Bringing Youth Preparedness Education to the Forefront: A Literature Review and Recommendations

CITIZEN PREPAREDNESS REVIEW

Community Resilience through Civic Responsibility and Self-Reliance

FEMA

This document summarizes research and evaluations in the field of youth disaster preparedness and education. Findings based on this literature review are presented in three principal categories: individual/youth preparedness education, school programs and curricula, and community engagement for youth preparedness. The report then concludes with recommended practices for youth disaster education and research to help achieve greater levels of preparedness activities among children and their families.

INTRODUCTION

“ At the end of the 20th century, an estimated 66.5 million children each year were affected by a disaster, and this number will most likely increase, owing to shifts within society and large climate changes. ”

In 2006, 73.7 million children were under the age of 18 in the United States, and it is projected that this number will grow to 74.4 million children by the year 2010, constituting more than a quarter of the entire U.S. population (National Commission on Children and Disasters, 2009b; U.S. Census Bureau, 2004). Additionally, 14.1 million children live in poverty, which constitutes 35 percent of the poor population, causing them to be disproportionately affected by disasters (U.S. Department of Commerce, 2009). At the end of the 20th century, an estimated 66.5 million children each year were affected by a disaster (Penrose and Takaki, 2006), and this number will most likely increase, owing to shifts within society and large climate changes.

Despite this vulnerability, however, scant attention has been given to this particular population regarding emergency preparedness and planning. Both researchers and practitioners have traditionally overlooked children's needs and experiences in a disaster, along with their role in disaster preparedness education and training. Scholars and professionals have also failed to explore further the importance of youth disaster education programs and their particular impact and effectiveness on shaping children's perceptions of what to do in a disaster event. According to Anderson (2005), disaster research on children has been severely lacking because children do not carry out research themselves or set a research agenda.

> " It is evident and imperative that more action be undertaken to ensure the proper education of children so that they are aware of what to do in the event of any disaster, regardless of its magnitude and scale. "

In addition to the lack of disaster research and scholarship, there is less of a focus in the practice of disaster preparedness for children as compared to adults, as emergency managers and practitioners have neglected to pay special attention to youth regarding education and training programs. According to Ronan and Johnston (2001b), even though hazard education programs are relatively widespread, published research on their effectiveness is virtually nonexistent. Additionally, children are not placed on par with adults; even though State and local emergency managers are required to address the needs of pets in their emergency plans, they are not required to meet the needs of children in those same plans. Therefore, it is evident and imperative that more action be undertaken to ensure the proper education of children so that they are aware of what to do in the event of any disaster, regardless of its magnitude and scale.

To address this issue, Congress chartered the National Commission on Children and Disasters in 2008 to provide an official forum for representatives of children's interests "to conduct a comprehensive study to examine and assess the needs of children as they relate to preparation for, response to, and recovery from all hazards (National Commission on Children and Disasters, 2009a)." The Commission released an interim report of their findings and recommendations in October 2009 and continues to fulfill their charge as advocates for children in disasters.

RESEARCH OBJECTIVES

Recognizing the need for research to evaluate the current state of disaster preparedness education and research regarding youth and children, Federal Emergency Management Agency (FEMA) commissioned a review of the literature related to emergency preparedness education for youth. The objectives of this review were two-fold:

1. To identify research and evaluations of youth education interventions for emergency preparedness; and

2. To use the findings to develop recommendations that can be used to assess current programs and to enhance the provision of youth preparedness education programs.

METHOD

Researchers conduct literature reviews to discover published materials relevant to a specific topic area to help inform the development of subsequent research strategies. Walliman (2008) proposes five purposes of a literature review, which include:

- Summarizing the results of previous research to form a foundation on which to build your own research;

- Collecting ideas on how to gather data;

- Investigating methods of data analysis;

- Studying instrumentation that has been used; and

- Assessing the success of the various research designs of the studies already undertaken.

This literature review summarizes and assesses the theories, recommended practices, and evaluations of disaster preparedness programs that target children and youth. The goal of this literature review is to understand what has been published on this topic, and to determine if current gaps exist in the literature that need to be addressed.

Researchers sought out published articles and established nongovernmental organizational (NGO) news articles, conference papers and proceedings, and Government and private organization Web sites, as well as utilized Internet searching. The research team conducted searches using databases within EBSCO, Internet search engines Google Scholar and Google, and the Center for Homeland Defense and Security Homeland Security Digital Library (HSDL). Search terms included a combination of the following: *children*, *youth*, *disaster preparedness education*, *disaster preparedness*, and *program evaluation*.

The first literature search consisted primarily of using the search terms *disaster preparedness education* and *youth* or *children*. Since the amount of literature available on disaster preparedness education and youth was severely limited, a second literature search was warranted and broadened to include the topic of injury prevention.

Inclusion criteria consisted of the following:

- Sources determined credible and reliable by the researcher were used;

- No items published or written older than 1990 were permitted;

- International articles were permitted; and

- Governmental and private organizational articles and press releases were allowed.

Exclusion criteria are standards that exclude material from being used in the literature review. Exclusion criteria consisted of general newspaper articles, magazine articles, and other non-scholarly materials.

Among the articles found, several were relevant to the research objectives. Kevin R. Ronan, professor of clinical psychology at Central Queensland University and author of numerous articles on community resiliency and disaster preparedness that were

> This literature review summarizes and assesses the theories, recommended practices, and evaluations of disaster preparedness programs that target children and youth.

> "Evaluations are conducted to provide information to decision-makers to help them decide whether the program was effective and to help them improve programs."

found to be particularly useful and pertinent to this literature review, was also contacted by email to determine if he had any additional suggestions in terms of sources that could be used for this research study.

In particular, program evaluations found in the literature were specifically valued because they showed whether a specific program was effective in achieving its goals and objectives. Evaluations are conducted to provide information to decision-makers to help them decide whether the program was effective and to help them improve programs. In this literature review, articles describing evaluations of disaster preparedness programs that targeted youth were also used. It is important to note that, on the basis of the literature search, very limited evaluations of youth-focused disaster preparedness programs exist. Additionally, the few evaluations that were conducted emphasized broad, theory-based practices and did not focus on more practical, action-oriented measures.

Generally, it is recommended that evaluations be designed with rigorous study methods in place. It has been argued that the most rigorous research study method would be an experimental design, but other study designs have been accepted owing to the high costs associated with this particular method. Due to these high costs, qualitative research methods were also included in the searches.

ANALYSIS

After the identification of relevant literature was completed, the documents and cases were analyzed for characteristics that closely matched the research objectives and that could help inform the study. Documents that included relevant information or contained similar initiatives were analyzed in-depth to see what themes or patterns emerged. Furthermore, education programs were analyzed to determine which contained characteristics related to identified themes. Over 30 sources of documentation were examined to help inform and guide this literature review.

LITERATURE REVIEW FINDINGS

On the basis of the literature review, the following themes have emerged and will be presented in the following fashion: first, findings based on the individual/youth level will be discussed; second, findings regarding school programs and curricula will be presented; and, lastly, the broader community level will be presented. The majority of the literature analyzed used the terms youth and children interchangeably and included research on children between the ages of 7 and 18. The literature review will then conclude with a series of recommended practices for parents, educators, and emergency managers that offer guidelines and recommendations for future research, dissemination, and practice of youth disaster preparedness programs.

INDIVIDUAL/YOUTH LEVEL: LITERATURE REVIEW FINDINGS

Children Play a Special Role in Disaster Preparedness

As was previously mentioned, children should not be treated the same as adults when it comes to disaster preparedness and education. Because children are so reliant on adults, lack independence, and do not perform at the same levels as older generations, many preparedness training programs and measures are geared toward more adult functions, such as evacuation plans, distribution of supplies, or announcement of shelter locations (National Commission on Children and Disasters, 2009b; Ronan and Johnston, 2003). Therefore, it is important that programs that target the youth population are developed and that these programs cater to their specific needs while delineating what role they will play in disaster preparedness.

Even though children are at special risk for disasters, this does not necessarily mean that they are passive victims. Programs can offer child-friendly activities in their homes, schools, and communities that can both educate children on preparedness measures and help mitigate disasters from occurring. In turn, children can then play a special role in communicating preparedness information to their friends and family members (Ronan, et al., 2008; Wisner, 2006), as children are seen as a trusted source of information as well as good messengers. This is especially helpful in families that speak more than one language or where English is not the primary language (Campbell, et al., 2001).

A study by Mitchell and colleagues (2008) found that children could become "translators" who bring the most relevant messages back to the community, helping to bridge cultural and technical gaps. Additionally, children can offer both practical and creative ideas to being more prepared, as well as provide solutions in helping communities recover from a major disaster (Peek, 2008).

Unique Learning and Developmental Differences Exist Between Children and Adults

A variety of factors cause children to be much different from adults in terms of anatomic, physiological, psychological, and behavioral attributes. These differences become a key factor in determining what preparedness measures need to be undertaken to ensure children's awareness, safety, and health.

Purely on the basis of anatomic and physiological differences, children are prone to become ill more quickly when exposed to hazards due to their smaller size and higher breathing rate; they require different dosages of antibiotics; they may need different-sized emergency equipment; they do not possess the fully functioning motor skills to escape a disaster site; and they require more food and drink (Markenson and Redlener, 2004; Bernado and Veenema, 2004; Peck, 2008). Additionally, children's skeletons are more pliable, making them more susceptible to fractures; their heads are a heavier portion of the body, making head injuries more common; their skin is thinner than adults,

> "A variety of factors cause children to be much different from adults in terms of anatomic, physiological, psychological, and behavioral attributes. These differences become a key factor in determining what preparedness measures need to be undertaken to ensure children's awareness, safety, and health."

> "Children compose a special population known as "vulnerable groups": those that are more prone to damage, loss, suffering, injury, and death in the event of a disaster."

making them more vulnerable to toxic agents; and they breathe more times per minute than adults, making them more vulnerable to air toxins (American Academy of Pediatrics, 2006).

In terms of developmental/cognitive differences, children can become very vulnerable in the event of a disaster. Because they may be non-communicative or they may feel anxiety during the disaster, children may be too afraid or unwilling to share information at a disaster site, which could prove to be detrimental when a child is trying to articulate distress (Silverman and La Greca, 2002) or if someone is trying to establish the child's identity (Ginter, et al., 2006). Being non-communicative can also make it difficult for children to describe symptoms or localize pain, in the event that they are physically harmed (American Academy of Pediatrics, 2006). Children may also lack self-preservation skills, which could prevent them from knowing when to flee from danger (Shannon, 2005). The shock of disasters can also cause other developmental effects, such as sudden changes in behavior (e.g., an outgoing child is suddenly shy) or regression (e.g., going back to thumb sucking) (New York State Office of Mental Health, 2000).

Children's Unique Vulnerability to Disasters Can Cause Adverse Effects if Exposed

Children compose a special population known as "vulnerable groups": those that are more prone to damage, loss, suffering, injury, and death in the event of a disaster (Wisner, et al., 2004). Though a variety of factors can influence exactly how vulnerable a child can be when faced with a potential

risk, Peek (2008) states three types of vulnerability that children in particular experience during disasters:

1. Psychological vulnerability: a serious traumatic event such as a natural or man-made disaster can greatly impact the mental health of children; most studies focus on post-traumatic stress disorder (PTSD) or similar conditions (La Greca, et al., 2002; Norris, et al., 2002). Udwin (1993) found growing evidence that shows the adverse effects of disasters on children, claiming that 30 to 50 percent of those children are likely to develop PTSD symptoms that will persist for long periods of time.

2. Physical vulnerability: a study by Zahran, Peek, and Brody (2008), found that different types of disasters affect the physical vulnerability of different age groups. These scholars found that in the United States, infants and young children (0- to 4-year-olds) are most likely to die of exposure to extreme heat, 5- to 14-year-olds are most likely to die in storms and flood events, and adolescents and young adults (15- to 24-year-olds) are most likely to die of excessive cold.

3. Educational vulnerability: destruction caused by a disaster can negatively impact children's academic performance, as it causes children to miss school and delay their progress. Lauten and Lietz (2008) found that children may experience up to 11 school changes over a 3-month period following a storm, with the average being three moves per child.

On the basis of these vulnerabilities, educational programs and policies can work to better assess children's needs and more fully understand how and why children are more vulnerable in the event of a disaster.

Familial Factors Can Influence How Children Cope When Faced With a Disaster

Even though children are developmentally different from adults, it has been found that their reactions generally reflect those of their parents (Silverman and La Greca, 2002). Children, for the most part, take cues from their parents when it comes to distress and danger and will react on the basis of their observations regarding safety. Thus, it is vitally important for parents to remain calm and to be adequately prepared during a disaster, as children who perceive greater levels of parental distress were also seen to cope less effectively (Ronan, 1997; Ronan and Johnston, 2003). Parents should also make it a point to discuss their emotions with their children before, during, and after a disaster, to reduce their child's anxiety levels (Ronan, et al., 2001).

The quality of interactions among family members can determine a child's adjustment to a major disaster. Laor, Wolmer, and Cohen (2001) found that family cohesion was a mitigating factor in helping children process and recover from traumatic experiences. These scholars also found that over-involved (enmeshed) families can pose a risk to children, as these types of families tend to spread negative emotions from one family member to another, creating adverse effects.

A variety of different non-disaster-related family factors can also influence a child's psychological functioning and recovery when faced with a major disaster. These factors can include low levels of warmth; inept discipline practice; increased parent, marital, or family conflict; parental psychopathology; parental substance abuse; and lack of parental supervision. These factors could come to greater fruition when a family is under great duress (Ronan, et al., 2008).

Scare Tactics Are an Ineffective Strategy in Educating Children About the Realistic Risk of Disasters

When children receive education about risks and hazards, it is important for them to fully understand the extent and reality of those risks. A child's realistic perceptions will lead to the child's comprehension and perhaps to behavioral change, such as preparing a disaster kit or looking up shelter locations. It is vital for parents, educators, emergency managers, and first responders to determine the best strategy for reaching out to children in the most effective way.

One strategy that has proven to be ineffective is the use of scare tactics. Beck (1998) found that the use of exaggerated dangers, false information, or biased presentations could lead the child to disbelieve the message and even discredit the messenger. Golub and Johnson (2001) discovered that when one uses exaggerated messages to try to provide truthful information to youth, this approach could backfire, especially when the child is exposed to other forms of information and advice.

> " Children, for the most part, take cues from their parents when it comes to distress and danger and will react on the basis of their observations regarding safety. "

> **"** Schools may be seen as the ideal setting for the dissemination of risk-based educational programs. **"**

Scare tactics in terms of disaster education are usually counterproductive, as they do not encourage children to implement disaster mitigation strategies and may even cause them to refuse to engage in a discussion about preparedness. A better strategy advocates helping children comprehend realistic risks while providing them with guidance, information, and encouragement to talk with parents about disasters (Ronan and Johnston, 2001b). A study by Fuhrmann and colleagues (2008) states that the 1950s "duck-and-cover" techniques should not be replicated nowadays because of their effects of scaring an entire generation. Instead, they suggest that both children and parents investigate disaster preparedness Web sites that integrate geoinformation technologies, graphic learning, gaming activities, and tactics that use the power of graphics to educate, but not scare, children about disasters.

SCHOOL LEVEL: LITERATURE REVIEW FINDINGS

Schools Are an Ideal Place for Children to Learn Disaster Preparedness Skills

Since attending school is mandated for every child in most countries including the United States, it is the ideal place to implement effective disaster preparedness programs. Most children can be seen as malleable and easily shaped and molded (Slovic, et al., 1981); if given the proper preparedness skills, children can develop those skills and carry them into their adulthood. Therefore, since children spend so much time in school for the majority of their young lives,

schools may be seen as the ideal setting for the dissemination of risk-based educational programs (Ronan and Johnston, 2005).

A study by Fuhrmann and colleagues (2008) found that schools should optimize the National Science Education Standards (that introduce students to natural and human-induced hazards) by incorporating disaster preparedness information into their lesson plans. The paper states that disaster preparedness education can be covered in almost any class, whether it is geography, history, economics, civics, social studies, language, arts, mathematics, science, physical education, health, or technology.

School-integrated injury prevention and disaster preparedness curricula and programs should be considered a principal strategy for long-term instruction and behavior change. Materials should be well written and age appropriate and should be disseminated through various means of print and electronic media. Hands-on, experiential learning is also another effective way to reach and engage children better (Peek, 2008). In a study focusing on Jamaica's strategies for education, Morris and Edwards (2008) found that schools participate in an innovative culinary competition where children create meals using solely nonperishable items: foods that would be available only after a major disaster. In Grenada, schools hold a "National Disaster Awareness Week Primary School Quiz" competition that allows children the opportunity to demonstrate their knowledge of hazards and disaster management (United Nations, 2007).

The ideal scenario is that children will experience several years of exposure to preparedness education (Campbell, et al., 2001). When coupled with home and community education programs, children will be exposed to multiple curricula that can deepen their understanding and increase their awareness of and involvement in disaster preparedness measures. Ronan and Johnston (2001b) found that children who were involved in two or more educational programs focusing on disaster preparedness and hazard education were significantly more knowledgeable than children who were involved in only one program.

Morris and Edwards (2008) found that the islands of Jamaica hold "hazard awareness days" twice a year that have eventually been included on schools' official calendars. Schools prepare months in advance for these days, creating lesson plans and activities for children. Some schools allow for a little creativity with their students by asking them to create songs, dances, plays, and poetry on any aspect of disaster management they find relevant. In a similar vein, South Africa hosts school competitions on The International Day for Disaster Reduction where children demonstrate their knowledge on disaster risk reduction through drama, art, and music (United Nations, 2007). By making programs engaging and interactive, but with this particular emergency management focus, schools disseminated information and resources more easily, causing them to become more widespread.

Hazard Education Increases Awareness, Realistic Risk Perceptions, and Knowledge of Protective Behaviors

As previously mentioned, helping children gain a realistic view of disasters is vital in ensuring their comprehension and understanding when faced with a major disaster event. Hazard education programs should work to integrate a more realistic perception of risks into their materials and curricula, as youth with unrealistic risk perceptions have been found to have an increased fear of hazards, a reduced belief in their coping ability, and decreased knowledge of protective behaviors, as compared to their peers with more realistic risk perceptions (Ronan and Johnston, 2001b).

In France, disaster education has four main goals: (1) teaching students preventive and protective measures against major risks in a daily life context; (2) informing students of different types of rescue services; (3) teaching students basic survival steps while waiting for organized rescue; and (4) encouraging students to develop civic-minded behavior and sense of individual and collective responsibility (United Nations, 2007). In Israel, children are taught openly about terrorism through conducting activities with their gas masks and learning about how to survive an attack (Conroy, 2008). And finally, in Cape Verde, a radio show targeted toward youth disseminates preventive measures, awareness messages, and self-protective measures (United Nations, 2007).

> " The ideal scenario is that children will experience several years of exposure to preparedness education. "

> "Educational programs should help promote understanding of protective actions for those risks relevant to the targeted population."

Additionally, there have been instances where children have used the knowledge they obtained from an educational program to help save lives. In 2004, 10-year-old Tilly Smith convinced her parents to reach higher ground when she noticed that the waters in Thailand looked similar to the tsunami waters she learned about in her geography class (Owen, 2005). By taking the information she learned in class, Tilly perceived the potential risk of a tsunami and immediately knew what to do to evacuate her family and dozens of other people to safety.

Another group of Vietnamese American youth affected by Hurricane Katrina in New Orleans created the Vietnamese American Young Leaders Association of New Orleans (VAYLA-NO), a program that mobilizes youth to increase individual awareness of preparedness and response actions in disaster-prone areas (Mitchell, et al., 2008). Because of this particular program, the group has organized hurricane clean-up days and information nights on specific recovery issues for both children and adults. Some of the children have also been chosen to be active messengers of information via cellular phone text messages that they can relay to their parents and families who are not as familiar with speaking English.

Educational Programs Help Promote Protective Factors While Taking Risk Factors Into Account

Educational programs should help promote understanding of protective actions for those risks that are relevant to the targeted population. Protective factors are factors that seem to protect against both the short- and long-term effects of a hazard. These protective factors should be at the forefront of the educational program and should be enhanced. Risk factors are factors that place the individual at increased risk of being affected by a hazard. They cause the individual to be vulnerable to certain types of risk and should be taken into consideration when developing programs (Ronan and Johnston, 2005).

In one example, Mitchell and colleagues (2008) found that children and families in El Salvador were particularly at risk due to earthquakes, floods, and landslides. An educational program by Plan International asked children in El Salvador to consider these risk factors through creative activities and exercises. Children were asked to conceptually map within their communities the most prevalent risks that could occur and to think about what they could do personally to mitigate those risks.

One El Salvadorian children's group in particular went a step further and explored ways to prevent a potential disaster from occurring, shifting the focus from actual preparedness to disaster prevention. When the children discovered that people were quarrying stone and sand from the river, increasing the risk of flooding and erosion, these children not only blockaded roads and erected signs but also persuaded local authorities to enforce regulations that would eradicate illegal extraction. Because of the risk prevention actions these children took, there is no longer any quarrying at the river that could put local residents in danger.

A survey study of primary school educators on burn-risk and fire safety education also found that the most prevalent risk factors for youth included being of lower socioeconomic status, being of minority ethnic background, having parents with little education, being born of a teenage pregnancy, and coming from a single-family household (Jordan, et al., 1993; Kolko and Kazdin, 1994). Studies have shown, however, that appropriate educational programs can help reduce the risk of childhood burn injuries. Corrarino, Walsh, and Nadel (2001) found that while minority populations are less likely to take preventative measures against childhood burns as compared to their white counterparts, proper education and training could cause behavioral change to be more likely within these particular groups.

Developers of educational programs could also take into account the factors that could potentially influence a child's response to disaster. For example, youth who have the greatest exposure to disasters and those who have preexisting mental health and anxiety conditions and disorders are more likely to suffer the most (Pfefferbaum, et al., 2008). As previously mentioned, children whose parents are in high distress are also more likely to be negatively affected. Therefore, programs could take these particular risk factors into consideration and attempt to alleviate their negative impact.

Educational Programs Should Address a Range of Hazards and Be Reinforced Over Time

A recommendation made by Ronan and Johnston (2001a) suggests that a range of hazards should be addressed in educational programs that progressively teach children new information and material over a period of time. For example, French disaster education programs teach responsibility progressively and continuously to gradually move students toward autonomy (United Nations, 2007). Ronan and Johnston also recommend that the curriculum be customized for children's specific ages and development, with different age groups receiving materials more specially geared toward them. Educational programs could include built-in refresher materials and mini-courses in order to help children retain new information annually, in a gradual, but effective, process (Ronan and Johnston, 2001b). For example, the Safety City program is an educational program that was implemented in Columbus, Ohio, by the American Red Cross and has over 20,000 children participants. An evaluation of this particular program states that the need for retraining to ensure adequate knowledge retention is important and necessary (Luria, et al., 2000). Additionally, programs such as Safety City may be helpful in initially presenting material, but the continued reinforcement by teachers and parents is just as vital to ensure retention and success (Bandura, 1986). By continually incorporating preparedness education into school curriculums, children may see preparedness as a societal value rather than some ad hoc exercise (Gustafson, 2009).

> " A range of hazards should be addressed in educational programs that progressively teach children new information and material over a period of time...the curriculum be customized for children's specific ages and development. "

> *Children receive a number of valuable benefits when they interact and become involved in disaster education. When children discuss what they learned, they benefit from a repetition of learned information, and are also exposed to social reinforcement and positive parental modeling.*

Educational Programs Should Encourage Interaction Between Parents and Children

Preparedness measures, such as creating a disaster plan or preparing a disaster kit, are seen as strategies that help to reduce the negative effect of a disaster. A 2001 study by Ronan and Johnston (2001) found that encouraging children to talk with parents about what they have learned significantly correlated with home-based adjustments to these preparedness measures. These preparedness strategies included adding lips on shelves, learning to extinguish fires, learning first aid, looking for cracks on their house foundation, and having their home looked at for earthquake resistance (Ronan and Johnston, 2005). Instead of just having children go home and discuss what they learned, it may be more useful to have children bring to their homes specific, selective information about how to prepare for a disaster (Ronan and Johnston, 2001b), sharing newly learned information with adults to promote readiness, response, and recovery (Ronan, 1997). One example is Australia's Families Preparing Together curriculum, where students create a family evacuation plan to be displayed around the classroom and then later taken home to be shared with family members (Gustafson, 2009). Another example is the School Safety Initiative in India, where children conduct "hazard hunts" in and around their homes in order to share information and knowledge with parents and relatives (United Nations, 2007).

Children receive a number of valuable benefits when they interact and become involved in disaster education. When children discuss what they learned, they benefit from a repetition of learned information, and are also exposed to social reinforcement and positive parental modeling (Bandura, 1986). Ronan and Johnston (2003) found that the initial learning at school followed by further reinforcement through the home environment could also help increase both emotional and problem-focused coping.

Demographic and Cultural Differences Should Be Taken Into Consideration When Developing Educational Programs

A number of preexisting demographic and cultural factors could influence how a child responds to a disaster, thus impacting how educational programs could be developed and implemented. In terms of age, a survey of primary school educators on burn-risk and fire safety education felt that children cannot internalize anti-fire play instruction until they are close to 7 years of age (Dougherty, et al., 2007). Though younger children may not be as mature cognitively and verbally as their older counterparts, this does not necessarily mean that they are unaffected and should not be taught proper preparedness procedures (Pfefferbaum, et al., 2008). Therefore, it is vital to have age-appropriate programs for knowledge to be understood and internalized. While some studies have found female children to be more vulnerable in a disaster, particularly in developing countries (Ramirez, et al., 2005), generally results focusing on gender have been inconsistent.

For diverse populations, program developers should be aware of varying cultures within communities and develop programs that are not only culturally appropriate but

also are taught by culturally competent instructors and trainers (Campbell, et al., 2001). Participants should feel comfortable enough to be able to fully understand and retain information and also to disseminate their knowledge to their families and surrounding communities. In the event that multilingual education is not available, American-born children can participate in the preparedness and recovery process by serving as translators for their parents and families. During Hurricane Katrina, many adolescents and children helped assist FEMA in the evacuation by translating important information regarding shelters, supplies, food, and registration to their non-English-speaking family members (Mitchell, et al., 2008).

COMMUNITY LEVEL: LITERATURE REVIEW FINDINGS

Community Involvement Should Be Encouraged and Supported in Providing Disaster Preparedness Education

Local communities play a major role in terms of providing support, encouraging participation in training and education programs, and raising overall awareness of proper preparedness protocol and procedures. Participation of communities in developing a disaster preparedness and mitigation system can be helpful in determining a community's resources, capabilities, coping mechanisms, and facilities (Newport and Jawahar, 2003). Additionally, people who feel a stronger bond to their community are more likely

to develop and follow through on solutions to their problems and feel a greater sense of confidence and self-efficacy (Prezza and Constantini, 1998). Thus, it is important that whole communities become involved in terms of preparing citizens for potential disasters and creating a sense of security among all individuals, including children.

A survey of primary school educators on burn-risk and fire safety education found that a holistic approach is important for that particular topic. Combining safety messages from emergency service personnel (e.g., medical staff, fire fighters, and police) and community groups such as parent–teacher organizations, burn survivor organizations, and after-school programs, Franklin and colleagues (2002) have found that this approach provided the most effective and comprehensive approach to relaying burn and fire safety.

In Jamaica, the Office of Disaster Preparedness and Emergency Management (ODPEM) partners with local schools along with other agencies such as the Jamaica Fire Brigade, the Jamaica Red Cross, and the Earthquake Unit to create educational programs that are dynamic and engaging to students (Morris and Edwards, 2008). In particular, drills, presentations, and simulations are created to raise awareness about relevant hazards and to encourage discussion within communities.

> "Local communities play a major role in terms of providing support, encouraging participation in training and education programs, and raising overall awareness of proper preparedness protocol and procedures."

> " Children can become more involved in their communities in terms of facilitating discussions surrounding disaster preparedness measures. "

Children Can Become Involved in Communities in Terms of Preparedness, Education, and Recovery

Children can become more involved in their communities in terms of facilitating discussions surrounding disaster preparedness measures. As part of the "Safe Village" model following major flooding in provinces of Vietnam, Plan International created a series of forums and consultation meetings with youth to get a sense of their concerns, ideas, and knowledge surrounding the problem. By being actively involved, these children not only increased their awareness of this particular hazard, but they were also able to openly discuss how to adequately protect their families and loved ones and what to do to seek help should their community be directly affected (Lauten, 2002).

In terms of education, children are also capable of teaching others in the community what they have learned. As previously mentioned, the Vietnamese American group in New Orleans, VAYLA-NO, offered educational nights for their local communities in terms of specific recovery response. These evenings consisted of topics including small business recovery, direct-action training, and leadership training (Mitchell, et al., 2008). In Gujarat, India, 84 groups of children from various villages were trained in search-and-rescue activities, risk communication, and psychological care (Nikku, et al., 2006). After they completed their training, the children met with other children within their villages to share what they had learned. In a final example, an action research project conducted in the Philippines titled "Child-Oriented

Participatory Risk Assessment and Planning" included the development of risk assessment tools by children to help identify their own needs, vulnerabilities, and capacities. Child-friendly discussions took place to facilitate a dialogue around the country's disaster risks and to find solutions to community problems (United Nations, 2007).

Children are aware of their ability to assist in recovery processes as well. Bartlett (2008) found that not only are children knowledgeable and resourceful with their surroundings, but they are also capable of coming up with interesting and practical ideas in terms of rebuilding their communities. In the 2001 El Salvadorian earthquake, children were involved with redesigning houses, organizing clean-up campaigns, planting trees and plants, holding educational meetings, and providing food and water to workers (Raftree, et al., 2002).

Program Evaluation Should Be Conducted To Determine the Success of the Educational Program Across All Levels

Ongoing evaluation provides useful information and data about whether certain aspects of the program are "on track" or not. Through ongoing evaluation, communities can provide quality, service delivery of programs, and adjust potential problems or challenges facing programs (Ronan and Johnston, 2005). Many injury prevention and safety programs have been found to be effective and appropriate for implementation through testing these interventions with rigorous research methods (Frederick, et al., 2000) and by finding significant results (Campbell, et al., 2001). Programs

specifically targeted for children should especially be evaluated beforehand in order to ensure that they are suitable for the capacities and abilities of children, so that potentially risky or dangerous activities can be avoided (Raftree, et al., 2002).Formative evaluations can be used for an educational program to seek the receptiveness of instructor training, to determine the content of educational materials, and to incorporate suggestions from the local community on how a program should be developed and implemented. Process evaluation methods, such as continuous feedback forms throughout the implementation of the program, can determine the ease and understanding of the community involved, and impact evaluation could include pre- and post-test analysis, as was the case with Campbell and colleagues' (2001) evaluation of a first aid and home safety program.

Evaluation also helps identify when programs are not effective. The Safety City program previously mentioned that was implemented in Columbus, Ohio, by the American Red Cross was not found to be effective according to its 2000 evaluation. This ineffectiveness may be due to the fact that successful programs that teach injury prevention knowledge have up to 6 hours of multiple sessions to teach this subject as opposed to the Safety City program that allowed only 20 minutes of instruction, exposing children to complex amounts of information in a brief period of time (Luria, et al., 2000).

RECOMMENDED PRACTICES

The following list of recommended practices for carrying out disaster education programs contains findings from the sources identified in the literature review and draws extensively from Kevin R. Ronan and David M. Johnston's book, *Promoting Community Resilience in Disasters: The Role for Schools, Youth, and Families* (2005, p. 163–165), which is based on their research studies and other extant research.

1. Use a graduated sequence of learning across school years by starting with basic messages and incorporate all phases of emergency management: preparedness, mitigation, response, and recovery. Integrate disaster preparedness education with other learning initiatives in schools (e.g., environmental education and sustainability; other curricula including science, social studies, civics, and geography).

2. Combine the raising of concern about local hazards with a confident, coping model that helps increase self-efficacy. Promote messages that present more realistic information about risks through combining such messages with information and learning and doing activities that foster a greater sense of control for youth. Stay away from messages that reduce a sense of control or efficacy (e.g., promoting overwhelming fear messages or presenting mass destruction images and messages that might convey a sense of helplessness or fatalism).

> " Promote messages that present more realistic information about risks through combining such messages with information and learning and doing activities that foster a greater sense of control for youth. "

> *Practice preparedness responses using in- and out-of-class simulations and through experiential exercises.*

3. Promote interactive activities within families, such as home-based discussion and development of home emergency plans or a graduated sequence of specified home-based activities that starts at simple, easy-to-do activities and progresses to other tasks.

4. Explain the importance of emotional regulation to parents. Research has shown that the emotional response of parents has a direct effect on how children cope with hazards. Thus, programs and campaigns should also teach parents how to control and regulate their emotional reactions and provide coping strategies so that they can more positively affect their children in terms of recovery and resilience.

5. Give special consideration to bilingual children, as they can serve as conduits of information to their family members and loved ones who do not fully understand English. In particular, diverse communities should capitalize on bilingual youth and utilize them to better disseminate information to the surrounding community.

6. Use real world events to teach about emergency situations and disasters (e.g., media coverage of a hazard). Also, use materials in the public domain (e.g., checklists, materials from FEMA, other Government agencies and nonprofit organizations) to better understand local hazards and appropriate preparedness and response actions.

7. Use demonstrations by invited guest speakers who are credible and engaging, such as emergency management authorities, fire service, and law enforcement personnel. Interventions are found to be more effective when the instructor is likeable, friendly, and viewed positively.

8. Use interactive visual aids to supplement learning. Computer games, Web sites, movies, television shows, and hazard education videos are just a few of the many components that can be included in an educational program that actively engages children and encourages their participation in disaster preparedness activities.

9. Practice preparedness responses using in- and out-of-class simulations and through experiential exercises. Research shows that mock scenarios should test children's skill levels and reinforce those skills. When joined with appropriate feedback, repeated practice of the desired skills will help develop the self-confidence necessary to ultimately change a child's behavior.

10. Offer opportunities for children to voice their opinions and concerns surrounding disaster preparedness. Through a series of open forums, town halls, or even telephone or online conferences, communities should be more open to allowing children to play a special role in planning for what actions to take in the event of an emergency.

11. Promote youth education programs throughout the community, via partnerships, to increase community-based preparedness discussions and activities. Promote outreach through media, parent–teacher groups, emergency management agencies, community and neighborhood groups, boys and girls programs, and local businesses and engage with other readiness-based efforts.

12. Integrate school hazard education programs with other community hazard education programs. Incorporate evaluation protocols to assess messaging and educational effectiveness and adjust the program on the basis of evaluation findings.

BIBLIOGRAPHY

American Academy of Pediatrics. (2006). *Pediatric Terrorism and Disaster Preparedness: A Resource for Pediatricians* (AHRQ Publication No. 06-0056-EF). Rockville, MD: Agency for Healthcare Research and Quality.

Anderson, W. A. (2005). Bringing children into focus on the social science disaster research agenda. *International Journal of Mass Emergencies and Disasters, 23*(3), 159–175.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, NJ: Prentice Hall.

Bartlett, S. (2008). After the tsunami in Cooks Nagar: The challenges of participatory rebuilding. *Children, Youth and Environments, 18*(1), 470–484.

Beck, J. (1998). 100 years of "just say no" versus "just say know": Re-evaluating drug education goals for the coming century. *Evaluation Review, 22*(1), 15–45.

Bernardo, L. M., & Veenema, T. G. (2004). Pediatric emergency preparedness for mass gatherings and special events. *Disaster Management Response, 2*(4), 118–122.

Campbell, N. R., Ayala, G. X., Litrwnik, A. J., Slymen, D. J., Zavala, F., & Elder, J. P. (2001). Evaluation of a first aid and home safety program for Hispanic migrant adolescents. *American Journal of Preventive Medicine, 20*(4), 258–265.

Child Trends' calculations using data from the Population Division, U.S. Census Bureau. (June 14, 2004). *Annual Estimates of the Population by Sex and Selected Age Groups for the United States: April 1, 2000 to July 1, 2003* (NC-EST2003- 02). Available at http://www.census.gov/popest/national/asrh/NC-EST2003-as.html.

Conroy, A. (2008). *What is going to move the needle on citizen preparedness? Can America create a culture of preparedness?* Unpublished master's thesis, Naval Postgraduate School, Monterey, California.

Corrarino, J. E., Walsh, P. J., & Nadel, E. (2001). Does teaching scald burn prevention to families of young children make a difference? A pilot study. *Journal of Pediatric Nursing, 16,* 256–262.

Dougherty, J., Pucci, P., Hemmila, M. R., Wahl, W. L., Wang, S. C., & Arbabi, A. (2007). Survey of primary school educators regarding burn-risk behaviors and fire-safety education. *Burns, 33,* 472–476.

Franklin, G. A., Pucci, P. S., Arbabi, S., Brandt, M. M., Wahl, W. L., & Taheri, P. A. (2002). Decreased juvenile arson and fire-setting recidivism after implementation of a multidisciplinary prevention program. *Journal of Trauma, 53*, 260–266.

Frederick, K., Bixby, E., Orzel, M. N., Stewart-Brown, S., & Willet, K. (2000). An evaluation of the effectiveness of the Injury Minimization Programme for Schools (IMPS). *Journal of the International Society for Child and Adolescent Injury Prevention, 6*(2), 92–95.

Fuhrmann, S., Stone, L. D., Casey, M. C., Curtis, M. D., Doyle, A. L., Earle, B. D., Jones, D. D., Rodriguez, P., & Schermerhorn, S. M. (2008). Teaching disaster preparedness in geographic education. *Journal of Geography, 107*(3), 112–120.

Ginter, P. M., Wingate, M. S., Rucks, A. C., Vasconez, R. D., McCormick, L. C., Baldwin, S., & Fargason, C. A. (2006). Creating a regional pediatric medical disaster preparedness network: Imperative and issues. *Maternity Child Health, 10*, 391–396.

Golub, A., & Johnson, B. D. (2001). Variation in youthful risks of progression from alcohol and tobacco to marijuana and to hard drugs across generations. *Journal of Public Health, 91*, 225–232.

Gustafson, T. S. (2009). *Empowering children to lead change: incorporating preparedness curricula in the K-12 educational system.* Unpublished master's thesis, Naval Postgraduate School, Monterey, California.

Jordan, E. A., Duggan, A. K., & Hardy, J. B. (1993). Injuries in children of adolescent mothers: Home safety education associated with decreased injury risk. *Pediatrics, 91*, 481–487.

Kolko, D. J., & Kazdin, A. E. (1994). Children's descriptions of their fire-setting incidents: Characteristics and relationship to recidivism. *Journal of American Children and Adolescent Psychiatry, 33,* 114–122.

La Greca, A. M., Silverman, W. K., Vernberg, E. M., & Roberts, M. C. (2002). Introduction. In A. M. La Greca, W. K. Silverman, E. M. Vernberg, and M. C. Roberts (Eds.), *Helping children cope with disasters and terrorism* (p. 3–8). Washington, DC: American Psychological Association.

Laor, N., Wolmer, L., & Cohen, D. J. (2001). Mothers' functioning and children's symptoms 5 years after a SCUD missile attack. *American Journal of Psychiatry, 21*, 383–390.

Lauten, A. (2002). Disaster preparedness and safe villages in Central Vietnam. In A. Jabry (Ed.), *Children and disasters: After the cameras have gone* (p. 34–40). London, England: Plan UK.

Lauten, A. W., & Lietz, K. (2008). A look at the standards gap: Comparing child protection responses in the aftermath of Hurricane Katrina and the Indian Ocean Tsunami. *Children, Youth and Environments, 18*(1). 158–201.

Luria, J. W., Smith, G. A., & Chapman, J. I. (2000). An evaluation of a safety education program for kindergarten and elementary school children. *Archive of Pediatric Adolescent Medicine, 154*, 227–231.

Markenson, D., & Redlener, I. (2004). Pediatric terrorism preparedness national guidelines and recommendations: Findings of an evidence-based consensus process. *Biosecurity Bioterrorism, 2*(4), 301–319.

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*(1), 254–279.

Morris, K.-A. N., & Edwards, M. T. (2008). Disaster risk reduction and vulnerable populations in Jamaica: Protecting children within the comprehensive disaster management framework. *Children, Youth and Environments, 18*(1), 389–407.

National Commission on Children and Disasters. (2009a). *Charter*. Washington, DC: Author. Retrieved from http://www.childrenanddisasters.acf.hhs.gov/NCCD%20 Charter.pdf.

National Commission on Children and Disasters. (2009b). *Interim Report*. Washington, DC. Retrieved from http://www.childrenanddisasters.acf.hhs.gov/.

Newport, J. K., & Jawahar, G. G. P. (2003). Community participation and public awareness in disaster mitigation. *Disaster Prevention and Management, 12*(1), 33–36.

New York State Office of Mental Health. (2000). *Crisis Counseling Guide to Children and Families in Disasters*. Albany, NY: State of New York.

Nikku, B. R., Sah, N., Karkara, R., & Ahmed, S. (2006). *Child rights perspective in response to natural disasters in South Asia: A retrospective study*. Kathmandu, Nepal: Save the Children Sweden.

Norris, F. H., Friedman, M. J., Watson, P. J., Byrne, C. M., Diaz, E., & Kaniasty, K. (2002). 60,000 disaster victims speak: Part I. An empirical review of the empirical literature, 1981–2001. *Psychiatry, 65*(3), 207–239.

Owen, J. (2005). Tsunami family saved by schoolgirl's geography lesson. *National Geographic News*. From http://news.nationalgeographic.com/ news/2005/01/0118_050118_tsunami_ geography_lesson.html.

Peck, G. Q. (2008). Disaster preparedness and pediatrics: What's next? *Pediatrics in Review, 29*, 371–373.

Peek, L. (2008). Children and disasters: Understanding vulnerability, developing capacities, and promoting resilience— An introduction. *Children, Youth and Environments, 18*(1), 1–29.

Penrose, A., & Takaki, M. (2006). Children's rights in emergencies and disasters. *The Lancet, 367,* 698–699.

Pfefferbaum, B., Houston, B., North, C. S., & Regens, J. L. (2008). Youth's reactions to disasters and the factors that influence their response. *The Prevention Researcher, 15*(3), 3–6.

Ronan, K. (1997). The effects of a series of volcanic eruptions on children with asthma. *New Zealand Medical Journal, 110*, 11–13.

Prezza, M. & Constantini, S. (1998). Sense of community and life satisfaction: Investigation in three different territorial contexts. *Journal of Community and Applied Social Psychology, 8*(3), 181–194.

Raftree, L., Machingaidze, S., del Valle, L., & Foster, F. (2002). Coping in the aftermath of calamity: The earthquakes of El Salvador. In A. Jabry (Ed.), *Children and disasters: After the cameras have gone* (p. 15–24). London, England: Plan UK.

Ramirez, M., Kano, M., Bourque, L. B., & Shoaf, K. I. (2005). Child and household factors associated with fatal and non-fatal pediatric injury during the 1999 Kocaeli earthquake. *International Journal of Mass Emergencies and Disasters, 23*(2), 129–147.

Ronan, K. (1997). The effects of a series of volcanic eruptions on children with asthma. *New Zealand Medical Journal, 110*, 11–13.

Ronan, K. R., Crellin, K., Johnston, D. M., Finnis, K., Paton, D., & Becker, J. (2008). Promoting child and family resilience to disasters: Effects, interventions, and prevention effectiveness. *Children, Youth and Environments, 18*(1), 332–353.

Ronan, K. R., & Johnston, D. (2001a). Correlates of hazard education programs for youth. *Risk Analysis, 21*(6), 1055–1063.

Ronan, K. R., & Johnston, D. (2003). Hazards education for youth: A quasi-experimental investigation. *Risk Analysis, 23*(5), 1009–1020.

Ronan, K. R., & Johnston, D. (2001b). *Hazards education in schools: Current findings, future directions.* Proceedings of the APEC Workshop on Dissemination of Disaster Mitigation Technologies for Humanistic Concerns (Phase I: Earthquake Disaster). Taipei, Taiwan: National Science and Technology Program for Hazards Mitigation (National Taiwan University), June 18–21.

Ronan, K. R., & Johnston, D. M. (2005). *Promoting community resilience in disasters: The role for schools, youth, and families.* New York: Springer.

Ronan, K. R., Johnston, D. M., Daly, M., & Fairley, R. (2001). School children's risk perceptions and preparedness: A hazards education survey. *Australasian Journal of Disaster and Trauma Studies, 1* (online peer reviewed journal URL http://massey.ac.nz/~trauma).

Shannon, M. *Pediatric aspects of terrorism/ disaster preparedness.* (2005). Lecture presented at Pediatric Disaster Preparedness Conference, Children's Hospital of Alabama, Birmingham, Alabama.

Silverman, W. K., & La Greca, A. M. (2002). Children experiencing disasters: Definitions, reactions, and predictors of outcomes. In A. M. La Greca, W. K. Silverman, E. M. Vernberg, & M. C. Roberts (Eds.), *Helping children cope with disasters and terrorism* (p. 11–33). Washington, DC: American Psychological Association.

Slovic, P., Fischhoff, B., & Lichenstein, S. (1981). Perceived risk: Psychological factors and social implications. *Proceedings of the Royal Society of London, 376*, 17–34.

Udwin, O. (1993). Annotation: Children's reactions to traumatic events. *Journal of Child Psychology and Psychiatry, 34*(2), 115–127.

United Nations. (2007). *Towards a Culture of Prevention: Disaster Risk Reduction Begins at School. Good Practices and Lessons Learned.* Geneva, Switzerland: International Strategy for Disaster Reduction.

U.S. Department of Commerce, Bureau of the Census, Current Population Survey, 2009 Annual Social and Economic Supplement, Detailed and Historical Poverty Tables.

Walliman, N. (2008). *Your research project* (2nd ed.). London, England: Sage.

Wisner, B. (2006). *Let our children teach us! A review of the role of education and knowledge in disaster risk reduction.* A report by the ISDR System Thematic Cluster/ Platform on Knowledge and Education. Bangalore, India: Books for Change.

Wisner, B., Blaikie, P., Cannon, T., & Davis, I. (2004). *At risk: Natural hazards, people's vulnerability, and disasters* (2nd ed.). New York: Routledge.

Zahran, S., Peek, L., & Brody, S. D. (2008). Youth mortality by forces of nature. *Children, Youth and Environments, 18*(1), 371–388.

citizen★corps

UNITING COMMUNITIES
PREPARING THE NATION

The Citizen Corps mission is to bring community and government leaders together to involve community members and organizations in all-hazards emergency preparedness, planning, mitigation, response, and recovery.

Individual and Community Preparedness Division
U.S. Department of Homeland Security/FEMA
800 K Street, NW
Washington, DC 20472-3630
202-786-9922 fax
CitizenCorps@dhs.gov
www.citizencorps.gov