

The Knowledge Uptake and Utilization Tool (KUUT)

Dr. Kelly Skinner, School of Public Health and Health Systems, University of Waterloo

Steve Montague, Performance and Planning Exchange

Overview

- Background on KUU and the KUUT
- The KUUT
- Preliminary validation
- Re-develop and validate the KUUT
- Questions and discussion

Developing a tool to measure “knowledge exchange outcomes”

The Canadian Journal of Program Evaluation Vol. 22 No. 1 Pages 49–73
ISSN 0834-1516 Copyright © 2007 Canadian Evaluation Society

49 ■

DEVELOPING A TOOL TO MEASURE KNOWLEDGE EXCHANGE OUTCOMES

Kelly Skinner
University of Waterloo
Waterloo, Ontario

Abstract: This article describes the process of developing measures to assess knowledge exchange outcomes using the dissemination of a best practices in type 2 diabetes document as a specific example. A best practices model consists of knowledge synthesis, knowledge exchange (dissemination/adoption), and evaluation stages. Best practices are required at each stage. An extensive literature review found no previous knowledge syntheses of concrete tools and models for evaluating dissemination or exchange strategies. This project developed a practical and usable tool to measure the reach and uptake of disseminated innovations. The instrument itself facilitates an opportunity for knowledge exchange to occur between producers and adopters. At this point the tool has a strong theoretical basis. Initial pilot-testing has begun; however, the accumulation of evidence of validity and reliability is only in the planning stages. The instrument described here can be adapted to other areas of population health and evaluation research.

Development of the tool in 2004

- 1) **LIT SEARCH**: a search for published, unpublished, and grey literature related to measuring outcomes of efforts to encourage knowledge use;
- 2) **KEY PAPERS**: selection of key articles and reports from the search, chosen for their applicability to developing a tool to measure knowledge exchange as they exhibited specific scales that could be adapted into a framework;
- 3) **COMPARED SCALES**: measurement scales from these sources were compared for overlapping concepts; and
- 4) **DEVELOPED INTO QUESTIONNAIRE**: key ideas emerged and scale categories were adapted and expanded to develop specific questions (which operationalized the concepts in the scales into items) to assess reach and uptake following knowledge dissemination or transfer/translation of an information or knowledge product.

Knowledge Uptake and Utilization (KUU)

Term	Definition	Key priorities
knowledge uptake and utilization (KUU)	<p>The process of implementing research-generated knowledge into practice and policies</p> <p>(Graham et al., 2006; Estabrooks et al., 2003)</p>	<ul style="list-style-type: none">• Using research findings, often in written form, to use and apply to health policies and programs <p>(Kothari, Birch, & Charles, 2005)</p>

KUU in health research contexts

- KT goals, activities, and rationale increasingly requested by funders
- Yet, it is rare for funders and researchers/authors to publish how the KT efforts were taken up, utilized, and resulted in change

(Scott et al., 2012; Scott et al., 2014)

- Very few evaluate the impact of KT products or initiatives

(LaRocca et al., 2012; Salter & Kothari, 2014; Bhattacharyya et al., 2011; Yamada et al., 2015)

- In literature reviews of KT practices and outcomes, no consistent or validated tools to evaluate the uptake of KT products were identified

(Clark, 2008; CREW, 2012; Gervais et al., 2015)

The Knowledge Uptake and Utilization Tool (KUUT)

- 2 Sections
 - Section 1: Use/Uptake
 - Section 2: Non-use
- Scoring the “Level of Use”

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)

Categories – Stages of Knowledge Utilization

Table 2: Stages/Standards of Knowledge Utilization^a

Stage	Category	Description
	➡ Awareness	awareness of the information ^b
1	Reception	receiving information/ information 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
	➡ Effort	effort to favour information over others
5	Adoption	influences outcomes and results
6	Implementation	adopted information becomes practice
7	Impact	tangible benefits of information

^aStages 1-7 summarized from Knott and Wildavsky (1980) with categories Awareness and Effort added by Skinner (2007).

^bthe term “information” could be substituted by: document, evaluation, initiative, innovation, intervention, knowledge, practice, policy, product, program, project, research, etc.

Terms

The term “*knowledge product*” encompassed various types of *products* and for the purposes of the KUUT and could be substituted within the questions with any of the following:

document, information, evaluation, initiative, innovation, intervention, knowledge, practice, policy, program, project, research, etc., depending on the type of knowledge product that is being disseminated.

Uptake Questionnaire - Awareness

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)

Uptake Questionnaire - Reception

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)

4 Did you retrieve a copy of the document on your own ?

YES (go to question 6)

NO (go to question 5)

5 Do you plan to access the document some time in the future ?

YES

MAYBE

NO (discontinue questions)

DON'T KNOW

6 Even before reading it, did you think the document might be useful ?

YES

MAYBE

NO

DON'T KNOW

Uptake Questionnaire - Cognition

Cognition (read, digest and understand the document)

7 Have you read the document ?

FULLY (go to question 10)

PARTIALLY (go to question 10)

NOT AT ALL (go to question 8)

8 Do you plan to read the document ?

YES (go to question 13)

MAYBE (go to question 13)

NO (go to question 9)

9 Do you have the intention of reading the document in the future ?

YES (discontinue questions)

NO (discontinue questions)

10 Was the material in the document presented in a way you could understand ?

YES

NO

11 Did you understand the material presented in the document ?

YES

NO

DON'T KNOW

12 Have you thought about the contents of the document since you read it ?

NEVER

RARELY

SOMETIMES

OFTEN

Uptake Questionnaire - Discussion

Discussion (altering frames of reference to the new information)

13 Have you made other colleague(s) aware of this document ?

YES

NO

DON'T KNOW

14 Have you discussed the document with colleagues within your organization ?

YES (go to question 16)

NO (go to question 15)

15 Do you plan to discuss the document with colleagues within your organization ?

YES

MAYBE

NO

16 Have you discussed the document with colleague(s) outside of your organization ?

YES (go to question 18)

NO (go to question 17)

17 Do you plan to discuss the document with colleague(s) outside of your organization ?

YES

MAYBE

NO

18 Have you sought the opinion(s) of other(s) who have used this document (e.g. through discussions, visits, or workshops) ?

YES

NO

Uptake Questionnaire - Reference

Reference (document influences action/adoption of information)

19 Have you cited this document in your own reports or documents ?

YES (go to question 21)

NO (go to question 20)

20 Do you plan to cite this document in your own reports ?

YES

MAYBE

NO

DON'T KNOW

21 Has this document introduced you to a new idea/way of thinking for a currently used practice (i.e. not a practice adopted from the document) ?

YES

NO

22 Has this document changed your beliefs about a particular approach to practice ?

YES

NO

Uptake Questionnaire - Effort

Effort (efforts made to favour information)

23 Have you favoured the results in this document over other document(s)/sources of information ?

YES

NO

24 Have you favoured using this document over other document(s)/sources of information?

YES

NO

Uptake Questionnaire - Adoption

Adoption (document influences adoption of a practice/practice adopted from document)

25 Have you adopted a practice outlined in the document ?

FULLY (go to question 28)

PARTIALLY (go to question 28)

NOT AT ALL (go to question 26)

26 Do you plan to adopt a practice outlined in the document ?

FULLY (go to question 27)

PARTIALLY (go to question 27)

NOT AT ALL (discontinue questions)

NOT SURE (discontinue questions)

If answered NOT AT ALL or NOT SURE to Question 26 proceed to Section 2.

27 Do you know when you will begin to use the practice you plan to adopt ?

YES (discontinue questions)

NO (discontinue questions)

28 a) Was the practice you adopted a Best Practice (as defined by the document/source) ?

YES (go to question 30)

NO (go to question 29)

28 b) Was the practice you adopted a Promising Practice (as defined by the document/source) ?

YES

NO

29 Have you stopped a non-recommended practice ?

YES

NO

NOT APPLICABLE

30 Have you combined together the components of at more than one practice ?

YES

NO

Uptake Questionnaire - Implementation

Implementation (adopted information becomes practice)

31 Overall, in the past 1 (6, 12, 18) month(s), how fully have you used a practice recommended in the document ?

NOT AT ALL

A LITTLE

A LOT

A LOT, BUT ADAPTED FROM THE ORIGINAL

32 Have you employed short-term strategies for using this practice ?

YES

NO

33 Do you know the short term effects (outcomes) from using this practice ?

YES

NO

34 Do you spend your time managing the activities of the practice ?

YES

NO

35 Do you know the long-term requirements to using this practice ?

YES

NO

36 Has using this practice has become routine (i.e. practice runs smoothly with minimal management problems) ?

YES

NO

37 Have you varied your use (i.e. made modifications) of the practice to increase its impact on your target population ?

YES

NO

38 Have you collaborated with colleagues and/or other organizations targeting the same population to implement this practice ?

YES (go to question 40)

NO (go to question 39)

Uptake Questionnaire - Impact

Impact

41 Has this practice has made an impact on your target population ?

YES

MAYBE

NO

DON'T KNOW

42 Has your use of this document changed a current practice or routine in your work ?

YES

MAYBE

NO

DON'T KNOW

43 Have you encouraged a colleague(s) to adopt this practice ?

YES

NO

44 Have you persuaded a colleague(s) to adopt this practice ?

YES

NO

Additional Comments

Are there any additional comments you would like to make about the document or practice ?
(Your comments do not need to be related to an adopted or implemented practice)

KUUT Section 2: Deliberate Non-Use

Categories: (Dobbins et al., 2002)

Characteristics of the:

- Innovation
- Organization
- Environment
- Individual

Non-Use – Reason: Innovation Characteristics

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

Compatibility

The innovation was not consistent with the current values of my program or organization

The innovation did not meet the needs of my program or organization

Complexity

The innovation was too difficult to understand

The innovation was too difficult to implement or use

Trialability

The innovation could not be implemented on a small scale to determine its advantages or disadvantages

I have not heard of any other organization(s) related to mine that have adopted this innovation

Observability

I have not seen this innovation successfully implemented

Non-Use – Reason: Organizational Characteristics

Organizational Characteristics

Size and Resources

My organization is too small or too large to adopt this innovation

My organization does not have enough personnel resources (staff) to adopt this innovation

My organization does not have enough financial resources to adopt this innovation

Location

My organization was not in an appropriate location to adopt or implement this innovation

Hierarchy

I do not have enough decision-making authority in my position to decide to adopt this innovation

I was not able to prove to my supervisor that this was an important innovation to adopt

Formalization

This innovation did not follow the rules and procedures of my organization

There was not enough research evidence that this innovation would be effective or successful

Non-Use – Reason: Environmental and Individual Characteristics

Environmental Characteristics

There is not enough collaboration or potential for networking with other organizations to be able to adopt and implement this innovation

Individual Characteristics

This innovation did not seem relevant to my practice

It is not an appropriate time to be adopting this innovation

This innovation does not coincide with my values or beliefs about what is effective

I have insufficient time to adopt and implement a new innovation

Other

Other reasons not mentioned above have resulted in non-adoption of this innovation

These other reasons are:

Scoring – Levels of Use of the Innovation

- Scoring based on Hall et al. 1975 “Levels of Use” of an innovation
- Mapped LoU onto the categories in the Questionnaire

Scoring Level of Use

Uptake outcomes and Levels of Use (LoU)^a

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
<i>Decision Point A – Takes action to learn more detailed information about the innovation</i>	
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
<i>Decision Point B – Makes a decision to use the innovation by establishing a time to begin</i>	
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
<i>Decision Point C – Begins first use of the innovation</i>	
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

Scoring Level of Use

Decision Point D-1 – A routine pattern of use is established

ROUTINE: Use of the innovation is stabilized. Few if any changes are being made in ongoing use. Little preparation or thought is being given to improving innovation use or its consequences.	Yes to Q 36 End here if No to Q 37
--	---------------------------------------

Decision Point D-2 – Changes use of the innovation based on formal or informal evaluation in order to increase client outcomes

REFINEMENT: State in which the user varies the use of the innovation to increase the impact on clients within immediate sphere of influence. Variations are based on knowledge of both short- and long-term consequences for clients.	Yes to Q 37 End here if No to Q 38 and 39
--	--

Decision Point E – Initiates changes in use of innovation based on input of and in coordination with what colleagues are doing

INTEGRATION: State in which the user is combining own efforts to use the innovation with related activities of colleagues to achieve a collective impact on clients within their common sphere of influence.	Yes to Q 38 or 39 End here if No to Q 40
---	---

Decision Point F – Begins exploring alternatives to or major modifications of the innovation presently in use

RENEWAL: State in which the user evaluates the quality of use of the innovation, seeks major modifications of or alternatives to present innovation to achieve increased impact on clients, examines new developments in the field and explores new goals for self and the system.	Yes to Q 40
---	-------------

^aDefinitions of Levels of Use and decision points are from Hall et al. 1975

Examples of application of the KUUT

Has been used by: PHAC, CPAC, PHO, Health Canada, NCCPP, and others

Some examples:

- as **part of a toolkit** designed to support knowledge transfer and exchange (KTE) design, planning, and evaluation within Canadian Partnership Against Cancer initiatives (CPAC, 2016)
- **assessing knowledge uptake** for individual public health unit Healthy Baby Healthy Children (HBHC) process implementation evaluation **reports** (H. Manson, personal communication, September 8, 2017)
- **as a standardized instrument recommended for use by Health Canada for their funded projects** to enable grantees to assess impact at the project level, and to allow for the funding program to roll up the KUUT data for analysis at the program level
 - used by 7 recipients of Health Canada funding, across a range of substance use health promotion, prevention and treatment related initiatives across the country
 - for most was implemented at end of project (M. Hunter, personal communication, April 12, 2017)

4 Phases to Re-develop and validate the KUUT

1. Gather and synthesize information
2. Re-develop the KUUT
- approach with an evaluation lens
3. Pilot-test the re-developed KUUT
4. Build validity evidence

PARTNER/KNOWLEDGE USERS



e.g. Public Health Ontario's Health Baby Healthy Child (plus others)

Performance & Planning Exchange (PPX)



PPX



Dr. Costello
[Homewood
Research Institute]



Dr. Manson
[Public Health
Ontario]



PPX

PHASE 1

Gather (1) literature on KUUT, (2) theory behind KUUT, (3) past and present use of KUUT, (4) knowledge from **subject matter experts** on the KUUT, and (5) people/organizations that have used the KUUT.

PHASE 2

Re-develop and revise KUUT from PHASE 1 knowledge.



Iterative review by **subject matter experts**.

PHASE 3

Pilot test re-developed KUUT with knowledge users.



Pilot version of KUUT agreed upon by **subject matter experts**.

PHASE 4

Collective evidence of validity from data gathered from PHASES 1, 2 and 3. Final version of KUUT agreed upon by **subject matter experts**.



FINAL KUUT

Building validity evidence

Built from all of the data generated from Phases 1-3.

- Test-retest reliability is measured during the pilot testing with knowledge users in Phase 3.
- Asking experts if the items “tap” the construct of interest and represent the array of item possibilities is a way to obtain **evidence of content validity** (Hubley & Zumbo, 1996)
- Effort to evaluate **construct validity** will begin in Phase 1 with the subject-matter experts by critically examining the existing KUUT scoring criteria and establishing new scoring criteria if needed (Gilbride et al., 2006)

Questions for Subject-Matter Experts

- Are there other operationalized tools to measure KUU?
- Are the items in the KUUT questionnaire reflective of knowledge utilization?
- Are there other scale categories/domains or items that should be considered that could represent knowledge utilization?
- How should this scale and/or questions be revised?
- Are there redundant, core, or missing items?

Moving forward with Knowledge Uptake + Use and the KUUT

January-April 2018 +

1. Updated literature review on KUU
 - *consideration of various models and approaches and their relative advantages and disadvantages*
2. Develop a Community of Practice (CoP) around KUU
 - *examination of face validity through feedback from CoP members about the trial version of the KUUT*
3. Evidence on how the KUUT has been used, and a synthesis of this information
4. Refinements to KUUT
 - *from a synthesis of past/current use of the KUUT, along with input from CoP members*

Looking for your ideas about...

- What are your needs?
- How can you use some of the tools presented?
- How might you adapt some of these tools to your environment/context?
- What tools have you used?
- What type of KT evaluation do you get involved in?
- How do you think we should move forward?

Questions & Discussion

Looking for feedback and ideas about...

- The KUUT itself
- Plans to re-develop and validate the tool
- How you might use this kind of tool
- What kind of impact tools you are looking for?
- Could this apply to policy + legislative advice? (briefings, discussion papers etc.)

Feedback on the KUUT

- How might you use this kind of tool?
- Thoughts about our plans to re-develop and validate the tool?
- Feedback on the KUUT itself (UPTAKE Questions) –
 - Which questions are core or redundant?
 - Missing categories?
 - Missing questions?
 - How should context be incorporated?

Preliminary Validity

Bonin (2007) assessed concurrent validity by:

- determining the degree of association between the KUUT outcomes and a qualitative assessment of knowledge use
 - qualitative data = interview transcripts (n=15) from the KE Extension
 - interviews with male and female staff from 3 Ontario Health Units representing a wide range of personnel
- transcripts were coded for instances of knowledge use
 - 2 independent coders for inter-rater reliability
 - percentage of agreement between the KUUT and the interview transcripts was calculated

Concurrent Validity of the KUUT

Level of Knowledge Use	Percentage of Agreement Between Coders
Non-use	100%
Orientation	100%
Preparation	100%
Mechanical	93%
Routine	93%
Refinement	93%
Integration	93%
Renewal	47%