

The Role of Institutions of Higher Education in Community-Centric Risk Reduction

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Introduction

Calls for universities to be good citizens and stewards of place have recently invited them to include commitments to strengthening the communities in which they reside in their mission statements and their program offerings. The American Association of State Colleges and Universities (AASCU) has renewed its call for institutions of higher education (IHEs) to be “stewards of place” (AASCU, 2014). To act as stewards of place universities are encouraged to demonstrate “public engagement” through “place-related,” “interactive,” “mutually beneficial” and “integrated” collaborations with their communities (AASCU, 2002). Universities are reminded that to be publicly engaged they must be “fully committed to direct, two-way interaction with communities and other external constituencies through the development, exchange, and application of knowledge, information, and expertise for mutual benefit” (AASCU, 2002, p. 9).

This paper explores one area in which colleges and universities may make substantial contributions to local communities. As relatively large institutions, often with substantial resources, IHEs can partner with emergency management actors to enhance disaster response and recovery activities. Furthermore, IHEs can multiply education and outreach to help mitigate local hazards and improve general risk reduction and household resilience. Universities also possess local knowledge and connections that allow access to local populations; other organizations working in disaster response often lack this access due to their regional or centralized structures. Universities can partially fulfill their roles as good citizens by actively partnering with local emergency management to support disaster response to improve the safety of people and places.

One illustration of the potential of partnerships with emergency management to support disaster response is Sam Houston State University (SHSU) collaboration with the Army National Guard to provide campus facilities to house personnel, equipment and supplies during Hurricane Harvey in fall 2017. Through interagency cooperation, the campus provided space and logistical support to responders. Previously, the campus has met additional disaster response needs by sheltering students as well as evacuees from other impacted areas. Additionally, the agricultural facilities were opened to house animals, both domestic and livestock, that were evacuated with their owners. Students, faculty, and staff have also consistently been involved in disaster response in many ways ranging from volunteering at evacuation shelters, gathering and donating necessities, and fundraising, to mucking out flooded houses and schools in cleaning and rebuilding efforts.

The first example of citizenship of our university is linked to disaster response and therefore only happens periodically when there is evident need. The second way campuses can contribute to the safety and wellbeing of their communities is more sustained. As disasters become more frequent

and severe, IHEs can increase risk awareness and emergency preparedness through curriculum that ultimately contributes to community risk reduction. Examples include courses in emergency management, community and public health, community nursing, community leadership and others that incorporate applied activities to increase community awareness and resilience.

Disaster-Risk Reduction in Vulnerable Communities

Natural disasters continue to pose significant risks and devastate communities globally (Engel, Harald, McNeil, Shaw, Trainor, & Zannoni, 2010; Traver, 2014). Therefore, mitigation and risk awareness are indispensable concepts of disaster risk reduction (DRR, Holmes, Schwein, & Shadie, 2012). Risk awareness and education are important aspects of mitigation because they allow policy makers to acknowledge risks and implement systematic processes of analyzing hazards in communities to reduce vulnerabilities and minimize impacts [National Research Council (NRC), 1991; United Nations Office for Disaster Risk Reduction (UNDRR), 2015]. IHEs, particularly those located in communities characterized by high-risk vulnerabilities such as high poverty rates, low median home values, low educational attainment, or low labor force participation can become meaningful programmatic entry points for successful disaster risk reduction initiatives (Twigg & Bottomly, 2011) and for local disaster resilience strengthening.

Indeed, in Huntsville, Walker County, Texas, with a county poverty rate of 22.7% in 2016 was nearly double the national average of people in poverty of 12.7%, median home values were \$60,000 below national average, educational attainment remained lower than the national average (e.g., 10% less of Bachelor-level educated adults), and labor force participation lagged national average by 20% (United States Census Bureau, 2016). The local tax base is limited by the large presence of several state agencies with large, tax-exempt land holdings: Texas Department of Criminal Justice (TDCJ); SHSU; several state parks; and a national forest. Particularly in a socio-economic context like this, institutional citizens, like universities, could lend their abilities and resources to strengthen local resilience.

Primary responsibility for Emergency Management (EM) and DRR rests on local governments (United States Department of Homeland Security [DHS], 2003; 2011; Rubin, 2012). This *community-centric* rather than *government-centric* disaster management philosophy became the mantra of the overall disaster management discourse since the Department of Homeland Security began. Indeed, despite federal legislation that established national-level organizations (e.g., Federal Emergency Management Agency [FEMA]) and national preparedness systems, U.S. disaster policies emerged first on the local level (Rubin, 2012; Sylves, 2015). The review of inadequate federal and state actions in response to hurricane Katrina (Post Katrina Emergency Management Reform Act [PKEMRA], U.S. Congress, 2006) further underscored that disaster resilience would improve if it evolved from the bottom up. This is best exemplified by the notion of the *Whole Community* approach, under which individuals and families, businesses, faith-based and community organizations, nonprofit groups, schools and academia, media outlets, and all levels of government share responsibility for DRR efforts (DHS, 2011). Subsequent *Whole Community* themes are anchored in (a) understanding community complexity; (b) recognizing community capabilities and needs; (c) fostering relationships with community leaders, building and maintaining partnerships, empowering local action, and leveraging and strengthening social infrastructure, networks, and assets (DHS, 2011, p. 5). In addition, in the

risk-reduction arena, federal financial statistics highlight severe under-resourcing of local-level community awareness and preparedness initiatives. Indeed, community-level support by the DHS and FEMA has been characterized as anemic (Kirk, 2014). Federal assistance such as the Urban Area Security Initiative (UASI) grant program has administered approximately \$8 billion from 2003 through 2014 to its 64 metropolitan areas (Errett, Bowman, Barnett, Resnick, & Lutkow, Frattaroli, & Rutkow, 2014), but UASI assistance has been largely regionalized to such metropolitan areas and focused on physical protection of assets critical to national security. Meanwhile, local governments and non-profit organizations, particularly in small towns and rural areas that are often remote or exhibit high social vulnerability characteristics, remain understaffed and have limited resources even as local governments are called upon to play an increasingly important role in service provision and policy making (Lobao, 2016).

This is also true for schools that have been specifically listed under the *Whole Community* approach as “hazards education can play a vital role in increasing a community being ready, willing, and able to do what is necessary to prepare for and respond to disaster” (Ronan & Johnston, 2010, p. 95). Schools nationally have been addressing decreasing budgets; for example, the K-12 education funding was cut in 34 states in 2011 alone (Johnson, Oliff, & Williams, 2011). Short of federal or state mandates to support hazards and risk-reduction education, public schools are unlikely to make it a priority (Hull, 2011). Moreover, rural schools in areas like Huntsville specifically tend to have less access to resources such as DRR grants than urban schools do (Diepenbrock, 2010).

Beyond what has been described as insufficient support of federal monies in remote, rural, and under-resourced communities, national non-profits like the American Red Cross (ARC) have marshalled resources and trained personnel towards DRR; however, they have recently moved to a regional office system covering large and often very diverse geographies, hazards, and communities (Holdeman, 2015). In fact, “the Red Cross has slashed its payroll by more than a third, eliminating thousands of jobs and closing hundreds of local chapters. Many veteran volunteers, who do the vital work of responding to local fires and floods have also left, alienated by what many perceive as an increasingly rigid, centralized management structure” (Elliott, 2015, para. 4). Regionalization of ARC chapters has been reported in many states in the last decade (Holdeman, 2015, 2016; Horsley, 2011; Shauger, 2017). This resulted in challenges in addressing localized and specific community needs (e.g., Baker & Denham, 2019; Denham & Baker, 2019; Elliott, Huseman, & Muldowney, 2017). If all disasters are local, then regional offices are not likely to possess the intimate knowledge necessary to mitigate hazards effectively in every location of their jurisdictions. We propose that one strategy to mitigate issues related to access, regionalization of NGOs, and resource allocation for DRR in under-resourced local schools; it could be through engagement with other, less-traditional, agency partners such as institutions of higher education. We offer a model for a community-centric approach to resilience building through institutional partnerships and specifically through engagement of college and university students.

The Role of Students in Disaster Risk Reduction

In addition to IHEs possessing logistical support and research acumen to aid communities in which they are anchored, they also house tremendous social capital of students who can be a

formidable force-multiplier in local community DRR efforts. Children and youth are among those most disparately affected by disasters (Fothergill & Peek, 2015; Peek, 2008; Peek & Stough, 2010; Ronoh, Gaillard, & Marlowe, 2015; Terranova, Boxer, & Morris, 2009). Historically, disaster research has treated school-age children as passive victims (Anderson, 2005; Mitchell, Tanner, & Haynes, 2009) with risk communication predominantly associated with centralized, adult-focused initiatives:

Mainstream approaches and theoretical debates in disaster management tend to ignore the role of children and young people as communicators of risk and as facilitators of disaster risk reduction (DRR). Instead, disaster management is dominated by top-down relief efforts targeted at adults, who are assumed to be attuned to the needs of their families and the wider community and to act harmoniously to protect their immediate and long-term interests (Mitchell, et al., 2009, p. 6).

In recent years, the importance of agency for children and youth in risk-reduction education has been slowly emerging in disaster literature in the United States (e.g., Drabek, 2013; Denham & Khemka, 2017; Denham & Lee, 2019.) Internationally, Child-Centered Disaster Risk Reduction (CC-DRR) scholarship noted a significant spike in publications from 7 in 2004 to more than 50 per year between 2016 and 2017 (Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector [GADRRRES] 2018; Ronan, Petal, & M. Tofa, 2018). Emerging international CC-DRR scholarship, as well as the recent meta-analysis of 35 CC-DRR studies, (Johnson, Ronan, & Johnston, 2014) encourages synergized and comprehensive global initiatives in science and technology to translate CC-DRR research into practice and policy.

Our focus on university students and children aligns with developing trends in DRR research that offer positive empirical support both domestically and internationally to propositions that children can be taught self-protective actions, contribute to community-level risk reduction efforts, engage in classroom discussions, youth councils, or act as agents in disseminating risk-reduction knowledge to their guardians; this potentially generates significant changes in their families and communities. Additionally, the *Sendai Framework for DRR* is “a non-binding agreement that recognizes national governments as having the primary role for DRR, but acknowledges that there is much wider stakeholder community (including local government, the private sector, NGOs, and others) that shares the burden” (Haddow et al., 2017, p. 339), recently included children and youth as key stakeholders in DRR efforts (UNDRR, 2019). Specifically, a children and youth engagement guide called “Words into Action: On the Frontline of Disaster Risk Reduction and Resilience” (UNDRR, 2019) has been issued as a companion for implementing the *Sendai Framework 2015-2030*. The main propositions of “Words into Action” (UNDRR, 2019) argue that children possess unique capabilities to drive mitigation solutions through: (a) awareness raising; (b) innovations such as crowd-source data gathering, creative ways to use new technologies; (c) ability to mobilize from local to global action through communication and leveraging of social media; (d) inclusivity in reaching and including populations most at risk; and (e) effectiveness of child and youth-led peer to peer supports. Our

youth-driven research study fulfills both the *Sendai Framework for Disaster Risk Reduction 2015-2030* and the call to include children and youth in actions that advance it. Most importantly, including students in DRR efforts through university partnerships with local communities makes this long-ignored population category a significant player in contributions to local disaster resiliency. Students can thereby also support the stewardship missions of educational institutions in communities where they live and study, which they might ultimately serve and for which they might advocate.

Leveraging Academic Community Engagement for Disaster Risk Reduction

Our university has adopted a campus-wide service-learning methodology called Academic Community Engagement (ACE). ACE-designated courses align learning objectives with community engagement. They typically require a minimum of nine hours of student community engagement, a reflection assignment, and the inclusion of the community engagement activity in the overall course grade (Denham, 2017a). The ACE designation identifies courses whose aim is to further acquisition of academic content and transversal competencies by university students while providing needed services *in situ* to communities the university serves and echoes Boyer's (1996) appeal to institutions of higher education that their resources ought to be connected "to our most pressing social, civic, and ethical problems, to our children, to our schools, to our teachers" (pp. 19-20).

For Emergency Management education and risk reduction specifically, ACE courses have previously served to strengthen reciprocal relationships of our campus with the community. For example, past ACE projects in DRR included graduate students performing safety and security risk assessment for under-resourced, non-profit educational entities (Denham, Franks, & Hajicek, 2014) and public schools (Franks & Denham, 2015). Students have also integrated into community response networks such as Community Emergency Response Teams (CERT, Denham, 2017a) and leveraged their expertise as disaster risk reduction exercise evaluators for public emergency response entities at a local level (Manousos & Denham, 2015). Scholarly research on ACE DRR education (e.g., fire hazard risk reduction in a community through a partnership with ARC Fire Safety campaign) demonstrates that national-level risk-reduction efforts clearly benefit from partnerships with universities. Students engaged in this smoke-detector installation and risk-education study were a valuable resource in identifying societal vulnerabilities such as linguistic needs, providing access to other university resources such as student organizations, adopting targeted strategies that were more specific-community risk-driven, and outperforming the NGO-led initiative through a more integrative approach to community-resilience building (Denham & Khemka, 2017). Most importantly, students linked an NGO with a previously limited footprint in the community to a network of community resources such as our university. Our current study built on Denham and Khemka's (2017) research by expanding the IHE/Community partnership to include the critical piece in DRR education, mainly by involving a local school and school-age children as potential household agents in DRR. To that end, our work fulfilled two CC DRR efforts as conceptualized by the the *Sendai Framework*; it meshed together the social capital of students and the social capital of school-age children in disaster mitigation efforts in an under-resourced community. Our study

was conducted in Spring of 2017 when we approached the local school district as a possible partner for a hazard education initiative. We hoped teaching children about local hazards would equip them with knowledge about risk-reduction that could be relayed further to their households.

Methods

The CC-DRR initiative we adopted for this collaborative hazard education project was ‘*Pillowcase Project: Learn, Practice, Share*’ (ARC, 2015). The overarching purpose was to involve our graduate students as lead educators, implementers, and evaluators of the ARC initiative and to align our graduate teaching of theories, concepts, and models of community resilience with local elementary school’s science curriculum. It is noteworthy that the Pillowcase Project was designed to address “many key elements of the Next Generation Science Standards for grades 3-5, as well as core competencies in the Common Core State Standards for grades 3-5” (ARC, 2015, p. 2). We liaised with the school district, assistant principals, teachers, and public relations’ personnel to align the Pillowcase Project with appropriate classes/grades and with the Texas Education Agency’s (TEA) Texas Essential Knowledge and Skills (TEKS) science elements. In addition to school district’s involvement, the ARC Disaster Program Manager helped onboard and train students, remained connected to faculty and curriculum content, and participated as an observer of the *Pillowcase Project* delivery. Overall, we scheduled seven concurrent graduate student-led (two graduate students per teaching team) 60-minute presentations to 135 third graders in one low-income elementary school. The Institutional Review Board (IRB) protocol was followed (APA, 2010) to ensure safeguarding of ethical research principles in child-centered research. Our research question related to graduate student engagement was: Do graduate students in an ACE-designed course support the civic mission of local institution of higher education in DRR and if so, in what ways?

Students prepared the teaching module based on local community’s primary hazard vulnerability, identified as house fires. It was our goal to assess to what degree school-aged children would convey the importance of proper placement, installation, and maintenance of smoke detectors and to what degree they would be able to influence household adults to make risk reduction adjustments. Thus, our resulting research question was: Do school-aged children engaged in CC DRR education influence the overall household resilience and if so, in what ways?

While we discuss our pedagogical approach and all data sources involved in this study elsewhere (Denham & Miller, 2019), for the purpose of this inquiry and to answer research question: *Do school-aged children engaged in CC DRR education influence the overall household resilience and if so, in what ways?*, we relied on the *Pillowcase Project Survey* instrument (Denham & Miller, 2017). We constructed the survey based on extensive overview of Pillowcase study materials (i.e., *My Preparedness Workbook* booklet distributed to third graders, *Dear Educator* workbook distributed to teachers, *The Pillowcase Project Presenter Fundamentals* used by graduate students, *Educational Standards Report* overviewing program components that support curricular standards for grades 3-5, [ARC, 2015]). The 15- item survey contained 12 items arranged along a 5-point Likert Scale (from *Strongly Agree* = 5 to *Strongly Disagree* = 1 with *Unsure* as midpoint = 3) as well as three open-ended questions. The survey was designed for representatives of households whose children were part of the third grade education module and measured their perceptions about hazard adjustments considered as a result of child sharing

knowledge gained in the project. The reliability analysis of the *Pillowcase Project Survey* (Denham & Miller, 2017) with the sample population yielded *Cronbach alpha* .85 based on standardized items. Adopting Field's (2009) criteria of .8 as reliable, we considered the instrument appropriate for our study. The 12 items represented the following questions:

- (1) Your household is more likely to take steps to prepare for an emergency or natural disaster
- (2) Your household is more likely to have an emergency communication plan
- (3) Your household is more likely to have a meeting point outside the home in case of an emergency
- (4) Your household has a plan to get out of the house quickly in case of an emergency
- (5) Your household has a plan to install smoke detectors
- (6) Your household has a plan to inspect smoke detectors
- (7) Everyone in your household knows how to dial 9-1-1 in case of an emergency
- (8) Everyone in your household knows the street address where you live
- (9) Everyone in your household knows different ways to exit the house in case regular exits are blocked
- (10) Your household has a list of most important things to have in an emergency
- (11) Your household has a plan to practice leaving the house in an emergency, and
- (12) Your household has a plan for pets in case of an emergency.

Open-ended questions of the *Pillowcase Project Survey* (Denham & Miller, 2017) asked the guardians about their interest in discussing household preparedness with researchers, discussing school's preparedness education in general as well as suggestions for further hazard education. Surveys were distributed by the teachers, delivered by third graders to their guardians, and returned to school Principal's office upon completion. Overall, of the 117 students who took part in the project, 42 guardian surveys (34%) were returned. We used SPSS for instrument reliability analysis and inferential statistics (no demographic data were collected). In order to elicit answers to our research question: *Do graduate students in ACE-designed course contribute to supporting the civic mission of local IHE in DRR and if so, in what ways?*, we used field observations by both researchers as well as ACE course structured end-of-semester *Final Reflections* by seven pairs of graduate students involved ($N= 14$).

Results

In response to the question: *Do school-aged children engaged in CC DRR education influence the overall household resilience and if so, in what ways?*, guardian responses to the survey are

represented in Table 1. Our analysis revealed that the guardians agreed that children’s participation in the Pillowcase Project education motivated adults to adopt preparedness adjustments in their households. Of those, the highest scores were related to the ability of school-children to influence guardians’ decisions to install smoke detectors, which has been one of the most successful domestic fire hazard adjustments noted in the literature (Tannous, Whybro, Lewis, Ollerenshaw, Watson, Broomhall, & Agho, 2016; Tannous & Agho, 2017) and in Texas specifically because smoke detectors installation in the state is lower than the national average (Texas Department of Insurance, 2015). Moreover, guardians felt their school-age children’s participation in the CC DRR module motivated them to inspect existing smoke detectors, a DRR strategy of equal significance when addressing residential fire hazards.

Putting our results in research perspective, the National Fire Protection Association (NFPA, 2017) reported that fire departments in the U.S in 2015 responded to 1,345,000 fires, of which 365,000 were in residential homes. Residential home fires accounted for one third of the total reported fires, but they resulted in 78% of civilian fire deaths and 71% of civilian injuries. Cooking was cited as the number one trigger for domestic fires in the U.S. Older adults and children are the most susceptible, followed by those living in poverty, smokers, and those located in rural areas. Moreover, low educational attainment is a predictor of incurring and suffering from residential fire risks (NFPA, 2017). Texas has one of the highest number of incidences of annual fires, compared with other states - 261 in Texas in 2011, compared with 234 in California, or 170 in New York state (Texas Department of Insurance, 2015). Fortunately, the presence of smoke and fire alert systems has increased greatly over the past decades from 22% in 1979 to 96% in 2007 (Ahrens, 2015). Although about 95% of residential homes in the U.S have at least one smoke detector, homes lacking them account for three out of every five home fires (NFPA, 2017). Texas residences reported lower than the national average of home smoke detectors at 79% (Texas Department of Insurance, 2015). While an investigation of factors influencing low smoke detector installation rates is beyond the scope of this paper, the importance of functional smoke alarms in homes as a key prevention strategy cannot be overemphasized. Evidence shows that most residential fires and associated injuries are preventable, and that the use of functional smoke alarms is a crucial and inexpensive prevention method (Haynes, 2017; Tannous & Agho, 2017). At the practical level, our results indicate that graduate students’ education of school-age children brought disaster risk reduction into households, having strong community life-saving potential. Beyond smoke detectors, guardians reported their children transferred and influenced household risk awareness related to fast evacuations, evacuation routes, and the overall importance of family communication plans.

Table 1

Means and Standard Deviations of the returned Pillowcase Project Survey (N = 42)

<i>Survey Item</i>	<i>Mean</i>	<i>SD</i>
Household more likely to take steps to prepare	4.14	.57

Household more likely to have communication plan	4.14	.81
Household more likely to have an outside meeting point	4.1	.76
Household more likely to get out of the house quickly	4.3	.64
Household more likely to install smoke detectors	4.6	.5
Household more likely to inspect smoke detectors	4.31	.64
Household more likely to know how to dial 9-1-1	4.14	.93
Household more likely to know residence address	3.8	1.1
Household more likely to know alternative exits	4.02	.84
Household more likely to have a list of emergency items	3.3	.94
Household more likely to practice evacuations	3.6	1.1
Household has an emergency pet plan	3.2	1.1

Qualitative assessment of open-ended questions of the survey demonstrated that children were concerned about household emergency pet plans and conveyed those concerns to their guardians. This finding is particularly meaningful because the Pillowcase Project does not address strategies for family pet emergency planning. Thus, children and ultimately their guardians' concerns underscore generative benefits of CC DRR education brings to school-age children. It suggests that children question and seek risk reduction strategies beyond those discussed in educational programs. Importantly, nearly 30% of the responding guardians expressed interest in learning more about household preparedness in the future. This finding is valuable as compared with consistent national studies reporting public's low interest in disaster preparedness overall at 14% or less (e.g., FEMA, 2019).

In turn, when analyzing data sources related to the question *Do graduate students in ACE-designed course contribute to supporting the civic mission of local IHE in DRR and if so, in what ways?*, we identified several ways in which students in this project contributed to the civic mission of the university. First, the project fulfilled the educational mission of the university by arming the students with knowledge, skills and experience related to DRR that they will take into

their various communities. Second, the graduate students shared their knowledge with local elementary school children and their families to increase risk awareness and household resiliency. Third, graduate students provided detailed feedback and suggestions to the non-profit partner about how to improve the design of their outreach and education program to better correspond to the specific needs of the local community. This potentially strengthens the non-profit's abilities to improve DRR efforts in additional communities. Most importantly, the main outcome beyond the knowledge gains and preparedness adjustments reported above was the creation of a community network for local DRR initiatives. Building collaborative relationships that ensure effective coordination and mutually beneficial outcomes to multiple partners is labor intensive. However, we found the investment pays large dividends when elementary school children receive hazards education they would not otherwise have received and their households make adjustments to improve safety and preparedness. Moreover, the ARC plans to incorporate the suggested improvements in future program delivery and will continue to work with the IHE in joint Pillowcase projects in additional schools. Additionally, the university has been approached to institute an ARC Club on campus, extending its presence at the local level.

Conclusion

The results of curricular community engagement linked to emergency management and disaster risk reduction are widespread and positive. Both the institution and the community benefit from these endeavors in multiple ways. Perhaps the most easily identifiable benefits to the university are measured by student gains associated with course learning objectives and acquisition of applied experiences linked to their field of study (Denham & Khemka, 2017; Denham & Miller, 2019). Faculty who integrate community engagement experiences like the ones described in this paper report positive outcomes in terms of student evaluations, connections to community organizations, knowledge of local communities, access to potential research sites and partners for community-based research endeavors. Additionally, the institution of higher education positions itself as a positive, contributing actor in the community --- an image that all stakeholders applaud. Particularly for AASCU institutions whose funding relies on state and federal funding, public engagement that builds good will is helpful when lobbying for legislative support.

Communities also benefit from community engagement directed at disaster risk reduction on a number of levels. The children in the elementary school classes that are taught by graduate students benefit from increased information about specific hazards and the actions they can take to mitigate them. Research findings are clear that children are more resilient when empowered with knowledge about hazard risk reduction (Back, Cameron, & Tanner, 2009; Mitchell, Haynes, Hall, Choong, & Oven, 2008; Mitchell et al. 2009; Tanner, 2013; Towers, Haynes, Sewell, Bailie, & Cross, 2014). In turn, when children share their knowledge about hazards with their families, entire households can take actions to minimize risk and increase safety (Ronan & Johnston, 2001; 2003; 2010).

Schools and nonprofits benefit as well. Schools may not have instructors with expertise in hazards or risk reduction. Additionally, school districts characterized by limited resources may not have instructional staff available to offer specialized instruction in addition to the basic content. Coordination between the school teachers, university faculty, and college students can provide lessons that appeal to the grade school students and reinforce essential concepts they are acquiring in the main content areas. Non-profit organizations, like ARC, expand the reach of

their programs through more widespread dissemination and implementation than their resources alone would allow. In the end, the community seems to be strengthened by overall risk reduction.

Finally, all participants in partnerships like the ones described above learn that the local university is an active local entity partnering with multiple stakeholders to develop and share resources that benefit the entire community. One public four-year institution demonstrates the potential of community engagement by actively supporting emergency management activities locally in two main ways: partnering with local and national agencies to provide logistical support to disaster response efforts when disasters occur and contributing to community disaster risk reduction through curricular offerings. Academic community engagement courses can further the role of universities as stewards of place.

References

AASCU. (2014). *Becoming a Steward of Place. Lessons from Carnegie Community Engagement Applications*. Washington, D.C.: American Association of State Colleges and Universities.

AASCU. (2002). *Stepping Forward as Stewards of Place*. Washington, D.C.: American Association of State Colleges and Universities.

Ahrens, M. (2015). *Smoke alarms in US home fires*. Quincy, MA: National Fire Protection Association, Fire Analysis and Research Division.

American Red Cross. (2015). Pillowcase Project. <http://www.redcross.org/local/texas/gulf-coast/programs/disaster-preparedness/pillowcase-project>

Anderson, W. A. (2005). Bringing children into focus on the social science disaster research agenda. *International Journal of Mass Emergencies and Disasters*, 23, 159-175.

American Psychological Association. (2010). *Publication manual of the American Psychological Association*. (6th ed.). Washington, DC: Author.

Back, E., Cameron, C., & Tanner, T. (2009). Children and disaster risk reduction: Taking stock and moving forward. Retrieved from http://toolkit.ineesite.org/resources/ineecms/uploads/1057/Children_and_Disaster_Risk_Reduction.pdf

Baker, N., & Denham, M. (2019). For a short time, we were the best version of ourselves: Hurricane Harvey and the ideal of community. *International Journal of Emergency Services*, 3, 1-13. doi 10.1108/IJES-12-2018-0066

Boyer, E. L. (1996). The scholarship of engagement. *Journal of Public Service and Outreach*, 1, 11-20.

Denham, M. A. (2017a). Academic community engagement strategies in Homeland Security and Emergency Management programs at a Texas university. In H. K. Evans (Ed.), *Community*

engagement best practices across the disciplines: Applying course content to community needs, (pp. 33-48). Lanham, MD: Rowman & Littlefield.

Denham, M. A. (2017b, July). *Just keep learning: Schools and education during disasters*. Panelist at the 42nd Annual Natural Hazard Research and Applications Workshop, Brookfield, Colorado.

Denham, M., & Baker, N. (2019). Harvey Unstrapped: Managing Adaptive Tensions on the Edge of Chaos. *WIT Transactions on the Built Environment*, 190, 1-18, WIT Press. Retrieved from <https://www.wessex.ac.uk/1911/ZENS5522A/DMAN19-9781784663537.pdf> ISSN1743-3509.

Denham, M. A., Franks, S., & Hajicek, B. (2014, May). *Integrating academic community engagement (ACE) into school safety assessment*. Presented at the Texas Division of Emergency Management (TDEM) annual conference, San Antonio, TX.

Denham, M. A., & Khemka, A. K. (2018). Reducing Risk through Academic Community Engagement in Homeland Security and Emergency Management. *International Journal of Disaster Response and Emergency Management*, 1, 1-21. doi:10.4018/IJDREM.2018010101

Denham, M. A., & Miller, L. (2019). Partnering for Resilience: An Innovative Approach to Hazard Education and Child-Centered Risk Reduction. *International Journal of Mass Emergencies and Disasters, Special Issue*, 37, 101-123.

Denham, M. A., & Miller, L. (2017). *Pillowcase Project Survey* [Instrument]. Authors.

Diepenbrock, R. G. (2010). *Safety and security concerns: perceptions of preparedness of a rural school district*. [Doctoral Dissertation]. Wichita State University, Kansas.

Drabek, T. E. (2013). *The Human Side of Disaster*. (2nd ed.). Boca Raton, FL: CRC Press.

Elliott, J. (2015). The corporate takeover of the Red Cross. *ProPublica*. Retrieved from <https://www.propublica.org/article/the-corporate-takeover-of-the-red-cross>

Elliott, J., Huseman, J., & Muldowney, D. (2017). Texas official after Harvey “The Red Cross was not there”. *ProPublica*. Retrieved from <https://www.propublica.org/article/texas-official-after-harvey-the-red-cross-was-not-there>

Engel, K., Harald, J., McNeil, S., Shaw, G., Trainor, J., & Zannoni, M. (2010). Floods and disaster management in the NL: “God Created the world, but the Dutch created the NL”. FEMA. Retrieved September 5, 2019. From <https://training.fema.gov/hiedu/downloads/compemmgmtbookproject/comparative%20em%20book%20-%20chapter%20-%20floods%20and%20disaster%20mgmt%20in%20the%20netherlands.doc>

Errett, N. A., Bowman, D. J., Resnick, B. A., Frattaroli, S., & Lutkow, L. (2014). Regional collaboration among Urban Area Security Initiative regions: results of the John Hopkins Urban

Area Survey. *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science*, 12, 356-365. doi:10.1089/bsp.2014.0057

Field, A. (2009). *Discovering statistics using SPSS*. (3rd ed.). Thousand Oaks, CA: Sage.

Fothergill, A. & Peek, L. (2015). *Children of Katrina*. Austin, TX: The University of Texas Press.

Franks, S., & Denham, M. A. (2015, May). *Fostering relationships: Bridging the gap between the Emergency Management and the Academia*. Presented at the Texas Emergency Management Conference, San Antonio, TX.

Global Alliance on Disaster Risk Reduction & Resilience in the Education Sector [GADRRES]. (2018). Retrieved from <https://gadrres.net/resources/research-evidence/research-into-action-briefs>

Haddow, G. D., Bullock, J. A., & Coppola, D. P. (2017). *Introduction to Emergency Management*. (6th edition). Cambridge, MA: Butterworth-Heinemann.

Haynes, H. J. G. (2017). *Fire loss in the United States during 2014*. National Fire Protection Association. [Report]. Fire Analysis and Research Division.

Holdeman, E. (2015). Trouble at the American Red Cross. *Disaster Zone*. Retrieved from <http://www.govtech.com/em/emergency-blogs/disaster-zone/trouble-at-the-american-red-cross.html>

Holdeman, E. (2016). The Red Cross responds to disasters and the critics. *Preparedness and Recovery*. Retrieved from <http://www.govtech.com/em/disaster/The-Red-Cross-Responds-to-Disastersand-the-Critics.html>

Holmes, R., Schwein, N., & Shadie, C. (2012). Flood risk awareness during the 2011 floods in the central United States: Showcasing the importance of hydrologic data and interagency collaboration. *American Society of Civil Engineers Library*. Retrieved September 26, 2019. Retrieved from <https://ascelibrary.org/doi/full/10.1061/%28ASCE%29LM.1943-5630.0000181>

Horsley, J. S. (2011). Regionalization will strengthen Alabama Red Cross. Tuscaloosa, AL: ARC.

Hull, B. (2011). Changing realities in school safety and preparedness. *Journal of Business Continuity and Emergency Planning*, 5, 440-451.

- Johnson, N., Oliff, P., Williams, E. (2011). "An Update on State Budget Cuts." Washington, DC: Center on Budget and Policy Priorities. Retrieved from <https://www.cbpp.org/sites/default/files/atoms/files/3-13-08sfp.pdf>
- Johnson, V. A., Ronan, K. R., & Johnston, D. M. (2014). Evaluation of disaster education programs for children: A methodological review. *International Journal of Disaster Risk Reduction*, 9, 107-123. doi:10.1016/j.ijdr.2014.04.001
- Kirk, P. M. (2014). *Community preparedness: Alternative approaches to citizen engagement and Homeland Security*. [Master Thesis]. Monterey, CA: Naval Postgraduate School.
- Lobao, L. (2016). The rising importance of local government in the United States: Recent research and challenges for sociology. *Sociology Compass*, 10, 893-905. doi:10.1111/soc4.12410
- Manousos, C. L., & Denham, M. A. (2015, May). *Linking boots and books: Partnering higher education in emergency management*. Presented at the Texas Emergency Management Conference, San Antonio, TX.
- Mitchell, T., Haynes, K., Hall, N., Choong, W., & Oven, K. (2008). The roles of children and youth in communicating disaster risk. *Children Youth and Environments*, 18, 254-279.
- Mitchell, T., Tanner, T., & Haynes, K. (2009). *Children as agents of change for disaster risk reduction: Lessons from El Salvador and the Philippines*. [Report]. Institute of Development Studies, Brighton, University of Sussex, UK. Retrieved from http://www.undpcc.org/undpcc/files/docs/publications/CCC_Working%20Paper_Final1_Screen.pdf
- National Fire Protection Association. (2017). *Fire statistics and reports*. (2017). Retrieved from <http://www.nfpa.org/News-and-Research/Fire-statistics-and-reports>
- National Research Council. (1991). *A safer future: reducing the impacts of natural disasters*. The National Academies Press. Retrieved October 24, 2019. Retrieved from <https://www.nap.edu/read/1840/chapter/5>
- Peek, L. (2008). Children and disasters: Understanding vulnerability, developing capacities, and promoting resilience. *Children, Youth and Environments*, 18(1), 1-29.
- Peek, L., & Stough, L. M. (2010). Children with disabilities in the context of disaster: A social vulnerability perspective. *Child Development*, 81, 1260-1270.
- Ronan, K. R., & Johnston, D. M. (2001). Correlates of hazard education programs for youth. *Risk Analysis*, 21, 1055-1063.

Ronan, K. R., & Johnston, D. M. (2003). Hazards education for youth: A quasi-experimental investigation. *Risk Analysis*, 23, 1009-1020.

Ronan, K. R., & Johnston, D. M. (2010). *Promoting community resilience in disasters: The role for schools, youth and families*. New York, NY: Springer.

Ronan, K. R., Petal, M., & Tofa, M. (2018). *Moving from projects to programs: Evidence-based roadmap and whitepaper. Child-Centered Risk Reduction and School Safety Research*. [Webinar]. Retrieved from https://www.preventionweb.net/files/61553_powerpointresearchagendaeng2018.pdf

Ronoh, S., Gaillard, J. C., & Marlowe, J. (2015). Children with disabilities and disaster preparedness: A case study of Christchurch. *Kōtuitui, New Zealand Journal of Social Sciences Online*, 10(2), 91-102.

Rubin, C. (2012). *Emergency Management: The American experience 1900-2010*. (2nd ed.). Boca Raton, FL: CRC Press.

Shauger, M. (2017). Red Cross intends to sell Montclair office, not 'not leaving' town. *Northjersey*. Retrieved from <https://www.northjersey.com/story/news/essex/montclair/2017/01/11/red-cross-intends-sell-montclair-office-but-not-leaving-town/96440682/>

Sylves, R. (2015). *Disaster policy and politics: Emergency Management and Homeland Security*. Thousand Oaks, CA: Sage.

Tanner, T. (2013). Shifting the narrative: Child-led responses to climate change and disasters in El Salvador and the Philippines. *Children and Society*, 4, 339-351. doi:10.1111/j.1099-0860.2010.00816.x

Tannous, W. K., & Agho, K. (2017). Socio-demographic predictors of residential fire and unwillingness to call the fire service in New South Wales. *Preventive Medicine Reports*, 7, 50-57.

Tannous, W. K., Whybro, M., Lewis, C., Ollerenshaw, M., Watson, G., Broomhall, S., & Agho, K. E. (2016). Using a cluster randomized controlled trial to determine the effects of intervention of battery and hardwired smoke alarms in New South Wales, Australia: home fire safety checks pilot program. *Journal of Safety Research*, 56, 23-27. doi:10.1016/j.jsr.2015.11.001

Terranova, A. M., Boxer, P., & Morris, A. S. (2009). Changes in children peer interactions following a natural disaster: How pre-disaster bullying and victimisation rates changed following Hurricane Katrina. *Psychology in the Schools*, 46, 333-347.

Texas Department of Insurance. (2015, September). Texas Fire Incident Reporting System 2014 Annual Fire Statistics.

Traver, R. (2014). Flood risk management: Call for a National Strategy. *American Society of Civil Engineers*. Retrieved from <https://ascelibrary.org/doi/pdf/10.1061/9780784478585>

Towers, B., Haynes, K., Sewell, F., Bailie, H., & Cross, D. (2014). Child-centered disaster risk reduction in Australia: Progress, gaps, and opportunities. *Australian Journal of Emergency Management*, 29(1), 31-38. Retrieved from http://www.rfs.nsw.gov.au/__data/assets/pdf_file/0015/12732/AJEM_29_ONE.pdf#page=31

Twigg, J., & Bottomley, H. (2011). Making local partnerships work for disaster risk reduction. *Humanitarian Practice Network*. Retrieved from <https://odihpn.org/magazine/making-local-partnerships-work-for-disaster-risk-reduction/>

United Nations Office for Disaster Risk Reduction. (2015). *Sendai Framework for Disaster Risk Reduction. Making the difference for poverty, health and resilience*. Retrieved from <https://www.unisdr.org/we/coordinate/sendai-framework>

United Nations Office for Disaster Risk Reduction. (2019). *Words into action: On the frontline of disaster risk reduction and resilience: Children and youth Children and youth engagement guide for implementing the Sendai Framework for Disaster Risk Reduction 2015-2030*. Retrieved from <https://www.unisdr.org/we/inform/publications/67704>

United States Congress. (2006). *S3721 Post Katrina Emergency Management Reform Act of 2006*. Retrieved from <https://www.congress.gov/bill/109th-congress/senate-bill/3721>

United States Department of Homeland Security. (2003). *Homeland Security Presidential Directive 5*. Retrieved from <https://www.dhs.gov/sites/default/files/publications/Homeland%20Security%20Presidential%20Directive%205.pdf>

United States Department of Homeland Security. Federal Emergency Management Agency. (2011). *A Whole Community Approach to Emergency Management: Principles, themes, and pathways for action* (FDOC 104-008-1). Retrieved from https://www.fema.gov/media-library-data/20130726-1813-25045-0649/whole_community_dec2011__2_.pdf

U.S. Census Bureau. (2016). *QuickFacts selected: Walker County, Texas; United States*. Retrieved from <https://www.census.gov/quickfacts/fact/table/walkercountytexas,US/PST045216>