i2S News

March/April 2019, #43

Australian National University

WELCOME

Welcome to the March/April i2S News! This is our bi-monthly notification of new additions to the resources on the i2S website (https://i2s.anu.edu.au/resources). It also provides a list of the latest blog posts on the Integration and Implementation Insights blog (http://i2insights.org).

There's a new addition to the i2S News. From time to time we will also feature an 'Updated Tool'. The i2S website has been active since 2003 and, as we get time, we're reviewing the older tools. Some are being updated and others are being archived.

We're also reviewing the 'tags' associated with the tools to make it easier to search for tools and to find related ones. We're delighted to be working with Caryn Anderson on this task.

We welcome your views on any aspects of the website, blog or i2S News. If discussing suggested improvements is easier than writing them down, just let us know and we'd be happy to arrange a call. Our contact details can be found at: https://i2s.anu.edu.au/contact-i2s.

Gabriele Bammer and Peter Deane

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FEATURED TOOLS

Dialogue: Nominal group technique

Purpose: Nominal group technique is a special-purpose method for problem solving or idea generation. It taps and combines individual judgments to arrive at decisions that could not be determined by one person. It is not a tool for routine meetings or for negotiating or bargaining. Instead it is a technique for judgmental or creative decision making where there is lack of agreement or an incomplete state of knowledge about either the nature of the problem or about what is required to reach a successful solution.

Description: An important preparatory stage is to determine the focal question. The main process is then organised into six stages.

Determining the focal question:
Providing a good, productive question for deliberation using the nominal group technique requires:

- clarity about the objective and desired outcomes of the meeting
- cross-checking the objective with considerations of the desired level of abstraction and breadth versus depth
- developing a set of alternative questions
- pilot testing the questions with a sample group to determine which will be most effective.

The six stages of the main process

1. Silent generation of ideas in writing: Each individual in the group silently writes down ideas in response to the focal question. This requires adequate time for thinking and reflection (around five minutes). While each group ideally has between five and nine members, the process can simultaneously involve several such groups.
2. Round-robin recording of ideas: Each group member in turn presents one idea (without being interrupted, or responded to, by other participants) which is recorded. This continues, with participants presenting additional ideas one at a time, until all ideas are recorded. This process allows equal participation in the generation of ideas, encourages a depersonalised focus on the problem, and allows a large number of ideas, including conflicting ideas, to be raised. If an idea that has been recorded stimulates a new idea in another group member, they are encouraged to write it down and report it during one of their turns in the round-robin.
3. Serial discussion for clarification: Each idea is discussed in turn to clarify what the words mean, as well as to convey the logic or argument behind the idea. Discussion can also touch on agreement or disagreement, as well as the relative importance of the idea in relation to other ideas. The point is to allow an equal and balanced discussion of all the ideas, with the focus on ensuring that everyone in the group understands the idea, rather than trying to secure winning votes for the idea.
4. Preliminary vote on item importance: Each person then privately votes to rank the ideas. There are different ranking methods that can be used, for example, each participant can be invited to choose their top five ideas and then rank those from most to least important. The point is to provide a process that encourages participants to make careful, iterative decisions rather than hasty ones, and to avoid some participants steam-rolling others into compliance. The rankings are then tallied. The process can end here, but two additional steps increase judgmental accuracy.

5. Discussion of the preliminary vote: The purpose of this discussion is to examine any inconsistent voting patterns and to provide an opportunity to rediscuss items which are perceived to have too many or too few votes. The aim is to revisit the clarification step to ensure that there are no misunderstandings of particular terms. It is not to exert social pressure to achieve a particular outcome.
6. Final vote: This can use the same process as in Step 4 or more refined rating methods.

Source: Andre L. Delbecq and Andrew H. Van de Ven developed the nominal group technique in 1968. They advise that '[i]t was derived from social-psychological studies of decision conferences, management-science studies of aggregating group judgments, and social-work studies of problems surrounding citizen participation in program planning' (Delbecq, Van de Ven and Gustafson 1975: 7–8).

- **Reference**:
  - Delbecq, A. L., Van de Ven, A. H. and Gustafson, D. H. (1975). *Group techniques for program planning: A guide to nominal group and Delphi processes*. Green Briar Press: Wisconsin, United States of America. https://sites.google.com/a/umn.edu/avandeven/publications/books/group-techniques-for-program-planning
- **Website**:
  - https://www.odi.org/publications/10671-10-things-know-about-how-influence-policy-research

Assessing evidence: Strengths and weaknesses of grading tools (updated tool)

Purpose: To describe common problems that can occur with grading systems which may negate their usefulness in justifying evidence-based changes in policy and practice.

Description: In order to summarise the state of research on particular topics, the quality and robustness of scientific results is often assessed using one of a number of so-called grading instruments or systems. Grading instruments are extensively used in evidence-based medicine to develop clinical guidelines, as well as in other research on health care. Applying a grading system to a body of evidence provides an air of authority to those findings and can help determine whether those findings are translated into changes in policy or practice.

However, there are eight common problems with grading systems, which must temper enthusiasm for their use. Before relying on conclusions drawn from applying a grading system, the limitations of the particular instrument and its potential for misuse must be assessed.

Limitation 1. Grading systems may lack information on their validity and reliability
Many grading instruments have not been validated, meaning that there are no guarantees that they are effective, avoid bias, and generally work in the way they claim to work.

Limitation 2. Grading systems may have poor concurrent validity
Concurrent validity is said to exist when the results from different instruments designed to measure the same underlying construct are highly correlated. There is little evidence for concurrent validity across different grading scales.

Limitation 3. Grading systems may not account adequately (or at all) for external validity
Grading instruments are often designed to focus solely on scientific robustness and do not include any metrics for evaluating the external validity of findings, which includes the generalisability of research results to real-life populations, the feasibility of applying findings in the real world and the sustainability of an intervention over time.

Limitation 4. Grading systems are not necessarily inherently logical
In most grading systems there is no essential way in which different elements of quality combine to create higher quality.

Limitation 5. Grading systems are susceptible to subjectivity and low inter-rater reliability
Many grading instruments have guidelines that are open to interpretation, meaning that the assessor's background, skills and views can affect how the guidelines are operationalised.

Limitation 6. Grading systems often have inadequate instructions and are overly complex
Many grading systems, including those that are complex, do not provide instructions or define terms, or instructions may be vague. This opens the possibility that raters arrive at conclusions that fit with their preconceptions.

Limitation 7. Some grading systems are biased toward randomised controlled trials
Some grading instruments automatically assign higher-level grades to evidence from randomised controlled trials and lower-level grades to evidence from other kinds of research, without taking into account any limitations in the randomised controlled trial or strengths in the other research designs.

Limitation 8. Grading systems may not adequately address different types of observational research
Some grading systems assume that all forms of observational research are equal in the strength of evidence they produce.

A final point is that grading instruments are not a uniform set of tools but vary widely (*eg.*, one grading tool is described at https://i2s.anu.edu.au/resources/assessing-evidence-quality-recommendations, but there are many others). This means that the choice of the appropriate grading system for a particular context is essential.

- **Reference**:
  - Irving, M., Eramudugolla, R., Cherbuin, N., and Anstey, K. (2017). A critical review of grading systems: Implications for public health policy. *Evaluation and the Health Professions*, **40**, 2: 244-262; https://doi.org/10.1177/0163278716645161

Additional tools can be found at: http://i2s.anu.edu.au/resources/tools

LATEST i2INSIGHTS BLOG POSTS

The i2Insights blog has recently published the following posts:

Incommensurability, plain difference and communication in interdisciplinary research
by Vincenzo Politi
https://i2insights.org/2019/04/09/understanding-incommensurability/

Improving transdisciplinary arts-science partnerships
by Tania Leimbach and Keith Armstrong
https://i2insights.org/2019/04/02/arts-science-partnerships/

Practical tips to foster research uptake
by Emily Hayter and Verity Warne
https://i2insights.org/2019/03/26/research-uptake-in-policy/

A manifesto of interdisciplinarity
by Rick Szostak
https://i2insights.org/2019/03/19/manifesto-of-interdisciplinarity/

Idea tree: A tool for brainstorming ideas in cross-disciplinary teams
by Dan Stokols, Maritza Salazar, Gary Olson and Judith Olson
https://i2insights.org/2019/03/12/idea-tree-brainstorming-tool/

Achieving transformational change
by Steve Waddell
https://i2insights.org/2019/03/05/transformational-change/

FEATURED JOURNAL AND JOURNAL NEWS

Journal of Simulation

The *Journal of Simulation* (JOS) "aims to publish both articles and technical notes from researchers and practitioners active in the field of simulation. In JOS, the field of simulation includes the techniques, tools, methods and technologies of the application and the use of discrete-event simulation, agent-based modelling and system dynamics", as well as "models that are hybrids of these approaches."

"JOS encourages theoretical papers that span the breadth of the simulation process, including both modelling and analysis methodologies, as well as practical papers from a wide range of simulation applications in domains including, manufacturing, service, defence, health care and general commerce."

JOS also focuses on where "significant success in the use of simulation" has occurred, as well as "the methodological and technological advances that represent significant progress toward the application of simulation modelling-related theory and/or practice."

JOS is the journal of the *Operational Research (OR) Society*.

- **Website**:
  - https://www.tandfonline.com/toc/tjsm20/current

GAIA column on 'Frameworks for Transdisciplinarity' Research #7

Fazey, I. (2019). Ten essentials for contributing more directly to transformational change. Frameworks for Transdisciplinary Research Framework #7. *GAIA*, **28**, 1: 8. Online (DOI): https://doi.org/10.14512/gaia.28.1.3

Additional journals can be found at: http://i2s.anu.edu.au/resources/journals

FEATURED PROFESSIONAL ASSOCIATIONS

Global Implementation Society (GIS)

The *Global Implementation Society* (GIS) "advances implementation practice and science by supporting members and by directly undertaking projects to develop implementation as a profession based on knowledge and standards for practice." The society supports a "community of professionals who are developing and using new and better ways of providing human services (implementation practice) and who are generating knowledge about how best to do this (implementation research, implementation policy)."

The *Global Implementation Society* was founded in 2018.

- **Website**: https://globalimplementation.org/society/

International Network for the Science of Team Science (INSciTS)

The *International Network for the Science of Team Science* (INSciTS) is the "professional organization for team science and the Science of Team Science (SciTS) field." The field "is concerned with understanding and managing circumstances that facilitate or hinder the effectiveness of large-scale collaborative research, training, and translational initiatives", including "understanding how teams connect and collaborate to achieve scientific breakthroughs that would not be attainable by either individual or simply additive efforts."

INSciTS supports "individuals leading, engaging in, managing, facilitating, supporting, evaluating, and producing scholarship on team science" and operates as "a forum to share the latest evidence for what works in team science" as well as providing collaboration opportunities towards advancing the SciTS field.

INSciTS hosts a set of Special Interest Groups (SIGs), which are "member-led groups that provide a 'home within a home' for INSciTS members to connect and collaborate with colleagues who have shared interests in the SciTS field". The network *Intereach* (*Interdisciplinary Integration Research Careers Hub*) became one of the SIGs in 2019.

The network was launched in 2018 and grew out of the *Science of Team Science Network* (SciTS).

It hosts an active listserv and a team science toolkit.

- **Website**: www.inscits.org/

Additional professional associations and networks can be found at:
http://i2s.anu.edu.au/resources/associations_networks

FEATURED CONFERENCE

63rd Annual Meeting of the International Society for the Systems Sciences (ISSS) - Nature's Enduring Patterns: A Path to Systems Literacy

"Science searches for answers to the mysteries that confront us as living beings. For over 60 years, the work of ISSS in the 'general systems' field has been to encourage the development of theoretical systems which are applicable to more than one of the traditional departments of knowledge. Recognizing our embeddedness in nature provides ways to investigate the common patterns or 'isomorphies' of concepts, laws, and models in various fields, and to help in useful transfers from one field to another. Understanding and appreciating these patterns is key to the development of systems-literate people able to make robust decisions and act in complex situations, considering relationships and effects of systems of all kinds and at all levels."

"Participants at ISSS 2019 will 1) Share scientific results and engage in conversations across disciplines regarding natures enduring patterns; and 2) Explore how to educate for, and what it means to create, a systems-literate society."

The conference will be held in Corvallis, Oregon, United States of America, on 28 June to 2 July 2019.

- For further details see:
  - http://isss.org/world/ISSS2019
  - Abstract closing date: 1 June 2019

Additional conference information can be found at:
http://i2s.anu.edu.au/resources/conferences

ABOUT i2S NEWS

The aim of this newsletter is to provide regular (bi-monthly) updates about new resources added to the Integration and Implementation Sciences website (http://i2s.anu.edu.au/resources). These resources are useful for researchers interested in Integration and Implementation Sciences (i2S), which underpins the investigation and tackling of complex real world problems, by:

- Synthesizing knowledge from different disciplines and stakeholders,
- Understanding and managing diverse unknowns, and
- Providing integrated research support for policy and practice change.

In general, each issue features tools (concepts and methods), case studies and/or approaches relevant to i2S - either a useful compilation or one or more examples of note. We also provide information about journals, professional associations & networks and conferences where researchers can learn from others, report their findings and interact with like-minded peers. The newsletter also reports on discussions in the LinkedIn group "Global Network for Research Integration and Implementation": https://www.linkedin.com/groups/4888295/ (when these occur) and new entries on the Integration and Implementation Insights blog: http://i2Insights.org.

i2S News is archived at: http://i2s.anu.edu.au/what-i2s/i2s-publications/i2s-news.

Useful links:

- i2S website: http://i2s.anu.edu.au
- i2S on YouTube: https://www.youtube.com/user/i2sTalks
- LinkedIn group "Global Network for Research Integration and Implementation":

https://www.linkedin.com/groups/4888295/
- i2Insights blog: http://i2Insights.org

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