Structured Dialogue to Uncover Research Assumptions: A Toolbox Workshop

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Outline

• The Workshop Plan
• What’s the Problem?
• The Leading Idea
• The Toolbox Project
• Workshop Nuts and Bolts
The Workshop Plan

Today’s Toolbox Exercise

– Toolbox introduction – 30 minutes
– Fill out Confirmation and Values modules – 10 minutes
– Group dialogue – 30 minutes
– Debrief – 20 minutes
What’s the Problem?

Interdisciplinary Activity (IDA) Is Important

– Complex problems—sustainability, hunger, climate change, etc.—require complex responses (Bruce et al. 2004)

– This theme is sounded by NAS 2004, who tell us, “Interdisciplinary thinking is rapidly becoming an integral feature of research as a result of four powerful ‘drivers’: 
What’s the Problem?

The inherent complexity of nature and society

The desire to explore problems and questions that are not confined to a single discipline
What’s the Problem?

The need to solve societal problems

The power of new technologies.”

— Facilitating Interdisciplinary Research, NAS, p. 40
What’s the Problem?

IDA Requires

– Mastery of multiple literatures (Hagoel and Kalekin-Fishman 2002)
– Ability to identify an integrative research problem (Repko 2011)
– Ability to synthesize different methods (Morse 2013)
– Integration of results to the appropriate degree (Eigenbrode et al. 2007)
What’s the Problem?

When IDA Is Collaborative

– Strangers from foreign lands ...
  • Disciplines as cultures (Boix Mansilla 2010)
  • These are cultures socially and epistemically
– ... must learn to speak in one voice
  • They need to speak as one to those who they support and who support them
  • They need to speak as one in grant proposals and publications
  • IDA as multidimensional localization (Crowley et al. 2010)
What’s the Problem?

The Manifold Challenges of IDA

- Lack of conducive institutional culture (Klein 2010)
- The academic reward system (NAS 2004)
- Wide distribution of collaborators (Olson et al. 2008)
- Lack of training opportunities (Rosa and Machlis 2002)
- Disciplinary chauvinism (Giri 2002)
- Turfism (Morse et al. 2007)
- Group dynamics (Jakobsen et al. 2004)
The Communication Challenge

– “[W]hat disciplinary training serves to do is to create a community ... of persons who can understand what is said” (Turner 2000, 52)

– “At the heart of interdisciplinarity is communication—the conversations, connections, and combinations that bring new insights to virtually every kind of scientist and engineer” (NAS 2004, 19)
Analyzing the Communication Challenge

– Return to the idea that IDA brings together different knowledge cultures

• These generate understanding by isolating aspects of interest and then examining them using various methods
• Members of knowledge cultures share assumptions about how one should investigate the topics of interest

– These cultures produce different languages, thoughts, actions – i.e., research worldviews

– IDA is multicultural integration in which much can be “lost in translation”
The Leading Idea

Responding to the Communication Challenge

– The Toolbox Project focuses on understanding and improving communication about research content within cross-disciplinary research

– This focus applies within teams of collaborators, as well as within groups of non-collaborators

– The Goal: Enhance communication and increase collaborative capacity by reducing the amount “lost in translation”
Better Science through Philosophy

– **Leading Idea:**

Enhanced understanding → Enhanced communication

– One can enhance understanding by using *philosophy* to frame reflection on research assumptions

  • **Content:** Philosophy systematically reveals these assumptions
  • **Methods:** Philosophy provides abstract common ground for dialogue about these assumptions
The Leading Idea

Collaborative Learning Objectives

– The Toolbox approach is a type of *dialogue method*: structured approaches that use dialogue to facilitate knowledge synthesis and improve decision-making (McDonald et al. 2009)

– The focus of the Toolbox is on *collaborative learning*

– The learning objectives are:
  • Habit identification
  • Habit sharing
  • Habit coordination
Evidence of Impact

<table>
<thead>
<tr>
<th>Key themes from open-ended responses to post-workshop evaluations</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workshop had a positive impact on awareness of the knowledge, opinions, or scientific approach of teammates</td>
<td>84.9</td>
</tr>
<tr>
<td>Overall assessment was entirely positive</td>
<td>82.6</td>
</tr>
<tr>
<td>Statements about impact on professional development were entirely positive</td>
<td>77.4</td>
</tr>
<tr>
<td>Workshop helped participant become more aware of dimensions of cross-disciplinary research, including challenges associated with working across disciplines and awareness of other disciplinary perspectives</td>
<td>43.9</td>
</tr>
<tr>
<td>Workshop helped participant become more aware of dimensions of science or scientific research</td>
<td>41.7</td>
</tr>
<tr>
<td>Workshop had (or could have) a positive impact on research communication</td>
<td>33.1</td>
</tr>
<tr>
<td>Workshop had a positive impact on the social aspects of team-building</td>
<td>18.7</td>
</tr>
<tr>
<td>Made at least one skeptical or negative comment about some aspect of the Toolbox workshop</td>
<td>8.6</td>
</tr>
</tbody>
</table>

Table 1. STEM workshop participant assessments (n=139) of the impact of the Toolbox workshop (from Schnapp et al. (2012) How to talk to strangers: Facilitating knowledge sharing within translational health teams with the Toolbox dialogue method. *Translational Behavioral Medicine, 2*(4): 469-479.)
The Toolbox Project

A History

– Motivated by graduate students in a team-based Integrative Graduate Education and Research Traineeship (IGERT) project at U. Idaho (UI)

– 2005 seminar, “Philosophical Issues in Interdisciplinary Research”, co-taught by Eigenbrode and O’Rourke

– Led to Eigenbrode et al. (2007)

– Funded by the UI and NSF (SES-0823058, 2008)
The Toolbox Project

A History

– Developed further in partnerships with climate science and health science initiatives

– Over 100 workshops on 3 continents, multiple publications and presentations, and an international conference that issued in this recently published volume:

![Enhancing Communication & Collaboration in Interdisciplinary Research](image)
How Can The Toolbox Help You?

– Today is not about enhancing your capacity to collaborate with your group, since these are *ad hoc*

– Instead, the goal is to introduce you to this particular dialogue method
  
  • You will have the opportunity to experience the type of dialogue it fosters
  
  • You will have a chance to react to the experience in a debrief conversation
IRB Approval

– The Toolbox Project is a research project with human subjects
– It has IRB approval from Michigan State University and collaborating institutions
– We will not collect data today – the goal is to introduce you to the approach
Toolbox Instrument

– A structured set of philosophical prompts meant to represent the epistemological and metaphysical dimensions of science

• 6 modules altogether, each with a core question that announces the theme and probing statements that develop it

• There is a space for answers to the questions and Likert scales associated with each statement

• Please concentrate on the Confirmation and Values modules
Toolbox Workshop

– The Toolbox workshop focuses on dialogue about the instrument
  • No structured order for working through the Toolbox
  • Participants are encouraged to follow their interests and insights around the instrument—the dialogue is lightly facilitated
  • We don’t define or delimit terms—extremity, vagueness, and ambiguity are there for you to negotiate in dialogue
  • Adopt a single perspective in filling it out (or keep track!)
– It typically ends with a second instrument and a debrief – today only the debrief
And Now...

– Please divide up into groups of about 10-12 or so
– Fill out the Confirmation and Values modules
– Once everyone is ready, begin discussing those modules
  • Appoint a facilitator—someone willing to move the group along if the dialogue lags
  • Start anywhere you wish
  • Be responsible as a group for keeping the dialogue going
  • I’ll make the rounds if you have any questions
– We’ll reconvene in 40 minutes to discuss the experience
References


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• Students and Postdocs: Chad Gonnerman, Chris Looney, Liela Rotschy
• Partners: UI Resilience IGERT (NSF), BEACON (NSF), ITHS (NIH), REACCH (USDA), Northwest Climate Science Center (USGS), GLEON (NSF), SCRiM (NSF)
• Members of other participating projects and teams—approximately 820 participants in 109 workshops
• Project advisors: Julie Thompson-Klein (Wayne State University), Frank Davis (UC Santa Barbara), Paul Griffiths (University of Sydney)