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Knowledge Translation: Implications for Evaluation

Colleen M. Davison

Abstract

Translation theory originates in the field of applied linguistics and communication. The term knowledge translation has been adopted in health and other fields to refer to the exchange, synthesis, and application of knowledge. The logic model is a circular or iterative loop among various knowledge translation actors (knowledge producers and users) with translation activities evolving and occurring at various stages. Successful knowledge translation depends on the engagement of the target audience, as well as using the knowledge to inform decisions and have a positive influence on health outcomes. Understanding this alerts the evaluator to how to maximize the likely usefulness and sustainability of their evaluation research with local stakeholders. It also invites evaluators to help appreciate why programs have the short- and long-term effects that they have, particularly any unintended or unexpected program outcomes that might have otherwise been puzzling. © Wiley Periodicals, Inc., and the American Evaluation Association.

Globally there is a significant amount of research evidence that is being underused or not used quickly enough to inform improvements in policies, products, services, and outcomes (Landry, Amara, Pablos-Mendes, & Shademani, 2006; Pablos-Mendez, Chunharas, Lansang,



Shademani, & Tugwell, 2005; Global Forum for Health Research, 2006; Lavis, Robertson, Woodside, McLeod, Abelson, & Knowledge Transfer Study Group, 2003). Evaluators have had long-standing concerns about knowledge use (Weiss, 2000). Knowledge translation has been conceptualized as the practice, the science, and the art of bridging the know-do gap, or the gap between the accumulation of knowledge and its subsequent use or application (World Health Organization, 2006). Although not the only term used to describe the processes of research to action (Graham et al., 2006), in the past few decades, *knowledge translation* has been widely adopted in the health field (Canadian Institutes of Health Research, 2004; Pablos-Mendez et al., 2005; National Center for the Dissemination of Disability Research, 2005; World Health Organization, 2004, Lyons & Warner, 2005). This chapter examines knowledge translation from an evaluation perspective, asking such questions as: How is knowledge translation defined and conceptualized? How can it be measured? How does it differ from other knowledge-to-action processes, and what would an evaluation informed by knowledge translation look like?

Literature Search

To ground this work, a literature search was conducted for documents pertaining to knowledge translation. Of specific interest were empirical studies relating to knowledge translation as well as preexisting knowledge translation definitions, theories, and models. When a broad search was conducted using *knowledge translation* as a keyword in Medline, CINAHL, PsychINFO, ERIC, and Social Sciences Abstracts databases, several thousand documents were retrieved. Then a snowball sampling technique was used to amass the most pertinent articles from 1997 to 2006. This type of sampling begins with a number of initial, seminal citations and then evolves based on the reference lists and key citations used in the articles. Initial articles were found through a review of abstracts from the keyword search and by e-mail consultation with leading scholars in the field of knowledge translation. Jacobson, Butterill, and Goering (2003) outline a similar search strategy. Documents were organized and reviewed using a matrix method for literature reviews in the health sciences outlined by Garrard (1999).

The Origins of Knowledge Translation. Translational theory originates in the fields of linguistics and communication and is commonly associated with the translation of text or spoken words from one language to another or, less frequently, from one culture to another (Davison, 2004). It is grounded in the process of adapting source material in a particular way so as to make it more comprehensible to target audiences. The term *knowledge translation* is relatively new in knowledge change terminology; *knowledge utilization*, *diffusion*, *transfer*, and *implementation* have longer histories. According to Hiss (2004), the use of the term *translate* to describe the movement and utilization of research products (knowledge, evidence, or innovations) in the health disciplines

can be traced to a 1975 U.S. National Commission on Diabetes Report, where diabetes research and training centers were called to “translate” advances in diabetes research with the least delay into improved care for patients with diabetes. The use of the term *knowledge translation* grew slowly from this time but became widely used only in the past fifteen years. Straus, Graham, and Mazmanian (2006) point out that in 1990, fewer than a hundred articles were retrieved when a search for knowledge translation was conducted within the Medline database. In February 2006, several thousand articles were found with the same search strategy. Today *knowledge translation* has become one of the most favored terms in the health field (Armstrong, Waters, Roberts, Oliver, & Popay, 2006; Davis et al., 2003; Glasgow, Lichtenstein, & Marcus, 2003; Graham et al., 2006; Canadian Institutes of Health Research, 2004; National Center for the Dissemination of Disability Research, 2005; Schryer-Roy, 2005) and is used occasionally in other fields as well: for example, in geography (Williams, 2006); social work (Stevens, Liabo, & Frost, 2005; McNeill, 2006); and education, particularly relating to medical or health education (Rikkert & Rigaud, 2004; Kyrkjebo, 2006).

Although some common characteristics appear to be emerging in the literature, Hiss (2004) notes that there has been a struggle since the introduction of the concept of KT to come to a mainstream understanding of the term. *Knowledge translation* is not used consistently, it is often not, or not well, differentiated from other knowledge exchange processes, and it is used in relation to a great number of different activities. Early conceptualizations of translation placed it at the end point of research. This was prominent in the United States in the 1980s when translating scientific discoveries into health and economic benefits began making its way into federal U.S. legislation with the Stevenson-Wyndler Technology Innovation Act and the Bayh-Dole Patent and Trademark Acts, for example (Sussman, Valente, Rohrbach, Skara, & Pentz, 2006; U.S. Congress, 1980a, 1980b). These acts existed as legislation to ensure that innovations led to “the achievement of national economic, environmental, and social goals” (U.S. Congress, 1980b).

Currently translation is more often being conceptualized as an important feature in all aspects of research, and funding is being provided accordingly. In the United States, the National Institutes of Health has launched a series of clinical and translational science awards that focus on knowledge translation through enhanced communication and information sharing between laboratory researchers and clinicians (National Institutes of Health, 2007; Dickler, Korn, & Gabbe, 2006). In Canada, the Canadian Health Services Research Foundation (CHSRF) was founded in 1997 to “facilitate evidence-based decision making in Canada’s health sector” (Lomas, 2000, p. 236). This foundation aims to provide funding for activities that link health research and policymaking. The Canadian Institutes of Health Research (CIHR), formerly the Medical Research Council (MRC) of Canada, has also adopted knowledge translation as a key component of their mandate. In the case of CIHR (2008), institutional language evolved from using knowledge

dissemination (prior to about the year 2000) to the use of knowledge translation and then more recently to the use of knowledge synthesis and exchange. This change has been driven by an overall reexamination of the mandate of the institution, as well as focused work by individuals within the organization responsible for providing leadership in the way institutional policy is operationalized (Canadian Institutes of Health Research, 2004, 2008). CIHR (2008) currently characterizes knowledge translation into two types: end-of-grant knowledge translation, which primarily takes place for the purpose of communicating research findings when a project is at an end point, and integrated knowledge translation, which ideally includes stakeholder engagement throughout the entire research process.

Definitions of Knowledge Translation. Three prominent definitions for knowledge translation emerged from the literature search:

The exchange, synthesis and ethically sound application of knowledge with a complex system of interactions among researchers and users—to accelerate the capture of the benefits of research for [Canadians] through improved health, more effective services and products, and a strengthening health care system. (Canadian Institutes of Health Research, 2004, p. 2)

The exchange, synthesis and effective communication of reliable and relevant research results. The focus is on promoting interaction among the producers and users of research, removing the barriers to research use, and tailoring information to different target audiences so that effective interventions are used more widely. (World Health Organization, 2004, p. 5)

The collaborative and systematic review, assessment, identification, aggregation and practical application of high quality [disability and rehabilitation] research by key stakeholders (i.e. consumers, researchers, practitioners, policy makers) for the purpose of improving the lives of individuals [with disabilities]. (National Center for the Dissemination of Disability Research, 2005, p. 4)

Tugwell, Robinson, Grimshaw, and Santesso (2006) use an adapted version of the CIHR definition, adding, “KT strategies that aim to enhance equity need to target barriers to achieving optimal effectiveness across socioeconomic status” (p. 643). Their adaptation aims to address equity issues relevant to the production, movement, and application of knowledge.

Translational researchers describe knowledge translation as being concerned with two types of situations. First is KT from bench to bedside, or the movement of knowledge from the realm of the basic and laboratory sciences into a realm of social or personal relevance. Second is knowledge translation from the hospital or health clinic to the community (Hiss, 2004; Sung et al., 2003; Sussman et al., 2006). Knowledge translation is most often conceptualized as an active or planned activity related to the adaptation and application of knowledge across different settings, contexts, or populations (Green et al., 2006). In this kind of arena, transdisciplinary, multilevel thinking is key.

Key Concepts in Knowledge Translation. Knowledge translation can be understood through four important concepts:

- *Purpose.* The purpose of knowledge translation is for knowledge to be applied or used to improve the health outcomes of individuals or groups or improvements in the function of services associated with health and illness.
- *Stakeholders.* Knowledge translation is about effective communication and a complex set of interactions between various stakeholders in both the production and the use of knowledge. Although research users and research producers are often characterized as different groups, knowledge translation is a fluid, iterative process that involves varied stakeholders in evolving roles.
- *Focus.* The focus of knowledge translation efforts has largely been the products of research or the products of research synthesis. Products could also be evidence, ideas, technologies, innovations, best practices, and new knowledge, for example.
- *Process.* The basic “how” of knowledge translation has a number of conceptualizations. Choi, McQueen, and Rootman (2003) present it as being about knowledge integration and knowledge simplification, where integration might indicate systematic reviews or meta-analyses and simplification could be writing research reports in summary form or plain language (see also Choi, 2005). Knowledge translation has also been conceptualized as a set of strategies to improve awareness, communication, or interaction among various stakeholders (Jacobson et al., 2003), the development of evidence-based actionable messages (Tugwell et al., 2006), the formulation of research topics, the participatory conduct of research, or the adaptation of reports of research for different audiences and contexts (Canadian Institutes of Health Research, 2004).

Theories, Models, and Frameworks of Knowledge Translation. A number of theories, models, and frameworks have been put forward in relation to knowledge translation (these are outlined briefly in Table 6.1). Among the recurring themes are these:

- *Knowledge translation is varied and multidimensional.* Knowledge translation is not a single action or activity, and it takes many forms: it can involve knowledge producers, users, and brokers; specific messages; actions and strategies; and features of the broader context. It is often the work of teams and requires transdisciplinary, multilevel thinking.
- *Knowledge translation involves interaction.* There is an emphasis placed on the relationships between many knowledge translation actors and not only on the message source and content, but also on identifying the target audience and what that audience’s own context might be.
- *The message often comes from research.* Nearly all of the theories or frameworks for knowledge translation view the work as pertaining to research

Table 6.1. Existing Knowledge Translation Theories, Models, and Frameworks

<i>Theory, Model, or Framework</i>	<i>Details</i>	<i>References</i>
Push-pull capacity theory	Knowledge moves in relation to push factors from the knowledge production or supply side and pull factors from the knowledge use or demand side.	World Health Organization, 2006; Curry, 2000; Green et al., 2006; Landry, Lamari, and Amara, 2007
Diffusion of innovations theory	Diffusion is the spread of ideas and innovations throughout systems (Rogers, 2003). Knowledge application and use differ by type of user and by the user's respective needs and incentives.	Rogers, 2003; Greenhalgh, Robert, Macfarlane, Bate, and Kyriakidou, 2004; Grimshaw et al., 2001
Two-communities or two-cultures theory	"The different worlds in which researchers and decision-makers work—employs principles of intercultural understanding" (Bowen, Martens, and the Need to Know Team, 2005, p. 209).	Bowen et al., 2005; Caplan, 1979; Lyons and Warner, 2005
Knowledge utilization theory	Variations of the six knowledge utilization models put forward by Weiss (1979, 2000): the knowledge model, the problem-solving model, an interactive model, a political model, an enlightenment model, and a tactical model.	Weiss, 1979, 2000
Knowledge translation within a communication system paradigm	The earliest model found in the literature. Knowledge translation is presented as one of six nested functions, activities, or processes within a larger communication system paradigm of knowledge production, management, translation, product development, product dissemination, and product adoption or utilization.	Beal and Meehan, 1978; Beal, 1980
Five-point knowledge translation framework	An often-cited framework for KT that has five points of focus: the message, the target audience, the messenger, the actual knowledge translation process and support system, and the evaluation.	Lavis et al., 2003
Five domain framework	This model consists of five domains: the user group and the context in which the population operates, the message or related issue that is to be translated, the characteristics of the research (What research evidence already exists? How	Jacobson et al., 2003

	familiar is the target audience with topic?), the researcher-user relationship, and the actual knowledge translation strategy used.	
Equity-oriented framework	The framework is grounded in the concept of health equity, and is a cascade of activities related to knowledge translation: the assessment of potential knowledge translation barriers and facilitators, the prioritization of barriers for modification, the choice of knowledge translation interventions to address barriers, the evaluation of knowledge translation, and the facilitation of knowledge management or sharing.	Tugwell et al., 2006
Canadian Institutes of Health Research knowledge translation model	The model reflects a belief that knowledge translation should be an iterative, multidimensional process that is integral to all parts of the research cycle: the interactions that take place between knowledge producers and users, the activities associated with the conduct of the research, the ability to contextualize research findings against the background of other knowledge and sociocultural norms, the act of catering reports and publishing in plain language, the ability to inform action and decision making, and the ability to influence subsequent rounds of research.	Canadian Institutes of Health Research, 2004; Armstrong et al., 2006; Tugwell et al., 2006; Schryer-Roy, 2005; Kiefer et al., 2005

knowledge and the message being associated with research products and processes. Some also refer to a messenger, a linking agent, and a support system in place to help facilitate interaction.

- *There are knowledge translation barriers and facilitators.* There are specific factors that either support or work against knowledge translation processes in different contexts. It is often implied that knowledge translation is challenging and that distinct planning and management of strategies are essential for success.

It is generally felt that a satisfactory, overarching model for knowledge translation has not emerged (World Health Organization, 2006). There is debate around whether an overarching theory or framework would be possible, or even preferable, to develop (Estabrooks, Thompson, Lovely, & Hofmeyer, 2006). This debate hinges on the facts that knowledge translation is actually a wide variety of activities, previous theory comes from a variety of disciplines, and knowledge translation can differ depending on the objectives and context of the work.

How Knowledge Translation Differs From Other Knowledge-to-Action Processes. A recent study looking at 33 applied research funding

agencies in nine countries found that 29 terms were being used to describe the idea of moving knowledge into action (Graham et al., 2006). Jacobson et al. (2003) present the principles of knowledge translation as consisting of dissemination, utilization, evidence into practice, and knowledge transfer. Choi (2005) explains that knowledge translation goes beyond dissemination and diffusion. It has also been described as a component of a communication system along with knowledge production, management, dissemination, and utilization (Beal & Meehan, 1978; Beal, 1980).

Although myriad views exist around how the various knowledge-to-action processes relate to one another, and how each of them may be defined and delineated from the others, a few things are clear. First, knowledge translation is most often about movement of scientific knowledge, particularly that from health research and research syntheses, into health outcomes and health system gains. This aspect is similar to that of knowledge transfer but is not similar to other knowledge change processes such as implementation, which often refer to policies and programs that are not focused in the health field. Second, knowledge translation, more than any of the other processes, focuses on interaction between the various knowledge translation actors or stakeholders and on the involvement, or engagement, of the target audience in the process. Through engagement of the target audience, informed adaptation of the message can occur and knowledge may be more effectively understood and applied in various contexts. Although knowledge translation shares significant theoretical ground with diffusion and knowledge utilization, especially with regard to how knowledge uptake may occur, it is unique in its emphasis on user engagement. And third, knowledge translation is an iterative, multidirectional process and can occur at multiple stages in the knowledge cycle. This may be true for knowledge exchange, but it is not usually true for knowledge transfer or dissemination, for example.

Implications for Evaluation: What Is KT Success?

A list of potential evaluation indicators informed by knowledge translation was compiled from the documents reviewed for this chapter and classified according to two broad principles of knowledge translation success: interaction and knowledge use or application:

- Interactions between varied stakeholders in the production and use of knowledge, including the engagement of the target audience. Indicators might include evidence of:
 - Communication channels, processes, and context between knowledge translation actors
 - Working relationships among stakeholders
 - An ongoing forum for sharing among stakeholders
 - Opportunities for collaboration
 - Shared vocabulary among stakeholders

- Knowledge being relevant to and understood by the target audience
- A linking or brokerage role being taken among stakeholders
- Members of the target audience being engaged as coresearchers
- The use or application of knowledge, passive or active—for example:
 - Research products being used to inform policy or agenda setting
 - Knowledge being used to inform decision making, in relation to individuals or in relation to policy and practice within systems, institutions, and states
 - Changes in behavior, awareness, communication, or interaction patterns evident among varied stakeholders
 - Knowledge being used to help create and support interventions

Also important to note when thinking about evaluation and knowledge translation are:

- The context of the process: What is the issue being translated? What stage of knowledge translation is currently the focus? Who are the key actors? What are characteristics of the setting?
- The definitions of how the knowledge translation process is framed by the actors themselves
- The decision-making processes that exist
- The critical events that take place

An evaluator is looking for both positive and negative outcomes.

Translation theory originates in the fields of applied linguistics and communication. The term *knowledge translation* has been widely adopted in health disciplines. The inherent logic model is a circular or iterative loop between varied knowledge translation actors, informed by the stakeholders and by knowledge use outcomes, occurring at various stages. Successful knowledge translation depends on the engagement of knowledge users and the use or application of knowledge to inform decisions and have a positive influence on health outcomes. In this regard, knowledge translation differs from related terms because of its specific focus on end user engagement and the essential component of knowledge use or application. An evaluation informed by knowledge translation would look at indicators of interaction, engagement, and application or use.

For evaluators, a knowledge translation lens could provide a way of looking at change that would differ not only from the insights gained if no knowledge-to-action lens was used at all, but from the insights gained from the lenses of other modes of knowledge to action: knowledge transfer, utilization, dissemination, or implementation. A knowledge translation lens helps evaluators answer questions about the experience of the various actors as they interact. It also helps evaluators answer questions about how knowledge may have informed the project or intervention and how knowledge flows into, within, and out of these activities over time.

Case Study Application: Evaluating the Gatehouse Project With a Knowledge Translation Lens

The Gatehouse Project was a successful multilevel, school-based intervention aimed at promoting the emotional well-being of young people by increasing students' connectedness to school (Patton et al., 2000, 2006; Patton, Bond, Butler, & Glover, 2003).

The intervention included a curriculum component focused on increasing students' skills and knowledge for dealing with everyday life challenges and a whole-school component that sought to make changes to the schools' social and learning environment to enhance security, communication, and positive regard through valued participation. A member of the research team facilitated the project implementation process. Key elements were the establishment of a school-based health action team, the use of local data to review the school environment and drive change, targeted professional development, and opportunities for reflective practice (Glover & Butler, 2004; Patton et al., 2003; Patton et al., 2006). This process resulted in schools' identifying and implementing activities and strategies appropriate to their local context; thus, what was done varied from school to school.

Two of the key knowledge translation (KT) success indicators are the engagement of the target audience and the use or application of knowledge. What would be of specific interest to evaluators using a KT lens to examine the Gatehouse Project would be how target audiences (such as students, school staff, other community members) were involved in intervention development. Did active involvement in the intervention and research create a form of social inclusion in and of itself? Did study participants buy in because they felt valued and in control? This could be investigated qualitatively and also quantitatively by examining the health survey scores of those most involved and least involved in the project, using some predesigned metric. Also, did the intervention tap into and legitimate any special kind of knowledge and transform it into a usable resource across the project? The Gatehouse schools undertook a comprehensive needs assessment, including students' perceptions of the school environment, policies, and practices. An evaluator might ask: How did the needs of one school compare to the next, and how did this influence the way the intervention was developed at each site? What processes integrated any previous knowledge of the content area into the new intervention's design and delivery? The answers to these questions might illuminate why projects have the effects they have. But more particularly, they might help to explain any unintended, unexpected outcomes.

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COLLEEN M. DAVISON is a Canadian Institutes for Health Research, Global Health Research Initiative postdoctoral fellow at the Institute of Population Health, University of Ottawa.