FROM NEW KNOWLEDGE TO COMMUNITY OUTCOMES: A TRANSLATIONAL RESEARCH MODEL FOR EMERGENCY MANAGEMENT AND HOMELAND SECURITY

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ABSTRACT

Translational research can entail several studies as steps to move knowledge into practice and onward to community-based outcomes. This article presents and discusses a model for thinking about and teaching translational research processes to graduate students. The model demonstrates a multi-directional pathway, where each segment can inform another piece of research. Translational research allows graduate students to address real-world issues or organizational needs. In the process, graduate students demonstrate the synthesis of knowledge and research tools and their ability to integrate knowledge into practice meaningfully.

Keywords: *applied research, implementation research, translational research, research translation, scholarship of teaching and learning, teaching applied research*

INTRODUCTION

The transdisciplinary and practical contexts of emergency management/homeland security (EM/HS) point to a need for practical learning experiences in graduate student research. Graduate students in EM/HS tend to gravitate toward a pragmatic research mode because it can make a real-world difference upon completing their work. It also motivates them to continue conducting translational work during their careers. This preference challenges those of us educating graduate students to think about how to model the pathway and scope of translational research toward the goal of improving community resilience. This article discusses a model for translational research that is beneficial for teaching graduate students.

Contextually, the proliferation of risks and threats, along with the growing scope and frequency of disaster events, generate complexity and uncertainty that leads to a wide array of obstacles faced in preparedness, mitigation, response, continuity, and recovery planning (Quarantelli, 1987; Mileti, 1999; Tierney, 2014; Phillips et al., 2016). Mileti (1999) additionally notes, "the knowledge that has accumulated through research is valid, yet some troubling questions arise about why more progress has not been made in reducing losses from hazards." (p. 24) While Mileti was speaking to the increasing frequency and widening impacts of disasters, it also applies to the progress of moving research knowledge into day-to-day practice. Further, Drabek (2009)

speaks to the requirement of skillful application of generalized knowledge to the new and unique situations EM/HS practice faces. All these points illustrate a need to find educational methods that can more effectively integrate research into a practical means of support to those in roles protecting lives, livelihoods, and the quality of life. Practical, applied, translational, and action research processes can be valuable tools for graduate students who plan to be practitioners in leadership.

CALIFORNIA STATE UNIVERSITY, LONG BEACH

The California State University (CSU) is a public institution comprised of 23 campuses and is the largest public university system in the world. Located in Long Beach, California, and established in 1949, California State University, Long Beach (CSULB) is one of the 23 campuses. The campus student population is approximately 38,000, making it one of the largest universities in the state. Of this population, about 5,500 are graduate students. Notably, the university is a Hispanic-serving institution. The university also qualifies as a minority-serving institution. Further, CSULB has a sizable percentage of first-generation college students.

The M.S. in Emergency Services Administration (EMER) program is within the School of Criminology, Criminal Justice, and Emergency Management, a part of the College of Health and Human Services at CSULB. The Western Association of Schools and Colleges assesses accreditation. The EMER program is a fully online degree program focusing on building the leadership and critical thinking skills needed to develop resilience in communities facing various hazards and risks. The program educates students in interdisciplinary research and theories of emergency management, homeland security, and organizational leadership.

THEORY FOR THE EMER 694 PROJECT

The *EMER 694 Project* is a master-level capstone research project designed to provide practical solutions to an existing problem within the emergency services metacommunity. The students work under the instructor's and committee members' guidance; one committee member is a practitioner from the community of interest. The project has a research focus on a specific community hazard or vulnerability problem, seeking a practical solution toward risk reduction and resilience building. Upon successful completion of this course, each student will be able to conduct the following:

1. Analyze a real-world situation and apply theoretical concepts to the evolving complex conditions.
2. Design an individual or collaborative project that advances the application of theoretical concepts in a practical form.
3. Assume responsibility as an organizational leader to translate theoretical concepts into practice.
4. Synthesize the use of emergency management principles: comprehensive, progressive, risk-driven, integrated, collaborative, coordinated, flexible, and professional.

5. Integrate strategies that will enhance the resiliency of communities and organizations.
6. Critique peer writing projects and provide professional-level feedback for improvement.

The process demonstrates a synthesis of the research tools and the ability to integrate that knowledge into a real-world deliverable for a community partner.

CONCEPT DEFINITIONS

An operational foundation for the desired student research outcomes is essential: "Definitions are required if knowledge is to be generated and links to be found among the research topics and variables" (McEntire, 2004, p. 2). This section highlights definitions that provide a basis for the discussion of research into practice for emergency management and homeland security.

Research is defined in the Common Rule of Federal Regulations as "a systematic investigation, including development, testing, and evaluation, designed to develop or contribute to generalizable knowledge" (§46.102d). Research is conducted for two key aims: to discover new knowledge and to apply this knowledge to solve practical problems. The first goal is *basic research*, and the second is *applied research*. Each has been defined by the Organisation for Economic Co-operation and Development's (2015) *Franscati Manual* and adopted by the National Science Foundation (2023). Basic research is "experimental or theoretical work undertaken primarily to acquire new knowledge," and applied research is "original investigation undertaken to acquire new knowledge, but it is directed primarily towards a specific, practical objective" (Organisation for Economic Co-operation and Development, 2015, p. 45).

In the space of practical research, added modes have evolved, describing the research relationship to the pathway point of moving new knowledge toward community outcomes.

- *Translational research* is broader than applied research and systematically converts basic research knowledge into practical applications to enhance human health and well-being. The goal is to translate scientific insights into actual, practical interventions that save peoples' lives and improve recovery outcomes. The term was first used and defined in the late 1990s (Butler, 2008) as transforming basic science into applications relevant to people. Initially designed for the medical world, translational research emerged in response to concern over the time lag between scientific discoveries and changes in treatments, practices, and policies incorporating the findings. The key is action steps to move scientific knowledge into day-to-day practice (Khoury et al., 2010).

- *Research translation* is the process whereby knowledge is passed anywhere along the translational pathway from basic science at one end to improved community-based outcomes at the other. The key point is that knowledge generated in one research mode informs the study or activity needed in the next mode (Woolf, 2008).

- *Implementation Research* is one of several subtypes of translational research, the scientific study to promote the systematic uptake and evaluation of interventions in real-world settings and routine practice of the disciplines that informed the intervention design to improve the quality and effectiveness of services (Woolf, 2008). Implementation has

been further defined as carrying out a basic policy from the starting point of an authoritative decision (Mazmanian & Sabatier, 1983, p. 99).

- *Action Research* is practical and answers "how" questions. It collects data to determine what works in a given context (Spickard, 2017).

As the definitions point out, moving new and existing knowledge to practice and community outcomes is a multi-step and multi-directional pathway. The EM/HS translational research pathway is presented and discussed as follows.

MODELING TRANSLATIONAL RESEARCH FOR EM/HS

The relevant definitions discussed above reveal that translational research can entail several studies as steps to move knowledge into practice and onward to community-based outcomes. Translation research may be seen as discovering how best to link new knowledge to progress along the translational pathway (Woolf, 2008). Translational research is valuable and needed for risk reduction and community resilience building. The process is also important to conceptualize to support students as they translate research to benefit practice.

Presented below is a model developed to think about the relationship between basic research, applied research, and translational research and the pathway of the research steps to achieve community-based outcomes. The model builds on a basic pattern presented by Khoury et al. (2010) for the field of epidemiology. The model was designed for EM/HS and expanded conceptually for community resilience building. Modifying the pre-existing mental scaffold aims to influence learning about the translational research process across the EM/HS disciplines (Feldmann-Jensen et al., 2019).

Figure 1: Translational Research Model for EM/HS

One beginning point can be the community hazard risk and vulnerability, where a recognized need or disaster-related question arises. The model equitably integrates the community's traditional or tacit knowledge in the problem context. *Traditional knowledge* is considered a "body of knowledge existing within or acquired by local people over a period of time through the accumulation of experiences, society-nature relationships, community, and institutional practices, and by passing it down through generations." (Mercer et al., 2010) Further, the inclusion of community information yields a more contextualized understanding, as highlighted by Van Wyk (2002): "The notion of knowledge in its social context embraces both the declarative, i.e., the specific cultural, traditional and community facts, as well as the procedural, i.e., the peculiar or general processes in knowledge construction" (p. 307). Acknowledging the community as a partner in the knowledge acquisition endeavor is vital in resilience building.

The model demonstrates a multi-directional pathway, where each research segment can inform another segment. At the core is knowledge synthesis informed by the problem set, community knowledge, discoveries, applications, and translations. The new knowledge gained in each translation step has specific objectives in the form of products, procedures, or services. Basic research addresses the discovery process and brings new disaster-related knowledge to light. *Translation Type 1* builds on the new knowledge with applied research to solve a real-world issue. The evidence-based recommendations inform the policy analysis or formulation of *Translation Type 2*. Practice, pilot, or control programs can develop from the evidence-based recommendations or policy analysis to comprise *Translation Type 3*. Both policy developments and evaluations of the pilots can inform *Translation Type 4*, implementation and ongoing evaluative learning processes, toward community outcomes.

TEACHING PROCESSES

Students can demonstrate mastery of the M.S. program curriculum and core competencies they learned through a culminating translational research project in EMER 694. Engaging students in developing their toolbox of current issue analysis, reflective inquiry, collaborative practice, and translational research methods is a logical extension of professional practice. The approach also builds in means to reduce social disadvantage for both students and the communities they serve.

Building on their research methods and analytics proposal work, students are guided and encouraged in the independent research processes for translating the EM/HS body of knowledge into new actions or policies for real-world practice or community resilience building. Broadly, students evaluate domain-specific texts, apply theory and methodological reasoning, demonstrate their ability to communicate with others and ask poignant questions to address the challenges and changes faced in their occupations. At a more granular level, the students come to the course with their topic selection, research question, related hypotheses, and human subjects consideration; they then conduct a detailed literature review, which informs their research design, analytic processes, and creation of the project itself, along with a consideration for appropriate diffusion of results.

Academic and practitioner collaboration is required on each student project committee. This criterion is heartily supported by the scholarship of teaching and learning (SoTL) focus group finding that "research projects should focus heavily on the relationship between scholars and practitioners since EM/HS are applied disciplines." (Feldmann-Jensen et al., 2019, p. 32) Working with a community EM/HS partner not only strengthens the feasibility of the deliverable a student produces but also generates contacts and opens future opportunities in the field for the student. Accordingly, the collaborative committee is also designed to advance the translation of knowledge to practice within the EM/HS profession, strengthening the communities in which the students live and work.

Translational research allows students to take on a real-world issue or organizational need. In the process, students demonstrate the synthesis of EM/HS knowledge and research tools and their ability to integrate knowledge meaningfully into practice, filling gaps and providing potential solutions. The final product of translated research demonstrates a rigorous quality of work any professional would be proud to sign and present to their professional community.

LIMITATIONS OF THEORY TO PRACTICE

The model has been tested and improved within the course setting for ten years. Student translational research projects have been integrated into practice across sectors, organizations, local regions, states, countries, and specific communities. Nevertheless, the model will benefit from additional use in other contexts for further validity. Dialogue and contributions to the practical translational research processes are needed for further refinement and integration into curricula.

Teaching students this process can bring tremendous satisfaction, especially seeing the infusion of knowledge into practice in tangible ways. An external limitation recognized is that translational research project support can be labor intensive. Additionally, the process requires a thorough understanding of the connections and practicalities of practice within a context or setting.

CONCLUSION

Widely used definitions provided the basis for discussing the value of translational research in mentoring EM/HS graduate students. A model was presented to guide thinking about the translational research pathway. Notably, the model holds value for teaching EM/HS graduate students about the various steps for their culminating projects and as they continue conducting translational work during their careers, making real-world differences.

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