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## Publications Highlight Science Communication Research for Busy Professionals

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**Abstract:** Professionals, such as Extension personnel, who communicate with a range of non-specialists about scientific or technical information face particular challenges. A common goal of all such professionals is to effect at least some change in their audiences' understanding and perhaps in their actions. A key challenge for many of these professionals is a lack of familiarity with research relating to communicating and making decisions about scientific and technical topics. *Public Science Communication Research and Practice*, a series of publications from Oregon State University, is designed to identify, distill, and highlight useful social science research to help professionals communicate more effectively.

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Professionals who work at a university, government agency, or non-governmental organization and communicate with a range of non-specialists about scientific or technical information face particular challenges. A common goal of all such professionals—regardless of their particular job title—is to effect at least some change in their audience's understanding and perhaps in their actions. A key challenge for many of these professionals is a lack of familiarity with research relating to communicating and making decisions about scientific topics.

Thus, while these professionals, such as Extension agents, would not want to enter a public communication context without up-to-date subject-matter expertise, they may enter without the benefit of expertise afforded by communication research.

### Removing a Blind Spot for Communication Research

This blind spot about communication research is evident in the influential view of Boyer (1990), who argued that, for Extension personnel, "to make complex ideas understandable to a large audience can be a difficult, demanding task, one that requires not only a deep and thorough knowledge of one's field, but keen literary skills, as well." The notion that effective communication is primarily a matter of "literary skills" or "art" and on a different plane from subject-matter expertise was echoed by Extension leaders describing "the making of a successful Extension educator" (Adams, Harrell, Maddy, & Weigel, 2005). "Clarity of communication of research or community-based knowledge into a format or language easily understandable by a target audience is as much an art as a science," they wrote, "and requires the individual to have the 'mastery of knowledge' aforementioned"—that is, of the subject, but not, apparently, a mastery of communication (Adams et al., 2005). What the "science" of communicating that they allude to might consist of, these authors

do not specify.

*Public Science Communication Research and Practice*, a series of publications by Oregon Sea Grant, is designed to identify, distill, and highlight useful social science research to help professionals communicate and engage more effectively. In doing so, Sea Grant follows a tradition, first articulated in the 1950s by the National Project in Agricultural Communications (Miller, 1995), of using social science research to inform Extension communications and public engagement. (Oregon Sea Grant is the marine program area for Extension faculty at Oregon State University.)

Two 2011 additions to the Oregon series can assist Extension professionals with two common tasks: conducting interviews and facilitating group decision making.

## Interviewing to Understand Others' Mental Models

All professionals conduct interviews, often to determine what another person understands, feels, believes, or is willing to discuss about topics of interest. The method described in *Mental Models Interviewing* <<http://seagrant.oregonstate.edu/sgpubs/onlinepubs/h11002.html>> can be a distinct advantage to such interviewers, as it provides a structure grounded in behavioral and communication research (Morgan, Fischhoff, Bostrom, & Atman, 2002). It is particularly helpful when a group of interviews is planned, because following the method will facilitate comparisons among interviews, because the same questions are asked in the same order and manner.

Mental models (Collins & Gentner, 1987) are representations in our minds of something real, just as a model airplane is a representation of a real airplane. The question mental models interviewing helps us answer is, how does this other person put together this reality? A model airplane comes in a box full of pieces; what do interviewees perceive as being in the "box" of the topic at hand, and how do they think the pieces fit together?

More specifically, for example, interviewers often want to know how interviewees understand cause-and-effect relationships. So, if interviewees understand that climate change is said to be caused by a buildup of heat in the atmosphere, and their mental model of the atmosphere includes the idea of a hole in the ozone, they may wonder why the heat doesn't just escape through the hole—and so, how could there be a climate change problem? The approach of mental models interviewing—semi-structured, exploratory, interviewer-neutral—allows such piece-fitting to be revealed.

## Structuring Decision Making to Enhance Participation

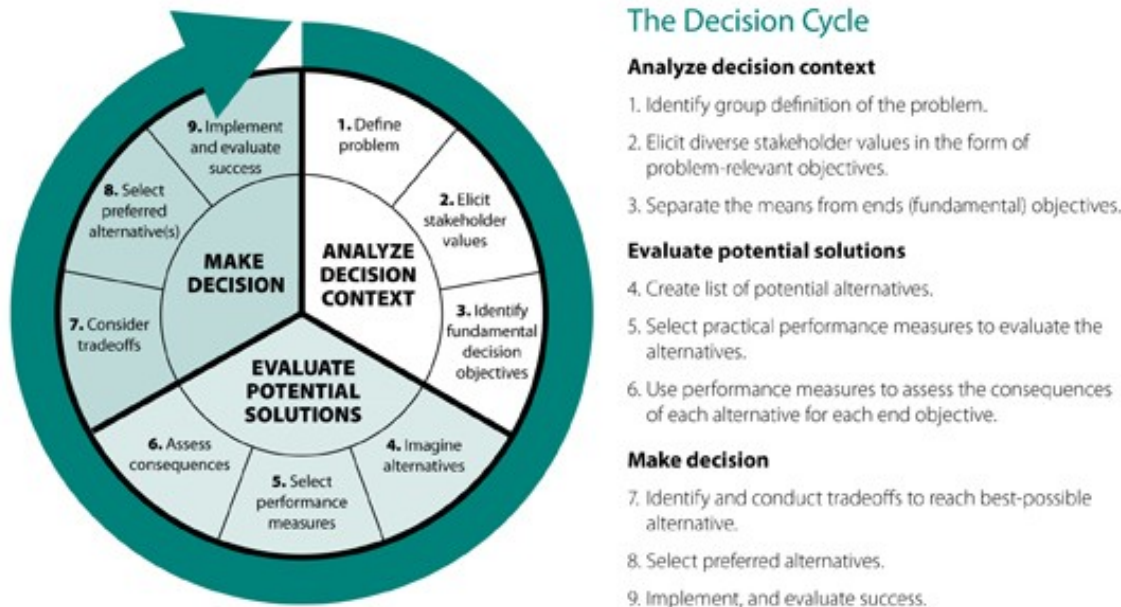
Another new publication from Oregon Sea Grant looks at structured ways in which groups of people can come together to understand a problem and overcome common errors in judgment as they evaluate potential solutions. *Structured Decision Making: Using decision research to improve stakeholder participation and results*, <<http://seagrant.oregonstate.edu/sgpubs/onlinepubs/h11001.html>> is written by two decision researchers, one of whom works for Extension. The 12-page publication highlights recent research on group decision making and offers guidelines for developing a process that's likely to produce results.

"Stakeholders"—those who have an interest in a particular project or problem—are often invited to take part in public hearings, workshops, and meetings; many times, the authors note, the results are less than satisfying for everyone involved. Too often, such meetings "give the impression that opportunities for input are simply a diversion to draw attention away from where the 'real' decisions are being made." Better results can be achieved by using structured, research-proven processes in which participants have an opportunity to

"understand the problem, express and clarify their issue-specific values and concerns, and carefully weigh the pros and cons of different actions or options."

The publication provides an overview of structured decision making (SDM), an outline of how it works, and a discussion of specific SDM methods, such as "swing-weighting" to compare trade-off options during that stage of deliberation. SDM is conducted within the framework of a decision making cycle of stages that analyze the decision context, evaluate potential solutions, then make and evaluate the decision (Figure 1).

**Figure 1.**  
The Decision Cycle and Outline of Its Steps



Other titles in the Sea Grant *Public Science Communication Research and Practice* series:

- Question common assumptions about public communication;
- Provide insights from behavioral research for public communicators;
- Overview and annotate public outreach and behavior-change literature; and
- Present survey findings about decision-makers on specific issues.

For Extension personnel who work on the boundariesâ even the frontiersâ where social and natural science meet management and community interests, such publications can be of special value and usefulness. All publications in the series are available from Oregon Sea Grant either as paid publications or as free downloads, in printable PDF and text-only versions <<http://seagrant.oregonstate.edu/sgpubs/onlinepubs.html>>.

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