CHAPTER 27

Research Applications in the Classroom

Brenda D. Phillips

If disaster research is helping to spawn a new discipline as some suggest (Mileti, 1999; Phillips, 2005), then its work remains incomplete. For a new discipline to emerge, take shape, and become recognized as a substantive field of knowledge, research must infuse the writings and materials used in the classroom. The presumed benefits of doing so include legitimacy and acceptance within the academy (Phillips, 2005); professionalization that generates promotions, higher salaries, and social prestige (Neal, 1993); and more effective emergency management practice. As one practitioner illustrates, "Decision makers must rely on sound conceptual understanding of the community, established research findings, and data that have to be collected with systematic methods" (Rossman, 1993, p. 132).

However, despite considerable growth of emergency management (EM), hazards, risk analysis, and antiterrorism programs around the world (especially within the United States), few empirically based, scholarly textbooks exist. Publishers have not produced adequate research anthologies either, particularly at the undergraduate levels. It is equally questionable how extensively research has penetrated related disciplines and classes such as geography, sociology, and political science except as topical seminars. This chapter thus reviews the challenges and barriers to research applications in the classroom, examines select case examples from around the world of how research is being used, identifies and describes the contributions of efforts driving research applications in the classroom, and specifies necessary actions to change the situation. Thus, despite the pessimistic scenario outlined here, opportunities exist to further research applications in the classroom.

CURRENT RESEARCH APPLICATIONS IN THE CLASSROOM

Generally, research in the U.S. classroom is used in a variety of ways. At the undergraduate level, traditional approaches rely on empirical content summarized and translated into general textbooks. For the field of emergency management, textbooks options remain slim and/or dated, although a new version of the popular *Emergency Management: Principles and Practices* published by the International City Manager's Association (Waugh and Tierney, 2006) is

underway. Revisions to this book are being made primarily by active disaster researchers albeit with overview by an advisory board composed of both academics and practitioners.

A more common way to integrate research into the emergency management classroom stems from faculty lectures. However, because so many students come from the practitioner community, some degree of skepticism must be overcome in order for students to accept lecture content (Dawson, 1993):

> That's not what I've always heard." Because it was not what we had always heard. We assumed the panic, looting and mass confusion were common place in disasters. Fortunately we have "seen the light."

The apparent predisposition of EM students to eschew research exists in emergency management practice as well. Mileti (1999, p. 328) surveyed 28 practitioners and "none reported receiving findings from academic journals," preferring e-mail and the Internet instead. Advanced undergraduate classes may incorporate research as required readings; however, an undergraduate-level compendium of articles remains unavailable. This unfortunate situation might result in a surprising economic benefit to a willing publisher given the rapid growth of EM programs in the United States.

Generally, graduate level programs typically rely on original research, particularly at the advanced master's and doctoral levels. Based on discussions with EM colleagues and observation at conference panels (in the United States and internationally), however, it is evident that many EM faculty attempt to meet both academic norms and practitioner needs by incorporating both research and technical guidance into graduate-level classrooms. This practice is probably appropriate given that a minority of students will progress into doctoral programs while the majority will return to or seek careers in the field.

REVIEW OF RELEVANT SYLLABI

Syllabi collections represent one starting point to examine the filtration of research writings into relevant classrooms. For the purposes of this limited inquiry, one set of voluntarily donated syllabi can be accessed at the U.S. Federal Emergency Management Agency (FEMA) Higher Education Project Web site (http://training.fema.gov/EMIWeb/edu—click on Education and Training tab). It should not be assumed, however, that these syllabi reflect the perspectives of FEMA; rather, they represent the perspectives of those faculty members willing to share their work with others. Further, these syllabi emanate primarily from emergency management-type programs and do not reflect how disaster research is (or is not) under use in discipline-specific classes. As such, they are not necessarily representative of the field but do offer a starting point for discussion. Syllabi date back to 1997 but do provide some insights into how research has been (or not been) used.

Any examination of available syllabi suggests several tentative conclusions given the delimitations just mentioned. First, it is clear that many EM educators are not using research extensively in the emergency management classroom. Faculty members at research-oriented universities appear most likely to use peer-reviewed articles than faculty at community colleges, in undergraduate programs, or at teaching-oriented institutions. Second, it is evident that a sufficient body of knowledge does not exist across the areas of inquiry or, at times, in appropriate contexts (Cole, personal communication, 2005). To illustrate, consider that the warning and response phase has been studied extensively while a topic like recovery remains underexamined (Mileti, 1999).

The most frequently occurring source for empirical, scientific scholarship remains embedded in review-type textbooks in which the research is summarized by a book or chapter author under topical headings. For the most part, it appears that emergency management students are simply not reading published research reports, particularly at the undergraduate level. Rather, technical reports and Internet links represent the lead favorite reading assignment. Graduate programs are more likely to include original research readings although edited volumes appear to be preferred over full research articles. For both undergraduate and graduate levels, the available books remain dated, with most in use published prior to September 11, 2001. It appears that the majority of the research articles in use explicate some practical or policy implications. In short, applied research is favored over basic research. Further examination is warranted on this topic, with controls for type of institution, level of the degree program, focus of the degree program, and student market.

THE CHALLENGES

What might explain the failure to integrate disaster research across all EM programs? Until pedagogical research is initiated in this emerging discipline, we must conjecture on the conditions that limit research applications. First, based on my classroom experience and discussion with colleagues, scientific articles often exceed student comprehension. For example, imagine a first-year student attempting to read through the traditional format for an article let alone attempting to grasp statistical analyses, something that even graduate students grapple with. Second, because of the institutional demands for peer-reviewed work from its professoriate, many publications are simply not user-friendly for undergraduate programs. Although doing so may threaten tenure or promotion, research faculty need to write scholarly based articles in trade journals, newsletters, anthologies, and electronic sources. Many senior research faculty members already know this dilemma, having worked many double-days to write works usable for both scholars and practitioners. A promising trend of late has come from senior faculty, near or at retirement, starting to write books suitable for use in the advanced undergraduate or graduate classroom.

Third, publishers have not fully recognized the burgeoning worldwide market; they must do so and develop materials for use at undergraduate and graduate levels particularly a full range of textbooks suitable at least for the four phases so common in U.S. classrooms: mitigation, preparedness, response, and recovery (Singh, 2004). And, although some edited books exist, most scholarly books work more effectively at the doctoral level. Translation of those exceptional works (e.g., see Perry & Quarantelli, 2005; Quarantelli, 1998) into classroom-friendly materials is essential, in part so that graduate students can understand the importance of conceptualization before launching research inquiries. Who will take the lead among academics and publishers to do so? Who will compile a compendium of understandable, scholarly materials suitable for the undergraduate level?

Fourth, a broader but significant barrier stems from an apparent lack of consensus among EM educators. Although implicit curricula are developing for general EM programs within the United States, a lack of consensus over what to call the degree as well as over course content still exists (Phillips, 2005). For example, is it emergency management, disaster management, homeland security, or something else? Is the field primarily public sector work or is there room in the academy for the private or nonprofit sectors? Although business contingency programs have emerged, only one institution—Hesston College in Kansas—has taken on the challenge of developing a nonprofit focus. Such development problems have beleaguered the field for

decades, although such issues are not unknown to emerging fields when disciplines emerge (Neal, 2005). Lack of a clear conceptualization hinders research; without clear conceptual definitions, publishers lack direction. The absence of an agreed-upon canon also may impede research applications (Phillips, 2005), particularly because of the "proliferation of claims" over what constitutes a canon (Haydon, 2004). The presumed conceptual canon of the "four phases" does appear to transfer fairly well across cultures (Morrissey, 2004); although the specific phase names may vary, the general idea of mitigation, preparedness, response, and recovery phases reappear worldwide (in New Zealand, for example, they are called the four R's: reduction, readiness, response, recovery). However, despite considerable angst over how to conceptualize and thus measure "disaster," only limited discussion over phase conceptualization has occurred (Neal, 1997).

Fifth, across the existing U.S. programs, few EM programs require courses in research methods. An EM research methods textbook does not exist at the undergraduate level either—so how can we expect students to read, understand, interpret, and appreciate research? To date, only one edited volume has been published suitable for use at the graduate level, although it is a general compendium rather than a "cookbook" of how to do research (Stallings, 2003). This glaring gap in EM curricula runs counter to accreditation standards which expect "an understanding of the subject matter, literature, theory and methodology of the discipline; Research, scholarly activity and/or advanced professional training" (Southern Association of Colleges and Schools, 2003). In short, we lack teaching resources to inculcate research methods in a meaningful way or to meet basic accreditation standards.

Sixth, considering the rapid growth of EM programs in the United States, professional development opportunities for faculty members need to be created. Given that faculty positions go unfilled, sometimes for years, and that EM programs appropriately rely on a mix of both academic and practitioner qualified faculty, efforts to disseminate disaster studies might be expanded. Allowing an emerging discipline to progress without adequate faculty preparation lessens EM's internal academic legitimacy and undermines reputations of both programs and graduates.

Perhaps we should not be surprised by the lack of research integration across the EM programs. Knowledge transfer problems between researchers and practitioners have always been a challenge (Fothergill, 2000; Mileti, 1999). Four factors appear to influence knowledge transfer between these communities. First, cultural influences on jargon and academic communication styles impede knowledge transfer. Communication, as the foundation of cultural transmission, serves as the key to breaking barriers between the professions. Second, institutions demand that researchers "focus on pure rather than practical research" to earn tenure and promotion (Mileti, 1999, pp. 329–330). Third, linkages between researchers and practitioners (such as workshops) remain insufficient. Fourth, a lack of interaction between the two groups stymies knowledge transfer. Educational programs can serve as a pivotal transfer mechanism (Neal, 1993). Given the preliminary findings of this chapter, though, generating that transfer still requires considerable effort.

SOLUTIONS AND APPROACHES

The Roles of Research Centers and Research Associations

Historically, research centers have played an important role in getting research out, though more can and should be done. The Natural Hazards Research and Applications Center (NHRAIC)

at the University of Colorado-Boulder has clearly taken the lead in generating, promoting and disseminating research (http://www.colorado.edu/hazards). NHRAIC's Quick Response Report series remains popular among some EM programs, with its reports easily accessible and/or downloadable for classroom use.

More could be done to promote the use of Web sites at other institutions and organizations, including online purchases or free access. In a noteworthy step, the International Research Committee on Disasters recently made most of their back inventory of the *International Journal of Mass Emergencies and Disasters* available free of charge to the public (http://www.ijmed.org). To access the past 3 years (a rolling time period), one must become a member, although rates remain affordable with reduced costs available for students and persons in developing nations.

To date, publications can be downloaded or otherwise accessed at several key institutions:

- Millersville University, Center for Disaster Reduction and Education (http://muweb.millersville.edu/~CDRE/). See also *Contemporary Disaster Review* (http://muweb.millersville.edu/~cdr/) which features a new section on EM pedagogy.
- Texas A&M University, Hazards Reduction and Recovery Center (http://hrrc.tamu.edu/research/index.shtml).
- University of Delaware, Disaster Research Center (http://www.udel.edu/DRC).
- University of Colorado, Natural Hazards Research and Applications Information Center, (http://www.colorado.edu/hazards).
- Oklahomo State University, Center for the Study of Disasters and Extreme Events.

PROMISING NATIONAL INITIATIVES

Several efforts spanning the last decade (some longer) suggest brighter futures for integrating research into the classroom. These efforts include the National Science Foundation's approach to funding engineering research centers, FEMA's Higher Education Project, grants funded to write books, and a joint academic-practitioner review of the literature called the "Second Assessment."

National Science Foundation

The National Science Foundation (NSF) has been supporting an Engineering Research Center (ERC) funding initiative since the 1980s. Key centers now integrate engineering with the social sciences, which can facilitate mainstreaming information into management programs that are typically social science based. NSF emphasis on the broader societal impacts of such research has been influential in making multidisciplinary research useful in the classroom. Part of that emphasis includes the transfer of research findings by involving students, creating new classes, and reinvigorating existing courses with newly produced research. Specific recommendations from NSF to partner with emergency management programs could improve that transfer.

Funded Books

Specific initiatives funded by various foundations and organizations have also produced research-influenced books usable in the classroom. The Public Entity Risk Institute partnered

with UC-Boulder's NHRAIC to produce *Holistic Disaster Recovery*, a practical guide written by a collective of academics and practitioners and made available free of charge (http://www.colorado.edu/hazards/holistic_recovery). The Heinz Center convened a group of experts to tackle challenges related to coastal disasters, though the product serves as a broader, useful, readable introduction to social vulnerability (Heinz Center, 2002, www.heinzctr.org). These initiatives have resulted in usable classroom products, an effort that should merit continuation and expansion by funders.

Second Assessment and Applications

Perhaps most useful to educators, the "Second Assessment" of disaster research led by the University of Colorado's Natural Hazards Research and Applications Information Center, produced a set of research-based, state-of-the-knowledge books usable at the advanced undergraduate and graduate levels. The National Academies has facilitated access by placing each book online or available for purchase (downloadable PDF or hard cover) by chapter or by volume. The lead book, *Disasters by Design* (Mileti, 1999, http://books.nap.edu/catalog/5782.html), reviews general findings in an introductory manner with a readable format. Additional volumes offer detailed content on preparedness and response (Tierney, Lindell, & Perry, 2001, http://books.nap.edu/catalog/9834.html), geographic perspectives on hazards (Cutter, 2001, http://books.nap.edu/catalog/10132.html), and land-use planning (Burby, 1998, http://books.nap.edu/catalog/5785.html).

FEMA

FEMA's Higher Education Project has provided contracts to develop courses, generate video streamed lectures, write textbooks, and bring educators together in an annual conference. Several recent college courses, notably "Social Vulnerability to Disaster" have emphasized intensive scholarship, extensive bibliographies, and reliance on a strong academic team. Most recently, FEMA contracted with North Dakota State University to assess the books "most commonly prescribed by educators" for emergency management graduate students. In order, the top five include:

- *Disasters by Design* (Mileti, 1999)
- *At Risk* (Wisner et al., 2004)
- *Disaster and Democracy* (Rutherford, 1999)
- *Disasters, Collective Behavior and Social Organization* (Dynes & Tierney, 1994)
- *What Is a Disaster?* (Perry & Quarantelli, 2005).

SELECTED SYLLABI REVIEW

Based on the review of syllabi from the FEMA Higher Education web site I solicited syllabi from faculty most likely to use research in the classroom. This section first reviews syllabi in EM or natural hazards management programs, followed by an illustration from a discipline-specific case. Recent trends to either internationalize the U.S. curriculum or grow international programs are then discussed.

EM Type Programs

First, it is clear that the Second Assessment has made a considerable difference in disseminating research into courses in emergency management and natural hazards management programs. For example, use of these scholarly books is evident in courses at Texas A&M University. In Dr. Michael Lindell's "Organizational and Community Response to Disaster," virtually all of the second assessment books are used either fully or in part, supplemented by additional scholarly works. Students must serve as a weekly discussion leader by generating research-based discussion questions. A term paper option challenges students to craft 20-page research proposals or case analyses complete with scholarly citations. Lindell's approach reorganizes scholarly readings into topics suitable for emergency management: disaster impacts; hazard vulnerability, agents, and analysis; disaster preparedness and response; hazard mitigation and insurance. A complementary course, "Disaster Recovery and Hazard Mitigation" does likewise, with readings tied to the management process: hazard analysis and vulnerability, sustainability, household and business mitigation and recovery, the adoption and implementation process, socioeconomic and political influences, hazard insurance, and both structural and land-use mitigation.

At the University of North Texas, Dr. David McEntire's senior undergraduate capstone course employs *Disaster by Design* along with NHRAIC Quick Response Reports and journal articles from *Disaster Prevention and Management*, *Natural Hazards Review*, the *International Journal of Mass Emergencies and Disasters,* and *Public Administration Review*. A specific course such as Response and Recovery relies on a mix of scholarly and practical materials. The same journals reappear in this syllabus; several emphasize hazards likely to occur in a regional area. McEntire partners these scholarly items with the Texas Department of Emergency Management agency's Disaster Recovery Manual. The UNT program's perspective is that students must comprehend the theory and assumptions behind their actions. Relying on the literature "permits critical thinking in the classroom" and allows students to see the bigger picture (quote from McEntire, personal communication, 2005; see also Drabek, 2003b; Phillips, 2004).

Dr. David Neal, Director of the Center for the Study of Disasters and Extreme Events at Oklahoma State University, has taught disaster research and emergency management classes since 1979 and emphasizes the value of research in every class. His efforts draw from research on the myths of disaster behavior and how they have infiltrated planning and response assumptions. Recognizing that research does not always resonate well with the practitioner community, he then brings in perspectives from practitioners who have "seen the light" (Dawson, 1993). Neal ties the value of research to the growing professionalism of the field, where we need to make "disaster management decisions based on well-grounded research rather than on biased, selective ones." The inspiration for his approach came partly from former colleague Tom Joslin, who was a career FEMA employee. Joslin, despite his practitioner background, advocated against teaching a "rules and regulations" approach because these policies are subject to continual change. Joslin, according to Neal, said that knowing the ideas and inspiration behind the regulations was more important, and that emergency management was about "the people, the victims, not the bureaucracy."

DISCIPLINE-SPECIFIC USE OF RESEARCH: THE CASE OF SOCIOLOGY

The longest-established institution generating discipline-specific research in this field is the Disaster Research Center (DRC), now at the University of Delaware (originally at The Ohio

State University). Faculty associated with DRC share a legacy of disseminating research through the classroom. For example, Dr. Joanne Nigg's "Social Impact of Disaster" course launches with a consideration of "how the term disaster developed as a theoretical concept" followed by an examination of the causes and impacts of various types of disasters, a comparison of loss reduction approaches (preparedness and mitigation), and an overview of the disaster recovery process. Using the four phases, Dr. Nigg requires students to read only empirical work. Students must also complete a term paper based on sociological research.

DRC's newest faculty member, Dr. Tricia Wachtendorf, follows strongly in the DRC sociology tradition in her "Disasters and Society" course, emphasizing that "disasters are actually social events, not merely physical ones." Wachtendorf expects students to achieve certain course objectives, including one tied to research. Students must demonstrate skills in research methodologies to study disasters and research various aspects of a particular disaster as part of a student team. From the more than 50 syllabi that I reviewed for this chapter, Wachtendorf appears to be the only faculty member to require that students read scholarly articles on how to do research (e.g., Stallings, 2003).

DRC's legacy continues in the classroom of Dr. Gary Webb at Oklahoma State University. He continues in the DRC myth debunking tradition, then engages students in a "detailed review of sociological research" at the individual, organizational, and community levels. Of all the syllabi reviewed for this chapter, Webb's course is distinguishable as the most intensively focused in sociological knowledge, deeply grounded in a wide variety of sociological and disaster-oriented journals, and linked to the conceptual and theoretical substance of the discipline.

In my own political science research methods courses, I use a traditional approach but incorporate disaster research examples for students in the emergency management program. In various sections, I connect content to EM practitioner skills. Doing so satisfies graduate-level accreditation standards for methods content, builds student skills to understand methods terminology, and links research skills to practice. In the qualitative section, for example, we discuss how interview, document analysis, and observation skills could facilitate hazard analysis. I require students to interview a long-term resident to learn about prior disasters and to research local archives. In the quantitative section, students access and analyze local census data and then generate descriptive statistics to illustrate their data. Students read peer-reviewed articles by hazards researchers and identify the parts of a scientific article, review and critique the methodology, and assess the findings for theoretical, practical and policy relevance. To this day, I rely on E.L. Quarantelli's (the co-founder of DRC) lecture notes from the graduate seminar I took from him.

Dr. Henry Fischer's (a graduate of DRC) undergraduate course "Sociology of Disaster" at Millersville University of Pennsylvania relies on *Disasters by Design* in conjunction with Fischer's own research-based *Response to Disaster*. Students apply the course content by choosing from a wide variety of very creative components integrating research with practical application: a disaster film critique vis-à-vis sociological knowledge, a Web site with disaster information, a disaster plan critique, a hazards assessment, content analysis of media coverage, an annotated bibliography of a disaster researcher's work or a disaster journal, a disaster agent primer, and shadowing a disaster mentor—either a practitioner or a researcher (Fischer, personal communication, 2005).

It is worthwhile to pause and consider the impact of the widespread media images from Hurricane Katrina. Despite the efforts of many social scientists to exercise caution in assuming that looting, panic, and role abandonment were occurring across New Orleans, the media unfortunately perpetuated what is currently turning out to be yet another gross misrepresentation

of sociobehavioral response to disaster. And, despite articles to the contrary in media such as *The New York Times* and the *Chronicle of Higher Education*, it is likely that many television viewers will retain these misperceptions. In the aftermath of Katrina, educators around the world will have to work doubly hard to counter these images by not only using pre-Katrina research but the media retractions and new research as well. A new Web site "Understanding Katrina" may contribute to this effort (http://understandingkatrina.ssrc.org, accessed October 10, 2005). Beyond the individual response to Katrina, organizations may face the same challenges. Though a limited body of research exists on "blame" it may be worthwhile to examine that work when talking about organizational response (FEMA and the Red Cross) in classes (Phillips & Ephraim, 1992).

INTERNATIONALIZING THE U.S. CURRICULUM

One limitation noticeable in most American syllabi is an overemphasis on the U.S. context. However, Dr. Carla Prater's (Texas A&M University) syllabi demonstrate how a course can be broadened through international readings (Prater, personal communication, 2005). Students in her graduate disaster seminar read *At Risk* (Wisner, Blaikie, Cannon, & Davis, 2004) and *Confronting Catastrophe* (Alexander, 2000). As another example, the "Disaster Recovery" course I teach at Oklahoma State University relies on guidance documents produced by the New Zealand Ministry of Civil Defence and Emergency Management (MCDEM), an effort that MCDEM produced from a review of the literature and consultation with the academic community (MCDEM, 2005a, 2005b; Norman, 2004). For a further review regarding the value of internationalizing the EM curriculum, see McEntire (2001a). Given the ways in which the United States has assisted in international disasters (e.g., the Indian Ocean tsunami) and given that disasters do not respect political boundaries, further globalization of the EM curriculum seems warranted. Providing a comparative perspective also generates richer and deeper insights and may serve to inspire applications of lessons learned from abroad. An overemphasis on the U.S. context will only serve to limit the growth of the field, let alone the development of intellectual capitol necessary to apply research and practice disaster management across national and cultural borders (Phillips, 2005).

INTERNATIONAL INITIATIVES

Internationally, a strong research emphasis can be found in several institutions. For example, in the United Kingdom, Coventry University's Risk and Emergency Management Program uses research through faculty lectures particularly in their Level 3 (final year) undergraduate module. Undergraduates are also expected to look at original research for their dissertation, which is then used in the classroom (Cole, personal communication, 2005). A familiar problem stems from "such a little body of knowledge with regard to UK emergency management, that sometimes we have to go out and do it in order to teach about it" (Cole, personal communication, 2005).

Auckland University of Technology's Bachelor of Studies in Paramedic program also expects students to be able to read, critique, and apply original research. Faculty members report that professional first responders need to communicate effectively with physicians and nurses. This means that paramedics must be able to understand the context of a medical decision and offer their perspective. In addition, paramedics often make spot decisions in

life-threatening situations. Understanding an empirical basis for that research makes them more effective practitioners and motivates them to contribute to paramedic research (Costa, 2005).

Falkiner (2005) reviewed undergraduate courses across 38 of the largest Canadian universities. From a sample of 100 courses, she concluded that geography dominated the social science offerings. An emphasis on the physical nature of natural hazards has apparently influenced the growth of these types of courses. She suggest that the "findings are rather disappointing, with relative few schools offering any undergraduate courses in planning." Only seven sociology courses were identified albeit offered infrequently. Within the United States, larger universities appeared to be among the last to develop courses and programs, a pattern that may be repeating itself as Canadian programs develop.

The University of the West Indies (UWI) is among the Caribbean institutions that has benefited from infusion projects. The United Nations Disaster Relief Office (UNDRO), the Pan American Health Organization (PAHO), and the League of Red Cross Societies supported the Pan-Caribbean Disaster Preparedness and Prevention Project (PCDPPP) which then transformed into the Caribbean Disaster Emergency Response Agency (CDERA). The original PCDPPP encouraged a "coordinated approach to disaster research" at the UWI campuses, particularly interdisciplinary research. Researchers then infused undergraduate courses at the Mona campus and launched an interdisciplinary disaster research study group on campus (Morrissey, 2004). In response to a 1993 earthquake, the Office of Domestic Preparedness in Jamaica offered a teacher training program to transform textbooks and school content. Teachers in the certificate, diploma, and bachelor programs at UWI must complete a "classroom based research study" (Morrissey, 2004).

India's value for higher education has resulted in emerging efforts to establish natural disaster education courses and programs, primarily in geography, geomorphology, and climatology at undergraduate levels (Singh, 2004). Students are required to conduct field surveys to "train students in primary data collection and analysis." Field research uses both structured and unstructured interview guides, resulting in data that are collected, analyzed, and subsequently mapped (Singh, 2004). Massive events have also prompted the Administrative Staff College of India to disseminate lessons learned to government and nongovernmental officials. Various institutes have also participated in gathering data and organizing training courses, including the National Environmental Engineering Research Institute and the National Civil Defence College. Indira Gandhi National Open University offers distance learning courses on disaster preparation (Singh, 2004).

INTERNATIONAL INITIATIVES FROM THE PRACTITIONER SECTOR

Beyond universities, other initiatives have proven useful in developing EM programs tied to research. For example, the New Zealand Ministry of Civil Defence and Emergency Management has convened groups of international and domestic faculties on the subject of emergency management education several times during the past several years. Their efforts have served to facilitate interaction, build linkages across programs and countries, and generate exchange of research materials. Ministry personnel have visited with researchers and educators in other nations, bringing new ideas and contacts back as resources to their nation. As another example, the recent U.S. National Science Foundation research competition on the Indian Ocean tsunami required involvement of non-U.S. researchers, an effort that is resulting in ties between

American, Thai, and Indian institutions fostering research exchanges and expansion of educational programs particularly in tsunami-impacted nations.

The Natural Hazards Project at the Organization of American States (OAS) launched the "Hemispheric Eduplan" nearly a decade ago to encourage the development of academic programming across the Americas and the Caribbean. To date, their efforts have brought scholars together in Hemispheric-wide workshops, conferences, and exchanges and established "technical secretariat" offices to support the Eduplan at various universities. As one consequence of the relationships fostered by the technical secretariats, I was awarded a Rotary International Teachers Abroad Award to teach at the University of Costa Rica. Students came primarily from the practitioner community to attend classes where I taught and disseminated social vulnerability research. This novel OAS effort has generated even more practical applications from research exchanges, including development of a Disaster Resistant Universities initiative as well as cross-interdisciplinary exchanges of research content used in classes. For example, research from the University of Bogota, Colombia on structural mitigation is used in emergency management classes at Oklahoma State University.

CONCLUSION

A number of needs exist in order to more fully integrate research into the emergency management program. The foremost need stems from the lack of existing textbooks, anthologies, and other usable materials especially at the undergraduate level. A related problem is that research is not necessarily available for undergraduate consumption, nor is research always integrated or recognized in some of the available undergraduate textbooks. Several steps could address these problems. *Publishers* must recognize that a new market exists, one that can be connected to a rich history of existing studies already verified through the peer review process. Another solution could stem from *online databases* of articles and critical readings that faculty can tailor to their specific courses. *Journal* editors could add sections to their publications that address pedagogical issues, or could even consider short pieces by established scholars on topics suitable for classroom use. Publishers and journals could make these pieces easily accessible through Web sites. Disaster *researchers* in particular should actively publicize their own works. EM professional *associations* should promote research across their publications and within their membership ranks.

Foundations and other funding organizations, as well as key research centers, could develop and contribute to online archives by funding and videotaping lectures on substantive topics and the research process as well as policy and practical applications of their work. Currently available technologies make this a relatively easy process, including Microsoft Producer, Camtasia, and distance education tools like Blackboard and WebCT. An early example of this can be found on the FEMA Higher Education web site, featuring disaster mini-lectures by Dr. Henry W. Fischer of Millersville University.

Organizations and agencies that fund research might require efforts such as those established by the National Science Foundation: infusion of research findings into new and existing courses with stronger ties to emergency management education programs. Institutions like those cited earlier should continue to model best practices for research applications into the classroom; however, they should strive to influence classroom content more visibly and assertively. Institutions and authors not currently integrating research into classes and textbooks are failing not only accreditation standards but their students and those they will seek to serve.

Perhaps most appropriate, research useful to the teaching of disaster studies must be conducted, within discipline-specific (e.g., sociology, political science, geography) and interdisciplinary classrooms (e.g., emergency management). Such a research agenda might include:

- Compilation and careful assessment of syllabi and course handouts using a rigorous sampling, with controls for historic events such as September 11 and Hurricane Katrina.
- Examination of pedagogical choices and their impact. For example:
  - The "myth debunking" approach used by many social scientists as an initial course entry point, with particular attention paid to how this may be more difficult due to the incorrect media images so widespread after Hurricane Katrina.
  - Effective teaching strategies to disseminate the research literature from the perspective of both teachers and students.
  - The traditional classroom vis-à-vis nontraditional formats including expedited and/or online programs (Neal, 2004; Phillips, 2004).
- Further consideration of the impediments faced by disaster researchers when attempting to disseminate their research (Fothergill, 2000; Mileti, 1999) but with a focus on the classroom environment.
- Longitudinal analyses of the careers of disaster researchers in both disciplinary and interdisciplinary settings.
- Identification of the key conditions that result in the use of research in the classroom.
- Review of accreditation standards vis-à-vis the content of courses, particularly in emergency management programs.
- Examination of the key conditions that influence textbook publishers to adopt or decline manuscripts using empirical works.
- Examination of the growth of EM programs (Neal, 2000), particularly since September 11, and the extent to which they use research in the classroom. A further line of inquiry might consider administrative location and its impact on research use.
- Review of faculty curriculum vitae, especially those faculty working in emergency management and homeland security programs, as an indicator of knowledge of, participation in and use of research. A comparison between these instructors vis-à-vis those offering discipline-specific courses might prove insightful.
- Identification of the ways in which faculty collaborate and exchange ideas for the purposes of teaching disaster studies, including review of new technologies: Internet conferencing, course Web sites, virtual classrooms and more (Phillips, 2005).
- Systematic, longitudinal student outcomes assessment studies focusing on acquisition and application of disaster research to the student's place of employment (Phillips, 2005).