

Knowledge Mobilization in the Health Professions

Adopting a Systems Approach to Knowledge Mobilization



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INNOVATION AND SCHOLARSHIP
IN MEDICAL EDUCATION

Land Acknowledgement

I acknowledge the Indigenous Peoples who have stewarded the lands of Manitoba. I respect the Treaties that were made on these lands, and I am grateful for the opportunity to live and work here.

I further acknowledge the harms of the past and present, and I am committed to working in partnership with Indigenous Peoples to reconcile our relationships.

I recognize that this acknowledgement only holds meaning when I take action to address the disproportionate injustices that affect Indigenous Peoples and communities. With my work, I am committed to removing barriers and including Indigenous knowledges in medical education and health care.

Knowledge Mobilization in the Health Professions

Developed and presented by:

Cheryl Moser

Educational Specialist, ISME

No conflict of interest to declare



Knowledge Mobilization in the Health Professions

1. Name, role, program
2. What is your experience with knowledge mobilization?
3. What are you hoping to get out of today's workshop?



Knowledge Mobilization in the Health Professions: A Faculty Development Series

1

SESSION

Adopting A
Systems Approach
to Knowledge
Mobilization

2

SESSION

Creating a
Knowledge
Mobilization Plan

3

SESSION

Evaluating a
Knowledge
Mobilization Plan

Knowledge Mobilization in the Health Professions: A Faculty Development Series

1

SESSION

Adopting A
Systems Approach
to Knowledge
Mobilization

Learning objectives

- Discuss the aims, mechanisms, and measures of knowledge mobilization
- Describe a systems approach to knowledge mobilization

Today's workshop format was designed to contextualize what is meant by knowledge mobilization, and why a systems approach to knowledge mobilization is needed.

Overview

- Review of key concepts
- Definitions
- Origins, aims, mechanisms, measures
- Systems approach
- Recap, Q&A, ISME tools



Key Concepts

The Riddle

If a tree falls in the forest, and nobody is there to hear it, does it make a sound?

Napier, 2011

Large Tree Crashing On Forest Floor. By Dan Jespersen. Adobe Stock. License no. 284017582.



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What is knowledge?

All responses to your question will be shown here

Each response can be up to 200 characters long

Turn on voting to let participants vote for their favorites



Menti

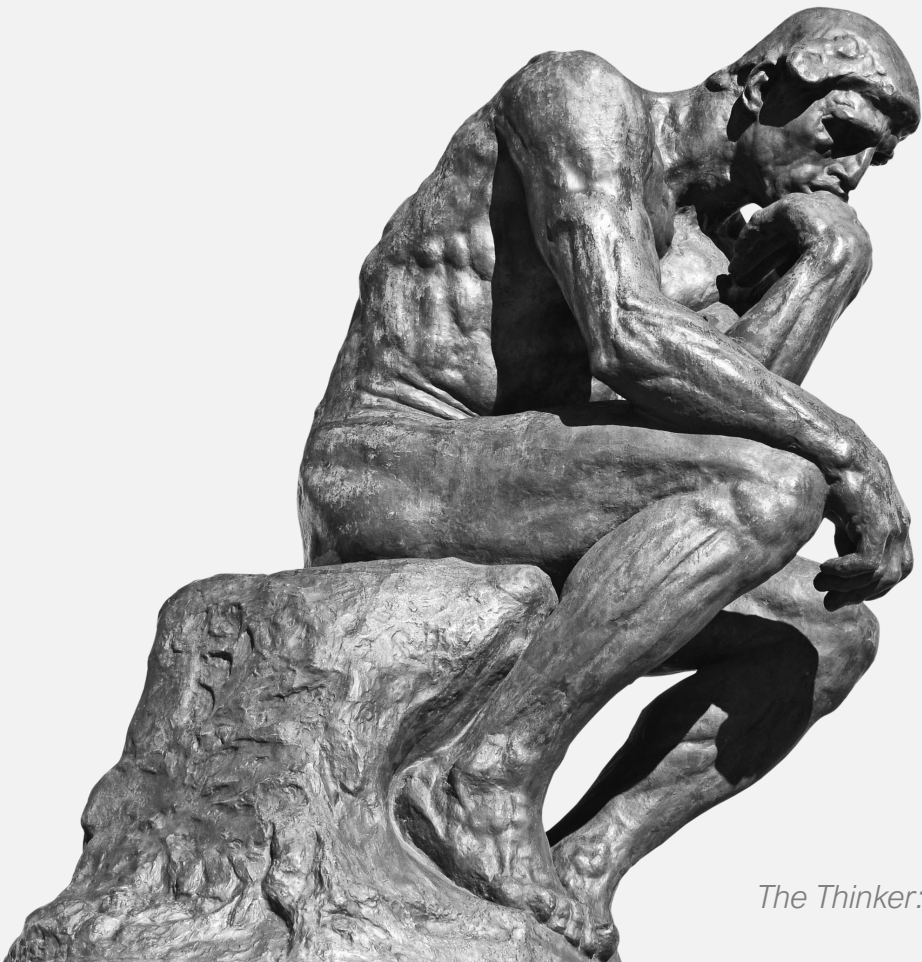
Knowledge Mobilization



Choose a slide to present



What is knowledge?



- Knowing is a human process
- Knowledge is the result
- Two colonial perspectives: rationalism and empiricism
- Agree that knowledge is a justified true belief
- Disagree about how we come to discover the truth or justify a belief

Zagzebski, 2017
Bolisani & Bratianu, 2018

Another perspective

Indigenous Knowledges

- Indigenous Knowledges are information and understandings that are unique to Indigenous Peoples, and founded on the ancestral relationship Indigenous Peoples have with their surroundings
- Indigenous Knowledges arise from Indigenous ways of knowing, which are the diverse, complex Indigenous approaches to learning and teaching that are shared from generation to generation within each Indigenous community

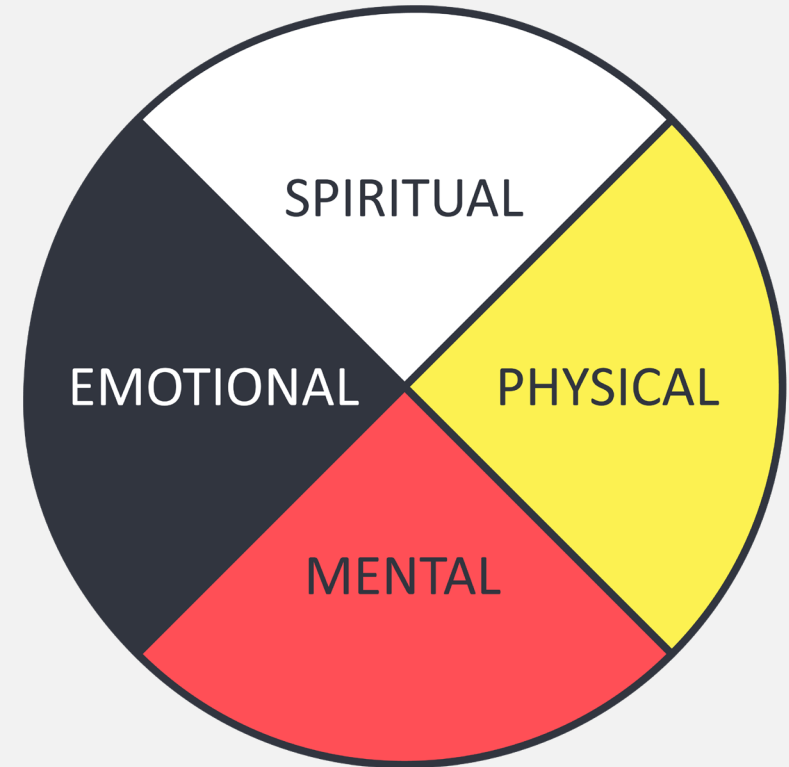
Lane et al., 1984

Mashford-Pringle & Shawanda, 2023

Another perspective

Indigenous ways of knowing

- Intergenerational information
- Historic experiences
- Practical application of skills
- Trust for inherited wisdom
- Practical experimentation
- A qualitative oral record
- Metaphor
- Storytelling



Medicine Wheel Teaching. A Canadian Indigenous conceptual tool looking at the whole and its parts. The interconnectedness of all that surrounds us and includes spiritual physical mental emotional aspects. By Irene. Adobe Stock. License no. 914519497.

Lane et al., 1984

Mashford-Pringle & Shawanda, 2023

Government of British Columbia, 2023

Whose knowledge matters?

What are some other forms of knowledge that you can think of?

What other forms of knowledge do you value in your role?



Collins et al., 2002

How is knowledge experienced in the health professions?

Hurst & Mickan, 2017

SYSTEMATIC REVIEW

Open Access



Describing knowledge encounters in healthcare: a mixed studies systematic review and development of a classification

Dominic Hurst^{1,*} and Sharon Mickan^{2,3,4}

Abstract

Background: Implementation science seeks to promote the uptake of research and other evidence-based findings into practice, but for healthcare professionals, this is complex as practice draws on, in addition to scientific principles, rules of thumb and a store of practical wisdom acquired from a range of informational and experiential sources. The aims of this review were to identify sources of information and professional experiences encountered by healthcare workers and from this to build a classification system, for use in future observational studies, that describes influences on how healthcare professionals acquire and use information in their clinical practice.

Methods: This was a mixed studies systematic review of observational studies. DATA SOURCES: OVID MEDLINE and Embase and Google Scholar were searched using terms around information, knowledge or evidence and sharing, searching and utilisation combined with terms relating to healthcare groups. ELIGIBILITY: Studies were eligible if one of the intentions was to identify information or experiential encounters by healthcare workers. DATA EXTRACTION: Data was extracted by one author after piloting with another. STUDY APPRAISAL: Studies were assessed using the Mixed Methods Appraisal Tool (MMAT). PRIMARY OUTCOME: The primary outcome extracted was the information source or professional experience encounter. ANALYSIS: Similar encounters were grouped together as single constructs. Our synthesis involved a mixed approach using the top-down logic of the Bliss Bibliographic Classification System (BC2) to generate classification categories and a bottom-up approach to develop descriptive codes (or "facets") for each category, from the data. The generic terms of BC2 were customised by an iterative process of thematic content analysis. Facets were developed by using available theory and keeping in mind the pragmatic end use of the classification.

Results: Eighty studies were included from which 178 discrete knowledge encounters were extracted. Six classification categories were developed: what information or experience was encountered; how was the information or experience encountered; what was the mode of encounter; from whom did the information originate or with whom was the experience; how many participants were there; and where did the encounter take place. For each of these categories, relevant descriptive facets were identified.

Conclusions: We have sought to identify and classify all knowledge encounters, and we have developed a faceted description of key categories which will support richer descriptions and interrogations of knowledge encounters in healthcare research.

Keywords: Knowledge encounters, Information sources, Healthcare workers, Faceted classification, Mixed studies, Systematic review, Evidence-based practice

* Correspondence: r.d.hurst@qmul.ac.uk

¹Barts and The London School of Medicine and Dentistry, Queen Mary University of London, London, UK

²Nuffield Department of Primary Care Health Sciences, University of Oxford, Oxford, UK

Full list of author information is available at the end of the article



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Breakout Discussion

- When are you most influenced by new knowledge?
- Who influences what you know and do?
- Which knowledge encounters matter the most to you?

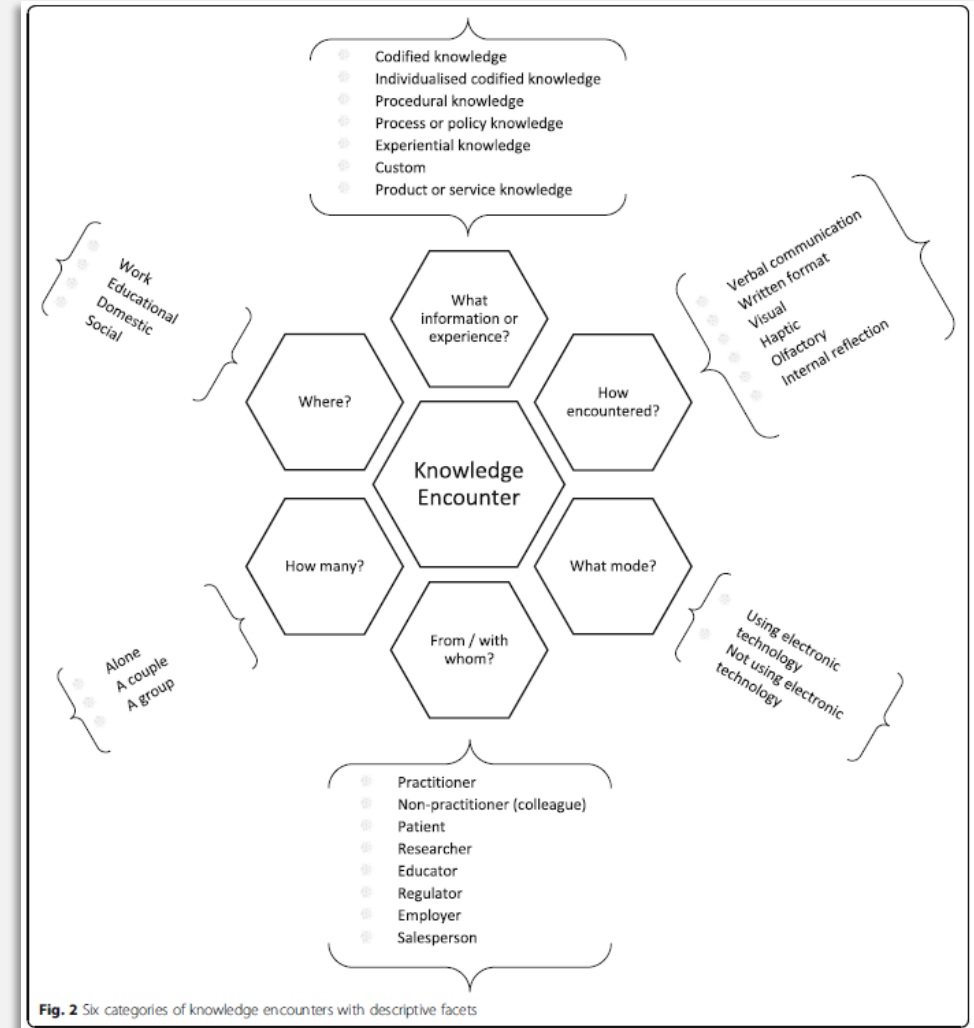


Fig. 2 Six categories of knowledge encounters with descriptive facets

Why think about knowledge mobilization?

- Personal motivation
- Employer incentive
- Social obligation
- Funding requirement
- Truth and Reconciliation



Definitions



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What is knowledge mobilization?

All responses to your question will be shown here

Each response can be up to 200 characters long

Turn on voting to let participants vote for their favorites



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Knowledge Mobilization



Choose a slide to present

What is knowledge?

Responses

- Knowing
- Understanding of phenomena
- Knowing how you got something
- Knowing what you got something
- Knowing how to do something
- Knowing how to do something

What is knowledge mobilization?

Responses

- Putting knowledge to use
- Bringing various pieces of knowledge from various sources into a new synthesis
- Understanding information for relationships
- Knowing how to do something
- Knowing how to do something
- Knowing how to do something

Defining knowledge mobilization

Knowledge mobilization is an umbrella term encompassing a wide range of activities relating to the production and use of research results, including knowledge synthesis, dissemination, transfer, exchange, co-creation, and co-production by researchers and knowledge users.

Canadian Institutes of Health Research (CIHR)

Defining knowledge mobilization

The reciprocal and complementary flow and uptake of research knowledge between researchers, knowledge brokers and knowledge users—both within and beyond academia—in such a way that may benefit users and create positive impacts within Canada or internationally.

**Social Sciences and Humanities Research
Council (SSHRC)**

SSHRC  CRSH

Social Sciences and Humanities Research Council of Canada
Conseil de recherches en sciences humaines du Canada

Defining knowledge mobilization

Knowledge mobilization is a term that is often used to talk about impact. It describes all the things that we do to get knowledge into the hands of the right people to create solutions to society's most pressing problems. It helps us take the best of what we know and make it useful to the people in our communities who will put it to use.

Research Impact Canada (RIC)

RESEARCH
IMPACT
CANADA | TURNING
RESEARCH
INTO ACTION

Defining knowledge mobilization

Indigenous ways of knowing underpin Indigenous healing practices and must be respected and considered alongside western medicine and research. Indigenous knowledge mobilization is distinct and needed; however, the question remains of how Indigenous knowledge has been most effectively mobilized in colonized spaces.

Hutchinson et al., 2023



Discussion

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Hutchinson et al., 2023





Origins

Origins

- Originated in the 1800s with malaria, quinine, and mauveine
- Knowledge should benefit people and industry
 - Evidence-informed decisions
 - Resource distribution
 - Service access and delivery
- Advanced in the 1900s with new legislation, research protocol



Research Impact Canada (RIC), 2020

Health advocacy in Canada



DIABETES
CANADA

Research Breakthroughs

Life-saving advances made possible by you.



1964

Dr. William Mustard develops surgical procedure to correct "blue baby syndrome," a previously lethal heart defect.



1968

One of the first heart transplant surgeries in Canada is performed.

1976

Prostaglandin E2 gives surgeons much needed time to repair defects in the hearts of newborns.

1980

Dr. Adolfo de Bold discovers atrial natriuretic factor (ANF), the hormone that controls high blood pressure, sparking a revolution in blood pressure research.

1987

A new surgical technique helps treat irregular heartbeats.



1990

First genetic link to premature heart disease is discovered.



1999

Clot-busting drug tPA used to treat ischemic stroke – one of the biggest life-saving breakthroughs.

2000

ACE inhibitors are found to significantly reduce the risk of heart attacks and strokes.

2004

INTERHEART study, led by Dr. Salim Yusuf, discovers the existence of nine modifiable risk factors that account for over 90% of heart attacks worldwide.

2006

Researchers identify important gender differences in the development of high blood pressure.



2014

Researchers discover the cause of increased calcium in the heart, which can lead to an irregular heartbeat and sudden death.

2016

Dr. Louise Pilote identifies gender – distinct from biological sex – as a unique risk factor for the recurrence of major cardiac events.

2018

Pioneering analysis quantifies the economic toll of stroke and heart disease on families, through reduced earnings and more.



1954

Dr. Wilfred Bigelow performs first successful open heart surgery in Canada, using a technique developed through a Heart & Stroke research grant.



1965

Diagnosing heart disease becomes easier thanks to ECG telemetry, which allows doctors to monitor patients' hearts remotely while they go about their daily activities.



1976

Dr. Henry Barnett conducts first clinical trial using Aspirin to prevent strokes.

1983

Dr. Robert Côté perfects a clinical tool that measures neurological deficits following an acute stroke. This Canadian Neurological Scale is now used all over the world.



1987

Researchers pioneer the use of the clot-busting drug tPA for heart attacks.

1997

Human genome mapping reveals more than 84,000 DNA sequences related to heart disease and stroke.



2000

Dr. Lori West discovers that, unlike adults, newborns are able to accept hearts from incompatible donors.

2003

Canadian Stroke Strategy, a joint initiative with the Canadian Stroke Network, revolutionizes stroke management with a new integrated approach to prevention, treatment and rehabilitation.

2005

The gene responsible for heart arrhythmias is found.



2009

World's first in-utero surgery to correct congenital heart defects is performed in Canada.

2015

ESCAPE trial shows that treating major strokes by removing blood clots through blood vessels cuts deaths by 50% and reduces disability in survivors.



2016

The stroke strategy established in 2003 pays off as research proves integrated systems of stroke care reduce stroke deaths by 20%.



2019

Discovery of a molecule linked to 1 in 5 cases of heart failure creates potential for preventing this debilitating condition.

Research Milestones

A timeline of Diabetes Canada funded research progress.



1953

Canadian Diabetes Association (now, Diabetes Canada) is founded

1968

"Family Tree" research program shows an inherited risk factor for diabetes

1975

Established an annually-funded diabetes research program

1982

Uncovered the role of glucagon on insulin & blood sugar

1988

New glucose clamp technology shows short-term changes to blood cholesterol & triglycerides in response to insulin

1998

Identified the role of gut proteins in insulin regulation

2001

Discovered how gut hormones help control insulin release

2010

Higher diabetes mortality with lower SES

2014

Stem-cell alternative for islet transplants

2018

Identified new therapeutic targets for diabetic kidney disease

2021

Closed-loop artificial pancreas becomes available

50th Anniversary of insulin; Diabetes Canada makes its first investment in diabetes research, at ~\$65K

1971

Discovered a genetic risk factor for T1D

1984

Created the glycemic index

1981

Both calcium and vitamin D are essential for insulin to function

1993

Insulin response to exercise in T2D

2005

First successful liver islet cell transplant

2000

Novel approach stops transplanted islet cells from being rejected

2017

New diabetes pump technology for T1D

2011

Mechanism of action for metformin

2023

Health research in Canada

- 1990s, knowledge mobilization concepts emerge in Canadian health and social sciences research
- Knowledge must be used to establish meaningful connections between research and society



Canadian Tri-Council Model for Research Funding



2000 | CIHR Act describes knowledge translation as a legislated mandate; new framework in development



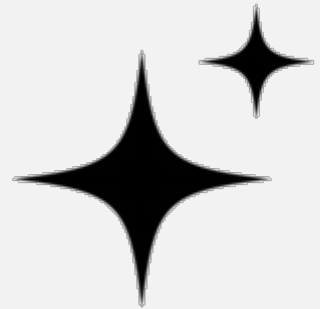
2009 | SSHRC includes knowledge mobilization as a mandatory element in their programming



2030 | NSERC aims to harmonize its knowledge mobilization approach with CIHR and SSHRC to increase the reach and impact of its research in society

Discussion

- How might a shift to AI technology change how we mobilize knowledge?
- How might a shift to AI technology impact on which knowledge gets mobilized?





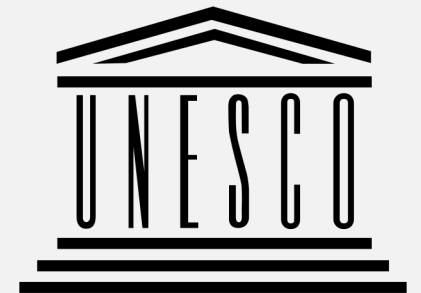
Key Players

Who does knowledge mobilization?

- Three major types of agency
 - Large research producers
 - Intermediary agencies
 - Major funders

Who does knowledge mobilization?

- Canada has adopted an advocacy framework for open education resource (OER) development
- OERs are learning materials in any format that reside in the public domain (creative commons licensing) and can be freely accessed and used
- OERs as knowledge mobilization
 - Produce and implement knowledge with labor-saving potential
 - Support innovation
 - Facilitate barrier-free access to knowledge
 - Foster creative collaborations in all disciplines
- Anyone can produce and share an OER



Hewitt et al., 2021

Who does knowledge mobilization?

Ng et al., 2017

Re-positioning faculty development as knowledge mobilization for health professions education

Stella L. Ng^{1,2,3,4,5} · Lindsay R. Baker^{1,3} · Karen Leslie^{1,3}

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© The Author(s) 2017. This article is an open access publication.

Abstract Faculty development as knowledge mobilization offers a particularly fruitful and novel avenue for exploring the research-practice interface in health professions education. We use this ‘eye opener’ to build off this assertion to envision faculty development as an enterprise that provides a formal, recognized space for the sharing of research and practical knowledge among health professions educators. Faculty development’s knowledge mobilizing strategies and outcomes, which draw upon varied sources of knowledge, make it a potentially effective knowledge mobilization vehicle.

First, we explain our choice of the term knowledge mobilization over translation, in an attempt to resist the false dichotomy of ‘knowledge user’ and ‘knowledge creator’. Second, we leverage the documented strengths of faculty development against the documented critiques of knowledge mobilization in the hopes of avoiding some of the pitfalls that have befallen previous attempts at closing knowing-doing gaps.

Through faculty development, faculty are indeed educated, in the traditional sense, to acquire new knowledge

Commentary by: J. van Tarwijk, DOI: 10.1007/s40037-017-0362-0

✉ Stella L. Ng
stella.ng@utoronto.ca

¹ Centre for Faculty Development, University of Toronto at St. Michael’s Hospital, Toronto, Canada

² The Wilson Centre, University of Toronto at University Health Network, Toronto, Canada

³ Faculty of Medicine, University of Toronto, Toronto, Canada

⁴ Li Ki Shing Knowledge Institute, Toronto, Ontario, Canada

⁵ Centre for Ambulatory Care Education, University of Toronto at Women’s College Hospital, Toronto, Canada

and skill, but they are also socialized to go on to form the systems and structures of their workplaces, as leaders and workers. Therefore, faculty development can not only mobilize knowledge, but also create knowledge mobilizers. Achieving this vision of faculty development as knowledge mobilization requires an acceptance of multiple sources of knowledge, including practice-based knowledge, and of multiple purposes for education and faculty development, including professional socialization.

Keywords Faculty development · Knowledge mobilization · Health professions education

Many scholars in health professions education (HPE) have debated the relationship between education research and education practice, typically aiming to improve how education science is used in education practice [1–4]. As a field, we are not alone; countless others have examined the research-practice interface. In any arena – e.g. clinical, educational, policy – the research-practice relationship represents an important opportunity, and a continued challenge. Knowledge translation, implementation science, and knowledge mobilization are just three examples of movements aimed at closing the apparent gaps between research and practice. Knowledge translation and mobilization are generally defined as dynamic and iterative processes of synthesizing and disseminating research knowledge into practice, while implementation science refers to the study of these processes [5, 6]. Yet all of these movements continue to face questions, such as: Where does practice-based knowledge fit in, which forms of knowledge do we hope to exchange or mobilize, and who creates and uses these various forms of knowledge and to what ends? [7].

We argue that positioning faculty development as knowledge mobilization offers a particularly fruitful and novel av-

Breakout Discussion

- To what extent do you see yourself as a knowledge mobilizer?
- What role do you see faculty having in knowledge mobilization?
- How would you describe the relationship between knowledge mobilization and faculty development in health professions education?



**Aims,
Mechanisms,
and Measures**

Aims

Within academia

- Informs, advances, and improves aspects of research, such as
 - Research agendas
 - Approaches to research
 - Research methods
 - Theoretical models and frameworks
- Health professions education, faculty development

Beyond academia

- Informs people in government, business, professional communities, and society to engage in
 - Public debate
 - Policy development
 - Services design and delivery
 - Decision-making
 - Resource allocation
 - Professional practice guidelines

Mechanisms

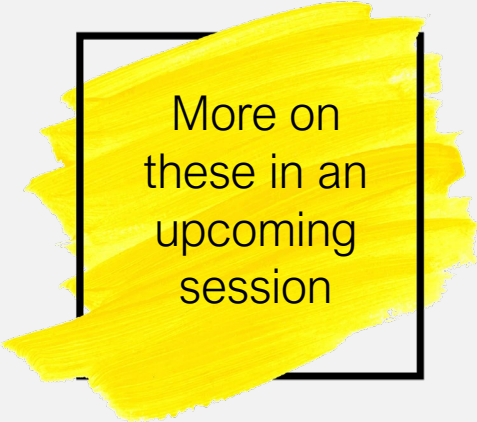
RELATIONSHIPS



Strategies

How do we do it?

- Public relations
- Media relations
- Government relations
- Advocacy
- Social influence
- Collaborative partnerships
- Research coproduction
- Patient engagement
- Organizational change management
- Communities of practice (networks)
- Health professions education
- Faculty development
- Technical innovation, now including AI

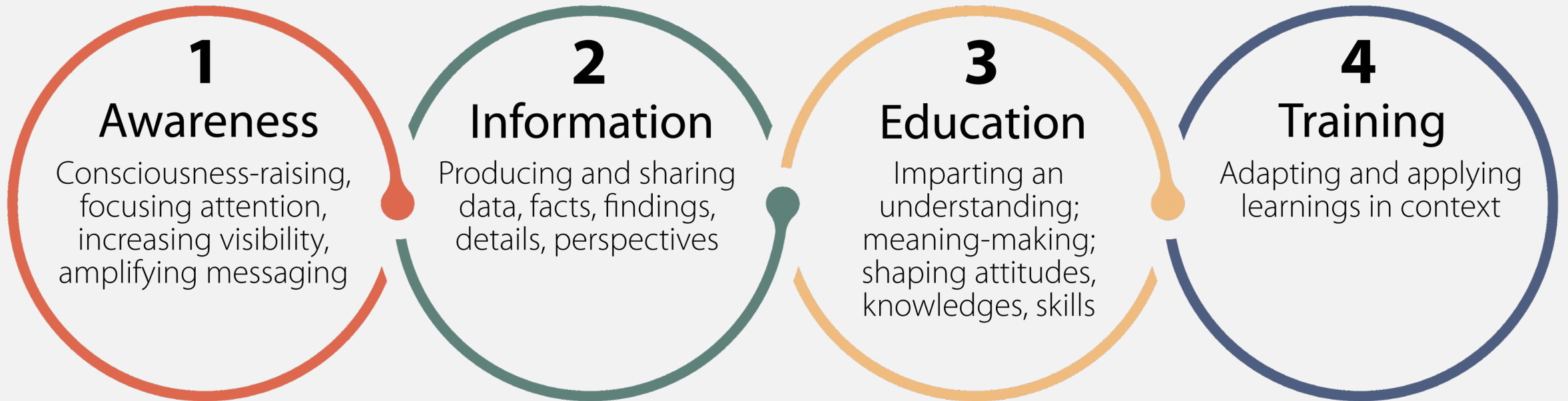


More on these in an upcoming session

Communications

What do we do?

More on these in an upcoming session



Example

- Optimal rate for hand hygiene compliance among healthcare workers in hospitals
- Target compliance rate: 60-70%
- Higher compliance rates not associated with less infections

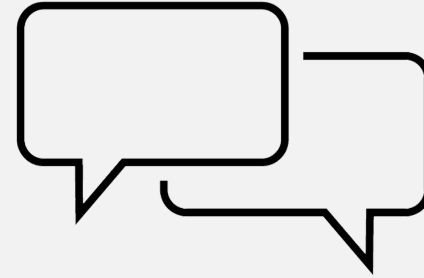


Mouajou et al., 2022

Example



Healthcare workers in public hospital settings



Organizational change management

1

Awareness

Healthcare workers' hands are a primary source of hospital-acquired infections

2

Information

Target compliance rate for hand hygiene among healthcare workers is 60-70%

3

Education

Hand hygiene benefits, options, guidelines

4

Training

Hand hygiene frequency, protocol, local options, continual reminders

Measures

How do we know if what we're doing is working?



More on these in an upcoming session

Measures

How do we know if what we're doing is working?



Reach

Total number of unique, individual knowledge encounters



Impressions

Total number of knowledge encounters, including repeat encounters



Impact

Magnitude and nature of change attributable to the knowledge encounters

Measures

- Short- and long-term public health outcomes
- Changes to health professions education, curriculum, faculty development
- Changes to public policy
- New attitudes, approaches, or ways of doing things
- New knowledges, innovations, products, programs, services
- New skills, technologies, and practices
- New strategic partnerships, ways of engaging
- Improved healthcare system design, access, and delivery
- Improved healthcare system functioning, coordination across healthcare sites
- Sustained efforts



More on these in an upcoming session

Example

- How might you measure the success of your knowledge mobilization campaign?
- Which factors would you measure?

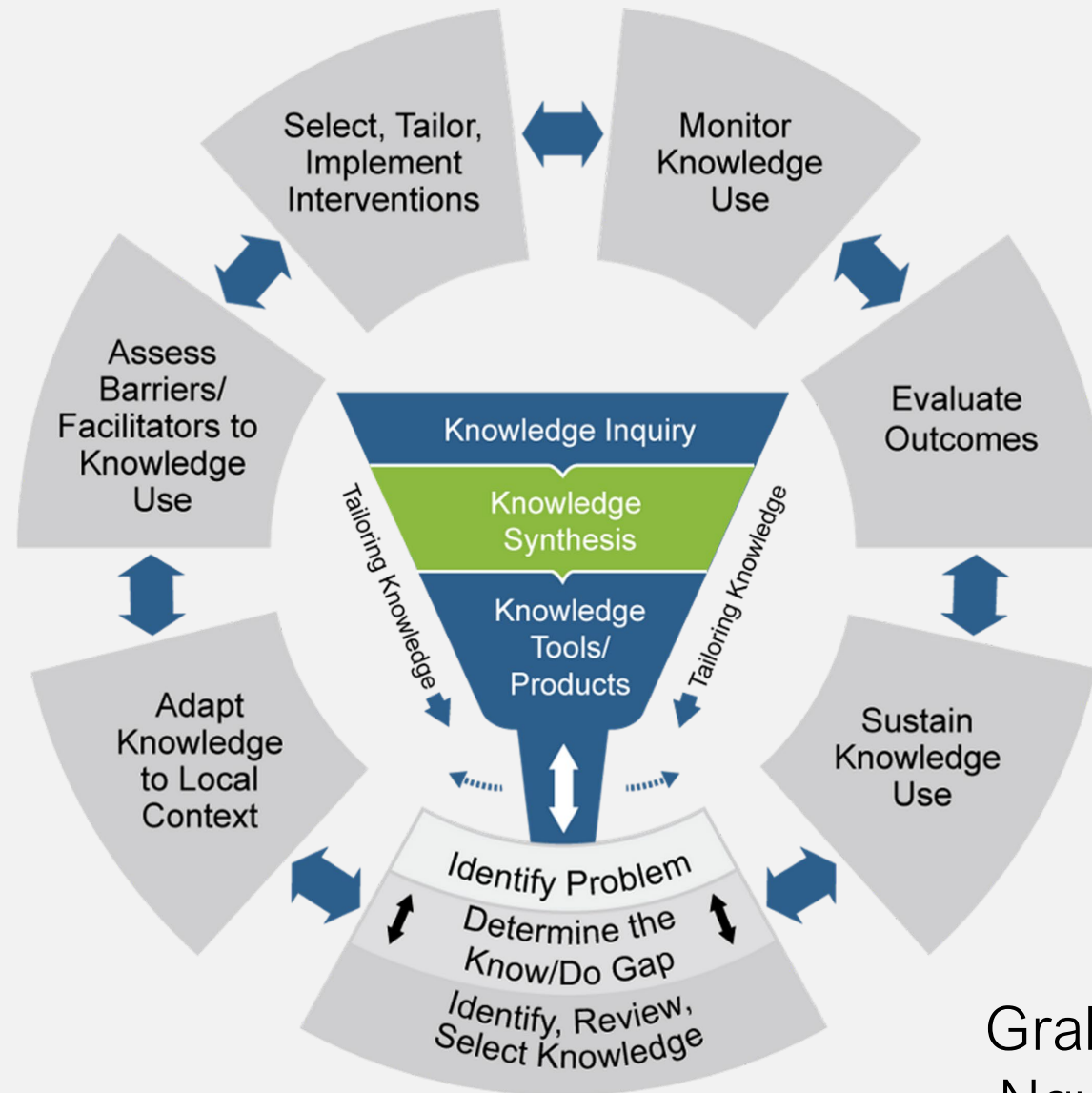


Mouajou et al., 2022



Systems Approach

A Cyclical Approach to Knowledge Translation



Graham et al., 2006
Nguyen et al., 2020
CIHR, 2024

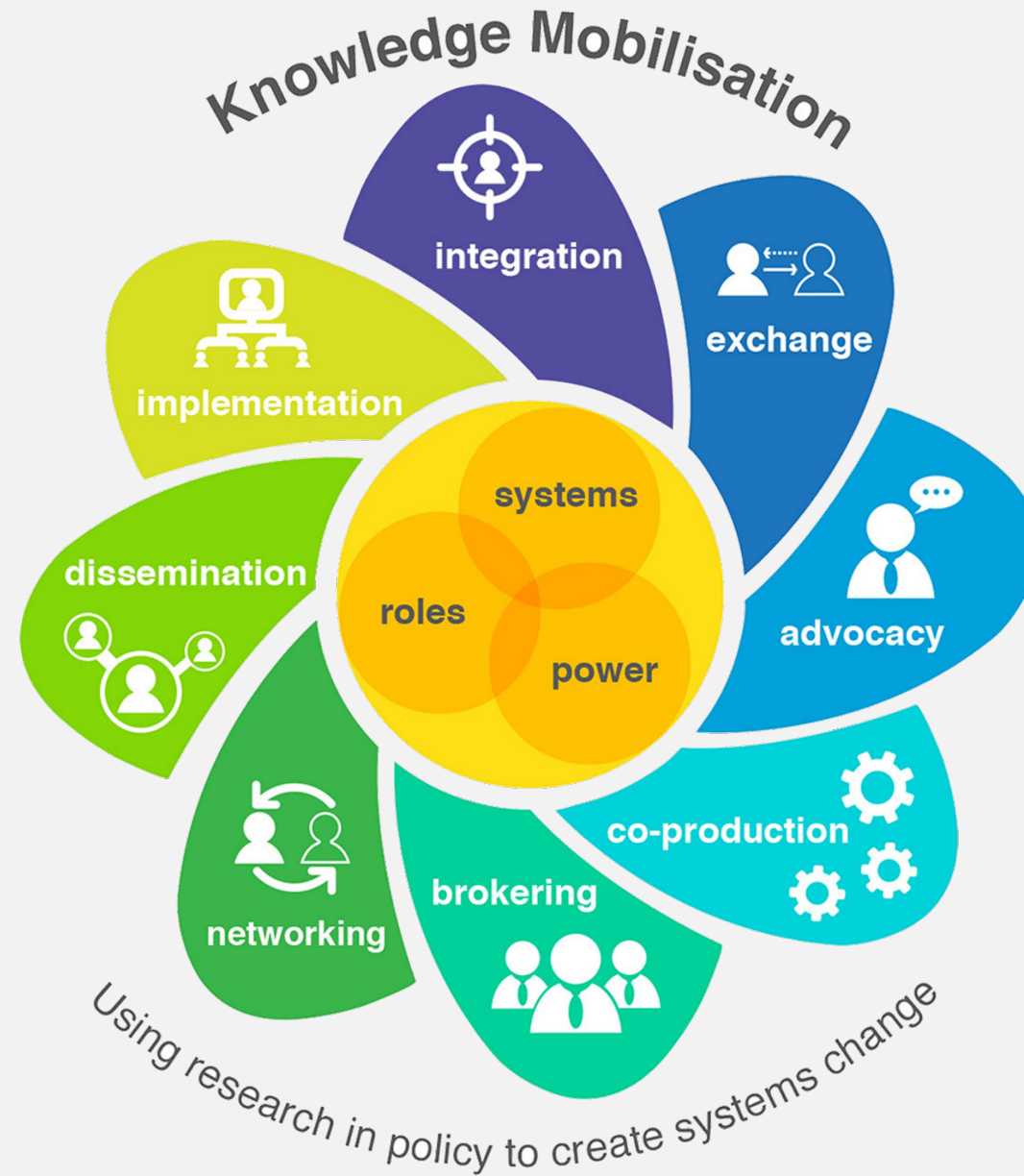
Why adopt a systems approach?

- To increase research impact through social processes
- Knowledge is coproduced and becomes meaningful through socialization

Haynes et al., 2020

Irving et al., 2023

A Systems Approach to Knowledge Mobilization



Integration



- What it is – building knowledge about knowledge and knowing
- What it does – advances the study and practice of knowledge mobilization
- How it works - addresses the complex, real-world contexts in which knowledge is produced, set in motion, and used

Exchange



- What it is – interactions between knowledge users and researchers that result in mutual learning
- What it does – collaborative problem-solving
- How it works – planning, producing, disseminating, and applying new or existing research evidence

CIHR, 2024
Davies et al., 2015

Advocacy



- What it is – advocating for evidence-informed action
- What it does – reduces structural, organizational, and cultural barriers to desired health outcomes
- How it works – creates the right knowledge context where influence is sought

Coproduction



- What it is – a partnership approach to research
- What it does – emphasizes interactive, knowledge-driven problem solving
- How it works – engages knowledge users in knowledge coproduction

Brokering



- What it is – promoting the flow and use of research evidence
- What it does – brokering new local research, or wider bodies of existing research
- How it works – knowledge brokers create interactive spaces where knowledge and expertise can interact

Networking



- What it is – establishing networks and communities of practice (CoPs)
- What it does – overcomes knowledge mobilization challenges using social influence, facilitated interaction
- How it works – shapes and shares expertise to increase the role of research-evidence

Dissemination



- What it is – tailoring the message for the medium and the audience
- What it does – amplifies key messages
- How it works – creatively engages knowledge users in dissemination planning

CIHR, 2024
Davies et al., 2015

Implementation

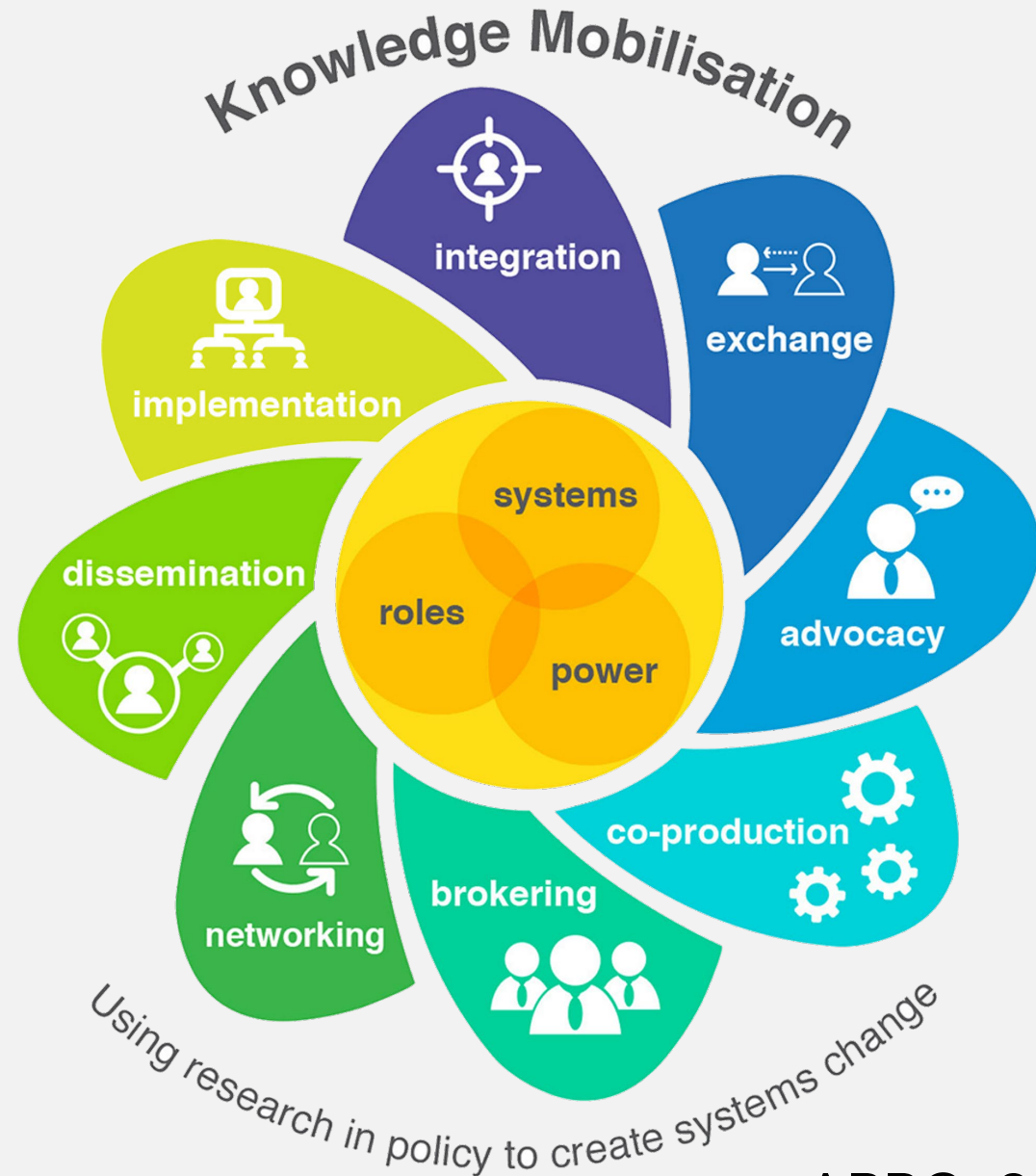


- What it is – research in practice, research into practice
- What it does – provides hands-on support for local implementation, developing networks, and building local knowledge capacities
- How it works – improves practice through the application of research from within and outside of the organization

Davies et al., 2015

Discussion

- Which aspects of this framework do you find:
 - Most useful?
 - Least useful?
- Why?





Recap

- Knowledge mobilization is not science marketing
- Knowledge mobilization is not knowledge translation
- Knowledge mobilization does not use the knowledge-to-action framework
- Knowledge mobilization does not seek a universal truth



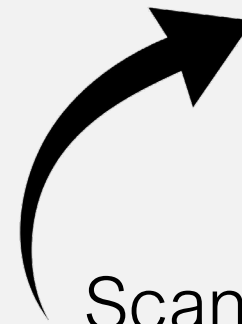
- Knowledge mobilization values many types of knowledge
- Knowledge mobilization is affected by relationships (social capital)
- Knowledge mobilization aims to increase research impact
- Knowledge mobilization uses common communications tools and techniques to accomplish its aims
- Knowledge mobilization aligns research products with those who can influence change



“There is no simple answer to the question of what counts as good evidence. It depends on what we want to know, for what purposes, and in what contexts we envisage that evidence being used.”

Review of learning objectives

- Discuss the aims, mechanisms, and measures of knowledge mobilization
- Describe a systems approach to knowledge mobilization



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Q&A



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