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Meeting Educational Challenges in Homeland Security and Emergency Management

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Meeting Educational Challenges in Homeland Security and Emergency Management

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Abstract

In response to Robert McCreight and Linda Kiltz, the authors propose that the role of academia is not to await government guidance on homeland security curriculum content, but rather to define that discipline and its supportive education via the triad of teaching, research, and service. This article contends that a sizable cadre of civic-minded individuals is already present, and that academia's focus must be to develop and promulgate new knowledge across the cross-section of new students and experienced professionals. This new knowledge must include practical skills applicable to the broad scope of emergency preparedness and should leverage educational technology in its delivery.

KEYWORDS: education, homeland security, emergency, curriculum, training

In initiating the discussion regarding “Educational Challenges in Homeland Security and Emergency Management,” Robert McCreight (2009) focused on the components of curriculum design developed to provide essential skills and to feed the growing realm of homeland security and emergency management professionals. In doing so, he described the dichotomy between the arena of prevention and security and that of response, questioning how a balance between these inherently different foci can be struck. In response to this challenge for analysis, Linda Kiltz (2009) suggested the emphasis of homeland security education should be civic duty. While both of these perspectives are valid, we believe they are mere components of a more strategic approach necessary to establish the standards McCreight proposes.

The aftermath of the September 11 terrorist strikes, and the anthrax attacks that closely followed, produced a surge in interest and activity concerning homeland security. The consolidation of 22 separate agencies into the Department of Homeland Security (2008) and the establishment of myriad academic programs supporting aspects of the emerging mission drew heavily from existing expertise. This amalgamation of disciplines and expertise linked constituencies often in conflict with each other, and ones not necessarily well suited to the domestic mission at hand. For example, the 2001 anthrax attacks were criminal acts, but little precedence existed for effective coordination between the law enforcement and medical communities. In fact, “although both public health and law enforcement protect the public, the approach and nature of the work performed in the two disciplines are quite different.” (Butler, Cohen, Friedman, Scripp, & Watz, 2002)

Public health investigations revolve around interviews, data collection, hypotheses development, and epidemiologic and laboratory studies. This inductive approach is validated by scientific peer review, and the findings are then translated into measures for prevention, detection, and treatment. The law enforcement investigation is built upon a deductive process.

Witnesses and potential suspects are interviewed, leads are developed and pursued, and all available evidence is collected, identified, and tracked. If evidence is adequate, the suspected perpetrator is identified, arrested, and prosecuted. The work of law enforcement is held to legal standards (Butler et al. 2002).

Not only are the approaches divergent, but conflicting procedural foci can be particularly obstructive for public health practice:

The presence of law enforcement officers has been thought to compromise the collection of sensitive medical information (e.g., illegal drug use). Indeed, some degree of separation from law enforcement may be advantageous for obtaining complete and accurate data during public health investigations. (Butler et al. 2002)

In communities with strong feelings of disenfranchisement, suspicion of the police can be intense, reducing the willingness to collaborate with law enforcement and engendering an environment that has been described as “destructive to public health efforts.” (Sidel, Cohen, & Gould, 2001, p. 717)

Sidel (2002, p. 86) further postulated that “military, intelligence, and law enforcement agencies and personnel have long histories of secrecy and deception that are contrary to the fundamental health principles of transparency and truthfulness. They may therefore be unsuitable partners for public health agencies that need to justify receiving the public’s trust.”

The wealth of expertise for chemical defense came from the military and was based on doctrine developed for warfare with the Soviets and on the Korean peninsula. Procedures, and the supporting equipment design, were based on advanced knowledge of intent to use chemical weapons, a highly trained and equipped military population, and the imperative to continue the mission with no or minimal regard for affected bystanders. These constructs do not convey to the civilian sector and victims of a surprise attack with chemical agents will react vastly differently than trained soldiers. Analysis of the Tokyo subway system Sarin attacks shows point of incident decontamination as highly unlikely. Similarly, the probability of the emergency department receiving advanced notice of incoming chemically contaminated patients is questionable at best, particularly if victims self-ambulate to treatment, as was the case in Tokyo.

These two points of reference illustrate the inherent diversity within an overly broad definition of a profession, and the spontaneous generation of that profession, from the ground up, by practitioners trained and experienced in narrow application of specific knowledge in dissimilar venues. We propose that the solution lies not in delineation of core curriculum and task standards by government agencies, as McCreight suggests, but rather in the exercise of the mission of the academy and the concomitant focus on fundamental thought process.

In developing a model for future homeland security education, one must fully recognize the diversity of the field, the commonalities, and the divergent realities that exist. Equally important is consideration of threat sources. While thoughts turn naturally to terrorism as the focus of homeland security, the stark reality is that natural disasters and emerging communicable illnesses pose equally ominous threats to the security of the nation and the health and welfare of its citizens and inhabitants. Consider the rude awakening prompted by the 2001 postal anthrax attacks and the emergence of SARS, avian flu, and the current influenza A nH1N1 pandemic, all matters of interest for homeland security and emergency response planning. Similarly, the physical devastation in Haiti could offer a preview of the aftermath of the next New Madrid earthquake. (Atkinson, 1989)

While the dramatic events of September 11, 2001 validated the reality of a possible terrorist attack, the subsequent anthrax attacks and contemporaneous incidents of previously unwitnessed diseases exposed the vulnerabilities in early identification of a biological or zoonotic event. This showed the need for coordination among the diverse communities that would respond to such an occurrence.

The rapid evolution of the anthrax cases and their impact across multiple locations, jurisdictions, and professional communities and constituencies (e.g., public health, hospitals, private physicians, law enforcement, environmental agencies, military response teams, firefighters, and affected workers and their unions) revealed the benefit of coordination planning that had been initiated as recently as two years earlier, but also exposed communications links and stakeholders not previously considered. (GAO, 2003)

Some endemic factors that impeded coordination were very basic. Procedures as seemingly routine as standard practices for clinical and environmental testing and use of proper protective clothing and equipment proved to differ among public health officials, postal officials, police, environmental specialists, and teams from DoD. For some, the response to this incident represented the first time they had met with and coordinated with organizations with which they were now working. This resulted in disagreements on which procedures and standards to follow. “In addition, some plans had not anticipated the need to forge quick relationships between public health departments and local groups affected by the incidents but not expressly mentioned in the plans.” (GAO, 2003, p. 11)

New and unanticipated working relationships also contributed to difficulties communicating critical information, such as decisions on how and when to provide prophylactic or preventive treatment to postal workers. Similarly, communications and coordination channels between public health and private groups affected by the emergency—such as hospitals—were not fully anticipated in response plans, causing the establishment of ad hoc daily conference calls, e-mail trees, and hastily convened meetings in those communities.

Clearly, the unfolding events led to recognition of the need for greater interaction, coordination, and communication among the various constituencies cited in the final report of the National Commission on Terrorist Attacks upon the United States – the “9/11 Commission.” (2004) How, then, is it possible to establish a common curriculum that will feed a newly-defined discipline and to define the measures of success therein? The answer lies in reasserting the traditional role and function of higher education: the discovery and dissemination of knowledge for the betterment of and service to society. (Hollander, 1999)

While faculty undertakes myriad activities in the performance of the profession, all can be grouped into three broad categories: teaching, research, and service (Council of Graduate Schools, n.d.). Teaching includes the broad spectrum of activities from traditional “platform teaching,” to mentoring and counseling, to serving on dissertation committees, and to preparation for these activities. Research encompasses the seeking and acquisition of new knowledge, publishing, and program evaluation. In the medical context, graduate medical education and continuing education activities would be included. Service is perhaps the broadest and most variable aspect of this triad. This can consist of serving on committees within the academy, activities and leadership of professional societies, community service, and—in the case of medical professionals—performance of clinical or related administrative duties. Similarly, instructors from the first responder community benefit from continued field service in law enforcement, fire, and emergency medical service.

The progression relies on this triumvirate of process: teaching, research, and service. Teaching is most certainly occurring, citing the plethora of over 200 different degree programs in homeland security and emergency management cited by Kiltz. Higher education in emergency management is a new and developing field (National Integration Center, 2008), with 65% of all programs having been in existence 6 years or less. (Cwiak, 2008)

Service is also seemingly solid, as the majority of faculty derives from “a combination of gritty experience, realistic and demanding career assignments, and education or training somehow related to their current occupations” as noted by McCreight. Noticeably absent is the middle—indeed the central, facilitating—activity of research. Rather than lying in anticipation of a pronouncement of product, academia should be leading the effort to define a newly created discipline of integrated homeland security and emergency management professionals. This effort should also include activity at the intersection of traditional research and service missions, a “service-directed research” that translates peer-reviewed publications into products and procedures for the public good.

McCreight presents four major issues that educational programs must address. The first of these is the “reconciliation of homeland security and emergency management.” This reconciliation has already begun in practice. Many states and local jurisdictions have centralized the responsibility for both in a single authority. The problem is not relative “airtime” for terrorism preparedness and emergency management subjects, but a true integration of these responsibilities. The real question is whether education can play a role in defining and facilitating this integration.

The second issue argues that access to human experience and expertise is the best or only foundation for an educational program. This ignores the real

contribution that the academic disciplines and advanced educational tools can provide. We cannot afford to learn lessons derived from mistakes such as locating a command center inside a tall building, when a simple simulation would have shown the folly of that decision. Practices are only “best practices” until better ones are discovered. McCreight requests guidance from DHS and FEMA on educational value. DHS and FEMA may not be the appropriate source for this information and judgment.

McCreight’s third issue is “actual preparedness” of students for “rapid assimilation” into the profession. He sees the value of on-the-job training (OJT), but overlooks the contribution of college education. This presumably defines OJT as real emergency experience and exercise participation. The actual preparedness an emergency professional garners from OJT is a function of the number, quality, and variety of experiences. The time pressures of work and the chance nature of emergencies make it nearly impossible to accumulate enough different experiences in a reasonable amount of time. Near-real technologies such as virtual reality provide the opportunity to engage the student in myriad emergency experiences where factors such as the type, scale, timing, student’s role, logistical constraints, and proximate danger can be controlled to guarantee the student a rich experience base.

McCreight’s last point speaks to the necessity “of meeting student needs and fulfilling career-relevant demands.” This points to an “academic minefield” of cross-departmental problems. In reality, this is the same issue DHS faces. The first step in meeting student needs is to define those needs. It seems that we first need a model that relates the constituents of the discipline, namely researchers, emergency managers, and responders.

Clearly, the model should be pyramidal. We need far fewer researchers than managers and everyone cannot be a manager. Many responders will aspire to become managers and some managers, researchers. For the most part, the researchers will come from and remain within the educational system. Some of the researchers are needed as planners and analysts within the emergency system.



Figure 1

To date, response education has been the purview of the community colleges. Colleges and universities have jumped into the Emergency Management arena through certificates and degrees within existing departmental structures. What is needed to truly address the problem is independent multidisciplinary programs/departments in Homeland Security/Emergency Management. Every profession is built upon a number of scientific disciplines that have been applied within the profession. The profession grows as the science behind it grows. The Centers of Excellence have yet to achieve this level of sophistication, perhaps because DHS has not stimulated the necessary infrastructure.

The remaining educational challenges in homeland security defined by McCreight can be summarized as:

- equal access to high quality education
- essential academic subjects
- credit for on-the-job experience
- educational need and standards

Underlying all of these arguments is the idea that experience is the most essential component of emergency education. Experience is not the same as lessons learned. Academic introspection is one mechanism to transform experience into knowledge. It also allows the emergency manager to project his or her knowledge onto new situations. In the world of sports, for example, very few star players become star coaches or managers.

McCreight's description of an amalgam of perspectives can serve as the guiding principle for curriculum design in homeland security and emergency management. The student population can be viewed in two cohorts: those with practical experience and traditional students. The former group consists of adult learners, while the latter individuals are in a formative career stage.

Adult learners are relevancy-oriented and practical (Lieb, 1991). This is particularly true of those already enmeshed in the skills, techniques, and culture of an active profession. Individuals already working in the field will seek expansion of their current frame of reference. This points to the application of Generative Learning Theory; learners gain comprehension by actively constructing relationships between the information presented and background knowledge. "Generative processing involves relating new information to prior knowledge in order to build more elaborate knowledge structures." (Jonassen, Mayes, & McAleese, 1993)

This speaks directly to the challenge described by McCreight. The weights assigned to various components of the instruction reflect the ability to engender this relating among students, establishing a generative learning framework wherein "learners actively participate in the learning process and

generate knowledge by forming mental connections between concepts.” (Grabowski & McCarthy, n.d.)

While learning specific facts or techniques is a necessary contributory step toward acquisition of skill, the very nature of developing a heuristic approach—regardless of discipline—represents the core of the educational focus. The ability to detect and discern facts from a wide variety of sources—sometimes sparse, other times in a torrent of data, and typically disjointed and of unknown reliability—demands an understanding of the process, of the information and its sources, and of the eventual use.

The emphases within the professorial roles for this program are reflective of Cognitive Flexibility Theory (Spiro, Coulson, Feltovich, & Anderson, 1988; Spiro & Jehng, 1990), which strives to “readily cast and recast knowledge on response to varying situational demands” (Foti, n.d.). The student must learn to understand problems in their full complexity and to conduct ongoing evaluations across multiple considerations.

All homeland security and emergency management disciplines share a common core, as has been delineated. The differentiation enters when specific team functions and contributions are considered. Certainly catchers, pitchers, and outfielders participate in differently focused training for baseball. Why would the realms of security and disaster response be any different? In designing a soon-to-be-launched graduate program in Advanced Emergency Management and Homeland Security, the authors began with the baseline premise—built upon their own professional disciplines and training—of a need for instruction in operational medicine. As the core curriculum developed, it became obvious that parallel tracks in government, corporate, and non-profit operations would encompass the full scope of requirements.

This same construct can be extended downward to baccalaureate students. Attendance in a traditional campus setting can integrate with and benefit from existing programs. Possibly unique among academic initiatives, the option of distance, or distributive, education fully integrated with more traditional delivery methods can actually enhance the educational experience, advancing the career preparation component of the instruction. Berge, in focusing on on-line education, defined four instructor roles: pedagogical, social, managerial, and technological. (Berge, 1995)

The pedagogical role revolves around duties as facilitator. Questions, guided conversations, and exercises focus discovery on critical concepts, principles and skills. The instructor also fulfills a social role, creating a friendly, social environment in which learning is promoted. The managerial aspect involves setting the agenda for interactions: objectives, rules for exchanges, timetable, and content norms. Lastly, the instructor is responsible for the technological aspects of the course: presentation and communication modes,

content delivery, and submission of work. This combination of attributes is central to the development of emergency preparedness and response professionals along a broad continuum of educational levels, experiences, capabilities, and disciplines.

This facilitative function offers the opportunity to link naïve students with field practitioners. Inclusion of powerful modeling techniques and virtual reality offer enhanced experiential learning within the safety of a controlled environment. Advanced emergency management and homeland security operations include disaster response (Auf Der Heide, 1989), which often involves work in hazardous locations such as collapsed structures (Oklahoma Department of Civil Emergency Management, n.d.), or toxic environments. (Eckerman, 2005)

These environments carry inherent dangers, not only to victims but to responders and rescuers as well (Oklahoma Department of Civil Emergency Management). “Virtual environments may serve as a tool for rehearsing critical actions in a safe environment, in preparation for target performance in a less forgiving one.” (Jonassen, p. 483)

Faced with similar dynamics, the military has developed several instructional software applications that serve both as training tools and as recruiting assets; possibly the most successful of these being “America’s Army” (Champlain College, 2009). America’s Army provides high definition visualizations and interactive scenarios that replicate real world situations, offering opportunities to “learn how to use complex equipment, work together, and rehearse missions...” and to “let commanders plan battles and try out different combat tactics, maneuvering platoons of virtual soldiers, vehicles, and weapons over thousands of square miles of terrain” (Science Clarified, n.d.). Although not a direct correlation to disaster response operations such as urban search and rescue, the format, capabilities, and utility of America’s Army and similar applications are highly relevant to the Advanced Emergency Management and Homeland Security program.

“Virtual Reality (VR) offers the enticing premise of a rich sensory experience” (Burdea & Coiffet, 2003) The sensory engagement can be of sufficient extent as to be termed “immersive” (Davis, Shilling, Mayberry, Bossant, McCree, Dossett, Buhl, Chang, Champlin, Wiglesworth, & Zyda, n.d.). While “educational software and systems are not easily usable for many learners and educators, and for that matter present obstacles for educational institutions” (Advanced Technology Program, 2005) America’s Army is both highly intuitive and immensely successful in its own right as a commercial product, claiming over 8 million users in 2007 (Champlain College, 2009). Commercial acceptance affords both extended use – among former, current, and prospective students— and fosters “self-sustained commercialization,” (Twigg, 1996) a means of supporting the significant development and maintenance costs of the application.

Statistics indicate the growing use of computers in education. “The U.S. Department of Education reported in late 2003 that about 90 percent of people aged five to seventeen use computers, mostly at school but also in libraries or at home.” (Science Clarified)

Research has shown that programs such as America’s Army can be highly successful in achieving educational and subsequent performance goals. “A task force of the U.S. Defense Science Board concluded in a report in 2000 that low U.S. casualties in military actions in the 1990s was [sic] due in large part to the use of simulators in training and planning” (Science Clarified). Academia is uniquely positioned to design, develop, and deploy an integrated educational offering for this emerging discipline.

In response to McCreight, Kilitz posits that higher education in homeland security should focus on civic duty:

A major goal of our homeland security and emergency management programs must be to assist students in becoming people who see how their individual self-interest is embedded in the general welfare and public interest, who have more faith in each other and their public institutions to solve complex problems, and who can act together with poise and boldness to question government actions that may undermine our hard won freedoms and liberty. (p. 4)

We contend there already exists a sufficient pool of highly motivated and selfless public servants awaiting development via rigorously researched and well-developed higher education programs. Two disparate but illustrative facts support this view. The U.S. military has been an all volunteer force since 1973. The National Fire Protection Association (NFPA) estimates there are approximately 1,148,850 firefighters in the United States, 72 percent of whom are unpaid volunteers. (NFPA, 2010)

What is lacking is a research-supported educational program that teaches heuristics, exercise development, and other related activities, aspects of which drive effective planning and response: human behavior, geography, plumes, meteorology, queuing, systems thinking, and other analytical skills.

Educational challenges in homeland security and emergency management today are not unlike those facing public health nearly a century ago. Public health was divided between civil and sanitary engineers and the emerging influence of medicine; bridled by the very parochial limitations McCreight suggests challenge effective curriculum development today. The Welch-Rose Report of 1915 established public health as an entity apart from medicine and created the modern public health education system. It is instructive that this discipline-defining effort arose not by mandate from a government agency, but from within the academic circles of the Rockefeller Foundation. In 2007, HSPD-21 centralized responsibility for public health and medical preparedness education within the

federal government in a single institution (The White House, 2007). In 2010 there has yet to emerge a standard for this education. McCreight is correct in asserting a discipline and the supporting education structure should be created. He has the initiating entity and the beneficiary environment reversed. It is time academia asserts its role as the developer and delivery agent of new knowledge.

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