

Mitigating for a Culture of Preparedness in America

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Foundations of Interdisciplinary Studies

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Everyone is a First responder

ABSTRACT

Interdisciplinary frameworks are considered crucial in regard to disastrous events and the idea that preparedness is “everyone’s responsibility.”

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Multidisciplinary Concepts, Methods, and Approaches for Disaster Research

Multidisciplinary frameworks are considered crucial in regard to disastrous events and the idea that preparedness is “*everyone’s responsibility*.” To date Multidisciplinary research has made major contributions to the fields of disaster mitigation, preparedness, response, recovery, and prevention. According to FEMA's 2023 National Household Survey, **51 percent of adults in the US believe they are prepared for a disaster**, which is a 9 percent increase from 2017. The survey also indicates that people are becoming more proactive and better informed about their geographical and personal risks. Additionally, 68% of those surveyed have taken three or more basic actions to prepare, such as gathering supplies, and creating emergency plans. However, these survey results suggest that there are still unanswered disciplinary and multidisciplinary questions regarding active engagement, with internal and external resources before, during, and after a disaster. Cross-disciplinary (multidisciplinary, interdisciplinary, or transdisciplinary) teams are increasingly recognized as crucial for solving complex and wicked (Roadkill) problems, particularly those attributable to natural and human-caused disasters (Gu, 2024). Despite the recognition, the need for additional studies should be pursued comparing the characteristics of events-including predictability, forewarning, magnitude, and duration of impact-affect regarding societal vulnerability and response. The limited research, examining factors for successful cross-disciplinary collaboration for disaster preparedness and response still has unanswered questions for EM’s. This paper examines the following questions. What is Multidisciplinary research? Why is cross-disciplinary collaboration so important to the field of hazards and disaster research? What theory, and methods, are fundamental to multidisciplinary research and its applications for emergency management mitigation?

Introduction

The outlook for future natural disasters is worrying, given the already observable and accelerating effects of disastrous events. Between 1998 and 2017, over 1.3 million people died, and 4.4 billion people were injured, homeless, displaced, or in need of emergency assistance due to earthquakes, tsunamis, floods, and other extreme weather events globally. Even without the exacerbating effects of natural and human-caused events, disasters and hazards are increasingly recognized as complex or wicked problems, involving an interdependence between built, natural, and social systems (Lahiri, 2021).

Coordinated interdependence processes are acknowledged to be critical for ‘horizontal’ collaborations between multiple stakeholders during dynamic disaster contexts instead of hierarchical, “Command-and-Control” organizational approaches, which have often failed at producing efficient disaster response. Command-and-control approaches to disaster management can also falter in the face of novel factors, such as the more diverse knowledge economy engendered by social media, whose horizontal flow of information can challenge hierarchical organizations (Gu, 2021).

As illustrated by Sawalha, inefficient coordination and confusion between multiple stakeholders can stem from a lack of collaborative guidance and capacity. Effective responses require robust collaborative structures between multiple stakeholders at multiple levels of disaster contexts. Robust collaboration is also an increasingly acknowledged feature of disaster research teams, as the complex problems of disaster response cannot be adequately addressed within the domain of a single discipline. Thus, there is increasing acknowledgment of the interdependent, multisectoral nature of disaster response and research, just old-fashion teamwork (Gautam, 2025).

FirstLine TaskForce for Disaster Defense is the educational factor addressing the whole community. The educational platform is redefining the “Power of Connection” while building a culture of preparedness in America. Augmented Reality (AR) technologies and handheld devices formulate a platform of connectivity that resonates community resiliency through engaging preparedness activities known as IN-STEP (Interactive Networks and Strategies for Teaching Emergency Preparedness). FirstLine visionaries bring first-responders, business heroes and communities together to advance beyond their experiences in both failure and success resulting from disaster. FirstLine’ marketing and branding model supporting IN-STEP presents a comprehensive package enriching individuals and communities while redefining the Emergency Management Cycle at the grass-roots level. Stimulating interactive reward programs create passion, excitement, and personal connection amongst people toward disaster awareness and emergency preparedness.

FirstLine’s AR preparedness App helps increase awareness and understanding, particularly among organizations implementing preparedness factors, of local knowledge, practices, and contexts related to disaster preparedness, so that they can be used before, during and after a catastrophic event. Our App represents the results of cross-disciplinary mitigation reviews and presents a framework that can be used to integrate local knowledge with citizenry on disaster readiness.

Social media has changed the way people communicate not only in their day-to-day lives, but also during disasters that threaten public health. Engaging with and using emerging social media may well place the emergency-management community, including medical and public health professionals, in a better position to respond to disasters.

The effectiveness of our public health emergency system relies on routine attention to preparedness, agility in responding to daily stresses and catastrophes, and the resilience that promotes rapid recovery. Social media enhances each of these component efforts.

FirstLine' central goal is to acknowledge how researchers, who are primarily trained within a single discipline, possess critical expertise moving them into the increasingly integrative spaces of emergency management. Making the integration a hallmark for multidisciplinary, interdisciplinary, and transdisciplinary research (Elkbuli, 2021).

What is Multidisciplinary research?

The Multidisciplinary research is a **technique of research in which the tools of different sciences and disciplines are utilized to find an explanation to an issue emerging from emergency management complexities**. Solutional processes occur when researchers among various disciplines work independently on a wicked problem or research question. In this approach, researchers share research goals and work on the same problem but look at it from their own discipline's perspective.

Interdisciplinary approach means that knowledge of several disciplines is used to a given problem and are supplementary to one another in such a way that it is possible to draw a clear-cut conclusion, which is free from being branded as isolated or partial one. In multidisciplinary research a number of fields participate in a certain line of inquiry which is specific to a problem or region. But the individual findings of the disciplines involved are only brought together in a cumulative fashion. Therefore, modern research is tending to be more multidisciplinary (Choudhary, 2015).

The reason is the increasing dominance of problem solving, project oriented applied research. Since current problems are of such a complex nature, the demand for knowledge encompasses all aspects of economics, social patterns, political unrest, psychology and more. Therefore, solutions through research demand a multidisciplinary approach. An effective multidisciplinary process is likely to require ‘softer’ human skills – like teamwork, leadership, and tolerances for difference, ambiguity, and selflessness (Cavallo, 2014).

Multidisciplinarity, juxtaposes two or more disciplines focused on a question, problem, topic, or theme, fostering an array of information, knowledge, and problem-solving solutions, noting however, disciplines remain separate. The existing structure of knowledge is not questioned. As an example, consider a group of emergency managers (EM) working together with a group of economists to study the costs and benefits of different approaches for flood risk management in a community that is geographically at risk of hurricane surge. The EM’s and economists would keep their work solidly within their traditional disciplinary approaches but leverage the collaboration of data and information from the group effort. The definition above identifies both the *composition of the research team* and the *mode of investigation*. Therefore, it is important to consider an “*unidisciplinary*” team, primarily consisting of sociologists. Such a team would draw on traditional sociological theories and methods to evaluate a hypothesis or answer a research question regarding readiness (Peek, L., & Guikema, S, 2021).

Because disasters unfold on different geographic and temporal scales and occur at the intersection of natural and built environments and social and technical systems. Disaster research has long engaged researchers in traditional disciplines. Disasters within the natural sciences, engineering, and social sciences, among others. In addition, various explicitly interdisciplinary fields, such as risk analysis, public administration, public health, and urban planning, have made substantial contributions by further bridging academic, policy, and practice divides (Klein, 1990).

Why is cross-disciplinary collaboration so important to the field of hazards and disaster research?

Cross-disciplinary collaboration is vital to the field of hazards and disaster research because failure to make connections across disciplines can lead to deadly errors in risk assessment, hazard mitigation, and disaster planning. Hazards and disasters arise from interactions between environmental and social processes, so interdisciplinary research is crucial in understanding and effectively managing them. Key areas where interdisciplinary work is vital include early warning, urban planning, hazard and risk mapping, scientific advisory processes, risk communication, and institutional geographies (Gilligan, 2023).

The uncertainty posed by natural and human-made disasters arises from both known risks and a range of unforeseeable risks, some of which may be novel, not having been observed before. These interconnected risks may evolve over short periods of time and may feed one another. In a network of multiple causes and effects, such risks may not be foreseeable at the disaster preparedness level and may only be observed at the time of disaster response. This creates a higher level of complexity and requires innovative approaches with individual organizations and members needing to make decisions outside predefined frameworks and hierarchical command-control structures while still operating in the ethos of their organizations (Ireland, 2014).

In addition, hierarchical command-controls is managing a sustainable development in a complex situation. The challenge is the interdependency of the associated societal and environmental issues such as livelihoods, food security, biodiversity, markets, and land use.

The complexity increases as each of these issues is influenced by multiple-governance actors with distinct roles, interests, beliefs, and capacities. Moreover, social, and environmental interconnectedness extends beyond single sectors and organizational hierarchies and is likely to further increase with global change (Bergsten, 2018).

What theory, and methods, are fundamental to multidisciplinary research and its applications for emergency management mitigation?

Multidisciplinary research for emergency management mitigation involves combining empirical and theoretical methodologies. Key theoretical perspectives include understanding disaster behavior, political and social definitions of disaster, and the emergence and importance of using a multidisciplinary approach.

Multidisciplinary research in emergency management mitigation requires a combination of theories and methods that integrate perspectives from various fields, including environmental science, engineering, public policy, sociology, psychology, and more. Here are some fundamental theories and methods that underpin this approach:

Key Theories

1. **Systems Theory** – Helps in understanding how different components of emergency management (social, technological, environmental) interact as a complex system. Also, **Systems Theory** in emergency management provides a structured way to understand how various elements—social, technological, environmental, and organizational—interact during disasters. It emphasizes the interconnectedness of different components rather than viewing them in isolation.

2. **Risk Theory** – Provides frameworks for assessing hazards, vulnerabilities, and potential impacts of disasters.
3. **Resilience Theory** – Examines how communities and organizations adapt, recover, and learn from disasters.
4. **Behavioral Theories** – From psychology and sociology, these explain how individuals and groups react to crisis situations.
5. **Decision Theory** – Used to analyze how choices are made under uncertainty, which is crucial in emergency response and mitigation planning.

Essential Methods

1. **Scenario Planning & Simulation** – Helps in anticipating different disaster scenarios and preparing responses.
2. **Geospatial Analysis** – Uses GIS technology to map risks and plan mitigation strategies.
3. **Quantitative and Qualitative Research** – Includes statistical analysis, case studies, surveys, and field interviews.
4. **Machine Learning & Predictive Analytics** – Enhances forecasting and response strategies through data-driven insights.
5. **Interdisciplinary Collaboration & Participatory Research**
Engaging with stakeholders from different fields and communities to create holistic solutions formulates pathways for solutions.

Emergency management mitigation is strongest when it embraces multiple perspectives, combining technical expertise, social sciences, and community engagement. Would you like to explore specific case studies or practical applications of these ideas?

Fixes vs Educational Platforms

In the aftermath of a disastrous event the whole community is immediately elevated to a status known as the “damage path.” Each effected region represents a diverse audience that will seek information imperative to resolve needs affecting communications, emergency medical, shelter / provisions (sheltering in place), transportation and interactions with first responders.

Response is delineated by conditions **affecting** medical, civil order, safety, continuing employment status, and the surrounding complexities of the whole community...” These questions demand a common denominator (an organizational pathway minimizing chaos), to communicate the needs of a diverse citizenry in each audience (FirstLine, 2025).

Disaster management can be divided into two main phases: **pre-disaster management and post-disaster management**. Each phase has distinct objectives and activities aimed at reducing the impact of disasters and facilitating recovery.

Step by Step Solution:

Step 1

Pre-disaster management involves activities aimed at preventing disasters or minimizing their impact. This includes risk assessment, preparedness planning, and mitigation strategies.

Step 2

Key activities in pre-disaster management include training and educating communities, developing early warning systems, and implementing building codes and land-use planning.

Step 3

Post-disaster management focuses on the response and recovery efforts after a disaster has occurred. This includes emergency response, relief distribution, and rehabilitation of affected areas.

Step 4

In post-disaster management, the emphasis is on restoring normalcy, rebuilding infrastructure, and providing psychological support to affected individuals.

Final Answer:

In summary, pre-disaster management is proactive and focuses on prevention and preparedness, while post-disaster management is reactive and focuses on response and recovery (Filo, 2025).

America's Disaster Relief System Is in Dire Need of Repair

Devastated Communities

In the aftermath of every major disaster, Americans watch a familiar scene unfold, where communities are devastated, families displaced, and survivors struggle to navigate a system that often feels like an obstacle course rather than a lifeline. Gaynor, a former FEMA administrator and the CEO of a private disaster recovery service for survivors, we've seen firsthand the dedication of emergency managers who work tirelessly to help people rebuild.

But we've also seen how the system, bound by bureaucratic constraints and outdated processes, too often fails to deliver support in the way that its leaders want to be able to, or that truly empowers survivors (Gaynor, 2025).

The Core Problem

The core problem isn't a lack of resources. In fact, the funding for essentials like housing, food and rebuilding already exists. But these resources are spread across a tangled web of federal, state, and nonprofit programs that fail to work together efficiently. Survivors are left navigating multiple agencies, redundant paperwork, and confusing eligibility requirements at a time when they need clarity and simplicity the most.

President Donald J. Trump Disaster Resilience Strategy

Now, with President Trump's recent announcement of a new disaster resilience strategy, we have an opportunity to massively upgrade the system for the 21st century and the coming onslaught of disasters. If we embrace this shift wisely, we can streamline the system to ensure survivors get the help they need without unnecessary delays.

Because the critical infrastructure of this country is not just roads and bridges; it's the resilience and strength of the American people and their ability to rebuild and bounce back.

Disaster recovery in America has long been plagued by inefficiencies and misaligned incentives. While agencies may work with good intentions, the system itself is not designed for seamless coordination. Instead of a single, survivor-centric process, disaster victims must navigate a maze of bureaucracies, each with its own requirements, deadlines, and limitations (Gaynor, 2025).

Disaster Readiness through Education

The continuous implementation of a formal or informal educational platform through schools, with linkages to community-based risk-reduction promises the development of a “culture of safety,” of societies less vulnerable and more resilient to the impact of disasters in the future.

In the book “Promoting Community Resiliency in Disaster,” the role for Schools, Youth, and Families. The book written by Kevin R Ronan from Massey University Palmerston, New Zealand and David M. Johnston from the Institute of Geological and Nuclear Sciences at Lower Hutt, New Zealand. The number of people to thank for their assistance in preparing the book is numerous. However, as mentioned in the title there is an acknowledgement to the schools, children, and families that participated in the programs and research.

The nine (9) chapters over 203 pages details information ranging from resilience frameworks, the role of schools, youth, families, response and recovery to public education and recovery. The book examines disastrous events caused by natural and human made events.

Ronan and Johnston recognize that the title Promoting Community Resilience in Disasters and its content offers both clinicians and researchers guidance on hazard preparation efforts as well as initial response and intervention practices. Proving the thesis stems from the discussions regarding natural and human caused events.

The book in a sense is a guide to **help increase bounce back, or resilience** factors within local communities.

Given the links between preparedness, response, and recovery from a disaster, **and between physical response and psychosocial forces**, help people to prepare more effectively, respond and recover more quickly. Resilience as outlined in the book focuses on the fact that youth and their families represent two groups identified as more vulnerable to the effects of a disaster. Socially, resilient communities exhibit stronger social cohesion and trust among members, enabling a more efficient response to crises. From a health perspective, such communities often witness fewer casualties and quicker return to normalcy post-disasters. Creating a culture of preparedness starts with linking directly to science. Resilient communities are better positioned to withstand and recover from disasters, translating to fewer economic losses (Cutter, 2008).

Human Behavioral Patterns, and Responses in Crises

Psychological factors, such as risk perception, significantly influence how individuals prepare for and respond to **disasters**. Subjective experiences, media coverage, and cognitive biases shape risk assessments and **decision**-making processes.

While we all share basic instincts, our individual responses to crises can vary wildly. Firsthand experiences play a significant role. Someone who's survived a previous disaster might have developed coping mechanisms that serve them well. Conversely, past trauma could heighten anxiety and fear responses.

Cultural background also shapes crisis behavior. In some cultures, stoicism in the face of adversity is highly valued. Others encourage more open emotional expression. These cultural norms can influence everything from how people seek help to how they interpret the severity of a situation.

Personality traits come into play as well. Research suggests that individuals high in traits like resilience and optimism tend to cope better with crises. They're more likely to maintain a sense of hope and actively seek solutions. On the other hand, those prone to anxiety or pessimism might struggle more with the uncertainty and stress of a crisis situation.

Preparedness is another crucial factor. People who've received crisis training or have emergency plans in place often respond more calmly and effectively. This highlights the importance of crisis plans for student behavior in schools and similar preparedness measures in other settings.

Conclusion

The wicked problem of Disaster risk reduction can be effectively achieved, but only through a comprehensive interdisciplinary approach aimed at connecting and integrating all the actors involved in forecasting, preventing, managing, and mitigating disaster risk and its consequences. Furthermore, disaster risks can certainly be minimized by transferring to the relevant institutions and the general public valid and reliable knowledge on the nature, causes and effects of such disasters (Righi, 2021).

Disaster risk assessment and mitigation, as well as emergency management, is based on state management and civil protection systems which rely on a sound public awareness of risks and prevention measures which are all too often missing. Therefore, it is crucial to enhance citizen awareness through a sound educational curriculum. Educating students on the types of disaster risk existing in specific areas.

Furthermore, from the standpoint of the whole community students are taught that fear and concern of people should be replaced by a widespread culture of preparedness. Risk and emergency management should always be preceded and accompanied by forecasting and prevention actions.

Preventing or minimizing the effects of disasters, such as those related to in this paper, requires interdisciplinary policies and interventions, moving beyond traditional public health and emergency services. New and innovative approaches to disaster risk reduction should be pursued, by merging knowledge and experience achieved, and by gathering academics, practitioners, employees of local governments and agencies to discuss common issues seen from different the perspectives presented (Righi, 2021).

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