

Understanding Interventions Journal:

Documenting the Process of Translating Research into Practice

Daryl Chubin, Christine Pfund, Janet Branchaw, John Matsui, Anthony DePass

I. Background and Need

Changing demographics and the need for a technology-savvy workforce have increased the urgency of developing, disseminating, and implementing evidence-based practices in science, technology, engineering and mathematics (STEM) education and professional training. “Broadening participation” has become a 21st century imperative. However, there is a gap in the scholarly infrastructure needed to advance this work. Recognition of this gap by the National Institute of General Medical Sciences (NIGMS) led, through a 2007 National Academies workshop, to the creation of Understanding Interventions That Broaden Participation in Research Careers (understanding-interventions.org/background). The dispersal across several disciplines of a growing body of research literature on the efficacy of STEM interventions, from K-12 through faculty development, inhibits practitioners’ access to this literature to inform their program design.

Today, the Annual Conference on Understanding Interventions That Broaden Participation in Science Careers (UI) serves at least four key constituencies: training program directors, social science scholars, interventions researchers, and evaluators. While enthusiastic participants in the UI community, each constituency has particular needs and levels of sophistication.

For example, most program directors are interested in learning effective ways of administering programs and enhancing impact by translating the literature to apply its lessons to their initiatives. Emerging interventions researchers seek experimental techniques that reduce alternative hypotheses about causal relationships in interventions research. Evaluators continue to harvest data that refine theories of change and explain observed outcomes due to controlled interventions.

All of these have been presented and discussed at UI conferences, and with the launch at the 7th Conference (San Diego, 2015) of the UI Index, an online searchable relational database encompassing various literatures related to STEM education and career interventions. Containing information on interventions, practices, and programs; evaluation tools and measures; and major reports and other materials, the UI Index is in its formative stages but available at understanding-interventions.org/bibliography.

II. Taking the Next Step

Although the UI conference, website, and UI Index represent significant progress in building and supporting this unique multidisciplinary community of scholars, barriers remain. There are few venues through which practitioners can publish their work in its early stages, including formative evaluation results. These results are obtained before outside stakeholders are engaged in the process of adaptation, refinement, and testing. Lacking a space to publish this formative work and earn career credit slows the development process and can deter funding for promising interventions not shared through publication. In short, community progress is impeded.

A few journals currently publish reports of development and formative evaluation research relevant to UI (e.g., *CBE-LSE*, *Academic Medicine*, and *Journal of Research in Science Teaching*), but they frequently require (a) data collected beyond local implementation and (b) interventions grounded in social science theories with which many intervention developers, particularly those practitioners trained in STEM disciplines, are not familiar.

In recognition of the UI community need for a journal that publishes interventions at *all* stages of the process, not just the end results of large-scale testing of fine-tuned interventions, this concept paper was developed. A journal that values rigorous methodology, as well as experimentation and adaptation efforts, would be a boon to intellectual development. Reporting on small-scale implementation and formative evaluation data from diverse groups in different institutional settings would guide efforts to adapt innovations that work at other implementation sites.

III. Proposing a New Online Journal

To remedy the growing pains that UI is experiencing and accelerate processes that facilitate the *understanding* of interventions, this project proposes an online UI Journal to publish interventions work aimed at broadening participation in the biomedical and broader STEM workforce. This new journal would be linked to the Understanding Interventions website and conference. It would be undergirded by the search and retrieval capabilities of the UI Index. It would publish reports—refereed for quality—across all stages of development and testing. And it would complement and build upon the work presented at the conference, creating a space to document the process of development, adaptation, and implementation, not just final outcomes, by defining stages of intervention development and identifying reports accordingly.

Three types of papers published in the journal would track the process from initial development to national implementation and testing of model interventions. In recognition

CONCEPT PAPER
December 2015

of the different types, and the stages of analysis from preliminary to completed research, the following typology—common in many disciplines—is proposed.

Letters

These would be limited to 1500 words. They would present research in progress, outlining the problem, key variables, study population, and institutional setting. Other elements such as research design and methods would also be required along with preliminary or pilot data and plans for the full analysis. One incentive for *Letters* is the annual UI Conference. Select presenters would be encouraged to develop into a publication for the UI Journal.

Letter submissions would be reviewed by a member of the editorial board and one member of the UI community who specializes in the research area. The decision to publish would be the editor's. Authors would be asked for the names of relevant referees. The turnaround from submission to publication would be brief, estimated as four months. Publication would encourage readers to respond directly to the authors with suggestions for revision and completion.

Communications

These papers would document, in a maximum of 6000 words, the process of local development and pilot testing of an intervention based on established theories and/or evidence-based practices in other fields. This would close the current gap in opportunity to share work through publication. *Communications* would include links to social science theories found in the UI Index and would translate those theories into language accessible to all UI practitioners. They would report evaluation data from the pilot studies, including suggestions for future implementation with new audiences. *Communications* would also offer resources through the UI database to guide practitioners in identifying appropriate outlets. Through publication and posting on the UI website, *Communications* should stimulate the formation of new teams and bring their collaborations to fruition.

Communications would feature research that is developed beyond the Letters stage with more than preliminary data and findings that invite comments and suggestions for additional analysis before completion. Communications would report evaluation data from initial adaptation and implementation efforts of successful local models exported and translated at selected new sites, thus establishing what generalizes and what does not (e.g., majority to Minority Serving Institutions and vice versa). They would detail adaptation of the "imported" intervention, specifying features of the new context and subject population. Communications, in short, would present what is commonly called "promising practices." Each would be

CONCEPT PAPER
December 2015

reviewed by at least one member of the editorial board and two relevant community members (including one or more suggested by the authors). The decision to publish would be shared by the editor and the board. Communications would have a six-month turnaround from submission to publication.

Articles

Full-length articles (10,000 words) would report the outcomes of large-scale dissemination, adaptation and implementation of successful intervention models (e.g., models that have been tested in a randomized control trial). These papers would discuss the process of “going to scale,” i.e., moving locally-successful interventions replicated in multiple sites to a potentially national-level innovation. Describing adjustments that surmount various institutional barriers without diminishing efficacy and impact is essential for transitioning from what is promising to what is “exemplary” as a set of model practices. In other words, *Articles* should be comparable in rigor, content, and format to any published in disciplinary journals as leading-edge, theory-driven, hypothesis-based research.

Articles would capture “summative” analyses presented to the community for emulation. To underscore the community basis for publication, all referees of Articles would be noted at the end. The UI Blog would encourage comments on Articles with references to new literature (in the UI Index or not) and opportunities for similar or continuing research by identifying potential sponsors, collaborators, and research sites. Articles would appear eight months after submission. The editorial board may recommend publication as a Communication rather than an Article if a consensus of referee comments so indicates.

The tripartite scheme envisioned for the UI Journal fulfills several needs of the UI community: providing an outlet for interventions research that can be disseminated in a timely way, creating opportunities for collaboration among community members who approach interventions from different perspectives, building a knowledge base anchored by the contents of the UI Index, and increasing the synergies fostered by an annual conference and an ongoing exchange of ideas through a multifaceted, feedback-oriented website.

IV. Establishing Infrastructure and Process

The UI co-directors have appointed for one year an editor and two associate editors drawn from the authors of this paper. We are preparing a presentation for the 8th UI Conference in Philadelphia that outlines the infrastructure and process for operating the UI Journal. Our purpose is to solicit feedback from the community on what appears above and needs to

CONCEPT PAPER
December 2015

be elaborated (notably, reviewer selection and pre- and post-review routines). Without the support of the community, there will be no e-journal. We have drafted a timetable that envisions publishing/posting the inaugural issue in Winter 2017. With community guidance, we plan to demonstrate UI's vitality as a site for rigorous, practical, and timely scholarship on challenges we all face in the science education and careers of our students and ourselves.

The "floor" is now open. Even before we meet in Philly, please use the UI blog to react to our ideas. Emails may also be sent to Daryl at daryl.chubin@comcast.net.