the external evaluation recommendations).* **Recommendation 7**: *In addition to attending to partnerships within projects, there is a need for provincial support for networking across projects and beyond, for example through: continued development of social media networks, opportunities for in-person networking, and developing an overall Ministry-university partnership(s) to function as a "hub" or "knowledge broker" to connect individuals, organizations, and activities around shared priority interests and areas of evidence.* **Recommendation 20**: *Recognize the importance of: engaging educators' appropriately to value their voice, ideas and actions; further developing Ministry, university, provincial partner, board and school partnerships, including the Ministry providing overarching vision, universities engaging in longer-term partnerships for example with boards and provincial organizations; and engaging graduate students more fully.*			

				Recommendation 19: *Involve evaluation of KNAER Phase II from the beginning that also includes approaches to evaluate the impact of partnerships and networks* **(Recommendation 8)**
Ministry Activities	Call for 3-5 CoPs per network			
KNAER Secretariat	Support Network Backbone call for CoPs	Ongoing support and communication to Network Backbones		
	Respond to outcomes of PIC meeting		Respond to outcomes of PIC meeting	Respond to outcomes of PIC meeting
	Respond to Advisory Group meeting outcomes		Respond to Advisory Group meeting outcomes	Respond to Advisory Group meeting outcomes
	Facilitate one-day training session (KMb) for Network Backbones	Facilitate summer institute session (KMb) for CoPs	Support Network Backbones as they begin working with CoPs	Support networking within the Backbones at OERS
				Participate in and respond to second external evaluation
PIC	4th PIC Meeting		5th PIC Meeting	6th PIC Meeting
Advisory Group	2nd Meeting		3rd meeting	4th meeting
Network Backbones	Work with Secretariat on calls for CoPs	Work with CoPs		Participate in KMb networking within CoPs
	Report to PIC		Report to PIC	Participate in and respond to external evaluation
				Report to PIC including summary of approved KMB plans
				Respond to interim reports from the CoPs
Professional learning opportunities – network backbones	One day PL session (KMb) for each CoP facilitated by the Secretariat (continue with an online Professional Learning platform)			
CoPs		Summer institute delivered in collaboration with the Ministry, Secretariat, PIC and Advisory Group and Network Backbones (KMb). For this institute CoPs develop KMb plans (continue with an online Professional Learning platform)	CoPs develop individual KMb plans and have them approved through Network Backbones	Continue with CoPs

				1st Interim report (to Network Backbone)
Networking KMb				Networking KMb within the backbones (including OERS)
Social Media (Website, twitter and blogging)	Call for CoP announcement included on KNAER front page, twitter campaign, and a number of supporting blogs Begin hosting monthly KMb chats and/or priority topic chats immediately to prepare for and promote KNAER Phase II	Communicate and support the 2-day training session for CoPs		Communicate and support networking KMb within the backbones
	KNAER Phase II website and twitter will continue to a) push out end-user products, b) push out resources for KMb, c) communicate announcements connected to KNAER Phase II d) encourage connections between and among intermediaries and KNAER Phase II CoPs e) develop resources to support KMb f) act as a repository for interim and final reports from CoPs and Network Backbones **g) facilitate twitter chats for i) individual CoP priority topics, ii) Network Backbone priority areas, and iii) around KMb strategies h) monthly newsletters I) create a members only section on a webpage to allow CoPs to login, share resources and chat.**			
Evaluator				2) Evaluate Year two

Year	**Year 3**			
Time period	*April –June 2017 (spring)*	*July-Aug 2017 (summer)*	*Sept – Dec 2017 (fall)*	*Jan – Mar 2018 (winter)*
Recommendations	**Recommendation 4**: *To learn from the experiences of the KNAER projects to inform future approaches to KMb, applied education research, and improved impact for enhancing practice. To consider, for example: the benefits of using professional learning communities to develop research-to-practice connections, the importance of actionable products such as professional resources for use by educators, and the need for training and guides to KMb for researchers.* **Recommendation 5**: *To act on the future opportunities proposed in the external evaluation to increase: focus on development of quality KMb activities (including potentially larger, longer term projects), to provide sector-wide training to develop understanding of and skills for KMb, and to leverage the existing knowledge and resources from the KNAER.* **Recommendation 6**: *Include attention to the provision of guidance and supports for effective partnership working into future models and plans (as consistent with the external evaluation recommendations).* **Recommendation 7**: *In addition to attending to partnerships within projects, there is a need for provincial support for networking across projects and beyond, for example through: continued development of social media networks, opportunities for in-person networking, and developing an overall Ministry-university partnership(s) to function as a "hub" or "knowledge broker" to connect individuals, organizations, and activities around shared priority interests and areas of evidence.*			

	Recommendation 20: *Recognize the importance of: engaging educators' appropriately to value their voice, ideas and actions; further developing Ministry, university, provincial partner, board and school partnerships, including the Ministry providing overarching vision, universities engaging in longer-term partnerships for example with boards and provincial organizations; and engaging graduate students more fully.*			
				Recommendation 19: *Involve evaluation of KNAER Phase II from the beginning that also includes approaches to evaluate the impact of partnerships and networks* **(Recommendation 8)**
Ministry Activities				
KNAER Secretariat	Continue to support the Network Backbones			
	Communicate and act on External evaluation recommendations		Respond to outcomes of PIC meeting	Respond to outcomes of PIC meeting
	Respond to outcomes of PIC meeting		Respond to Advisory Group meeting outcomes	Respond to Advisory Group meeting outcomes
				Participate in and respond to external evaluation (year 3)
	Various provincial activities throughout the sector to share what KNAER Phase II has learned so far about a particular priority areas and for KMb planning and strategies			
PIC	7th PIC Meeting		8th PIC Meeting	9th PIC Meeting
Advisory Group			5th Meeting	6th Meeting
Network Backbones	Continue to work collaboratively with the 3-5 CoPs (respond to interim report feedback)			
	Act on external evaluation recommendations			Facilitate Networking KMb across the backbones
	Report to PIC			Report to PIC
				Participate in and respond to external evaluation (year 3)
		Respond to interim reports from CoPs		Respond to interim reports from CoPs
Professional learning opportunities	One day PL session (KMb) facilitated by the Secretariat and each Network Backbone for all CoPs in each backbone (3, one-day sessions in total) (continue with an online Professional Learning platform)		½ day Follow-up to the One day PL session (KMb) facilitated by the secretariat and each Network Backbone for all CoPs in each backbone (3, one-day sessions in total) (continue with an online Professional Learning platform)	
CoP	Continue with CoP activities			

		2nd interim report (to Network Backbone)		3rd Interim report (to Network Backbone)
Networking KMb				Networking KMb across the backbones (including OERS)
Social Media (Website, twitter and blogging)		Communicate and support CoP activities		
	KNAER Phase II website and twitter will continue to a) push out end-user products, b) push out resources for KMb, c) communicate announcements connected to KNAER Phase II d) encourage connections between and among intermediaries and KNAER Phase II CoPs e) develop resources to support KMb f) act as a repository for interim and final reports from CoPs and Network Backbones g) facilitate twitter chats for i) individual CoP priority topics, ii) Network Backbone priority areas, and iii) around KMb strategies h) monthly newsletters I) create a members only section on a webpage to allow CoPs to login, share resources and chat.			
Evaluator				3) Evaluate Year three

Year	**Year 4**			
Time period	*April –June 2018 (spring)*	*July-Aug 2018 (summer)*	*Sept – Dec 2018 (fall)*	*Jan – Mar 2019 (winter)*
Recommendations	**Recommendation 4**: *To learn from the experiences of the KNAER projects to inform future approaches to KMb, applied education research, and improved impact for enhancing practice. To consider, for example: the benefits of using professional learning communities to develop research-to-practice connections, the importance of actionable products such as professional resources for use by educators, and the need for training and guides to KMb for researchers.* **Recommendation 5**: *To act on the future opportunities proposed in the external evaluation to increase: focus on development of quality KMb activities (including potentially larger, longer term projects), to provide sector-wide training to develop understanding of and skills for KMb, and to leverage the existing knowledge and resources from the KNAER.* **Recommendation 6**: *Include attention to the provision of guidance and supports for effective partnership working into future models and plans (as consistent with the external evaluation recommendations).* **Recommendation 7**: *In addition to attending to partnerships within projects, there is a need for provincial support for networking across projects and beyond, for example through: continued development of social media networks, opportunities for in-person networking, and developing an overall Ministry-university partnership(s) to function as a "hub" or "knowledge broker" to connect individuals, organizations, and activities around shared priority interests and areas of evidence.* **Recommendation 20**: *Recognize the importance of: engaging educators' appropriately to value their voice, ideas and actions; further developing Ministry, university, provincial partner, board and school partnerships, including the Ministry providing overarching vision, universities engaging in longer-term partnerships for example with boards and provincial organizations; and engaging graduate students more fully.*			
				Recommendation 19: *Involve evaluation of KNAER Phase II from the beginning that also includes approaches to evaluate the impact of partnerships and networks* **(Recommendation 8)**

Ministry Activities				
KNAER Secretariat	Continue to support the Network Backbones			
	Communicate and act on External evaluation recommendations		Respond to outcomes of PIC meeting	Respond to outcomes of PIC meeting
	Respond to outcomes of PIC meeting		Respond to Advisory Group meeting outcomes	Respond to Advisory Group meeting outcomes
	Facilitate 2-day workshop with Network Backbones and CoPs			Respond to external evaluation (year 4)
				Facilitating a provincial conference that targets networking for the three backbones and the various CoPs
PIC	10th PIC Meeting		11th PIC Meeting	12th PIC Meeting
Advisory Group			7th Meeting	8th Meeting
Network Backbone	Continue to support the 3 – 5 CoPs			
				Facilitate Networking KMb across the backbones
	Report to PIC			Report to PIC
	Act on external evaluation recommendations			Participate in and respond to external evaluation (year 4)
CoPs	Continue with CoP activities			Final report to Network Backbone
Networking KMb	2-day workshop facilitated by the secretariat: 1st day CoPs in their Network Backbone: 2nd day CoPs and backbone share across backbone groups (continue with an online Professional Learning platform)			Facilitated by the Secretariat and Ministry facilitated networking for the Network Backbones and CoPs within the education sector/connection to other intermediaries through a provincial conference. (continue with an online Professional Learning platform)
Social Media (Website, twitter and blogging)	KNAER Phase II website and twitter will continue to a) push out end-user products, b) push out resources for KMb, c) communicate announcements connected to KNAER Phase II d) encourage connections between and among intermediaries and KNAER Phase II CoPs e) develop resources to support KMb f) act as a repository for interim and final reports from CoPs and Network Backbones g) facilitate twitter chats for i) individual CoP priority topics, ii) Network Backbone priority areas, and iii) around KMb strategies h) monthly newsletters I) create a members only section on a webpage to allow CoPs to login, share resources and chat.			
Evaluator				4) Evaluate Year four

Year Five

In our proposed model for KNAER Phase II we envision that CoPs will continue to exist without funding. We propose that Year Five be dedicated to report writing, reflection and re-evaluation of KNAER Phase II, and a continued effort to connect communities of practice to the larger sector and build capacity within the education sector.

Table 4. Year 5 of proposed KNAER Phase II.

Year	**Year 5**			
Time period	*April –June 2019 (spring)*	*July-Aug 2019 (summer)*	*Sept – Dec 2019 (fall)*	*Jan – Mar 2020 (winter)*
Recommendations	**Recommendation 4**: *To learn from the experiences of the KNAER projects to inform future approaches to KMb, applied education research, and improved impact for enhancing practice. To consider, for example: the benefits of using professional learning communities to develop research-to-practice connections, the importance of actionable products such as professional resources for use by educators, and the need for training and guides to KMb for researchers.* **Recommendation 5**: *To act on the future opportunities proposed in the external evaluation to increase: focus on development of quality KMb activities (including potentially larger, longer term projects), to provide sector-wide training to develop understanding of and skills for KMb, and to leverage the existing knowledge and resources from the KNAER.* **Recommendation 6**: *Include attention to the provision of guidance and supports for effective partnership working into future models and plans (as consistent with the external evaluation recommendations).* **Recommendation 7**: *In addition to attending to partnerships within projects, there is a need for provincial support for networking across projects and beyond, for example through: continued development of social media networks, opportunities for in-person networking, and developing an overall Ministry-university partnership(s) to function as a "hub" or "knowledge broker" to connect individuals, organizations, and activities around shared priority interests and areas of evidence.* **Recommendation 20**: *Recognize the importance of: engaging educators' appropriately to value their voice, ideas and actions; further developing Ministry, university, provincial partner, board and school partnerships, including the Ministry providing overarching vision, universities engaging in longer-term partnerships for example with boards and provincial organizations; and engaging graduate students more fully.*			
				Recommendation 19: *Involve evaluation of KNAER Phase II from the beginning that also includes approaches to evaluate the impact of partnerships and networks* **(Recommendation 8)**
Ministry Activities				
KNAER Secretariat	Respond to outcomes of PIC meeting		Respond to outcomes of PIC meeting	Respond to outcomes of PIC meeting

			Respond to Advisory Group meeting outcomes	Respond to Advisory Group meeting outcomes
				Participate in and respond to Final external evaluation
	Various provincial activities throughout the sector to share what KNAER Phase II has learned about a particular priority area and for KMb planning and strategies			
PIC	13th PIC Meeting		14th PIC Meeting	15th PIC Meeting
Advisory Group			9th Meeting	10th Meeting
Networking KMb	Any professional learning activity on the online Professional Learning platform continue with the support of the secretariat			
Social Media (Website, twitter and blogging)	KNAER Phase II website will continue to a) push out end-user products, b) push out resources for KMb, c) communicate announcements connected to KNAER Phase II d) encourage connections between and among intermediaries and KNAER Phase II CoPs e) develop resources to support KMb f) act as a repository for interim and final reports from CoPs and Network Backbone s g) facilitate twitter chats for i) individual CoP priority topics, ii) Network Backbone priority areas, and iii) around KMb strategies			
Evaluator				5) Evaluate entire KNAER Phase II. **Recommendation 19)** *Involve evaluation of KNAER Phase II from the beginning that also includes approaches to evaluate the impact of partnerships and networks* **(Recommendation 8)**

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Appendices

Appendix A – Work of University Partners: Activities

Strategic leadership

- Work with Ontario Ministry of Education partners to design, develop, adapt, deliver and review the KNAER– an unique and innovative initiative requiring all aspects of the KNAER to be established and created, including:
    - Call for Letters of Intent (LOI),
    - Review of LOIs and
    - Approval of LOIs
    - Design of call for proposals
    - Involvement of external reviewers
    - Ongoing review of proposals and approval process
- PIC meetings (x18 in person between November 2010 and January 2014)
- KNAER core team meetings (we only started keeping minutes recently)
- Interim report template design
- Final report template design
- Administration and analysis of interim report
- Administration and analysis of final Reports
- presentations at Faculty council meetings (Western) (x2)
- Feedback to PIs on Interim and final reports
- Virtual discussions (x?)
- Working group 1: Building KMb capacity online through Orion O3
- Working group 2: Partnerships and networks
- MISA-KNAER connection session
- OERS
    - OERS 2014 *Building on Success: Mobilizing Quality Evidence to Inform Policy and Practice*
    - OERS Summary (PPP) February 2013
    - OERS KNAER Update 2012 (Cooper and Levin)
    - OERS ppt Pollock Bairos
    - KNAER Connection session: Meet the Knowledge Network Feb 13, 2013 (Audience: OERS Attendees)

Research and Knowledge Mobilization

- Creation of three KMb plans for the KNAER initiative
- Creation of two KMb Tip sheets
- KMb bookmarks
- *Conference proposals*:
    - Ontario Teachers' Federation (OTF)
    - American Educational Research Association (AERA)
    - Canadian Society for the Study of Education (CSSE)

- *Conference presentations*:
    - CSSE (x2 proposals; 3 papers; 1 symposium)
        - CSSE 2012 - Conversation proposal Government, University and School District Collaboration and Partnerships: Promoting Research Use to Improve Education – not accepted.
        - CSSE paper proposal (YEAR?) – Organizational Governance - Service Contracts and the Ministry: An Organizational Governance Analysis of the Knowledge Network for Applied Education Research (KNAER)
        - CSSE paper (2013) Pollock, McWhorter and Levin The Knowledge Network for Applied Education Research (KNAER): Knowledge Brokering
        - CSSE 2011 Paper – accepted Levin, Macmillan Cooper – the Ontario Knowledge Network for Applied Education Research.
        - CSSE Partnership paper 2012 - The Case of a Government-University Collaboration that Engages Multiple Partners – Accepted
        - CSSE symposium (2011) - Government, University and School District Collaboration: Promoting Research Use to Improve Education - Acccepted?
    - AERA
        - AERA 2013 paper proposal (not accepted) What Works? Knowledge Mobilization Strategies in Education: Perspectives from the Knowledge Network for Applied Education Research (KNAER)
        - AERA 2012 - symposium submission (included four papers) Government, University and School District Collaboration and Partnerships: Promoting Research Use to Improve Education - not accepted.
        - AERA (x1 symposium proposal; x1 paper proposal
    - OERS (x3)
        - Booths at OERS 3
    - KMb Forums (x2 - 2013, 2014)
    - CRDCN
    - Academic Conferences
- Wisconsin meeting
- Kevin Collins & Robbie Collins
- Blog
- Twitter
- Marketing Material
- KNAER website
- Brochure
- Toolkit
- In-house University Activities – 3 (Information communication sessions)
    - Faculty council meeting UWO 2012 KNAER Overview (PPP)
    - Presentation at UWO Research day (Poster and table)
    - Western held a KMb sessions 2011, 2012
- Draft for professionally speaking publication
    - Knowledge Mobilization Snapshot (May 2012)
    - Tip sheet was created in 2011 and updated in 2012
    - KNAER project KMb product and strategy summary 2013, 2012, 2011

    - The Power of Networks: KNAER Project Meeting February 12 2013
    - KNAER KMb plan 2011, 2013
    - UWO completed a literature review 2013
    - Virtual discussions and report Jan 2013
- Individual KMb support provided to projects
- Participation in the KNAER external evaluations and other reporting and monitoring activities as requested by the Ontario Ministry of Education
- Reviewing, analyzing and reporting KMb activity of the 44 KNAER projects

Operational Management

- Review of initial letters of intent (LOIs)
- Review of the original KNAER proposals
- Reports to PIC
- Ongoing financial reporting
- Quantifying KMb activity of the 44 KNAER projects
- Ongoing communication and support to PIs
- Building and maintaining a SharePoint site
- Ministry Logic Model
- Operational support for MISA-KNAER event
- Brochure
- *Data management*
    - Excel tracking of project outputs
    - Website usage data collection

Appendix B – KNAER Brochure

KNOWLEDGE NETWORK FOR APPLIED EDUCATION RESEARCH

RÉSEAU D'ÉCHANGE DES CONNAISSANCES POUR LA RECHERCHE APPLIQUÉE ÉDUCATION

KNAER RECRAE

AN ONTARIO NETWORK PROMOTING THE USE OF RESEARCH IN EDUCATION

www.knaer-recrae.ca

UNIVERSITY OF TORONTO
OISE | ONTARIO INSTITUTE FOR STUDIES IN EDUCATION

Ontario

Western Education

WHO WE ARE

The Knowledge Network for Applied Education Research-Réseau d'échange des connaissances pour la recherché appliquée éducation (KNAER-RECRAE) is a tripartite agreement between the Ontario Ministry of Education, the University of Western Ontario, and the University of Toronto to mobilize education research.

The KNAER-RECRAE facilitated the development and dissemination of research knowledge for the purpose of improving policy and practice in classrooms, schools, and school boards across the province.

The KNAER-RECRAE focused on building, advancing, and applying robust evidence of effective practices through conducting research and synthesizing state-of-the-art knowledge from existing bodies of evidence from Ontario, Canada, and around the world.

To learn more about the implementation, governance and structure of the KNAER-RECRAE, please visit our website, www.knaer-recrae.ca.

PROJECTS

The 44 KNAER-RECRAE projects received up to $100,000 each in funding to mobilize education research across Ontario.

The projects aligned with at least one of four KNAER-RECRAE priorities: transitions, equity, teaching and learning, and engagement.

This initiative focused on mobilizing effective practices from research to practice in schools and classrooms. Research projects included partners across the education sector and from a wide-range of topic areas.

135 NETWORK PARTNERS

- School Boards
- Schools
- Post-secondary Institutions
- Health Organizations
- Community Organizations
- Other Intermediaries

TOPIC AREAS

- Communities of Practice
- Behaviour/Classroom Management
- Mathematics Education
- Early Childhood Education
- Mental Health
- Aboriginal Education
- Francophone Education
- Parent Engagement
- Special Education
- Student Identity
- ...and more!

WHO WE ARE

WHAT WE DO & WHY WE DO IT

The KNAER-RECRAE initiative enabled Principal Investigators to mobilize knowledge by establishing networks with individuals in organizations across the education sector.

The aim was to promote the exchange of knowledge between researchers and key education audiences to benefit education for all.

NETWORKS

The main requirement of the KNAER-RECRAE initiative was to build mutually-beneficial partnerships. Each project required at least one partner organization for knowledge exchange.

The benefits of working with partners in a network are many and include:

- Access to different perspectives from stakeholders
- Creating new connections for future partnerships
- Access to more knowledge and resources in one location
- Creating a support network for yourself and your topic of interest

BENEFITS OF KNOWLEDGE MOBILIZATION

- **Facilitates the exchange of knowledge between researchers and practitioners to increase understanding of educational issues and problems**
- **Makes research evidence relevant, useful, and available to those who need it**
- **Can lead to improvements in practice and policy making**

KNOWLEDGE MOBILIZATION

Knowledge mobilization involves the exchange of knowledge between researchers, practitioners, policy makers and service users to improve policy-making and practice for the benefit of individuals and society.

The KNAER-RECRAE initiative sought to strengthen the relationships between research, policy, and practice within the broader education sector of Ontario.

The projects focused on the use of knowledge mobilization strategies to support these relationships. Each project fell into one of four areas:

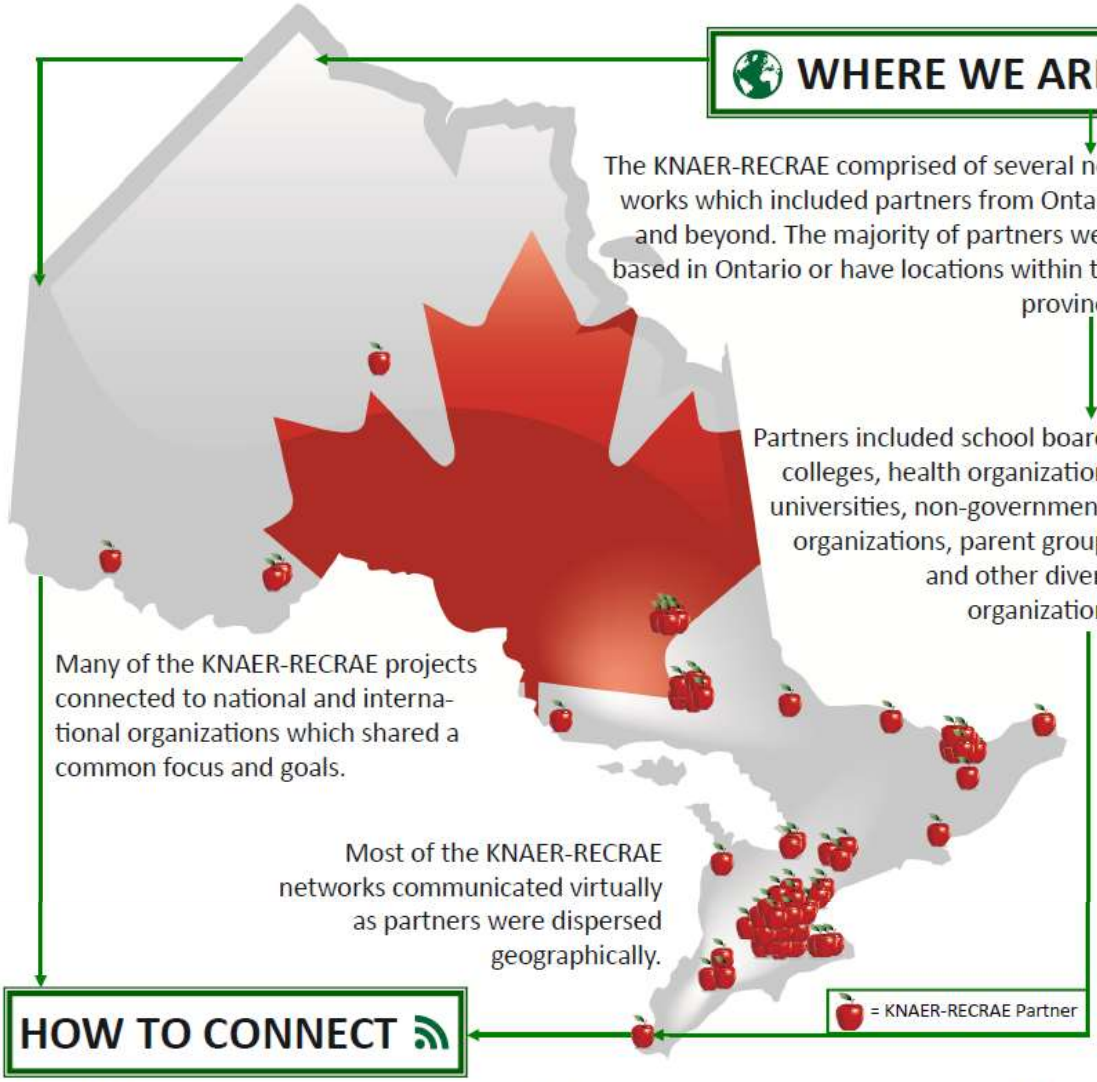
1. Making use of available research
2. Building or extending networks
3. Strengthening research brokering
4. Visits by world-leading researchers

The research from these projects have been summarized into useable information and resources for adoption into policy and practice.

WHERE WE ARE

The KNAER-RECRAE comprised of several networks which included partners from Ontario and beyond. The majority of partners were based in Ontario or have locations within the province.

Partners included school boards, colleges, health organizations, universities, non-governmental organizations, parent groups, and other diverse organizations.



Many of the KNAER-RECRAE projects connected to national and international organizations which shared a common focus and goals.

Most of the KNAER-RECRAE networks communicated virtually as partners were dispersed geographically.

HOW TO CONNECT

The KNAER-RECRAE networks provide opportunities to connect with new partners, including both individuals and organizations.

There are different ways to connect to a network:

- Contact a Principal Investigator or project partner connected to a topic of interest. Contact information for Principal Investigators and website addresses for partners are on our website, www.knaer-recrae.ca.
- Contact the KNAER-RECRAE directly at info@knaer-recrae.ca.

REASONS TO CONNECT

- FIND AND/OR SHARE RESOURCES
- LEARN ABOUT KNOWLEDGE MOBILIZATION
- JOIN A NETWORK
- TEAM UP FOR A PROJECT
- LEARN ABOUT A TOPIC
- BECOME A PARTICIPANT

WHERE WE ARE & HOW TO CONNECT

RESOURCES AVAILABLE

The 44 KNAER-RECRAE knowledge mobilization projects resulted in the creation of several resources in easily digestible formats.

Some resources were disseminated through traditional methods such as publications and attending conferences. The goal of these knowledge mobilization projects was to go beyond traditional methods, making sharing of research more accessible.

Listed below are various types of resources that were created from the projects, as well as knowledge mobilization strategies used to disseminate knowledge.

Feel free to contact a project's Principal Investigator or KNAER-RECRAE directly at info@knaer-recrae.ca if there is a particular resource type or strategy that you are interested in learning more about.

RESOURCES AVAILABLE

LESSONS LEARNED

i. CREATING NEW PARTNERSHIPS

- Existing research partnerships identified new partners, exchanged ideas and extended the reach of gained knowledge
- Browsing internet and social media sites identified new partners and connections
- Incentives motivated new partnerships for research collaborations (e.g. providing teacher release time)

ii. COLLABORATIVE INQUIRY

- Initial face-to-face meetings established trust, built strong relationships, and helped develop realistic project plans
- Regular meetings enforced the network, promoted sharing and allowed contributions from all partners
- Leaders as champions cultivated a culture of sharing among all partners

iii. KNOWLEDGE PRODUCTS

- Target audiences used knowledge products that were concise and easily accessible
- Creating a variety of knowledge products showcased different aspects of the research which were useful to target audiences
- Creative web-based knowledge products were accessed more by target audiences

iv. KNOWLEDGE FLOW

- Research partners sharing and discussing ideas, improved the quality of the final project
- Communicating through Elluminate, Skype, and Instant Messaging promoted conversations and fostered exchanges among partners in different organizations
- Using networks led to more shared knowledge and understanding of different perspectives
- Utilizing other networks to disseminate knowledge products increased the audience reach

TIPS

EDUCATORS

- Interested in joining a research project? Contact your school board's research officer or a Faculty of Education to join a project
- Search for plain-language summaries of evidence-based information at http://oere.oise.utoronto.ca
- Join a community of practice to exchange resources and good practices or start your own within your school or school board

RESEARCHERS

- Create plain-language summaries or resources and make them more accessible, e.g. add to your organization or faculty's website
- Consult your participants about your research and findings—collaborative inquiry is key to mobilizing knowledge
- Connect to existing networks to share your work, learn from others and collaborate—browse the www.knaer-recrae.ca website to find some!

POLICY-MAKERS

- Attend workshops and sessions that provide opportunities for policy-makers to give input to the research community
- Connect with stakeholders through networks to learn about current issues, research and resources
- Attend research symposia to learn about current research and connect directly with researchers. The OERS is a good example, visit http://www.edu.gov.on.ca/eng/research/

ORGANIZATIONS

- Contact a local school board or Faculty of Education to find researchers in your interest area
- Search for other organizations and networks in your interest area to collaborate, find research, and exchange resources
- Collaborate with researchers to create resources for non-academic audiences such as pamphlets and workshops

KNAER-RECRAE PROJECTS

EXPLOITING AVAILABLE RESEARCH

- Assessing to Learn and Learning to Assess in Mathematics: Implementing and Evaluating Growing Success Recommendations for Evidence of Student Achievement of Primary English Language Learners
- Assessment for Learning: Closing the Gap between Principles and Practices
- Bringing Research to the Classroom: Building a SURE Teacher Learning Community to Enhance Evidence Uptake in Schools
- Engaging Students through Collaborative Music Creation
- Extending the Child and Youth Mental Health Information Network: Sharing Mental Health Information with Educators
- Kimaachiihtoomin e-anishinaabe-kikinoo 'amaageyak; Beginning to Teach in an Indigenous Way
- Mobilizing a Global Citizenship Perspective with Educators: Curriculum Development, Equity and Community Partnerships
- Mobilizing Key Body-Positive Health Literacy Curriculum Messages Gr. 4-9
- Ontario Education Research Exchange (OERE)
- Ouverture du savoir scientifique et du terrain pour une didactique de collaboration
- Research Brokering in Education (RBE)
- Research Dissemination and Training: Cultural Space and Identity Development among Deaf Youth
- The Behaviour Management Network
- The Use of Data Visualization Techniques to Share and Apply TDSB Research Findings

BUILDING OR EXTENDING NETWORKS

- Exploring Learning and Differentiated Instruction for the Difficult to Learn Topic of Grade 6 Fractions using Teacher-Coach-Researcher-Developer Networking
- Knowledge Mobilization, Early Learning Research and Online Learning
- Knowledge Mobilization on Decision-making for School Improvement: A Peer-to-Peer Network for School Principals
- Mentoring Northern Ontario School Boards to Meet the Mental Health Needs of their Student Bodies
- Mobilizing Humanistic Pedagogies in Long-Term Suspension and Expulsion
- Our Kids Network: Taking Research to Practice

STRENGTHENING RESEARCH BROKERING

- Beyond Council Meetings: Mobilizing Research for Effective Parent Engagement
- Demographic Data and Student Equity
- Evidence Utilization in the Planning, Implementation and Evaluation of Full Day Kindergarten in Ontario School Boards
- Facilitation Network: Supporting Students with Disabilities in the Transition to Post-Secondary Education
- Homeroom: A Case-Based Toolkit for Classroom Management
- How can a Multidisciplinary Team take the Knowledge and Research Results of a Proven Evidence-based Initiative and Mobilize this Knowledge to Strengthen Tier 1 Instruction in Reading across Kindergarten Teachers and ECE Staff where Applicable?
- It's the Method that Counts: Using Case Studies and Problem –based Learning Strategies to Teach Elementary/High School and Post Secondary Science Courses
- Knowledge Mobilization: Early Learning Research and its Practical Implications in the Full-day Kindergarten Classroom
- Knowledge Mobilization through Collective Pedagogical Inquiry in Schools Serving Culturally and Linguistically Diverse Students
- Proactive Management of Child Emotional and Behavioural Difficulties in the Classroom: Sharing Knowledge on Effective Teaching Practices
- Sharing our Coaching Program
- Strengthening Research Brokering—Building a Virtual Knowledge Mobilization Lab
- Supporting In-Service Teacher Learning in Special Education Additional Qualification Courses
- The Knowledge to Practice Gap in Classroom Assessment
- The Adolescent Brain: Implications for Instruction
- What did You do in Math Today?
- Videos of Visual Artists in Greater Sudbury

VISITS BY WORLD-LEADING RESEARCHERS

- Engaging Students through Collaborative Music Creation—Expert Visit
- Evaluating Research about Education Programs for Students with Special Needs
- Go North: Health through Physical Activity
- Perspective GIARE: Aligner les indicateurs et les stratégies d'apprentissage afin de réduire l'écart garçon-fille
- Putting Theory into Practice: Finding Paths to Students' Engagement and Equity
- Understanding Equity and Engagement
- Visit by Dr. Maureen Walsh, World Leader in Multimodality

Visit our projects online! www.knaer-recrae.ca

V.1 OCTOBER 2013

Appendix C – Full list of KNAER Projects, Organized by Project Category[2]

Category 1: Exploiting available research more effectively

1. Assessing to Learn and Learning to Assess in Mathematics: Implementing and Evaluating Growing Success Recommendations for Evidence of Student Achievement of Primary English Language Learners

2. Assessment for Learning: Closing the Gap between Principles and Practices

3. Bringing Research to the Classroom: Building a SURE Teacher Learning Community to Enhance Evidence Uptake in Schools

4. Engaging Students through Collaborative Music Creation

5. Extending the Child and Youth Mental Health Information Network: Sharing Mental Health Information with Educators

6. Kimaachiihtoomin e-anishinaabe-kikinoo 'amaageyak; Beginning to Teach in an Indigenous Way

7. Mobilizing a Global Citizenship Perspective with Educators: Curriculum Development, Equity and Community Partnerships

8. Mobilizing Key Body-Positive Health Literacy Curriculum Messages Gr. 4-9

9. Ontario Education Research Exchange (OERE)

10. Ouverture du savoir scientifique et du terrain pour une didactique de collaboration

11. Research Dissemination and Training: Cultural Space and Identity Development among Deaf Youth

12. The Behaviour Management Network

13. The Use of Data Visualization Techniques to Share and Apply TDSB Research Findings

[2] For the purpose of these appendices, projects that identified themselves as belonging to more than one project category have been placed in the category their project aligned with best.

Category 2: Building or extending networks for further research in priority areas

14. Exploring Learning and Differentiated Instruction for the Difficult to Learn Topic of Grade 6 Fractions using Teacher-Coach-Researcher-Developer Networking

15. Knowledge Mobilization, Early Learning Research and Online Learning

16. Knowledge Mobilization on Decision-making for School Improvement: A Peer-to-Peer Network for School Principals

17. Mentoring Northern Ontario School Boards to Meet the Mental Health Needs of their Student Bodies

18. Mobilizing Humanistic Pedagogies in Long-Term Suspension and Expulsion

19. Our Kids Network: Taking Research to Practice

Category 3: Strengthening research brokering work

20. Beyond Council Meetings: Mobilizing Research for Effective Parent Engagement

21. Demographic Data and Student Equity

22. Evaluating Research about Education Programs for Students with Special Needs

23. Evidence Utilization in the Planning, Implementation and Evaluation of Full Day Kindergarten in Ontario School Boards

24. Facilitation Network: Supporting Students with Disabilities in the Transition to Post-Secondary Education

25. Homeroom: A Case-Based Toolkit for Classroom Management

26. How can a Multidisciplinary Team take the Knowledge and Research Results of a Proven Evidence-based Initiative and Mobilize this Knowledge to Strengthen Tier 1 Instruction in Reading across Kindergarten Teachers and ECE Staff where Applicable?

27. It's the Method that Counts: Using Case Studies and Problem–based Learning Strategies to Teach Elementary/High School and Post-Secondary Science Courses

28. Knowledge Mobilization: Early Learning Research and its Practical Implications in the Full-day Kindergarten Classroom

29. Knowledge Mobilization through Collective Pedagogical Inquiry in Schools Serving Culturally and Linguistically Diverse Students

30. Proactive Management of Child Emotional and Behavioural Difficulties in the Classroom: Sharing Knowledge on Effective Teaching Practices

31. Research Brokering in Education (RBE)

32. Sharing our Coaching Program

33. Strengthening Research Brokering—Building a Virtual Knowledge Mobilization Lab

34. Supporting In-Service Teacher Learning in Special Education Additional Qualification Courses

35. The Adolescent Brain: Implications for Instruction

36. The Knowledge to Practice Gap in Classroom Assessment

37. Videos of Visual Artists in Greater Sudbury

38. What did You do in Math Today?

Category 4: Visits by world-leading researchers

39. Engaging Students through Collaborative Music Creation—Expert Visit

40. Go North: Health through Physical Activity

41. Perspective GIARE: Aligner les indicateurs et les stratégies d'apprentissage afin de réduire l'écart garçon-fille

42. Putting Theory into Practice: Finding Paths to Students' Engagement and Equity

43. Understanding Equity and Engagement

44. Visit by Dr. Maureen Walsh, World Leader in Multimodality

Appendix D – KNAER Project Output Types

Project output types include:

- activity
- article
- assessment material
- awareness event
- blog
- book
- brochure
- case study
- concert
- conference
- consultations
- data visualization
- documentary
- DVDs
- e-book
- existing website
- facilitation guide
- focus group
- forum
- information session
- information sheet
- internal website
- interview
- learning community
- lecture
- lesson plan
- listserv
- literature review
- magazine article
- manual
- media release
- monograph
- new website
- newsletter
- newspaper article
- online forum
- panel
- paper
- photographs
- poster
- presentation
- Prezi
- professional resources
- radio
- report
- resource package
- scholarly publication
- social media
- song
- summary
- survey
- symposium
- template
- testimonial
- tip sheet
- toolkit
- training
- video
- web repository
- webinar
- workshop

Appendix E – Project Output Quantities, Organized by Project Category

	Category One	Category Two	Category Three	Category Four	Total
Total Outputs	**424**	**162**	**409**	**89**	**1084**
video	30	10	92	16	**148**
presentation	57	13	53	24	**147**
lesson plan	53	0	3	0	**56**
summary	20	22	9	0	**51**
workshop	21	7	12	9	**49**
conference	27	6	2	7	**42**
report	27	5	4	1	**37**
activity	22	2	12	0	**36**
learning community	26	2	2	0	**30**
facilitation guide	0	6	18	0	**24**
article	5	5	10	2	**22**
existing website	6	3	9	3	**21**
lecture	8	4	3	5	**20**
focus group	5	4	10	0	**19**
survey	8	4	7	0	**19**
symposium	12	2	5	0	**19**
testimonial	19	0	0	0	**19**
professional resources	4	10	0	5	**19**
information sheet	8	2	8	0	**18**
interview	3	15	0	0	**18**
DVDs	0	0	17	0	**17**
photographs	2	2	11	2	**17**
forum	1	12	2	1	**16**
information session	7	1	7	0	**15**
new website	5	1	4	2	**12**
manual	4	4	4	0	**12**
social media	4	3	4	0	**11**
literature review	5	5	0	1	**11**
resource package	0	0	10	0	**10**
song	0	0	9	0	**9**
scholarly publication	5	0	2	1	**8**
consultations	0	0	7	0	**7**
concert	0	0	6	1	**7**
poster	0	0	6	1	**7**

paper	0	1	5	1	**7**
assessment material	4	1	2	0	**7**
training	3	2	2	0	**7**
panel	4	1	1	1	**7**
media release	0	0	6	0	**6**
online forum	2	0	4	0	**6**
newsletter	2	2	2	0	**6**
case study	0	0	5	0	**5**
Prezi	0	0	5	0	**5**
webinar	0	0	5	0	**5**
magazine article	1	1	2	1	**5**
tip sheet	1	0	3	0	**4**
template	2	0	2	0	**4**
internal website	2	1	1	0	**4**
monograph	2	0	1	1	**4**
brochure	1	1	1	1	**4**
toolkit	1	1	1	1	**4**
documentary	0	0	3	0	**3**
newspaper article	0	0	3	0	**3**
awareness event	2	0	1	0	**3**
blog	1	0	1	1	**3**
listserv	0	0	2	0	**2**
book/eBook	0	0	2	0	**2**
radio	0	0	1	1	**2**
data visualization	2	0	0	0	**2**
web repository	0	1	0	0	**1**

Appendix F – Interview Questions

1. **In your experience, what incentivizes and/or motivates the following groups to participate in evidence-informed use of research in education:**
    - Teachers
    - Administrators (school and district)
    - Researchers
    - Policy-makers
    - Parents and community members

2. **In your experience, what supports practitioners to:**
    - Find and access research?
    - Understand research findings?
    - Share research findings?
    - Adapt and/or apply research findings to inform changes in practice?

3. **In your experience, what supports researchers to:**
    - Conduct timely and relevant research for evidence-informed educational practices?
    - Mobilize their research through networks?
    - Mobilize their research through practical activities and products?
    - Develop approaches to support educators to engage with their research?

4. **What facilitates research mobilization throughout a system?**
    - Are there particular models or practices that appear to be particularly effective?
    - In what ways are these practices most effective?
    - What does not work? Why?

5. **What types of networks support mobilizing research for evidence based professional learning and practice?**
    - What processes are most important?
    - What activities and/or products are required?
    - Why are these types of networks, processes, activities, or products important or required?

6. **Are there particularly promising models or approaches for developing government-university partnerships to advance knowledge mobilization and research use to improve practices and outcomes?**
    - How and in what ways are these models promising?

7. **What challenges are there for connecting research and practice in education?**
    - Why do you believe these are challenges?
    - How can these challenges be addressed in Ontario?

8. **Based on your experience, what could the Ontario Ministry of Education and university partners do to effectively develop and support research and practice networks for mobilizing and applying research among researchers, educators and policy-makers?**

9. **Any other comments?**