Developing a Tool to Measure Knowledge Exchange Outcomes

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Evaluation and Knowledge Translation in Public Health

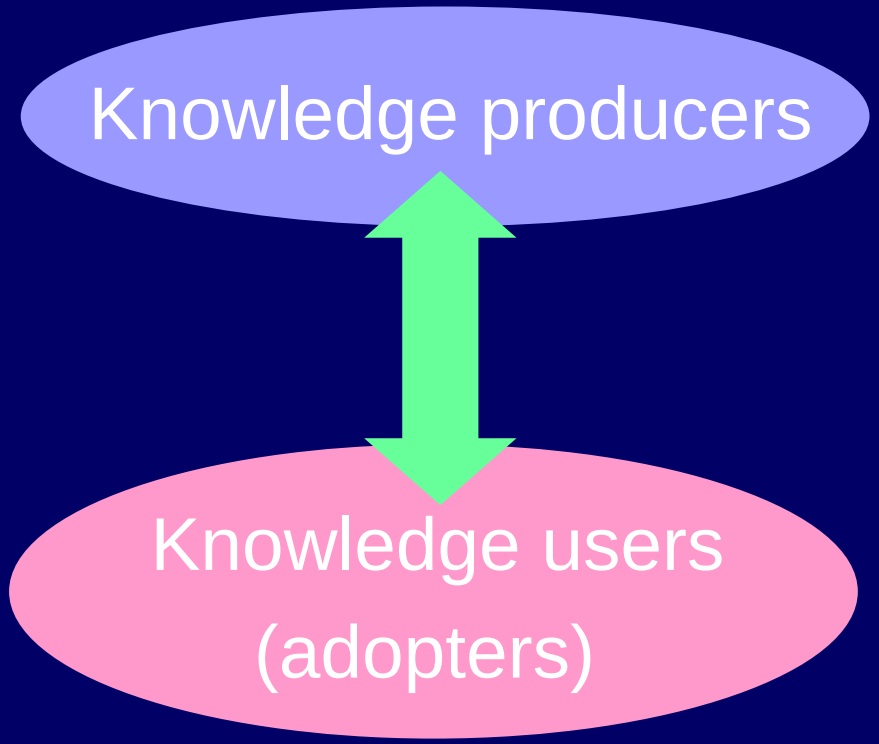
WHY?

- Resource stewardship, effective dissemination and interaction between knowledge producers and knowledge users

HOW?

- Development of a tool to measure knowledge exchange outcomes
  - Knowledge Utilization Uptake Tool (KUUT)

Knowledge Exchange



- Interaction
- Collaborative problem-solving
- Understanding of each other
- Joint learning

Initial Goal

To find quantitative models or scales to be used to measure the reach and uptake of disseminated practices

Systematic Literature Search

- Publications, reports, grey literature
  - Databases (n=8)
  - Web search (Google)
  - Non-indexed electronic journals – titles with *knowledge, evaluation, or measurement* (n=12)
  - Review of reference lists

- Search strings of keywords: *knowledge, exchange, evaluat*, measure*, disseminat*, diffusion, knowledge exchange, knowledge translation, knowledge transfer, model, process, outcome, program, intervention, adoption, reach, uptake*
- English-language
- 1970 to December 2004

Findings???

- 130+ resources retrieved
- Numerous models and strategies for effective dissemination

HOWEVER…

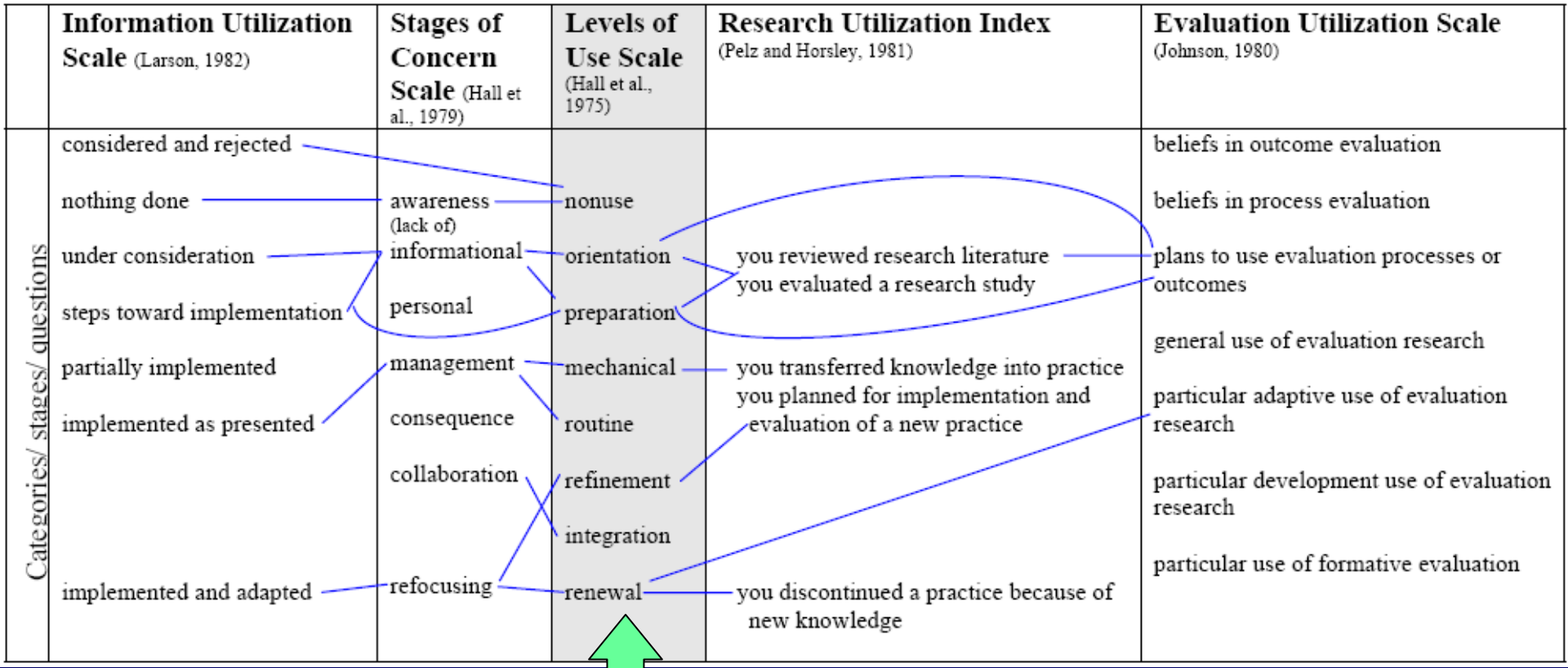
no concrete measurement tools

Process of Developing a Tool

How do we measure the extent of knowledge exchange that has occurred?

1. Annotated bibliography to identify key concepts
2. Compared overlapping concepts from key articles
3. Adapted measures to design specific questions

Overlapping Concepts



Scales and Indices described by Dunn (1983)

Stages of Knowledge Utilization

Stage	Category	Description
1	Reception	Receiving information/information[a] is within reach
2	Cognition	Read, digest, and understand information
3	Discussion	Altering frames of reference to the new information
4	Reference	Information influences action/adoption of information
5	Adoption	Influences outcomes and results/effort to favour information
6	Implementation	Adopted information becomes practice
7	Impact	Tangible benefits of information

Summarized from Knott & Wildavsky (1980)

Knowledge Utilization Uptake Tool (KUUT)

- Awareness
- Reception
- Cognition
- Discussion
- Reference
- Effort
- Adoption
- Implementation
- Impact

KUUT Section 1: Use (Uptake)

- 44-item questionnaire
- Categories: Knott & Wildavsky (1980); Hall et al. (1975)
- Question design: Landry et al. (2001a,b); Estabrooks (1999)

KUUT Section 1 Example

SECTION 1
Awareness (I know the document exists)
1 Are you aware of the document ? YES (go to question 3) NO (go to question 2)
2 Would you like to learn more about this document ? YES (discontinue questions and distribute information) NO (discontinue questions)
Reception (I have a copy of the document OR know how to access the document)
3 Have you received a copy of the document ? YES (go to question 6) NO (go to question 4)

KUUT Section 2: Non-use

Categories: Dobbins et al. (2002)

Characteristics of the:

- Innovation
- Organization
- Environment
- Individual

KUUT Section 2 Example

SECTION 2: Deliberate Non-use	
This section only applies to answers NOT AT ALL or NOT SURE to Question 26.	
x	**Please indicate ALL of the following reasons why you chose not to adopt this new source of information/document/practice/intervention/innovation.**
Innovation Characteristics	
Relative Advantage	
	I have an equivalent program already in place
	The innovation was not perceived to be better than the current program
	The innovation did not show any economic advantage from adopting it
	The innovation was more time consuming and required more effort than the current program

Level of Use (Uptake)

- Interpreting a Level of Use (Hall et al. 1975) or “knowledge exchanged”

- Levels of Use:
  - Non-use
  - Orientation
  - Preparation
  - Mechanical Use
  - Routine
  - Refinement
  - Integration
  - Renewal

Levels of Use of the Innovation:
A Framework for Analyzing
Innovation Adoption

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Change and the tendency to embrace or to resist it seem always to have been a part of the human condition. Change leads to consternation for some, indignation for others, shock for still others, and hope for a few. Because of this inherent potential for trauma, defining concepts and developing measurement procedures for assessing what is actually accomplished by change is difficult and challenging work. All too frequently the affective dimension of change draws a veil that obscures what the innovation users are actually doing. In this paper, we would like to describe a hypothesized dimension of innovation adoption that we have defined and are measuring, which attempts to assess what the individual innovation user actually does in using an innovation [1, 2]. The dimension seems to have power for practitioners, researchers, and theoreticians alike — particularly in education, where innovation adoption is so widespread, and where the public interest in change is so intense.

Based on our experiences in the field as practitioners and adoption agents and on our past research efforts, we have found that "change" or innovation adoption is not accomplished in fact just because a decision maker has announced it. Instead, the various members of a user system, such as teachers and professors, demonstrate a wide variation in the type and degree of their use of an innovation. One of the reasons for this variation is the commonly overlooked **fact that** innovation adoption is a process rather than a decision-point — a process that each innovation user experiences individually. A basic assumption of our present research is that this variation in use by each individual innovation user must be behaviorally described and systematically accounted for if innovations are to be used with maximum effectiveness.

We recognize that other variables need to be considered, such as organizational climate, intervention strategies, and characteristics of decision makers. However, we and others have found that regardless of the character of the outside variables, what actually happens in the individual application of an innovation is open to tremendous variation.

All of the authors participate in the Procedures for Adopting Educational Innovations Project, one of four research projects of The Research and Development Center for Teacher Education, The University of Texas at Austin. Gene E. Hall is project director; Susan F. Loucks, William L. Rutherford, and Beulah W. Newlove are all research associates with the Project. Rutherford is also associate professor of curriculum and instruction.

Levels of Innovation Use

So that we can account for the individual variation in use of an innovation, we have attempted to articulate the *Levels of Use of the Innovation*, a concept described in the *Concerns-Based Adoption Model* [CBAM] [3]. Eight discrete levels of use of an innovation that an individual may demonstrate are proposed. These levels range from lack of knowing that the innovation exists to an active, sophisticated and highly effective use of it and, further, to active searching for a superseding innovation. It is further hypothesized that growth in quality of use of an innovation [movement toward higher levels] by most individuals is developmental. Normally, individuals do not use an innovation for the first or even the second time as effectively and efficiently as they do after four or five cycles of use.

The Levels of Use [LoU] dimension describes the various behaviors of the innovation user through various stages — from spending most efforts in *orienting*, to *managing*, and finally to *integrating* use of the innovation. Before actual use, the individual becomes familiar with and increasingly knowledgeable about the innovation. First use is typically disjointed, with management problems quite common. With continued use management becomes routine, and the user [teacher or professor] is able to direct more effort toward increased effectiveness for the clients [learners] and integrate what s[he is doing with what others are doing. Obviously, these advanced levels of use are not attained merely by use of the innovation through several cycles. Experience is essential but not sufficient to insure that a given individual will develop high-quality use of an innovation.

It should be noted that the LoU dimension is targeted toward describing behaviors of innovation users and does not at all focus on attitudinal, motivational, or other affective aspects of the user. The dimension does not attempt to explain causality. Instead, the LoU dimension is an attempt to define operationally various states of innovation user be-

Scoring "Level of Use" Example

Scale Point Definitions: Levels of Use of the Innovation	Relationship to Questions: Determining Level
NON-USE: State in which the user has little or no knowledge of the innovation, no involvement with the innovation, and is doing nothing toward becoming involved	End here if No to Q 2, 5 or ended at Q 9
Decision Point A – ***Takes action to learn more detailed information about the innovation***	
ORIENTATION: State in which the user has acquired or is acquiring information about the innovation and/or has explored or is exploring its value orientation and its demands upon user and user system	Yes or Maybe to any of Q 5, 6, 7, 8, 10, 11, 12, End here if No to Q 8
Decision Point B – ***Makes a decision to use the innovation by establishing a time to begin***	
PREPARATION: State in which the user is preparing for first use of the innovation	Fully/Partially to Q 26 Yes to Q 27 End here if No to Q 25 and 26
Decision Point C – ***Begins first use of the innovation***	
MECHANICAL USE: State in which the user focuses most effort on the short-term, day-to-day use of the innovation with little time for reflection. Changes in use are made more to meet user needs than client needs. The user is primarily engaged in a stepwise attempt to master the tasks required to use the innovation, often resulting in disjointed and superficial use.	Yes to any of Q 25, 32, 33, 34 End here if No to all of Q 25, 32, 33, 34, 36

The KUUT…

- captures actions by the user and feedback for the producer
- facilitates an opportunity for knowledge exchange to occur between producers and users
- can be adapted for a variety of applications

KUUT in Action

- identifying and selecting public health units demonstrating low, moderate and high levels of knowledge use as a cross case comparison study of knowledge utilization in public health (Bonin, 2007)
- measuring the level of transfer and utilization of the elements presented in a professional training program for managers in Quebec's public administration (Jacob, 2008)
- evaluating the outcomes of an educational intervention

Summary

- Standardized, validated measures of knowledge utilization that can both:
  - determine outcome (i.e. success of processes intended to increase evidence-informed practice)
  - guide improvements in practices

- KUUT is one example