The next generation core competencies for emergency management

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ABSTRACT

The Next Generation Core Competencies (NGCC) guide the professional development of future emergency managers. Once familiar roles are evolving as the world grows more interdependent; at the same time, disaster risk factors are intensified by the changing interactions between the social, built, and physical environments. The updated edition of emergency management core competencies is particularly important for refining the trajectory of the emergency management discipline and developing capacities requisite to reducing disaster risk and building resilient communities in the midst of a turbulent, complex, and uncertain future.

The NGCC project was a multiphase study conducted by a FEMA-sponsored focus group. Oriented toward future needs, the competencies have been built on the current emergency management competencies, a review of related competencies and global risk trends, a multiphase Delphi study, and wider emergency management community listening sessions. Behavioral anchors and key actions for measurement accompany the new core competencies. The overarching goal of the work is to establish the next generation emergency management core competencies, which are likely to underpin the emergency management workforce of 2030 and beyond. The 13 core competencies fall into three nested categories that are interrelated, but have attributes that build the individual, the practitioner, or relationships.

Key words: emergency management, core competencies, competencies, higher education, competency measurement

Revisiting emergency management core competencies is particularly important at this time for refining future disciplinary approaches. Critical to understanding the competencies that will be at the core of successful future emergency management practice requires examining the current and anticipated drivers of change. Once familiar roles are evolving as the world grows more interconnected and interdependent; at the same time, disaster risk factors are intensified by the changing interactions between the social, built, and physical environments. This new terrain has important implications for the practice of emergency management today, and into the future. The continuing changes point to the need for the next generation of emergency management professionals to be self-programmable, values-based, flexible, able to adapt to changing cultural models, capable of bending without breaking, and to possess the ability to remain inner-directed, while evolving with the surrounding society.[1,2] Accordingly, the focus of this study centered upon the foundations needed to better equip future emergency management professionals to address the transforming hazard and risk conditions.

In general terms, competencies are job-relevant behaviors, motivation, and knowledge.[3] Core competencies were originally characterized as "… the collective learning in the organization … unlike physical assets, which deteriorate over time, competencies are enhanced as they are applied and shared"[4]; and addressed the assets relevant to all people at all levels of service. A more current description for core competencies embodies collective learning that integrates

and coordinates diverse skills, and invests in strategies that unify the wider organization or stakeholder community. In contrast, *technical* competencies are generally unique to a specific functional component of the discipline, important to accomplishing the tasks and objectives of those functions.

Core competencies are used in a variety of ways. Most commonly, core competencies are used to develop student learning outcomes for training and education programs; core competencies can also provide transparency for workplace performance. The purpose of this multiphase study was to establish core competencies that will align with the evolving professional requirements for the emergency management workforce of 2030 and beyond.

RELEVANT TRENDS AFFECTING COMPETENCY REQUIREMENTS

Clearly, the challenges of 2030 and beyond are likely to be different from those confronted today. As the world steadily becomes more interconnected and interdependent, the dynamics of risk continue to transform. Amid these changes, new patterns of risk governance have emerged with shifting trends toward the inclusion of a wide range of institutions.[5] An examination of current and anticipated future forces of change is critical to understanding the competencies that will be at the core of emergency management professionals' successful practice.

Changes to the natural environment include multiple processes such as degradation, resource depletion, loss of biodiversity, and emerging pathogens. The changing climate may be the most significant development; and it alone has the potential to influence "the core emergency management mission area and long-term vision of reducing physical and economic disaster loss."[6]

The built environment is influenced by demographic changes. Population movement trends are producing areas of greater population density, rapid unplanned urbanization, and more people living in high risk hazard zones. The trends contribute to increased hazard exposure, a concentration of risk, and escalating response and recovery costs.

Transformative trends are most evident in the social environment. The pace of information communication technologies development over the past 30 years has enabled the interconnectedness and interdependence of today's social systems. A significant feature includes key processes functioning as a unit on a planetary scale in real time.[1] While the diffusion of information and resource sharing is empowering, network structures can also be characteristically uneven. And so, the evolving flow of information not only changes how people carry out daily functions, but also brings with it new vulnerabilities and increasingly polarized societies.

The interactions between the natural, built, and social environments, and the multiple drivers within each system give rise to complexity. The trajectory of these interactions is a dynamic and grave hazardscape. Such complexity and uncertainty requires entirely new approaches, tools, and capabilities.

Many of the arising interactions evident today will influence the emergency management professional to a greater degree in the future. In a society that is now largely networked in structure, new opportunities are available to work together with the interactive natural, built, and social systems. The initial aim is to recognize and value the dynamic connections in relationship to the constituent parts of disaster risk management and the associated nature of risk.[5] The opportunity is to lay appropriate educational groundwork for preparing future emergency managers to be effective in emerging and unexpected conditions.

METHODOLOGY FOR THE NEXT GENERATION CORE COMPETENCY DEVELOPMENT

The subsequent research was centered on discovering how to best prepare the next generation of emergency management professionals. Establishing core competencies, related behavioral anchors and key actions capable of informing and guiding the preparation of the emergency management workforce of 2030 and beyond was the objective of the study. The resulting update of emergency management core competencies was conducted to address the current and projected drivers of change in relationship to the evolving disaster risks.

The future orientation and uncertainty of the outcomes current risk drivers may yield is acknowledged

as a fundamental study perspective. As such, meaning was sought and interpreted through historical competency findings, as well as conclusions from a range of emergency management experts. The social construction interpretation seeks understanding of the world based on historical and social positions of the community we live and work in.[7] Correspondingly, the study utilized multiple strata of information gathering and analytic refinement of the competencies to address any bias arising in the inductive processes. A variety of participants were engaged to inform the processes and competency development over several phases of the research. The focus group drafted the précis and conducted the data gathering, amalgamation, and analysis. Member composition for each task and cycle was varied to reduce possible single researcher bias. The experts in the Delphi cycles provided an iterative reshaping and refining of the core competencies. As a final refining process, the summary report was posted and listening sessions were conducted for the wider emergency management community feedback. The derived competencies and their definitions was achieved through an inclusive multiphase process: (1) focus group, (2) Delphi study, (3) listening sessions with the broader emergency management community, and (4) development of a measurement model.

Research design and processes

Oriented toward future needs, the competencies were built upon existing emergency management purview, competencies, and literature. Several notable emergency management core competency projects have influenced the profession since 2003. Related competency models, listed below in Table 1, were examined as a starting place. The points of convergence among the models informed components of the initial "strawman argument" for the Next Generation Emergency Management Core Competencies. During the same time frame as this project, the development of Australian standards was underway, but differing in research design; as such, the model served in Phase 3 as a means of triangulating results.

The qualitative research design of this study comprised several processes, which included multiple contributors at several stages of inquiry. A

| Table 1. Related competency models analyzed ||
Competency model	Year
FEMA Emergency Management Core Competency Criterion	2003
United Kingdom Emergency Management Core Competencies	2006
New Zealand Emergency Management Competency Framework	2009
CDC/ASPH Public Health Preparedness & Response Core Competency Model	2010
Guide to Senior Executive Service Qualifications	2012
FEMA/NIC Mapping Core Competencies	2013
FEMA/EMI Disciplinary Purview Focus Group	2013
California Emergency Services Association Competency Framework Draft	2014
Australian Generic Disaster Management Standards	2016

FEMA-sponsored focus group was followed by a multicycle Delphi study, and culminated with a yearlong consultation with the wider emergency management community.

Phase 1: The focus group. A small focus group comprised of regionally diverse emergency management educators examined the present and future contexts of emergency management, emergency management core competency projects to date, and core competency work in similar fields. The charges given to the group were to discuss the currency of disaster risk drivers in relationship to disaster risk management competencies, draft the set of next generation core competencies, and conduct the Delphi study for refinement and ratification of the updated competencies. During the 2-day gathering period, the focus group debated the drivers of future disasters and what foundations an emergency manager of 2030 and beyond might require. Consensus was reached with drafted competencies for the initial précis. Focus group members then conducted the multicycle Delphi study and analyzed the qualitative data obtained toward refining the competencies and their definitions.

Phase 2: The Delphi study. A Delphi technique was selected as a systematic method for recognizing and refining the draft core competencies. An iterative and interactive process, the Delphi technique relies on a panel of subject matter experts to gain consensus on the subject. Feedback from the expert panel was solicited through two or more cycles of questions regarding the draft précis. Information derived from each cycle of responses was amalgamated by one focus group member and then sent to three other focus group participants for qualitative analysis and summary of the data. The revised competency draft was then redistributed for repeated questions and validation of the future oriented competency model. The cycles were repeated until there was reasonable consistency among the participating expert panel members. The preliminary report, which summarizes the next generation core competencies for emergency management professionals derived in the Delphi study, was posted on the FEMA Higher Education website in April 2016 for wider community feedback.

Phase 3: Listening sessions from wider exposure. Presentation and listening sessions were conducted among a wide range of emergency management practitioner, executive leadership, and researcher settings, both domestically and internationally. Recommendations were documented from each setting. The listening sessions provided amalgamated data for a final round of qualitative analysis. The analytic results were also triangulated with relevant literature and the recently published Australian standards. These processes served to refine the competencies, definitions, and their recategorization.

The data from this phase generated a competency grouping that fell into three interrelated and nested categories, which have attributes that foster the individual, the practitioner, or relationships. The nested categories are illustrated below in Figure 1 and include: (1) EM Core Competencies that Build the Individual, (2) EM Core Competencies that Build the Practitioner, and (3) EM Core Competencies that Build Relationships.

Competencies of literacy in conjunction with another concept are core to the category EM Competencies that Build the Practitioner. *Literacy*, used in this sense, is a more expansive perspective, and encompasses knowledge specific to a subject or field.

Phase 4: Development of measurement model. A model for the measurement was developed to accompany the competencies to further support both education and practice. The process of deriving the behavioral anchors and key actions came directly from the range of literature and theories pertaining to the subject within each competency itself, Delphi participant data, and emergency management community listening data. Cognitive, Affective, and Psychomotor domains of Bloom's Taxonomy were foundational to the measurable key actions for each competency. The key actions of the undergraduate, master, and doctoral levels are designated by the action verb used, and based on Bloom's Taxonomy for the lower to higher order learning.

Each core competency has connected behavioral anchors and key actions that provide an evidence-based model for measures at multiple levels of education and practice. Behavioral anchors and their key actions are specific examples of behaviors that demonstrate competency. The behavioral anchors and their key actions can be used toward observable performance measures, or generating measurable learning objectives to underpin a higher education program or curriculum.[8] Resulting data serve as a versatile evidence base for focused improvements, the refinement of curriculum or organizational practice, and locating unknown potential. Each behavioral anchor has key actions for the range of educational levels. An illustrated sample learning objective for each educational stage is also provided for each behavioral anchor. The established model is intended as an easy to use guide for evaluating demonstrated competency levels.

THE NEXT GENERATION EMERGENCY MANAGEMENT CORE COMPETENCIES

The competencies oriented toward future needs were generated and refined through the processes described above. The first competency is specific to emergency management, while the other competencies are designed for greater unity of effort and have broad applications to the range of emergency

Figure 1. Nested relationship of the next generation core competencies' functional categories.

management functions as well as related disciplines. Notably, the 13 competencies are interconnected and interrelated; thus, there is no prioritization in the order they are shown. The Next Generation Emergency Management Core Competencies are presented below under their associated categories, followed by the related definition for the competency.

*Emergency management competencies
that build the individual*
Operate within the emergency management framework, principles, and body of knowledge. The emergency management professional utilizes a proactive, anticipatory, and innovative approach for guiding public policy and in the application of the emergency management framework and principles. Emergency management seeks to promote safer, more resilient, and thriving communities. All necessary actions are employed to mitigate against, prepare for, respond to, and recover from threatened or actual hazards. Emergency management activities must be

comprehensive, progressive, risk-driven, integrated, collaborative, coordinated, flexible, and professional.[9]

Possess critical thinking. The emergency management professional employs critical thinking to identify and reduce disaster risk in the communities they serve. Critical thinking is a disciplined and multifaceted intellectual process, which involves problem-solving, strategic, adaptive, and innovative thinking. The practice of recognizing relevant evidence, understanding relationships in multilayered data, and making clear the connections between potential causes and effects is fundamental to decision making, adaptive actions, and thriving in uncertain environments.

Abide by professional ethics. The emergency management professional both abides by and champions professional ethics. Professional ethics delineate expected and appropriate conduct, principles, and moral and ethical values that guide practice in the midst of both known and uncertain environments.

Ethics must be approached as a totality of principles, not as individual guidelines; together, the sum of principles provides an important foundation for action.

Continual learning. The emergency management professional engages in continual learning as a central means of increasing their efficacy when operating in a dynamic risk environment. Continual learning is about building adaptive capacity through an iterative exchange of new information in relationship to prior understanding. The continual learning process allows ongoing improvement, which is critical to achieving system stability, resilience, and thriving opportunities in the midst of an uncertain and complex future. Continual learners develop and nurture a frame of mind that values and utilizes curiosity, reflection, experience, and the development of new understanding.

Emergency management competencies that build the practitioner
Scientific literacy. The emergency management professional possesses an understanding and working knowledge of scientific processes, as well as a familiarity with the natural, social, and applied sciences. Diverse scientific knowledge is essential to inform the management and understanding of disaster risk and vulnerability on local, regional, national, and global levels. Scientific literacy is the capacity to objectively and systematically work through complex problems, using the scientific process to identify questions, interpret evidence-based findings to inform decision making, and effectively communicate the results to policy makers and the public. Through the use of the scientific process and principles in relationship to hazards, risks, and vulnerabilities, practitioners can deliver enhanced value to enable the communities they serve to thrive.

Geographic literacy. The emergency management professional possesses a foundational and comprehensive understanding of the geographic configurations of hazards, vulnerability, and risk. Geographic literacy comprises knowledge of the earth's physical and human systems, utilizing a spatial foundation where hazards, vulnerability, and risk can be conceptualized. The interconnections, interactions, and implications across complex physical, built, and social environments can be analyzed to track changing disaster risk profiles and inform decision making.

Sociocultural literacy. The emergency management professional recognizes the social determinants of risk, as both the risks for and the effects of disasters are socially produced. A sociocultural foundation provides the lens to examine and understand human behavior, and the individual and collective ways in which humans may affect their relationship to risk, adaptive capacity, and ability to thrive.

Technological literacy. The emergency management professional possesses a fundamental understanding of evolving technologies, their relevant application to practice, and timely adoption of these technologies. Technology refers to the mechanisms or devices developed from the application of scientific knowledge. Integrating emerging or evolving technology into emergency management practice requires an awareness of current innovations, the ability to evaluate their potential utility, the expertise to utilize technologies, and a grasp of the security measures necessary to protect the technology.

Systems literacy. The emergency management professional sees the whole picture, particularly interrelationships and patterns of change. Systems literacy helps the emergency management professional synchronize their understanding and practice with the ongoing shift away from a linear and hierarchical human order to one that is characteristically dynamic, complex, and exponential. The focus of systems literacy is on interdependent relationships that produce reactions, changes, and adaptations over time. This scientific foundation provides the emergency management professional a deeper understanding of the present for developing future focused strategies that enable adaptation and the ability to thrive.

Emergency management competencies that build relationships
Disaster risk management. The emergency management professional communicates and facilitates

disaster risk awareness, assessment, measurement, and reduction across a broad spectrum of stakeholders. Disaster risk management is the application of strategies and policies to prevent new disaster risk, reduce existing disaster risk, and manage the residual disaster risk, ultimately contributing to loss reduction, resilience building, and thriving communities. An understanding of how systems interact to create risk, along with recognition that risk is interdependent with social systems is fundamental to the function.

Community engagement. The emergency management professional is able to facilitate community ownership of risk. Community engagement involves an open dialogue and relationship development that fosters working constructively to reduce the shared disaster risk. The practices of clearly communicating information, giving voice to unheard community members, integrating divergent perspectives, promoting and supporting individuals, families, businesses, and organizations are vital for building the foundation of respect and support for a thriving community.

Governance and civics. The emergency management professional understands how to participate with civic and legal processes, from politics to policy. The way society manages collective processes is referred to as governance, which seeks to identify, evaluate, and operate within the context of relational dynamics including those within power structures. Collaborative processes further expand the achievement of public value by bringing people together across the boundaries of public agencies, levels of government, NGOs, business, and civil society.

Leadership. The emergency management professional is comfortable leading within and across organizations. Effective emergency management leadership emphasizes team building, collaboration, collective leadership, and communication connectivity to a wide range of stakeholders, so that the complex risks can be addressed. Leadership is characterized by: informed decision making, constructive administration and management techniques, fostering a shared vision, empowering others, establishing communication capabilities across varied networks, and creating an outcome oriented environment for continual improvement.

DISCUSSION

The emergency manager's contribution will be pivotal toward reducing disaster risk and building resilient, thriving communities amid a future of high turbulence, uncertainty, and complexity. And so, it is important to highlight that built into the competencies is an intention toward equipping future emergency managers to foster more resilient and thriving communities.

The 13 core competencies identified for the preparation of the future emergency management workforce are ones relevant to all people at all levels of emergency management service, and do not address all skills needed. Furthermore, it is unrealistic to expect all competencies to be fully available in one person. Developing a full competency range through a team approach may yield the fuller representation.

Communications were a cross cutting theme among the behavioral anchors and key actions. The components of communications are expressed in varying dimensions throughout the measures of numerous competencies. The evidence highlighted both communications and finances as sets of fundamental proficiencies, which necessarily underpin the core competencies for future emergency management professionals. Meaning that a set of financial mathematics and written and oral communications are an essential starting point prior to the competencies.

The Next Generation Core Competencies (NGCC) are now tested enough to become central to informing and guiding educational programs and workplace performance. For example, the core competencies and their measures can be used to develop student learning outcomes for training and education programs.[10] As the future drivers and their interactions indicate, the next generation emergency manager will face events of greater challenge and complexity. Therefore, it is vital the new competencies founded on understandings of emerging challenges and complexity be disseminated, incorporated into curriculums, and be taught and fostered.

Future expansion on this work can more explicitly address professional development and workplace

performance. Unexpected changes can also occur in the physical, built, and social environments, and in their subsequent interactions. Therefore, adjustments to the core competencies may be needed to adapt to the ever-changing world.

Already, research was completed with the earlier competencies draft following the Delphi result in relationship to the meta-leadership model.[11] Preliminary work was also conducted to further validate the post Delphi draft competencies during the spring of 2017, as reported by Phelps[12]; and a high correlation was found regarding the necessity for the competencies as identified by the study participants, seasoned emergency managers. Building on the model, a path was outlined for establishing emergency and disaster management core competencies among the Caribbean nations.[13] Arkansas Tech University's Emergency Management and Homeland Security graduate program changed their entire curriculum and student learning objectives to align with the NGCC 2016 draft.[14] The data from this curriculum change can continue to inform the accuracy of the NGCC. Going forward, we recommend the diffusion and implementation of the competencies into practice be explored.

CONCLUSION

The changing world of hazard and risk governance prompted the exploration into what it might mean for a future emergency management workforce. Guiding the work was the goal of establishing the next generation emergency management core competencies for higher education practice; the intent was to prepare future emergency managers to reduce disaster risk and built disaster resilience in an increasingly dynamic environment. The NGCC work was designed to support the education processes involved in preparing the emergency management workforce of 2030 and beyond. The model for measurement was created to foster clarity for emergency management educators and practitioners regarding the behaviors/actions needed for demonstrating a specific core competency.

The examination coalesced in the establishment of a new set of core competencies, which reflect the drivers of tomorrow's risk. Applying the competencies and their supporting model for measurement can contribute to greater unity across degree programs, as well as foster future emergency management professionals that can produce value for their communities by helping them become more resilient and thrive amid turbulence, uncertainty, and complexity.

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