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For the final version, see the French translation.*

**COLLABORATIVE
PRACTICES IN
MOBILIZING EDUCATION
RESEARCH KNOWLEDGE
FROM PUBLIC
ORGANIZATIONS ACROSS
THE INTERNET¹**

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Abstract: This paper will profile a project that examines the use of educational organization’s websites as their primary vehicle for disseminating research findings in the form of research products to support knowledge mobilization efforts. The project specifically seeks to understand how visitors to these websites utilize the research materials posted. Beginning to understand how visitors use web-based research products might improve our understanding of knowledge mobilization in the current technological societal context. Although the data from the project is important, understanding the how university researchers collaborate with organizations to transfer new knowledge and strengthen communities of practice has become a major aspect of this project and has implications for how public administrations adopt collaborative practices.

Knowledge mobilization (KM) is broadly defined as a bridge between theory, research and practice. The KM process seeks to understand “the direct use of research to make decisions... [and] the many ways that research is used indirectly” to make decisions (Nutley, Walter, & Davies, 2007, p. 2). The process is also about “getting the right information into the hands of the right people” (Dobbins et al., 2007, p. 9). KM is described as a multi-directional linking process where research producers and users interact to transfer knowledge stemming from well-validated research evidence (Hemsley-Brown & Sharp, 2003; Bennet & Bennet, 2007; Levin, 2008; Cooper, Levin, & Campbell, 2009; King et al., 2009). The Research Supporting Practice in Education (RSPE) program, a program of research at the Ontario Institute for Studies in Education (OISE), uses the above definitions of KM as the basis for exploring and explaining how to increase KM in education to improve the educational experiences of educators and students. Many of these projects have examined how public administration organizations, like government funded universities, medical facilities, school systems and individuals within schools engage in KM strategies and the KM process to disseminate the research they produce to research users.

The project described in this paper focuses on a knowledge mobilization strategy of disseminating research through posting products on educational organizations’ websites. Products are defined as material resources for sharing research knowledge online such as research reports, summaries, or video clips. The

¹ I would like to acknowledge the contributions from the PI of the project, members of the research team, and the organizational partners.

assumption is that when products are available, interested persons will access and use these products (Qi & Levin, 2010). In other projects (i.e. Qi & Levin, 2010; Sá, Faubert, Qi, & Edelstein, in press), conclusions were made that organizations were more likely to post products to disseminate research evidence than other KM strategies. Questions stemming from these other projects included: Why do these organizations focus on products? Are visitors to websites looking for products? If they are looking for products, do the visitors do anything with those products? As the team gathered literature about the use of research on the Internet, we found that there were few empirical studies examining these questions and have taken the Use of Online Research project as the opportunity to start answering those questions (i.e. Jadad et al., 2000; Shah et al., 2001; Arduengo, 2008).

■ LITERATURE REVIEW

Understanding knowledge mobilization

Earlier in this paper, knowledge mobilization was defined as linking process of research, policy and practice (Nutley, Walter, & Davies, 2007). Other terms used to describe similar linking efforts are: Knowledge translation, knowledge adaption, knowledge generation, research utilization, knowledge exchange, and the acronyms KMB and K* (Bennet & Bennet, 2007; Graham et al., 2006; Bielak, 2011; Jansson, et al., 2010). All the terms have a common focus on ways that research knowledge is shared so that practitioners can use research to affect change in their practice.

Knowledge can be used within an organization to influence decision-making (Argote et al., 2003; Argote, 1999; Nonaka, 1994; Bennet & Bennet, 2004). What counts as research knowledge is itself disputed (Nutley et al., 2007). One formulation organizes knowledge as being either tacit or explicit (Bennet and Bennet, 2007; Nutley, Walter et Davies, 2007; Jones et al., 2009; Wiess, 1979; Cordingly, 2009; Sudsawad, 2007; Milton, 2006). Tacit knowledge is gained from personal experience and can be difficult to explain to others while explicit knowledge can readily be put into propositional form (Bennet and Bennet, 2007; Nutley et al. 2007; Sudsawad, 2007; Jones et al., 2009; Milton, 2006). When trying to understand tacit knowledge, collaborative experiences can allow people to find the shared time to discuss their experiences and how these relate to what they are doing (Foos et al., 2006).

The concept of research use can also have quite different meanings. These include three ways of using knowledge. Instrumental use – making decisions based on evidence; conceptual use – using the ideas from a body of knowledge to understand situations; and symbolic use – where knowledge is used to legitimize practices and policy decisions (Lavis et al. 2003; Weiss, 1979; Davies & Nutley, 2008; Sudsawad, 2007; Landry, Amara, & Lamari, 2001).

One way of transferring the knowledge that public administrations hold is by collaborating with and across organizations to involve different members of the organization (Bennet & Bennet, 2004; Davies et al., 2000). Change may also come through how research is approached in the realm of public administration. By understanding how research producers can disseminate research to practice, organizational learning and the social context of research use can become a system that is collaborative across an organization, such as using communities of practice as a means to disseminate research (Davies et al, 2000; Nutley et al., 2007; Bennet and Bennet, 2007; March, 1981; Wenger, 2004). Implementing communities of practice within and across partner organizations can help with organizational learning strategies that support and improve the use of research in practice (Mathiassen, 2002).

Research evidence, use, and impact

Multiple authors have called for empirical research into understanding where practitioners get information and how the research knowledge they find online, or elsewhere is taken up (Davies , Nutley, & Smith, 2000; Biddle & Saha, 2002; Hemsley-Brown & Sharp, 2003; Milton, 2006). Davies and Powell (2010) write that to

understand the impact of knowledge mobilization researchers on those with whom they collaborate; we need to know more than just what works when translating research into real needs for practice. We need to know why change happens; how outcomes are achieved; how it research is implemented in practice; and the processes to maintain on-going learning and innovation stemming from incorporating research into practice (p.3). Although there are studies based on the use of research in the medical field (Dobbins et al., 2007; Estabrooks, 1999, Lavis, et al., 2003; Maynard, 2007; Mitton, et al., 2007; Jadad et al., 2000) and we can draw comparisons between the fields, there is a lack of data from the field of education on how practitioners actually use research they might come across online to inform practice.

Davies and Nutley (2008) explore how research has an impact on policy and practice. They state that research impact is “often indirect and long-term and can be difficult to track” (p.3). Others have suggested that there needs to be more empirical work done to understand the impact of research for policy and practice and if research use has a direct or indirect affect on practice (Walter, Nutley & Davies, 2003; Tetroe, 2007; Davies & Nutley, 2008; Nelson, Leffler & Hansen, 2009; Sebba, 2007). Although tracking impact is never easy there are strategies that others have used to increase the impact of research on practice. One of these strategies is having researchers working directly with policy makers and practitioners in seminars and workshops to talk about how research can impact practice (Sebba, 2007). Another way is to have research materials translated into accessible language that meets the practitioners’ needs along with clearly laid out findings and implications for use in practice (Biddle & Saha, 2002; Davies & Nutley, 2008; Dobbins et al., 2007; Hemsley-Brown & Sharp, 2003; Maynard, 2007). The impact of research on practice might depend not only on the type of language used , but also how it is presented (Cordingly, 2008; Behrstock, Drill & Miller, 2009; Biddle & Saha, 2002).

With its capability of hosting multiple formats, the Internet is becoming a major factor in sharing research. With online research, the structure and timing of dissemination is changing (Backer, 1991, p.236 in Qi & Levin, 2010, p.4). Because much online research is open source, and every educational organization has its own website, research is not limited to an academic audience. Practitioners, policy makers and others interested in the field of education can take up research whenever they want. Additionally the format of research is changing – it is not just found in peer-reviewed journals but as embedded on webpages and in research summaries meant to reach a broad audience. Working with educational organizations who post research evidence on their websites provides a way to examine the uptake of online research.

Collaborative research partnerships

Collaborative research goes by a variety of different names, each signifying a slightly different orientation to the meaning of working with others. These terms include: Collaborative research; partnership research; co-constructive research; community-based research; participatory research; action research; and participatory-action research (Alcorn, 2010; Marra, 2004; Israel, et al., 1998; Park, 1999; Datnow & Park, 2009; Cargo & Mercer, 2008; Wallerstein & Duran, 2010).

Collaborative research criteria

Involving partners from outside the university research sector can create a commitment from the university researchers and partners to find, develop and create linkages to improve the accessibility of research and the way that research is disseminated to users (Levin, 2010; Lencucha et al., 2010). How partners work together can differ depending on the project. In some cases collaborative research takes the form of partners working together from the outset defining the problem that the project will look at, the research questions, methodology, data collection, analysis and how the results are disseminated (Nyeden & Wiewel, 1992; Golden-Biddle, et al., 2003; Lencucha, et al., 2010; Spencer & Taylor, 2010). In other cases the researchers define the project goals, data collection and data analysis but external partners collaborate on the results of the project. In this latter case partners provide feedback on the analysis to determine the implications of the research for their community and for follow-up in understanding how the partners and

their stakeholders make use of the research findings (Park, 1999; Cargo & Mercer, 2008; Lasker & Weiss, 2003).

Collaborative research can strengthen the links between research producers and users while improving the flow of information and ideas between the different groups (Walter, Davies, & Nutley, 2003; Bennet, & Bennet, 2007; Thomson, Perry, & Miller, 2007). Partnering can explicitly strengthen links between community groups, organizations, policy-makers, and researchers because it brings “together partners with diverse skills, knowledge, expertise and sensitivities to address complex problems” and different frames of reference to research (Israel, et al., 1998, p.180). As partnering bring together different backgrounds, interests and skills, working in a collaborative research partnership not only allows researchers access to a data sample, but since there is insight from practitioners there is improved research quality and validity by grounding research in local knowledge (Israel, et al., 1998). Working in a collaborative partnership explicitly mobilizes knowledge and creates impact for using research findings in practice (Alcorn, 2010; Ross, et al., 2003).

Barriers and facilitators to maintaining a collaborative research partnership

Despite the positives in working collaboratively with partners, there are a number of tensions and barriers to partnership mentioned in the literature. These include a lack of trust between researchers and participants including a lack of communication and shared resources; inequitable distribution of power and control between partners; conflicts over established goals and the mission of the partnership; a lack of research knowledge and skills by collaborating partners; how the research is disseminated between partners and to the public; time constraints and methodological concerns (Israel, et al., 1998; Yashkina & Levin, 2008; Ross, et al., 2003; Lasker, Weiss, & Miller, 2001; Cunningham, 2008; Golden-Biddle, et al., 2003; Baker, et al., 1999; Nyeden, & Wiewel, 1992; Bennet & Bennet, 2007; Rynes, et al., 2001; Nelson, Leffler, & Hansen, 2009; Huxham & Vangen, 2000).

Of this list of tensions and barriers to facilitating a successful research partnership, the most commonly cited tension is lack of trust (Kandel & Lazear, 1992; Goering et al., 2003; Cargo & Mercer, 2008; Vangen & Huxham, 2003). Trust is defined as “having sufficient confidence in a partner to commit valuable know-how and other resources to the venture...” or “mutual confidence that no party...will exploit the other’s vulnerability” (Kelly et al., 2002, p. 12-13). Trust, though, is not only between partners it is about having trust in the research process and findings (Fleischmann, 2006; Griffin, 2010). Research is mistrusted because of the source of the research, the motives of the researchers and whether or not the research findings will really create change in the community (Levin & Edelstein, 2010). Another area where trust comes in is how research is disseminated to the partners and the public. Dissemination needs to be written in plain language for non-academic partners with clearly defined implications and next steps (Davies & Nutley, 2008; Bennet & Bennet, 2007; Dobbins, et al., 2007; Milton, 2006). The partners need to create a process where they can trust each other’s judgements; researchers need to relinquish some control over the research process to the partners; and the partners need to acknowledge that how they write, or even what they say, might have to change for the partnership to work well (Nutley et al., 2007; Bennet & Bennet, 2007; Maynard, 2007; Campbell & Fulford, 2009; Cordingly, 2008; Nyeden & Wiewel, 1992; Qi & Levin, 2010; Roussos & Fawcett, 2000; Marra, 2004; Kandel & Lazear, 1992).

Context of online use of research

One priority of the knowledge mobilization process is to ensure that research is easily accessible, timely, and understood by different audiences. Although posting research on the Internet may increase access, there is “is no guarantee that knowledge sharing will actually take place” from posting research online (Reychav & Te’eni, 2009, p.1270). Some posit that it is the context and format of the research posted that matters when trying to understand the uptake of research (Elliott & Popay, 2005; Cordingly, 2008; Cooper, Edelstein, Levin, & Leung, May 2010).

As a facilitator of knowledge, the Internet has the potential to create access to research in ways that were not possible a few years ago (Jadad et al., 2000; Jadad, 1999; Morahan-Martin, 2004; Ho et al., 2003). Clifton (2008) and Ledford and Tyler (2007) assert that the late 1990's dot-com boom was the catalyst for thinking about how websites are used and that tracking website usage through analytics would be a very good thing for understanding what goes into a website and how visitors use the website to find information. As a result, different web analytics software tools have appeared on the market to help businesses and organizations understand why visitors come to their site and what makes the content on the site successful (Clifton, 2008; Ledford & Tyler, 2007).

For the Internet to be an effective tool for knowledge mobilization, Jadad (1999) suggests that the system and websites need to be: Easy to access and use; provide rapid access to information; provide users with relevant and ready to use information; provides knowledge for the practitioner to integrate the information they find online with the values and circumstances of their work environments; balances the need for face-to-face interactions; and provides some kind of privacy while ensuring connectivity. Dede (2000) argues three points: (1) that the Internet can be used to disseminate educational research by shifting from knowledge assimilation to “knowledge creation, sharing and mastery of knowledge” (p.2); (2) where interactive media can be used as a facilitator for imparting exemplary practices “to reinforce...systemic change” (p.2-3); (3) and that the Internet can become a social tool for unlearning “the beliefs, values, assumptions, and culture” that underlie teaching practice by broadening practitioners use of research through collaborative virtual community building (p.3). Although Dede (2000) supports the use of the Internet as a knowledge mobilization tool, he cautions that the use of the Internet as a tool for mobilizing knowledge is not simple. Depending on how the research found online ends up being interpreted, its use may not reflect the intentions of the researcher or policy-maker. Morahan-Martin (2004) discusses the downside to the Internet in that its unlimited library can cause users to become overwhelmed so they “do not go beyond the first two pages of citations that they find online” (p.499). She argues that Internet users need to know what terms they are using in search engines to facilitate their access.

Conceptual framework

The Use of Online Research (UOR) conceptual framework is based on the bridging of three components: Research evidence, the user, and actual use of research products over time. Research evidence, examines the type of resource (idea, product, contact, link) available, the format of the product, and the relevance of the product (Qi & Levin, 2010). The second component, the user, seeks to understand the role of the visitor coming to the website and the purpose of their visit (Dede, 2000; Hartley & Bendixen, 2001). The final component, actual use over time, compares the original intention of downloading a web-based product to its actual use (Morahan-Martin, 2004). Questions around actual use include trying to understand if the product is of no use, undetermined use, immediate use, future use or were already used by the visitor (Landry, Amara, & Lamari, 2001; Amara, Ouimet, & Landry, 2004). Other investigative aspects of use over time also examine if the visitor to the website shared the materials they found and whether the information they found was used for conceptual, symbolic or instrumental purposes (Weiss, 1979; Cooper, Edelstein, Leung & Levin, 2010). These components: Research evidence, the user, actual use over time has framed our methodology and how we categorize the data from this project.

■ METHODOLOGY

Two data sources, survey data and Google Analytics drive the research for the Use of Online Research project. Each of these data sources has their own data sample and method of analysis.

Survey data

The Use of Online Research (UOR) project has twelve partners whose websites the surveys are embedded on. Our two-part survey looks at what information the visitor has found on the organization's website while the second asks respondents about what they did specifically with the information they may have downloaded or read from the website. Both surveys are analyzed using descriptive data from the survey and the themes stemming from long answer questions (Cooper, Edelstein, Levin, & Leung, 2010).

The first part of the survey is posted on our partner organizations' websites on multiple web pages to increase the chance that visitors to the site will see and participate in the survey. The purpose of the first survey is to help us to understand visitor's intentions. This includes what they will do with the research they download, how it will inform their current and future work, whether the research has a significant impact on their work and if they use the research formally or informally within and outside of their workplace.

The second part of the survey is provided to respondents who agreed to be emailed a follow-up survey approximately 30 days from when they first took the survey on one of the partner websites. The follow up survey asks participant's questions about what they actually did with the research related products that they previously downloaded from our partner websites.

Google Analytics

There are ten partners from four countries participating in the Google Analytics phase of our data collection. Google Analytics is applied to understand data relating to website usage, including the following metrics: Page views, visits, visitors, pages per visit, average time on site, bounce rate, percent of new visits, entrances, percent of those who exit on a given page, and top landing page for each website and organizations identified research pages. These metrics are used to provide each organization a benchmark of where they are and to compare between the organizations the ratios of those metrics for the homepage, overall site and identified research web page. Therefore we analyze the website usage data for comparison across homepage and research pages for each organization and for unique targets, defined as specific research pages or research initiatives within each organization. We also compare similar targets across the organizations for all the metrics related to website usage. For the product analysis, Google Analytics is used to track downloads from each organization. The data from the download analysis is used to understand the intensity and uptake of specific products as well as if the products are connected with a specific research initiative, the uptake of that initiative by visitors to the site (Cooper, Edelstein, Levin, & Leung, 2010; Edelstein, Shah, & Levin, 2011).

■ FINDINGS FROM THE UOR PROJECT

Empirical data from the UOR project

We have currently done a preliminary analysis on the survey responses from the survey posted on the partner's websites, the follow-up survey and the website usage data. We are just at the point of receiving enough data on the product download, the research evidence as mentioned in the conceptual framework, to begin that aspect of the analysis.

The survey and website use analysis focus on several implications. Although there is currently a low response rate to the online survey (n=350, as of May 2011), we have found that respondents report that online research is important and they are more likely to share what they find informally among co-workers. The research team is investigating ways to raise the response rate to the survey.

Findings from an initial analysis of the Google Analytics usage data includes: There are significant differences between organizational websites; fewer people view research pages than the overall site; a smaller percent of visitors view the research pages who come to the overall site than those who also view the

homepage; some research pages have a lot of repeat visitors while others hardly have any. From the analysis, we believe that most people visit education organizations websites to find very specific research information. Some of this is research-based, other not, but those that are interested in the organizations' research capacities return to the identified research pages often. With further analysis of the incoming data we hope to be able to explain why the variances exist. From both the survey data and the website usage data, the research team is finding that the online uptake of research is not as strong as it might seem. With more in-depth analysis of the website usage data, a greater response rate to the survey, and engaging in the product download analysis, we believe that there will be more to say about how visitors to educational organizations' websites are actually using the research they find and if they use the research they find over time (Edelstein, Shah, & Levin, 2011).

What we have learned about collaborating with educational organizations

Almost two years into the Use of Online Research project, working with a variety of partners has been a rewarding learning experience about the efforts needed to conduct a knowledge mobilization project. Although the research team always wanted active input from the partners, in the first year and a half of the project communication with the partners was more based on administrative tasks of setting up Google Analytics and ensuring that the survey was on their site. In the course of setting up Google Analytics and learning about its functionality we have communicated much more than when we started the project with partners about the decision-making processes relating to the project. More recently, since we have begun analyzing data, we have communicated with partners to get their feedback on developing the typology and the data analysis framework; on the data; the use of Google Analytics; and on the papers we write from the project. Our dialogue with the partners happens through e-mail, phone, Skype, and most recently through using GoogleDocs as a platform for sharing resources and getting feedback. The data in the following sections are taken from the correspondence the team has had with the partners².

One unanticipated challenge that we encountered with partnering with international organizations was their funding. Many of the organizations we work with are funded, at least in part, by their government. With the worldwide recession, and accompanied budget cuts by governments, several of our partner organizations have had their funding cut. As a result, we have had to work with organizations to support their IT use, be flexible and patient with on-going communication and gathering data (Maynard, 2007; Mitton et al., 2007; Israel et al., 1998).

Partner feedback on decision-making processes, frameworks and data analysis

The partners within each organization have been instrumental in guiding the project. Partners have helped make decisions relating to how to raise the response rate of our survey; providing feedback on the product typology; helping us organize the data analysis framework by providing input into what metrics we might think of examining; and providing feedback on the data. For example, partners have also provided input to which products on their website they want us to track. Although the research team familiarizes itself with the partner's website and suggests some products of interest, it is better when the partner provides the input since it is their data that we are tracking. One interesting aspect of the project has been that since a few of our partner organizations are connected, they post the same products. As a result, as part of the product data analysis we are comparing the same reports from these different organizations to each other in order to tell partners how the same product is being accessed on different websites (Edelstein, Shah, & Levin, 2011). Another example pertains to how the partners have been integral for providing feedback on our data analysis. After each round of data analysis we send our results to the partners. Partner feedback for the survey results has included partners reporting how valuable it is to understand the way that visitors have or are using research from their website; some partners expressed disappointment with the survey response rates on their

² Due to privacy concerns, these emails and conversations have not been cited directly.

website, while others asserted that the response rate seemed reasonable. For example one partner reflected on the idea that with their lower than average per month visit numbers, and the similarly low percentage of page views of the pages where the survey is posted, it makes sense that they have a low response rate because not many people are coming to that page. The team reported back to the partner encouraging them to consider changing the page that the survey is posted to pages that have a higher percentage of page views.

The partner's feedback to our initial website usage data analysis has also been encouraging. We have learned from dialoguing with our partners, that they are taking our data and using it to help them build their website. The feedback has informed our data analysis framework and we have added additional analyses from their feedback, such as analyzing the pages from which visitors arrive and their exit page to see if there is a pattern to page path. We have learned that partners will use the comparative aspect of the website usage data analysis as a benchmark for greater traffic to their site. One partner mentioned that due to the analysis, their team was going to begin working at targeting specific audiences and promoting their site to increase use. Another partner mentioned that they could now understand that the way they had designed their website was having an impact – they had designed it so that visitors would spend time on their site reading research. It was indicated from our analysis that this is precisely what visitors to the site were doing. Another partner mentioned that they could see how their pages differed in terms of page views and that it was evident that a certain type of visitor with specific interests were coming to their site because one page had more than four times the views of their other web pages.

■ CONCLUSION

After a year and a half of working on this project, the research team can see the value this project has for understanding knowledge mobilization processes. An important outcome from this project has been the development of a methodology. Although the way that the RSPE team has envisaged the project has changed as we have learned from technology experts about Google Analytics and from our partners about their websites and products, we hope that the frameworks and typologies created from this project will assist others in doing similar work either in the field of education or other fields. Building a methodology that incorporates working with our partners will assist others in doing this type of work by providing a framework for how to do a collaborative research project.

Working through this project, the way that the partnership was viewed has changed. It has moved from communicating with our partners to decide on administrative tasks to seeing the partners as an integral part of this project to provide input and insights into the data gathering, analysis and findings process. Just as we are learning from the data analysis and findings, we are also learning about how knowledge is mobilized from dialoguing with our partners. This includes involving them in the process of creating the frameworks and typologies related to the project and getting their feedback on the data. Although sometimes there are misunderstandings due to distance and how we each write, working via e-mail with access to Skype has enabled us to work with organizations from across the world.

Finally, working on a project, with different publically funded educational organizations has allowed the research team to see how knowledge can be transferred outwardly and also within networks of interested people. Although we are still learning about how the collaborative process impacts our partners' organizational learning and knowledge mobilization processes within their organizational structures, we can see how knowledge is beginning to flow between the research team and the partners within the project structure. For example, our partners have indicated to us that they are beginning to understand from our data reports that website usage of research might be more about breadth than depth as to what is available online. As researchers, we are learning about the processes within our partner organizations that facilitate and impede knowledge mobilization. In turn, our partners are learning from our research about the ways to shape their organization into one that can successfully engage in knowledge mobilization activities and disseminate research that will reach users and impact practice. We hope that in the future we can further share these instances and that these findings may be applied to other sectors.

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