**Measuring KT in Technology-Oriented Projects**

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October 31, 2013

Text version of PowerPoint™ presentation for SEDL’s Center on Knowledge Translation for Disability and Rehabilitation Research online conference Knowledge Translation Measurement: Concepts, Strategies and Tools. Conference information: [www.ktdrr.org/conference](http://www.ktdrr.org/conference)

Slide template: Blue bar at top with the words on the left side: Knowledge Translation Measurement: Concepts, Strategies, and Tools. Hosted by SEDL’s Center on Knowledge Translation for Disability and Rehabilitation Research (KTDRR).  On the right side, the words: An online conference for NIDRR Grantees.

Slide 1: (Title)

Measuring KT in Technology-oriented Projects

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Logo bottom left - KT4TT: Knowledge Translation, Technology Transfer

Slide 2: Public Support for New Knowledge Creation

* Grant-based Scientific Research to Advance Understanding – Exploration to discover new knowledge about physical world (NSF/NIH):

*Grant-based Scholarship → Peer System → Publish for Tenure*.

* Contract Engineering Development for Production Programs – Application to deliver products with national value (DOD/DOE):

*Contract-based Design → Performance Test → Produce for Profit.*

* So-called “R&D” for “S&T” Innovation – Flawed hybrid of scientific methods and market mechanisms fails to achieve intended impacts. Scholarly outputs for tenure ≠ Corporate requirements for profit.

Slide 3: Four Approaches to Measure KT Activity

1. Construct an evidence-based model to track the generation and communication of knowledge in different states resulting from different yet complementary methods.

2. Create an instrument to track the recipients experience from the first instance of encountering new knowledge to their decision to apply that knowledge in action.

3. Conduct Knowledge Value Mapping of National Organizations to assess their potential role in KT.

4. Conduct RCT’s to compare how various non-traditional stakeholder groups respond to new knowledge which is novel, valid and relevant to them.

Slide 4: 1. Tracking Knowledge in 3 States

Need to Knowledge (NtK) Model

* Scientific Research methods generate knowledge in state of Conceptual Discoveries, requiring content translation to convey relevance to non-traditional stakeholders.
* Engineering Development methods generate knowledge in state of Prototype Inventions, requiring legal transfer of ownership & control for integration into products.
* Industrial Production generates knowledge in state of Commercial Innovation requiring market transaction for acquisition and consumption.

Slide 5: Knowledge Communication - 3 Strategies for 3 States:

Graphic of a flow-chart, multicolored boxes moving from left to right. The chart begins with the first box: "Science and Innovation Policy for the generation of technology-based devices and services."

An arrow then leads to the second box: "Research activity generating discovery outputs."

From the second box, an arrow leads to the third box: "Development activity generating invention outputs." Directly above this arrow are the words "Knowledge Translation."

From the third box, an arrow leads to the fourth box: "Production activity generating innovation outputs." The words "Technology Transfer" are written above this arrow.

From the fourth box, an arrow leads to the fifth and final box: "Marketplace outcomes and impacts." Directly above this arrow are the words "Commercial Transaction."

Slide 6: 2. Tracking Individual’s Knowledge Use

Level Of Knowledge Use Survey (LOKUS)

Defines and tracks levels of use for non-traditional stakeholders under field conditions.

Designed for web-based self-report (VOVICI).

Five Levels of Use; each containing multiple types, dimensions and activities.

Psychometric analysis shows LOKUS to be valid and reliable for measuring changes across levels and across various stakeholder groups.

LOKUS: 4 Levels / 5 Types of Use

Slide 7: LOKUS: 4 Levels / 5 Types of Use:

Graphic of a flow-chart, moving from top to bottom. The chart begins with the first box that reads: “Non-Awareness.”

An arrow leads to the second box: “Awareness.”

An arrow then leads to the third box: “Interest (Orientation & Preparation).”

From the third box are two arrows leading to boxes that are side by side. The box on the left reads: “Intended Use (Initial & Routine Use) and box on the right: “Modified Use (Collaboration, Expansion, Integration, Modification).

These side-by-side boxes are connected to one-another with bi-directional arrows.

Slide 8: 3. Assess National Organization’s as KT Brokers

Knowledge Value Mapping

Efficiently share knowledge from R&D projects with diverse and non-traditional audiences.

Effectively communicate findings under existing time and money constraints.

Understand how national organizations value new knowledge to properly tailor message.

Conclusion: National organizations can indeed serve as effective mediators and translation/ dissemination networks for various stakeholders.

Slide 9: 4. Compare Three Communication Methods

Randomized Controlled Trials

Scholars resist KT as a burden beyond the traditional mandate to publish study results, so we compared the results of three methods of communicating knowledge:

*Passive diffusion* expects initial peer-reviewed publications to eventually trickle down and out through stakeholder audiences.

*Active dissemination* expects scholars to allocate time to present their findings through conferences, workshops and webinars.

*KT* expects scholars to tailor findings to values and context of varied stakeholder audiences and apply targeted multi-media.

Findings: Awareness and Use are different. Use involves active engagement which is drive by relevance not rigor!

Slide 10: Related Publications

Lane, J & Flagg, J. (2010) “Translating 3 States of Knowledge: Discovery, Invention & Innovation.” Implementation Science, 5, 1, 9. <http://www.implementationscience.com/content/5/1/9>

Stone, V. & Lane J (2012). “Modeling the Technology Innovation Process: How the implementation of science, engineering and industry methods combine to generate beneficial socio-economic impacts.” Implementation Science, 7, 1, 44. <http://www.implementationscience.com/content/7/1/44>.

Flagg, J, Lane, J., & Lockett M. (2013) “Need to Knowledge (NtK) Model: An Evidence-based Framework for Generating Technology-based Innovations.” Implementation Science, 8, 21, <http://www.implementationscience.com/content/8/1/21>

Lane, JP & Rogers, JD (2011). “Engaging national organizations for knowledge translation: Comparative case studies in knowledge value mapping.” Implementation Science, 6:106. <http://www.implementationscience.com/content/6/1/106/abstract>

Working paper on LOKUS design and psychometric testing: <http://kt4tt.buffalo.edu/publications/WorkingPapers/Updated%20Working%20Paper%20II%20for%20Website%2010%2010%2013.pdf>

Working paper on RCT comparing three methods of communication new knowledge: <http://kt4tt.buffalo.edu/publications/WorkingPapers/Working%20Paper%20III%20_AAC%20Pilot%20RCT%20for%20website.pdf>

On-line access to Need to Knowledge Model, including links to all supporting literature and analytic tool descriptions, and case examples: <http://kt4tt.buffalo.edu/knowledgebase/model.php>

Slide 11: ACKNOWLEDGEMENT  
The contents of this presentation were developed under a grant from the Department of Education, NIDRR grant number H133A130014.

Center of slide contains a row of sixteen human figures in black silhouettes, ranging size and age from children to seniors, and all using an array of assistive technology and mainstream devices for mobility.