Spring 5-19-2016

Teaching Preparedness to Better Prepare Children in the Event of Disaster

Brian Kendall
Arkansas Tech University

TEACHING PREPAREDNESS TO BETTER PREPARE CHILDREN IN THE EVENT OF DISASTER

By

BRIAN KENDALL

Submitted to the Faculty of the Graduate College of
Arkansas Tech University
in partial fulfillment of the requirements
for the degree of
MASTER OF SCIENCE IN
EMERGENCY MANAGEMENT AND HOMELAND SECURITY
May 2016

Permission

Title: Teaching Preparedness to Better Prepare Children in the Event of Disaster

Program: Emergency Management and Homeland Security

Degree: Master of Science

In presenting this thesis in partial fulfillment for a graduate degree from Arkansas Tech University, I agree the library of this university shall make it freely available for inspection. I further agree that permission for extensive copying for scholarly purposes may be granted to my thesis director, or, in that professor's absence, by the Head of the Department or the Dean of the Graduate College. To the extent that the usage of the thesis is under control of Arkansas Tech University, it is understood that due recognition shall be given to me and to Arkansas Tech University in any scholarly use which may be made of any material in my thesis.

Signature

April 8, 2016

Date

Abstract

The purpose of this research was to determine if teaching preparedness to children will better prepare them in the event of a disaster. Children have been the target audience for several campaigns in the past. By introducing disaster awareness into the schools, it is hoped, like in other campaigns, that children will take the knowledge obtained and share that information to family and friends. This study was significant to the field of emergency management due to the need of providing the general public with the necessary information and resources that could potentially save lives. As a result of this study, it has been found that children who were introduced to disaster preparedness did in fact increase their overall knowledge pertaining to disaster preparedness. This was evident by comparing the participants' pre- and post-test scores. Although there are multiple organizations trying to reach as many children as possible through various programs, disaster preparedness is not currently found in every school across the United States. By introducing disaster preparedness in the schools, children are ensured exposure to this life saving information. In addition, the children are potentially the link between the information and the rest of the family by being the best resource for reaching as many people as possible.

Keywords: emergency preparedness, disaster preparedness, teaching preparedness, children's participation in disaster, elementary schools, education, natural disasters, teaching

Table of Contents

Page

List of Figures

List of Tables

Chapter I: Introduction

Natural disasters are defined as any event resulting from the forces of nature that cause destruction and devastation. However, no disaster is the same and each one is accompanied by a unique set of secondary hazards (as cited in Counts, 2001). In addition, disasters also vary in magnitude, nature, and impact. Each of these primary and secondary hazards impact communities and the people within them in a multitude of ways, depending on their age, health, and social statuses (as cited in Counts, 2001).

Problem

In 2011, the United Nations Office for Disaster Risk Reduction deduced that approximately 100 million children and teens fall victim to natural disasters each year (United Nations Office for Disaster Risk Reduction [UNISDR], 2007). For example, the Haiti earthquake claimed the lives of 316,000 people, with many of them being children (UNISDR, 2007). In order to reduce the loss of lives that may result from a disastrous event, the general public must be properly educated on the correct actions to take when facing these life-threatening events.

Ensuring the dissemination of disaster preparedness materials is one of many obstacles facing emergency managers. Therefore, the question is how do we get the information pertaining to disaster preparedness distributed to as many people as possible? One idea is through educational outreach. Children are a great, untapped resource in regards to the distribution of information pertaining to disaster preparedness (Murtaza, 2013). Teaching children at school or other extracurricular functions will allow the information to reach a wider audience. For instance, children love to show their parents what they have accomplished at school. So why should disaster preparedness be any

different? If children are taught emergency preparedness via hands-on activities or other methods, it is safe to assume that they would then take what they have learned to their parents, and help prepare their own homes.

Research Question

Therefore, the purpose of this research was to determine *"Does teaching preparedness to children better prepare the children in the event of a disaster?"* First, in order to teach preparedness, it is important to understand exactly what preparedness actually is. The Federal Emergency Management Agency (FEMA) and the Department of Homeland Security (DHS) define preparedness as "a continuous cycle of planning, organizing, training, equipping, exercising, evaluating, and taking corrective action in an effort to ensure effective coordination during incident response" (The Department of Homeland Security, 2013, para. 4).

FEMA's definition of preparedness emphasizes that training, or education, is an important aspect of disaster preparedness. If children are introduced to the concept of disaster preparedness, they will be better prepared to deal with the stress and fears that can accompany a natural disaster event (Hauserman, 2012). Furthermore, disasters do not only result in physical injuries; they also have the potential to result in the children to experience symptoms anxiety and depression (Hauserman, 2012). By providing children with a better understanding of what can occur during a disaster, the children will be more likely to be able to cope with potential physiological trauma and as well as assist others in need (Hauserman, 2012).

Current Programs

How do we educate our children on disaster preparedness? First, there are several age appropriate programs available for teachers and parents to utilize, in order to educate their children on what to do when a disaster strikes, and what to expect when the disaster has passed. In addition, there are programs that are trying to make their way into the school systems, so that the information can be given to the children (American Red Cross, 2014a). For instance, the Pillowcase Project uses pillowcases decorated with Disney characters to teach preparedness to the children (American Red Cross, 2014a). In addition, the Pillowcase Project also encourages the children to share information with other family members, as well as sitting down with parents to establish an emergency plan and emergency disaster kit (American Red Cross, 2014a). Other programs such as the *Masters of Disaster*, also utilizes age appropriate lessons and materials to educate children on disaster preparedness (Wachtendorf, Brown, & Nickle, 2008).

Global Efforts & Disaster Impacts on Children

Disaster preparedness is not only a concern of the United States. In fact, the importance of teaching disaster preparedness to children has increased worldwide. Children in Pakistan have taken an interest in disaster preparedness, and taken the initiative without prompting to become more engaged in the planning and preparations of their own country (Murtaza, 2013). Furthermore, the need to spread the word about disaster preparedness is imperative. By including the introduction of preparedness into the school's curriculum, more children will be exposed to the information (Johnson, 2011).

According to Rose (2009), in order to provide children with a better chance of survival during a disaster, they must be provided with the proper knowledge and tools to do so. If schools are not willing to teach preparedness, even though the ability for disaster preparedness can be added into already existing courses, it then becomes the parents' responsibility to educate their children. Parents should ensure that their children are aware of all the available resources within their community, so that they will know who to call for help in the event they are home alone or out in the community. Furthermore, in addition to educating children on what to do in the event of a disaster, it is also important to teach them what to expect following the disaster, and what resources are available to assist them with coping with any psychological effects that they may experience.

Black (1982) ascertained, "children exposed to disaster are twice as likely to develop psychological disorders as their peers, either in childhood or later" (p. 989). Children who are in the area directly impacted by a disaster generally display symptoms more so than those outside the impacted zone (Black, 1982). For example, Fraser stated, "If you have a round pond, full of frogs and if you throw stones into the middle, the frogs in the middle will experience fear and the frogs at the rim, affected by the ripple, will experience anxiety" (as cited in Black, 1982, p. 989).

This example illustrates that the frogs in the impact zone have the ability to move away from the initial danger (Black, 1982). However, those frogs on the outer rim of the pond will be subjected to the impact of the secondary impact [the ripples], despite their location in the pond (Black, 1982). Children who are impacted by disaster experience the same fears and anxieties. In order to reduce the psychological trauma that children

experience following an event, programs have been developed to help children talk through their experiences (Black, 1982).

According to Pynoos and Nader (1989), by reducing a child's exposure to death injury and destruction, we can reduce the potential for psychological effects following a disaster. Schools fail to expose children to potential psychological effects that they may experience (Pynoos & Nader, 1989). Children must not only be taught what to do to prepare and mitigate against disaster, but they also must be provided with an idea of what could follow a disaster (Pynoos & Nader, 1989). Although there is no way to completely prepare anyone for everything that may occur, by incorporating the potential outcomes of a disaster into a preparedness curriculum, we can better prepare our children and reduce the psychological impacts that may accompany a disaster.

Through proper education, we will not only prepare our children, but also have the potential to save the lives of others. For example, a tsunami hit Maikhao Beach in Thailand on December 26, 2004. If it were not for Tilly Smith, 10 year-old from England, more people would have lost their lives that day (Martin, 2010). Lives were saved that day because Tilly recently studied tsunamis in school, and she was able to alert others of the impending dome that was heading their way. Tilly's actions saved the lives of hundreds of people enjoying the beach that day (Martin, 2010). Children play a large role in all stages of a disaster and that the ideal method of protecting them is through a culture of risk reduction. This can be accomplished by ensuring the participation of children in preparedness and mitigation activities (Martin, 2010).

Children are considered to be extremely vulnerable to the effects of disaster. However, it is evident that children are crucial in the dissemination of knowledge

pertaining to disaster preparedness (Martin, 2010). Whether it is spreading the information to family and friends, or taking action in order to save lives. Teaching our children what to do when and how a disaster occurs will not only help save their lives, but has the potential to save the lives of others (Martin, 2010). Schools are ideal for introducing disaster preparedness to children. By doing so, more children can be reached and that information provided can be spread to a much wider audience.

Chapter II: Literature Review

The purpose of this literature review was to assess the extant literature pertaining to *teaching children about preparedness to better prepare them in the event of a disaster*. Sources used have been obtained by an extensive computerized literature search using Google Scholar, ProQuest, and EBSCO. Key terms that were searched included emergency preparedness, Pillow Case Project, Masters of Disaster, Stop Disasters, Friends to the Rescue, children's participation in disaster, elementary schools, education, natural disasters, and teaching.

The literature review was divided into four subcategories. Each category addressed different aspects pertaining to children and the importance of disaster preparedness. The first subcategory is *preparedness*. Under this section, preparedness was defined, and the importance of being prepared for a disaster was also addressed. The second subcategory, *effects of disasters on children*, addressed the physical and mental effects that children may experience during and after a natural disaster.

In the third subcategory, *past programs,* discussed passed programs used for teaching disaster preparedness and where the discipline is now. This category looked at whether or not there have been attempts in the past at teaching emergency preparedness to children. In addition, this section illuminated the effectiveness of the previous campaigns at getting the message out. Furthermore, this section addressed if, how, and where preparedness is being taught today. The fourth subcategory, *teaching preparedness,* talked about the various methods and benefits of utilizing schools to disseminate information pertaining to disaster preparedness. Subcategory five, *children's participation,* discussed how children have participated in disaster preparedness efforts in

various countries. The literature review concluded with an overall summary of the theoretical and research literature pertaining to the importance of *teaching preparedness in the school so that children will be better prepared in the event of a disaster*.

Preparedness

The Federal Emergency Management Agency (FEMA) and the Department of Homeland Security (DHS) defined preparedness as "a continuous cycle of planning, organizing, training, equipping, exercising, evaluating, and taking corrective action in an effort to ensure effective coordination during incident response" (The Department of Homeland Security, 2013, para.4). According to Sutton and Tierney (2006), preparedness is the ability of individuals, households, businesses, towns, and communities to respond efficiently and to recover in the event of a disaster striking. Furthermore, natural disasters consist of events resulting from forces of nature and epidemics that vary in regularity, predictability, ability to mitigate against them, and potential devastation (as cited in Counts, 2001). However, the United Nations takes the definition of a disaster one step further and defines a disaster as "a serious disruption of the functioning of society, causing widespread human, material, or environmental losses which exceed the capacity of the affected society to cope using only its own sources" (as cited in Hamiel, Wolmer, Spirman, & Laor, 2013, p. 262).

Each year natural disasters affect over 200 million people. Therefore, it is important to take the necessary precautions to prepare yourself, family, and community (American Red Cross, 2014b). Everyone has a part ensuring the safety resiliency of the United States when facing disaster (Federal Emergency Management Agency, 2014). These disasters, both human-made and natural can result in extreme effects on human life

such as disease, injury, and death. The destruction of land and property, damage to buildings and businesses can also affect the economy (Javaid, Arshad, & Khalid, 2011).

It is important that households are prepared both as an entity and on an individual basis (Sutton & Tierney, 2006). Sutton and Tierney (2006) stated, "preparedness begins in the home with some simple steps that can be taken to improve life safety, property protection and survival from hazardous event" (p. 12). The National Center for Disaster Preparedness discovered that out of the entire general public, fewer than half have an emergency disaster plan in place. Surprisingly, it was also determined that one-third felt as if they would be prepared in the event that a disaster were to occur (Baker & Cormier, 2012). No two households are identical; so many factors can influence the vulnerability of a home. These factors can include, but are not limited to single-parent families, income, age, culture, and language (Sutton & Tierney, 2006).

Children are the most vulnerable population when referring to both human-made and natural disasters (Hamiel et al., 2013). This risk was increased if the state or country where the children lived did not possess adequate means of dealing with these disasters (Javaid et al., 2011). Not having the ability to properly address disasters puts children at a greater risk for disease, malnutrition, injury, and/or death (Javaid et al., 2011). Children who come from lower income families were affected more than families with a higher income (Murray & Monteiro, 2012). Disasters also have the ability to separate families, disrupt education, and result in issues pertaining to sanitation (Javaid et al., 2011).

Children receive most of their socialization influence from their families (Miller, et al., 2012). Thompson et al. (2014) asserted that children do not receive the proper training or education that will allow them, and their families to be better prepared for

disasters. It is necessary that children and families be as prepared as possible for disasters. So why are these families not preparing their children and homes?

According to Mitchell, Tanner, and Haynes (2009), children are still viewed as helpless victims, and are not able to properly explain risks, prevention, or play a role in response. Adults dominate the disaster management field, due to the ideas that they know what is best for their families, and are the ones that can influence the community (Mitchell et al., 2009). Concerns pertaining to disasters are becoming more globally recognized (Mitchell et al., 2009).

According to Plan UK, disasters affected approximately 77 million children between 1991 and 2000 (as cited in Mitchell et al., 2009). If a child possesses the knowledge that gives them the ability to react, they reduce their risk. When a disaster occurs children make up a large percentage of the death toll (Mitchell et al., 2009). Therefore, not educating the children or including them on the planning process puts children at greater risk when disasters occur. Children are a great resource that can be utilized in risk communication, education, and risk reduction (Mitchell et al., 2009).

Chief and Special Representative of the United Nations Secretary General for Disaster Reduction, Margareta Whalström stated:

> We must get beyond perceptions of children as passive and subordinate to ensure they are active participants in decision-making and risk reduction activities. They can influence their communities to invest in safe schools and health facilities and take into account the special circumstances of children and other vulnerable groups when designing early warning systems and other projects which contribute

> to resilience in the face of disasters and climate change. (as cited in the United Nations International Strategy for Disaster Reduction, 2011, p. 1)

Children differ from adults when referring to disaster preparedness and education according to the Federal Emergency Management Agency (2010). Due to the lack of life experience and the inability to act on the same level as the adults, children are then forced to rely on the adults during times of disaster (Federal Emergency Management Agency, 2010). An additional reason why children must rely on adults for guidance is due to the fact that courses regarding disaster preparedness are designed for an older audience (Federal Emergency Management Agency, 2010). These courses focus on matters such as distribution of supplies, evacuation plans, and locations of various shelter types (Federal Emergency Management Agency, 2010).

The need for disaster preparedness courses developed for a younger generation is imperative (Federal Emergency Management Agency, 2010). Children should not be classified as passive victims simply because they are at a greater risk during times of disaster (Federal Emergency Management Agency, 2010). There are existing programs in place that can instruct children on risks that may occur in the home, school or communities in which the children live. By giving children the necessary information to better prepare themselves in the event a disaster, it would be very beneficial to them (Federal Emergency Management Agency, 2010). This will also enable the children to relay the information that they have obtained, and share with their family and friends (Federal Emergency Management Agency, 2010).

Teaching children preparedness can also assist with distributing disaster preparedness information to families where English is not their native language (Federal

Emergency Management Agency, 2010). Children pose the potential to help bridge the gap in order to make this possible. Today, children often play the role of translator for the family (Federal Emergency Management Agency, 2010). Children who have learned the material can then take it home, and teach it to the rest of their families (Federal Emergency Management Agency, 2010). Children can then further explain the information, so that their parents can breakdown these barriers (Federal Emergency Management Agency, 2010).

According to Save the Children, 74 percent of parents felt that the United States federal government has not taken the necessary steps to ensure the safety of their children (as cited in McKay, 2014). Additionally, the parents themselves have not taken the time to help discuss the issues of disaster preparedness with their own children (McKay, 2014). A study done by the Save the Children organization, surveyed 1,012 parents and asked them how much time they devoted to educating their children on emergency preparedness (McKay, 2014). The results of that study discovered that parents spent approximately five hours a week preparing for the upcoming school year, and only spent an hour or less on preparedness exercises (McKay, 2014).

Several of the parents felt that they could not protect their own children and were concerned about the children's time in school (McKay, 2014). The senior director of policy and advocacy for Save the Children, Rich Bland stated, "Parents are certainly anxious and yet they aren't doing enough to prepare" (as cited. in McKay, 2014, p. 1). Bland thought that many parents believed that there were measures already in place to ensure the safety of the children (McKay, 2014).

Effects of Disasters on Children

Today, both children and adults find themselves coping with the after effects of disasters (Hamiel et al., 2013). Natural disasters can occur anywhere. Disasters have the potential to lead to negative psychological impacts. These impacts can vary due to several different reasons, such as a person's age, culture, and past experiences. Disasters also affect everyone differently (Hauserman, 2012). They can affect families and children directly and indirectly. Children may be affected by how their families cope with experiencing a disaster (Hauserman, 2012). Parents and their children can potentially suffer from anxiety, depression, and post-traumatic stress disorder; which have the possibility of causing changes in moods. Children can also be at risk of being victims of sudden changes in mood (Hauserman, 2012).

There are several factors that could contribute to the stress of experiencing a traumatic disaster event (Wang, Chan, & Ho, 2013). Contributors include the loss or separation of a family member or pet, children's homes being destroyed, lack of food and water, and the disruption of daily activities, such as school, church, and social interaction (Wang et al., 2013). Post-traumatic stress disorder or (PTSD) can be a result of extremely stressful situations. Children who suffer from PTSD experience daily disruptions in their lives (Mohay & Forbes, 2009). These disruptions can include the symptoms of PTSD, such as reliving the traumatic experience, which can lead to anxiety, and avoiding anything linked back to the traumatic experience, such as a television show or discussion group (Mohay & Forbes, 2009).

Children who have been through a traumatic disaster experience may begin to distance themselves from anything that they can relate back to their bad experience.

Some children will block out specific events that may have occurred, or could have trouble remembering what exactly took place (Fritz, 2014). These children may also relive these traumatic events through nightmares or flashbacks. In addition to the nightmares and flashbacks, the children may also become anxious or irritable when discussing or seeing things that relate back to their experience. They could develop sleeping problems with sleeping or changes in eating habits (Fritz, 2014).

What should parents do to prevent these children from suffering the psychological effects of a disaster? Being prepared is the first step in reducing the chance of short and long-term effects. Families should sit down with their children and create an emergency plan in case a disaster occurs (Fritz, 2014). These plans should include a method of evacuation, an agreed upon location where everyone can meet in the event that they are separated, and discuss means of communication (Fritz, 2014). Not only will this better prepare the child, it will also help reduce feelings of anxiety prior to a traumatic experience. Other methods of reducing anxiety are running drills of the plan and preparing a disaster kit. It is also necessary ensuring that the children know where the kit is located within the home (Fritz, 2014).

Children are also more susceptible to illness, injuries, and loss of body heat than adults. In addition, children may also have difficulties trying to explain what may be bothering them (Centers for Disease Control and Prevention, 2014). Therefore, it is the adults' responsibility to try and determine what the children are trying to express when it comes to pain and illness (Centers for Disease Control and Prevention, 2014). Children and adults are different in several ways, including their behavior, and psychologically, physiologically, and anatomically make-up. Children are more likely to become ill when

facing times of disaster (Federal Emergency Management Agency, 2010). This is due to a child's size and other physical traits. These traits can cause them to be more vulnerable to secondary hazards that may come as a result of a natural disaster (Federal Emergency Management Agency, 2010).

According to Osofsky and Chartrand (2013), disaster related research shows that children have a more difficult time recovering from a disaster when the disaster is more devastating and lasts over a long period of time. Depression rates among children also increases when the children are victims of more than one disaster occurrence. If children are separated from family, the children's resilience is compromised (Osofsky & Chartrand, 2013). Osofsky and Chartrand (2013) reaffirm there are several factors that can affect the child's ability to cope with disaster. The child's age, gender, and personality traits play a major role in how the child will bounce back (Osofsky & Chartrand, 2013).

Natural disasters are emotionally scaring for both adults and children. The effects of traumatic disaster occurrence can be long-lasting and may affect everyone differently (Lazarus, Jimerson, & Brock, 2003). When disasters devastate a community, the children that live in that community lose a sense of safety. Schools are an excellent resource to help children cope with the aftermath of a traumatic disaster occurrence (Lazarus et al., 2003). Schools also can provide comfort and allow children to learn from what has taken place (Lazarus et al., 2003).

Past Programs

The importance of disaster preparedness has never been more evident due to the increase in natural and man-made disasters. There have been several programs developed

in the past that have attempted to educate children on what to do during a disaster. However, the evolution of technology and the need for a more modern approach is essential. Past programs such as *Friends to the Rescue*, *Masters of Disaster*, *Disney's Pillow Case Project*, and *Stop Disasters!* have unique ideas on how to deliver the message, but in the end, they share the same mission.

Friends to the rescue. In 1969, Sesame Street, a children's television show aired for its first time. The show consisted of puppets, such as Big Bird, Elmo, Oscar the Grouch, Burt, and Ernie (Wachtendorf et al., 2008). The purpose of the program was to educate children in subjects such as reading, writing, math, health, safety, and introduced children to other cultures. Sesame Street was produced by Sesame Workshop, a non-profit organization (Wachtendorf et al., 2008). The Sesame Workshop believes that education has the power to make the world a better place, and that a child's education helps create the person that they grow up to be, as well as helps mold the community the child inhabits (Wachtendorf et al., 2008).

The Sesame Street program has, in the past, addressed several sensitive global issues, such as the human immunodeficiency virus (HIV), acquired immunodeficiency syndrome (AIDS), and the ethnic conflict in Serbia and Croatia (Wachtendorf et al., 2008). In response to the terrorist attacks on September 11, 2001, the Sesame Workshop produced a five-part series devoted to disaster preparedness. The video was titled *Friends to the Rescue* and addressed Sesame Street's response to a hurricane (Wachtendorf et al., 2008). The video begins with a storm moving towards Sesame Street. Concerned about the weather, the people of Sesame Street asked for information pertaining to hurricanes from weatherman, Al Roker (Wachtendorf et al., 2008).

The Sesame Street residents then began preparing their homes and the community by taping and securing windows and stock piling food. Once prepared the residents worked together to ensure the safety of their friends (Wachtendorf et al., 2008). Big Bird was forced to stay with friends because his home was outdoors. In the aftermath of the storm, Big Bird discovered his home was destroyed, and there were several other structures destroyed. Following the discovery of the destruction, the community worked together to clean up the debris, and rebuilt everything back to what it was before (Wachtendorf et al., 2008).

This video teaches children the importance of disaster preparedness as well as methods of coping with high stress situations that accompany disaster. The video also points out the vulnerabilities of the community and when disaster strikes, it is important to work together both before and after disasters occur. One of the best strategies that was learned from the video was the need to work with one another, whether the need is rebuilding the community or helping your fellow citizen or family member through troubling times (Wachtendorf et al., 2008).

Another potential problem resulting from a disaster is the possibility of psychological effects that both children and adults can endure. To help prevent further traumatic issues, such as PTSD or other disorders, it is important to talk through and adapt to the sudden changes that may be faced (Wachtendorf et al., 2008). There are several other key lessons that can be learned from the *Friends to the Rescue* series, such as supporting loved ones and finding distractions to help keep your mind off things. For instance, taking up an art projects will help give that distraction to allow the mind a break from the traumatic event (Wachtendorf et al., 2008).

Masters of disaster. In 1999, the American Red Cross, working alongside the Allstate Foundation created the *Masters of Disaster* program. The program was created due to the lack of natural disaster education in the schools' curriculum (Wachtendorf et al., 2008). The *Masters of Disaster* program delivered the material through methods such as age appropriate videos and lesson plans. The curriculum was aimed towards kindergarten through eighth grades, which covered disaster problems that children could face while at home, school, or somewhere in between. The curriculum also discussed matters of preparedness, response, and recovery (Wachtendorf et al., 2008).

The *Masters of Disaster* program was designed, so that educators could incorporate the information pertaining to disasters into the existing curriculum, such as social studies, sciences, language arts, and mathematics. Educators were provided with the necessary tools to deliver the material about various types of disasters. These disasters included but were not limited to tornados, hurricanes, lightning, and floods (Wachtendorf et al., 2008). Students in sixth through eighth grades were exposed to videos that depicted other students investigating past disaster, occurrences and then present it in a news report. These videos also provided ideas to help better prepare students in the event that they were exposed to a disaster event. During the videos, students heard from experts in fields that included meteorologists and geologists (Wachtendorf et al., 2008).

Since the *Masters of Disaster* program can be integrated into the already-in-place curriculum, teachers teaching science can use experiments to explain weather phenomenon, and English classes can assign disaster terminology as spelling words and assign books related to disasters (Wachtendorf et al., 2008). One of the goals of the *Masters of Disaster* program is for children to take home what they have learned.

Students are encouraged to better prepare their homes and families, so that when a disaster strikes they too can be better prepared. This can be done by preparing evacuation plans, putting together a disaster kit, and securing items in the home that are prone to being knocked over if an earthquake takes place (Wachtendorf et al., 2008).

The *Masters of Disaster* program helps prepare children and teaches them the necessary tools to prevent them from becoming victims. The program provides them with problem-solving skills and teaches them how they can make a difference in the home and in the community (Wachtendorf et al., 2008). The children that partake in the *Masters of Disaster* program are then encouraged to pay forward the materials and information that they have learned, so that they can help prepare other children and people within their communities (Wachtendorf et al., 2008).

Stop disasters! Donald Dennis, who managed the Brunnelle Youth Technology Series (BYTES) located at the Georgetown County Library in South Carolina, was contacted by George McInvaill, library director, about taking part in the "Georgetown County Hurricane Project" in 2009 (Dennis, 2011). The purpose of the program was to educate children and the community by documenting the destruction in the wake of Hurricane Hugo. During the program, videos were created to educate the community about hurricanes and hurricane safety (Dennis, 2011). The children that participated in the BYTES program created public service announcement videos that aired on television (Dennis, 2011).

The project also led to the BYTES team putting on "Stop Disaster Games Marathon" (Dennis, 2011). International Strategy for Disaster Reduction created a game called *Stop Disasters!* In the game, the players' goal was to prepare for an upcoming

disaster and survive by utilizing resources and tools that were provided to them in the game (Dennis, 2011). Throughout the game, players completed tasks that would provide players with information that demonstrated how to utilize risk assessment maps and know what emergency resources are available to them (Dennis, 2011). If the players performed all the tasks and reached the end of the game, the players received a certificate of completion (Dennis, 2011). Other organizations such as the American Red Cross have implemented a plan known as the Pillowcase Project; it prepares children in the event a disaster strikes (American Red Cross, 2014a).

Disney's pillowcase project. A Red Cross Chapter in Southeast Louisiana created a new way of introducing children to disaster preparedness utilizing pillowcases. The project was created by actions of several students from Loyola University (American Red Cross, 2014a). Kay Wilkins, chief executive officer of the American Red Cross Southeast Louisiana Chapter heard about the actions of these students during the evacuation of the dorms prior to Hurricane Katrina in 2005. The students gathered their things and carried them out using the pillowcases from their beds (American Red Cross, 2014a). This intrigued Wilkins and with the help of an art therapist, the *Pillowcase Project* was born. Eventually the *Pillowcase Project* would make its way into the school system, targeting elementary school students (American Red Cross, 2014a). The project spread to other Red Cross chapters and caught the eye of the Walt Disney Company (American Red Cross, 2014a). The Walt Disney Company enriched the program by providing funding and standardizing the lesson to be taught to more children (American Red Cross, 2014a).

Teaching Preparedness

According to Johnson (2011), the Federal Emergency Management Agency (FEMA) along with Department of Education is attempting to put together a plan to incorporate disaster awareness into the school systems. The goal of FEMA and the Department of Education's is to reach as many children as possible and inform them on the importance of disaster preparedness (Johnson, 2011). Education is the best method for preparedness (Izadkhah & Hosseini, 2005). One of the best ways of spreading information is by targeting the schools. Children will then take the information that they have obtained in school, and then relay that information to the home and the rest of their family (Izadkhah & Hosseini, 2005). Disaster education is driven by several key factors (Battersby, Mitchell, & Cutter, 2011). These factors include the acknowledgment that comprehending disaster related events will help reduce risk; disasters can capture the attention of students; disasters tend to be on the forefront of current events; and disasters allow for heated discussions (Battersby et al., 2011).

The United Nations General Assembly (2010) states, "that everyone shall enjoy the human right to education" (p. 1). A complication impairing the United Nations' goal to provide education to children around the world is that a vast majority of children do not attend school, and live in areas prone to disasters and political conflict (The United Nations, 2010). However, the use of education to prepare the community has been proven successful in various countries around the world. Some of these countries are limited by the lack of revenue and expertise in the subject matter, but they still utilize the resources they have available (Izadkhah & Hosseini, 2005).

The countries that have taken this step to educate the children have introduced health, safety, and hazard awareness into the school curriculum. The purpose of introducing disaster awareness is to give children a better understanding of what to do before and during a disaster, and what to expect during and after the disaster occurs. This allows that both the children and adults to be better prepared (as cited in Izadkhah & Hosseini, 2005). So why is it important to educate the children? Schools play a crucial role in the molding of our children into what they become in their adult lives. Children are the critical links that allow the information concerning disaster preparedness to reach the home and prepare the families (Izadkhah & Hosseini, 2005). Understanding how important children are in disaster preparedness, the United Nations created the World Disaster Reduction Campaign in 2000.

The campaign's goal was to promote the education of children on disaster risk and impact reduction through educational programs (Izadkhah & Hosseini, 2005). Since children can grasp new information and retain it better than adults, attempts at incorporating preparedness programs into the school curriculums has been done (Izadkhah & Hosseini, 2005). The idea of introducing disaster preparedness can be introduced as early as preschool. This will provide the children a base to build on as they progress throughout higher levels of education (Izadkhah & Hosseini, 2005). The 2001 United Nations World Disaster Reduction Campaign states:

> A culture of prevention is something that forms over time. What is needed is a change in attitude, based on the conviction that we do not need to be fatalistic about disaster risks and a willingness to act upon that conviction. The mind-set is best developed at any early age. (as cited in Izadkhah & Hosseini, 2005, p. 142)

It is crucial that children understand the material, which covers disasters and the risks that come from those disasters presented to them. It is also important that those presenting information to children understand that each child learns in a different way, speed, and determine the appropriate method of delivery. The goal is for that children to take away as much information as possible (Federal Emergency Management Agency, 2010). When teaching preparedness to the children it is important to find the correct method of delivery. Several delivery options should not be used. An example of a teaching method that has been proven ineffective is the use of scare tactics to educate children about disasters (Federal Emergency Management Agency, 2010).

Beck, a researcher from the Center for Educational Research and Development, discovered that children do not respond to scare tactics, and they do not believe exaggerated information, such as the risks and dangers (as cited in Federal Emergency Management Agency, 2010). Golub and Johnson, investigators at the National Development and Research Institutes, revealed that using information that is exaggerated or false could pose repercussions (as cited in Federal Emergency Management Agency, 2010). Counterproductive tactics, such as the scare tact, generally does not result in children taking the necessary preparedness measures, whether creating a disaster kit or participating in discussions pertaining to disaster preparedness. A more effective approach to educating children on disaster preparedness is ensuring that the children fully understand the true risks that are present in disaster scenarios. In addition, it is a good idea to encourage the children to pass the information onto their parents (as cited in Federal Emergency Management Agency, 2010)

In the United States, along with other countries around the world, children are required to attend school. This makes schools the best method of delivery for disaster education (as cited in Federal Emergency Management Agency, 2010). Children with the proper education can possess the necessary skills that they can carry with them for the rest of their lives. Disaster preparedness can be blended in with other subjects, such as science, math, health, and technology (as cited in Federal Emergency Management Agency, 2010).

Elementary schools can use past occurrences of disasters to teach geography (Lintner, 2006). Educators can also use the occurrences to look at where the disaster struck and where it originated. By using maps, children could plot the paths of a disaster, such as a hurricane or tsunami. Teachers can ask questions addressing the traumatic events that the children were exposed to during the disaster and its aftermath. The educators can also tie the disasters to how the community and its infrastructure were affected by the disaster (Lintner, 2006).

Disasters can also be incorporated into the economics by addressing issues of how disasters affected the supply and demand of the area that was hit. Additionally, disasters can also be tied to history. Students can study the past events that have occurred around the world and how they have impacted past civilizations (Lintner, 2006). Dennis (2011) asserts that libraries are an excellent way to distribute disaster preparedness information to children. Being educated on disaster preparedness is essential for survival. Material that is presented to the children should aim to reach all children. Information should be age appropriate, and the delivery of the information should accommodate all styles of

learning whether it is hands-on or through the use of visual aids or computers (as cited in Federal Emergency Management Agency, 2010).

Researchers from the graduate school of public health at San Diego State University emphasized that in a perfect scenario, children would receive years of education that revolves around disaster preparedness (as cited in Federal Emergency Management Agency, 2010). Ronan and Johnston ascertain that children, who participate in multiple educational programs where disaster preparedness was being taught, tend to possess a stronger knowledge over the subject matter. Morris and Edwards, Jamaican researchers with the Office of Disaster Preparedness and Emergency Management in Kingston, Jamaica, discovered that in Jamaica, schools work several months to prepare for "hazard awareness days" (as cited in Federal Emergency Management Agency, 2010. p.9). Hazard awareness days are programs that began being held biannually with a purpose of trying to prepare students for disaster. These days were eventually added to the school system's academic calendar each year (as cited in Federal Emergency Management Agency, 2010).

It is important for children to have a clear understanding on what disasters are and the risks that come with the disaster (Federal Emergency Management Agency, 2010). It is also crucial that children know what to do and have an idea of what to expect when disasters occur. Children who do not understand what exactly a disaster is and what to expect tend to suffer fears and anxiety. These children may also lack the confidence that they may need to face the situations that they may be forced to face. However, children who have a more practical view of disaster preparedness or have been exposed

to information pertaining to disasters, tend to be more able to cope with the stress of disasters more efficiently (as cited in Federal Emergency Management Agency, 2010).

The United Nations (2007) identified that France has its own disaster educational system comprised of four goals. The first goal, teaching students prevention and protection, will prepare the children how to address risks that the children may face in their daily lives (The United Nations Office for Disaster Risk Reduction, 2007). Students will also be informed of the various emergency resources that are available in their communities and will be provided contact information for each one (The United Nations Office for Disaster Risk Reduction, 2007). The third goal that France has incorporated into their program was a brief survival and safety course. Finally, the fourth goal consists of helping students to become more responsible, both as individuals and as a group (The United Nations Office for Disaster Risk Reduction, 2007).

Activities such as creating a family evacuation plan and putting together a disaster kit can help reduce the impact of disasters at home (Federal Emergency Management Agency, 2010). Ronan and Johnson, researchers from the Central Queensland University in New Zealand, discovered that when children took home what they learned and shared it with the rest of their family, a strong correlation developed with the family plans being created or updated (as cited in Federal Emergency Management Agency, 2010). In India, children are encouraged to search for hazards around their own homes and then pass that information onto their parents (The United Nations Office for Disaster Risk Reduction, 2007).

When children continuously utilize what they have learned, they are more likely to retain the knowledge and reach upon those skills when put into an emergency situation

(as cited in Federal Emergency Management Agency, 2010). It was affirmed that when children learn preparedness at school and continue to use what they have learned outside the classroom, they tend to develop a stronger ability to cope with disasters (as cited in Federal Emergency Management, 2010).

The idea of involving children in disaster preparedness and risk reduction is spreading around the world. Programs promoting the participation of children has been proven successful on several fronts (Lopez, Hayden, Cologon, & Hadley, 2012). In Mozambique, children that have been informed on preparedness education and the importance that accompanies it. By simply being prepared, it will provide children a better understanding of the risks involved with disasters and how to prepare if a disaster were to occur (as cited in Lopez et al., 2012).

The children have taken what they have learned and shared it with their families and even their communities. It is important to expose children to programs that emphasize disaster preparedness (Lopez et al., 2012). Children that receive the information will then possess the necessary knowledge and skills that could potentially save their lives and be carried into adulthood, so that they can pass the information onto future generations. Children who were exposed to disaster preparedness also possess a greater confidence, which allows them to act more efficiently in times of need (Lopez et al., 2012)

According to Rose (2009), speaking with children about possible disasters that can affect their communities can help them understand the risks that are involved with them and help keep them safe. Unprepared children will not know how to respond to the chaotic events going on around them. Therefore, it is crucial to assist the children with

the correct responses for those chaotic times (Rose, 2009). Several things can be taught to children to help them understand what to expect when disaster occurs. For instance, evacuation can be taught through songs to help the children retain and recall the information when needed. Games and drills are also other good methods that can be utilized to practice and prepare for an evacuation (Rose, 2009).

Prior to an earthquake occurrence, educators and parents can teach their children about the steps that need to be taken during an earthquake (Rose, 2009). "*The Duck, Cover, and Hold"* safety measure should be taught to children as well as what takes place during an earthquake. An adult should demonstrate the three steps to ensure that the children completely understand the process. Another preventative measure that teachers and parents can share with the children is the *"Stop, Drop, and Roll"* (Rose, 2009). Teaching the children about what to do if they were exposed to a fire hazard and their clothes ignited is another way to prepare the children of the unexpected disaster. Giving the children the opportunity to practice these safety tips will help them understand what to do during a disaster scenario (Rose, 2009).

It is important that children are educated about disaster preparedness without worrying whether or not it will strike fear into the children (National Disaster Education Coalition, 2004). The National Disaster Education Coalition (2004) asserts that it is better to talk to the children about what could occur during a disaster rather than keeping them uninformed. It is also a good idea to allow the children to express any fears or concerns that they may have pertaining to disasters. By providing the children with a basic understanding of what could occur, children will be more at ease (National Disaster Education Coalition, 2004).

Children need to know the risks that can come from various types of disasters. Explaining to the children that someone could be injured or killed is a way to prepare the children for what they may be subjected to during a disaster (National Disaster Education Coalition, 2004). Teaching children the warning signs can help the children prepare themselves for what may come. It is also important to create a family emergency plan and disaster kit. Families and schools should practice these drills with the children to ensure a quicker and more efficient response (National Disaster Education Coalition, 2004).

In the event of a disaster, it is important to do whatever is possible to be prepared. In the aftermath of a disaster, emergency personnel may not arrive on the scene or be able to reach someone for several hours (National Disaster Education Coalition, 2004). During a disaster, a family may be forced to evacuate with little notice, which does not allow enough time to gather everything that is needed. Creating an emergency disaster kit will provide the key essentials that someone will need to survive until they can be rescued or until they can replenish their supplies. A disaster kit is comprised of household items that a person may need in the event of a disaster occurrence (National Disaster Education Coalition, 2004).

The National Disaster Coalition (2004) also encourages that children be educated on basic safety strategies. Teaching children the importance of 911, and how to call for help can save lives (National Disaster Education Coalition, 2004). Teaching children about 911 and incorporating it into the family emergency plan, along with important contacts can give the children a sense of security and better prepare the children. Teach children about resources in the community that can provide assistance is an additional

strategy that should be used to prepare the children (National Disaster Education Coalition, 2004).

Children's Participations

It is a child's right to be involved in disaster preparedness activities. Children have the right to education, which will allow them to have a better chance at the preservation of their own lives (Mitchell et al., 2009). In Pakistan, a horrifyingly high number of children have been affected by disasters. Pakistan is victimized by earthquakes and monsoons. Schools have crumbled during earthquakes leaving high death tolls and children traumatized (Murtaza, 2013). During the wet season, monsoons create excessive amounts of water, and has been known to cause drownings and electrocutions. Several victims of these disasters are children. They could suffer from the mental trauma of experiencing such an event, lose a loved one, or in worst case scenarios lose their lives (Murtaza, 2013). Murtaza (2013) stated:

> After the heavy rains in 2011 and during the rehabilitation work in the rural areas of Sindh province, I observed a very interesting phenomenon. Many children took a great interest in the development work and even proposed new plans for the schools, playgrounds, and streets. (p.1)

Murtaza (2013) asserts that children should be able to participate in the decision-making process that concerns disaster preparedness, due to the fact that they are affected as well. Children want to participate and can provide great ideas. It is the role of the adult to listen to the children; instead of ignoring them and thinking that, they do not have anything to contribute. Children who are prepared have a better chance of survival than

those who do not. It was suggested that if children are properly educated that they can then promote disaster preparedness to others and help save lives (Murtaza, 2013).

Children do not have to work out in the field to participate in disaster preparedness. Students from the American Canyon High School in California, decided to reach out to younger students at the American Canyon elementary schools (Brinkerhoff, 2014). A recent earthquake that occurred near Napa Valley California sparked this project to prepare younger children. The students taught the children about the way the disasters can affect their community, and how the Red Cross helps during these times (Brinkerhoff, 2014).

The elementary students were also introduced to projects, such as Red Cross's *Pillowcase Project* (Brinkerhoff, 2014). The goal of the high school students was to better educate the children in hopes that they will take that information and pass it onto their parents. This is another way that children can play a role in disaster preparedness. By reaching out to the children, the children can then spread the word not only to their immediate families, but also to distant relatives, friends, and neighbors (Brinkerhoff, 2014).

The importance of teaching preparedness to the children is to better prepare them in the event a disaster occurs. The information in the literature review supports this statement. There are several methods of delivery, such as schools, homes, churches, and various organizations like the Boys and Girls Club, Girls Scouts, or Boy Scouts. The goal of campaigns such as the *Pillowcase Project* and *Friends to the Rescue*, is for the children to obtain a better understanding on what to do when facing disaster scenarios. Additionally, these campaigns were designed to help children cope with the aftermath of

a disaster, and take home what they have learned to teach it to their family and friends. The literature also addresses the problems that can come from the lack of preparedness and how disasters have long-term mental affects. The importance of adults reaching out to the children and help them work through any concerns or problems that children may face was also addressed.

Chapter III: Methodology

Everyday a disaster occurs somewhere in the world. When talking about those at risk from disaster, whether it is natural or man-made, it is safe to assume that children are the most vulnerable. The vulnerability of children increases when either the governments or communities lack a level of preparedness (Javaid et al., 2011). Children have the potential to experience both short-term and long-term effects following exposure of a disastrous event. However, by including children in mitigation and preparedness projects, we can help them better understand and cope with disasters when they arise (Back, Cameron, & Tanneer, 2009).

The purpose of this study was to answer the research question: "*Does teaching preparedness to children better prepare the children in the event of a disaster?"* To accomplish this, a sample consisting of two fourth grade classes was randomly selected by convenience from two schools within the Russellville School District in Russellville, Arkansas. The principals from these two schools were contacted regarding a request for a 50-minute time slot in order to administer a pre-test, a block of instruction, and finish with a post-test. The designed research instrument used for this study was comprised of a pre- and post-test questions covering tornado preparedness. This chapter examines the particulars of the sample population and the ethical standards utilized for this study. Furthermore, the chapter discusses the various mechanisms of the research instrument, the methods used for the data collection, and the approaches applied in the data analysis process.

Epistemology and Paradigm

The positivism epistemological approach can be interrelated to the quantitative method. Positivism stresses that only facts obtained through the scientific method can be deemed as being capable of making valid assertions (Eriksson & Kovalainen, 2008). Therefore, I chose to test the question of *does teaching preparedness better prepare children in the event of disaster* using a quantitative method. By using this method, I could determine if the participants' knowledge of disaster preparedness increased through the test results of comparing the pre- and post-test.

Setting and Environment

The setting for this study was comprised of two fourth grade classrooms, from separate elementary schools, within close proximity to Arkansas Tech University. The locations for this study were selected due to their convenience and school cooperation. However, multiple schools from the area were contacted, but only the two within this study agreed to participate. Furthermore, the participants may have felt more comfortable participating in the study within an environment that is familiar to them. Therefore, I met with each group of participants in their classrooms. In addition, the principals from each cooperating school selected the classrooms for this study.

Sample population. A total of 67 fourth grade students attending two different elementary schools participated in the study. Fourth grade students were selected as the study population for this research study due to the researcher's experience teaching this age group. The population studied was comprised of students ranging from nine to ten years of age with various racial and cultural backgrounds.

Sampling methods. The selection of the sample population was completed by using both convenience and a simple random selection method. The simple random selection method ensures that the sample was completely randomly selected and that any member of the selected population had the potential to be chosen for this study (Explorable Psychology Experiments, 2009). The sample convenience was due to the school's proximity to Arkansas Tech University. Access to the sample population was obtained through permission by the principals from the two elementary schools, as well as signed consent forms from the participants' parents or legal guardians.

Methodology

Due to the nature of the research question, I have chosen to use the quantitative methodology. According to Aliaga and Gunderson (as cited in Muijs, 2004), "quantitative research is explaining phenomena by collecting numerical data that are analysed using mathematically based methods (in particular statistics)" (p. 1). Therefore, the numerical data collected for this study made the quantitative methodology the appropriate method for analysis. Data that did not originate in numerical form such as gender and race, was assigned a numerical value so that it could be analyzed using the quantitative methodology. The study aims for a better understand of the educational process, and the ability of the participants to retain and apply the information provided during the instructional stage to the post-test.

Methods. To measure the participants' performance, I chose to use a pre- and post-test format for my study. My reasoning for selecting this method of data collection was because the pre- and post-test scores would allow me to ascertain if there were any improvements in the participants' knowledge of tornado preparedness. This corresponds

with the quantitative methodology that I have chosen for this study. In order to gather my data, I created a 20-question pre- and post-test. The pre- and post-test was numbered and accompanied by either a letter "A" or "B." Letter "A" represented the pre-test, whereas letter "B" represented the post-test. I also created a 30-minute lesson plan that was comprised of general tornado facts and information covering tornado preparedness.

Upon meeting with the participants who had been granted consent by their parents or legal guardians, I informed them of what exactly the study would encompass. I also asked that the participants not write their name on the tests to ensure confidentiality. Following the introduction and instruction, I administered the pre-test to the participants. Once all of the pre-tests were gathered, I provided a 30-minute interactive teaching lesson covering tornado preparedness and general tornado information. After the lesson, I administered the post-test. As a result of the post-test, I noticed that the participants' test times improved.

Research instrument. The sample population was invited to participate in a twenty-question pre-test, followed by a brief teaching instruction covering tornado preparedness, and concluded the session by administering the post-test. It should be noted that the pre- and post-test were the same set of questions. Each student was assigned a number that corresponded with the twenty-question test that was also assigned a number. The numbering of the tests ensured the student's identity remained confidential, and allowed for the comparison of the pre- and post-test scores.

The test was divided into two sections, which included demographics and general knowledge pertaining to tornados preparedness. Section one addressed demographics. The first three questions of the twenty-question test entailed questions pertaining to race,

gender, and age. Section two of the pre- and post-test was comprised of 17 questions covering general knowledge of tornado preparedness. The purpose of the questions within this section was to determine how much the participants knew and understood, pertaining to tornado preparedness. In addition, it also addressed the participants' knowledge and understanding of any actions that needed to be taken in order to better prepare themselves and their homes. In addition, it helped determine if the participants knew and understood what safety precautions and actions to take in the event of a tornado occurrence. Question 4 asked whether the sample population was aware of having a family emergency plan in the home. Question 5 was designed to determine if the sample population knew what items should be present in an emergency disaster kit. Question 6 tested the sample population's knowledge of tornado watches versus tornado warnings. Question 7 was designed to determine if the participants knew the proper location in the home to take cover in the event of a tornado occurrence.

Question 8 was designed to determine if the participants understood when outside, where the safest place to take shelter is during a tornado. Question 9 asked participants, what the proper actions were to take when a tornado is approaching. Questions 10 asked if the practicing of tornado drills was important. Question 11 determined if the participants were aware of the time of the year when tornados were most common. Question 12 covered where should an emergency disaster kit should be stored.

Questions 13, 14, and 15 were intended to determine if the participants knew the warning signs and proper safety measures to take if they were caught outside or lived in a mobile home during a tornadic event. Question 16 was designed to determine if the participants knew the proper amount of water per day that each person should have in the

event of a tornado. Question 17 addressed safety issues concerning down power lines in the aftermath of a tornado. Question 18 and 19 was intended to examine if the participants could identify the differences between a funnel cloud and tornado. Question 20 was designed to analyze the participants' knowledge of the wind speeds of a tornado. A copy of the full questionnaire can be found in Appendix C.

Data Collection & Analysis

This study was conducted using the quantitative methodology, so that the collected data could be examined in numerical form. Prior to administering the tests, access to the study population had to be obtained. In order to obtain access, permission from the schools' principals was required. Once permission was acquired, consent forms were sent home with the potential participants, so that their parents or legal guardians could read over the scope and purpose of the study, and decide whether they would allow their child to participate. The parental consent forms addressed the matters of confidentiality, privacy, and the removal of personal identifiers. The participants' confidentiality was not an issue because no personal identifiers were present on the pre- or post-test.

The 67 participants were administered a pre- and post-test, separated with a 30-minute block of teaching instruction covering tornado preparedness. Once the participant's research records were gathered, they were reviewed, stored on a secured drive, and analyzed at Arkansas Tech University. To analyze the collected data, it was entered into a Microsoft Excel file where an ANOVA analysis was performed. Rutherford (2001) stated, "ANOVA is employed most frequently to address the question: are there significant differences between the mean scores obtained in different

experimental conditions" (p. 18)? Therefore, a single-factor ANOVA was selected as the best method for analyzing the collected data. Upon completion of the study, all data collected from the participants was then to be deleted from the system, and all paper copies were to be shredded.

Positioning, Bias, and Ethical Issues

This study required human participation in order to address the research question. Therefore, approval from the Institutional Review Board (IRB) was required in order to continue with the research. To obtain IRB approval, an IRB application along with an abstract detailing the study was required. The IRB application was comprised of sections pertaining to issues concerning how the research was introduced, methodology and procedures, risks, costs, benefits, voluntary participation, confidentiality, consent forms, and data collection. Issues of the participants' confidentiality were addressed by not requiring the participants to include their name or any other identifiers.

Due to not having any family or friends associated with either setting, my relationship to the sample population was an etic relationship. A potential consequence that may have come from this study and my interaction with the participants was the participants' improved knowledge of tornado preparedness the information obtained through the study will be transferred to the participants famil and friends. During and after this study, the participants had the possibility of experiencing certain effects that may include a greater understanding of tornado preparedness, the ability to be better prepared if a tornado were to occur, and the possibility to save a family member or friend's life by spreading the information learning.

Rigor. According to Bordens and Abbott (2011), "…internal validity is the ability of your design to test the hypothesis that it was designed to test" (p. 114, para. 2). Therefore, to test the hypothesis *teaching preparedness to children in schools will improve their knowledge of preparedness*, it was necessary to take the positivist methodological approach. Since the study was a correlational study, the lesson taught represents the predictor variable, also known as the independent variable, whereas the post-test represents the criterion variable or dependent variable. Throughout the session, the researcher was present during the pre-test, teaching of the lesson, and post-test. Therefore, researcher ensured that there was not any outside influences in the participants' test scores. The participants also did not have access to any outside sources that could influence their knowledge over the subject matter. Both groups of participants received the same pre- and post-test. In addition, the same lesson plan was used at both locations in order to ensure the internal validity of this study.

External validity is the ability to generalize the results of your study beyond the study's setting (Bordens & Abbott, 2011). The setting of the study was two public elementary schools, where the population of the sample was comprised of a diverse ethnical group of students. This would allow the results of the study to be generalized in other settings. In addition, the sample population for this study was randomly selected. Reliability refers to the capability to yield alike outcomes (Bordens & Abbott, 2011). In order to ensure reliability, both groups of participants were given the same pre- and post-test, and both groups received the same teaching lesson concerning tornado preparedness. To certify objectivity, there were no personal relationships between the researcher and

the participants involved in this study. In addition, the researcher had no prior knowledge as to what level of understanding the participants had in regards to tornado preparedness.

Summary

Does teaching preparedness to preparedness to children better prepare the children in the event of a disaster? Using the positivist methodology, it was clear that the quantitative method was the appropriate method for this study. This was due to the data being collected in numerical form, which allowed the researcher to determine whether there was variation between the participants' pre-test scores and the post-test scores following the lesson covering tornado preparedness. The data was collected by administering a pre- and post-test, which was separated by a 30-minute teaching lesson of tornado preparedness. The sample population was comprised of 67 fourth grade students split between two elementary schools with close proximity to Arkansas Tech University.

Chapter IV: Results

This study was conducted with the purpose of answering the following research question: *Does teaching preparedness to children better prepare them for disaster?* Therefore, in order to answer this question, the study tested the hypothesis: *Teaching preparedness to children will increase their understanding and knowledge of disaster preparedness*, where the null hypothesis was *teaching preparedness to children will not increase their understanding and knowledge of disaster preparedness*. In order to determine whether the null hypothesis would be rejected, data was collected from two fourth grade classrooms from two different elementary schools in close proximity to Arkansas Tech University. The two classrooms from School A were comprised of 32 participants, while the two classrooms from School B were comprised of 35 participants, with a total of 67 participants participating in the study. Classrooms from both schools were comprised of participants from various genders, ages, and ethnical backgrounds.

Figure 1 illustrates the age demographics for both School A and School B. There were no participants 8 years of age; therefore, the 8-year-old category was not represented in Figure 1. At School A out of the 32 participants, 11 participants were comprised of 9 year olds, 19 of the participants were 10 years of age, and two were 11 years of age. At School B, the 35 participants were also comprised of 9, 10, and 11 year olds. Nine of the 35 participants were 9 years of age, 25 out of the 35 participants were 10 years of age, and 1 out of the 35 participants was 11 years of age.

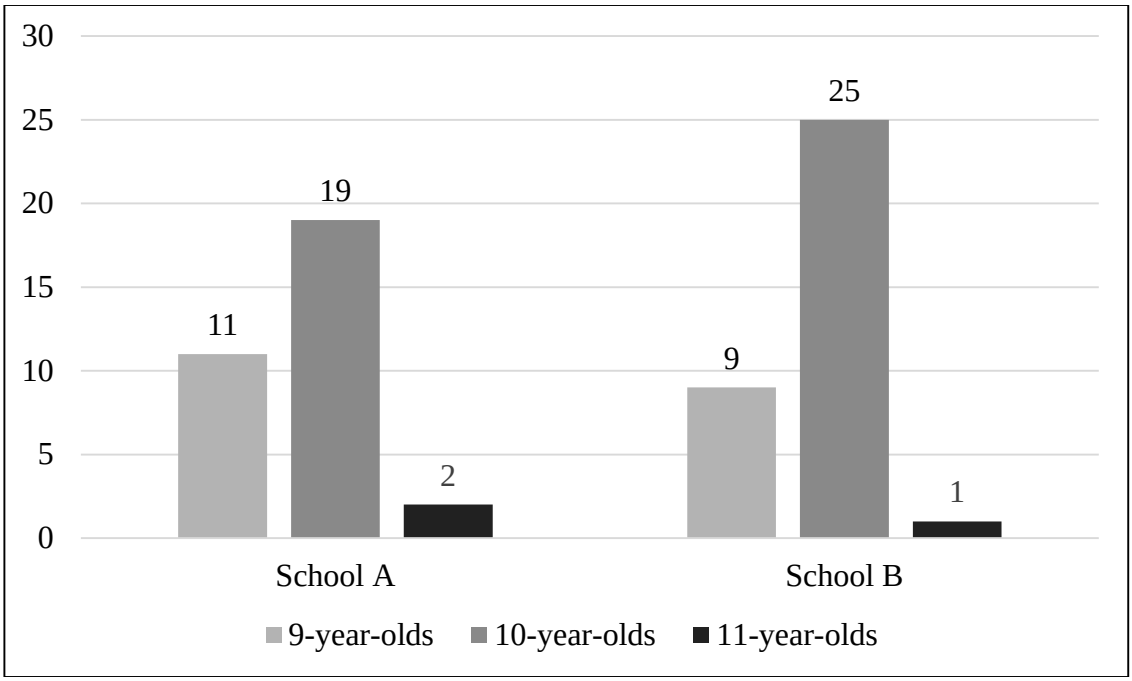

Figure 1. Age Demographics for Schools A and B.

Figure 2 illustrates the age demographics for both School A and School B. At School A out of the 32 participants, 11 participants were comprised of 9 year olds, 19 of the participants were 10 years of age, and two were 11 years of age. At School B, the 35 participants were also comprised of 9, 10, and 11 year olds. Nine of the 35 participants were 9 years of age, 25 out of the 35 participants were 10 years of age, and 1 out of the 35 participants was 11 years of age.

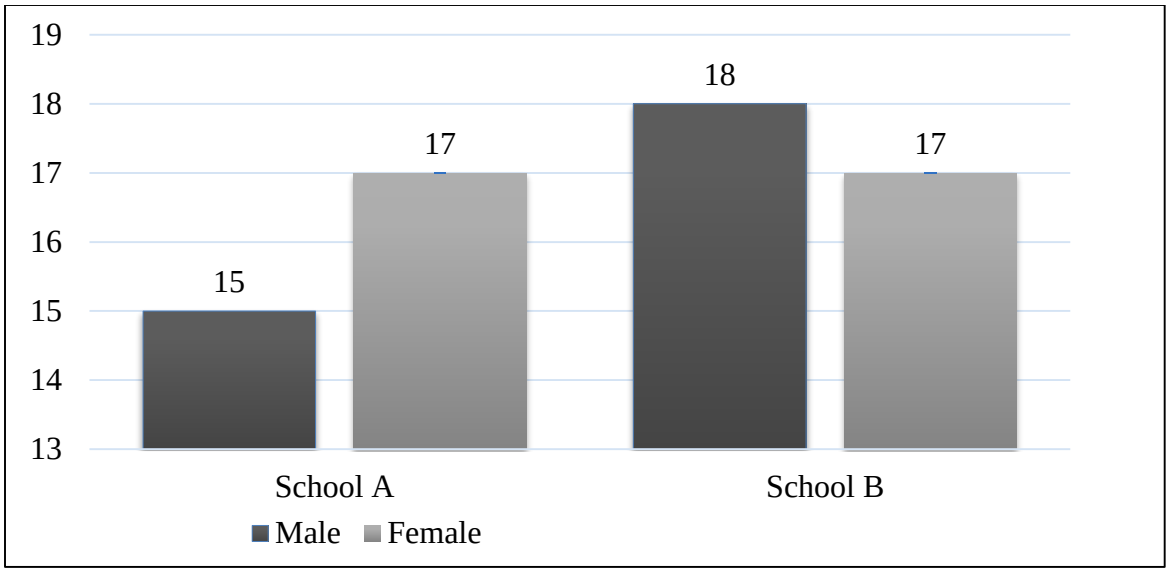

Figure 2. Gender Demographics for Schools A and B.

Figure 3 illustrates the race demographics for both School A and School B. Both schools were made up of a group of participants from diverse cultural backgrounds. Asian/Pacific Islanders and Native Americans were not included in the figure below, due to none of the participants identifying their race being Asian/Pacific Islander or Native American. School A was comprised of 24 white participants, 1 African-American participant, 3 Hispanic participants, and 4 participants that identified themselves as other or mixed races. There were 24 white participants, 5 African-American participants, 5 Hispanic participants, and 1 participant that identified his or herself as other or mixed race at School B.

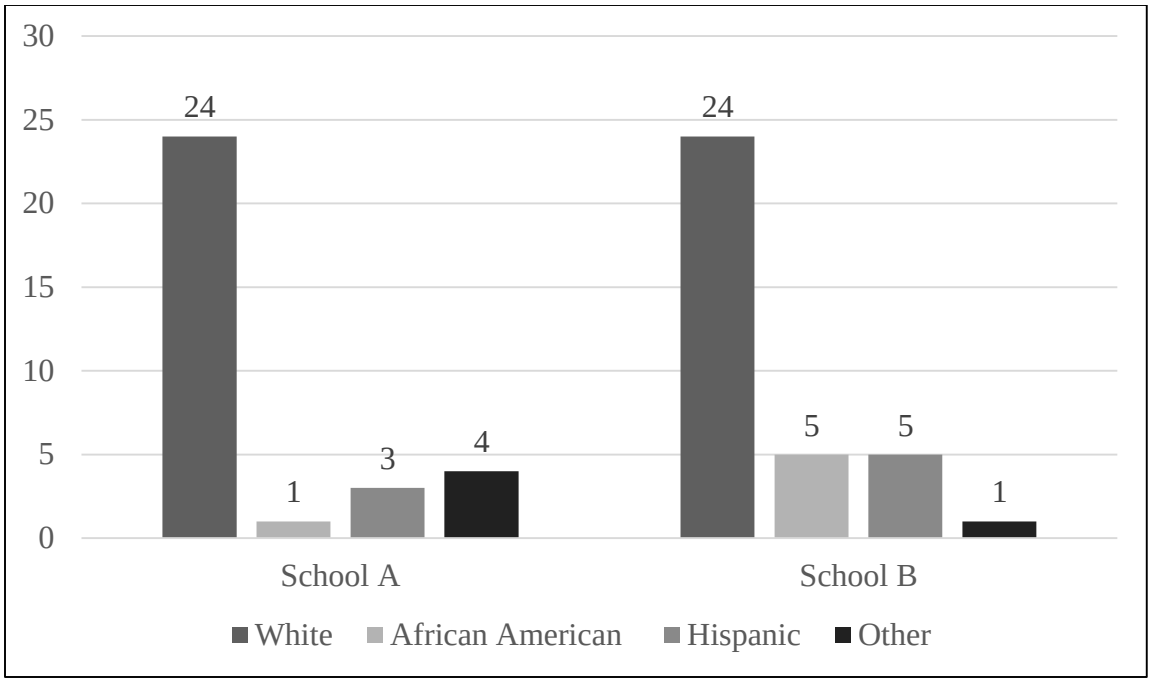

Figure 3. Race Demographics for School A and School B.

Scores for School A & B

Upon completing the gathering of the data for this study, the data collected from the two elementary schools was entered into a Microsoft Excel file. The data was then divided into two categories for each school, which included the number assigned to each participants' test and pre- and post-test scores. After the data was entered, a Single-Factor ANOVA analyzed the collected data. Tables 1 and 2 illustrate the findings from both elementary schools.

Table 1 represents the Single-Factor ANOVA for School A. School A was comprised of 32 participants where the average pre-test score was 78% and the average post-test score was 93%. There was a significant effect of instruction covering preparedness on post-test scores of the participant's for School A, $F(1, 62) = 62.10$, $p = .000$, $\omega = .699$.

Table 1

Single-Factor ANOVA for School A

SUMMARY

Groups	Count	Sum	Average	Variance
Pre-test %	32	25.1	0.784	0.008
Post-test %	32	29.9	0.934	0.003

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.36	1	0.36	62.108	<.001	3.996
Within Groups	0.359	62	0.006			
Total	0.719	63				

Due to the results of the Single-Factor ANOVA for School A, the null hypothesis, *teaching preparedness to children will not increase their understanding and knowledge of disaster preparedness*, was rejected. Meaning that there was a correlation between teaching preparedness and the post-test scores for School A.

Table 2 represents the Single-Factor ANOVA for School B. School B was comprised of 35 participants where the average pre-test score was 77% and the average post-test score was 95%. There was a significant effect of instruction covering preparedness on post-test scores of the participant's for School B, $F(1, 68) = 110.94$, $p = .000$, $\omega = .782$.

Table 2

Single-Factor ANOVA for School B

ANOVA: Single-Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Pre-test %	35	27.1	0.774286	0.007555
Post-test %	35	33.55	0.958571	0.00316

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.594321	1	0.594321	110.94	< .001	3.981896
Within Groups	0.364286	68	0.005357			
Total	0.958607	69				

These findings support the conclusion that there was a significant correlation between teaching preparedness and the post-test scores for School B. Due to the significant results of the two Single-Factor ANOVA tests; a Paired T-test was conducted to further analyze the findings from the ANOVA. The results from the Paired T-test are represented in Tables 3 and 4 below.

Table 3 illustrates an increase in the average test scores between the pre- and post-tests for School A. Prior to the 30-minute block of instruction the average test score was 78%. Following the 30-minute lesson, the scores increased 15% to an average of 93%.

Table 3

Paired T-Test for School A

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-test	.7844	32	.09108	.01610
	Post-test	.9344	32	.05741	.01015

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pre-test Post-test	-.15000	.07931	.01402	-.17859	-.12141	-10.699	31	.000

On average, participants from school one, after given a 30-minute lesson had demonstrated an increase in test scores (M=.9344, SE= 0.01) in comparison to their pre-test scores (M=0.7844, SE=0.016). This difference, 0.15, was significant t(31) = -10.7, p =0.000, and the represented large-sized effect, d=1.6484.

Table 4

Paired T-Test for School B

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-test	.7743	35	.08692	.01469
	Post-test	.9586	35	.05621	.00950

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre-test Post-test	-.18429	.10129	.01712	-.21908	-.14949	-10.763	34	.000

On average, participants from school one, after given a 30-minute lesson had demonstrated an increase in test scores (M=0.9586, SE=0.0095) in comparison to their pre-test scores (M=0.7743, SE=0.0147). This difference, 0.18, was significant t(34) = -10.76, p =.000, and the represented large-sized effect, d=2.12.

Chapter V: Discussion

Everyday disasters occur around the world affect millions of people, including children. Therefore, it is the responsibility of adults to ensure children are prepared to cope with both the physical and psychological traumas that can result from experiencing a disastrous event. Furthermore, it is essential that children are properly educated on what to expect during and after a disaster in order to reduce the impact that the event may have on them. It appears as though governments emphasize the importance of mitigating damages to infrastructure and businesses, but there are not enough efforts being made to mitigate against the loss of the true critical assets, which are children.

Conclusions

The purpose of this study was to answer the question: *Does teaching preparedness to children prepare them for disaster?* A thorough literature review was conducted over the subject matter. However, I was unable to locate any previous research pertaining to whether or not teaching disaster preparedness to children improved their knowledge and understanding of disaster preparedness.

In order to answer the research question, I worked with two different elementary schools; which was comprised of various ages, races, and gender demographics. After introducing myself and explaining the process to the participants, I administered the pre-test, followed by a block of instruction covering disaster preparedness. During that time, I discovered that several of the participants had a great deal of knowledge pertaining to disaster preparedness, where other participants were lacking severely. Following the completion of the post-test, both the pre- and post-tests were taken back to Arkansas

Tech University and analyzed to determine if there was a significance between the participants' pre-and post-test. This was done for both schools participating in this study.

The average pre-test score for School A was a 78%, whereas the average post-test score for School A increased 15 percentage points to a 93%. With a P-value of .000 the null hypothesis of *teaching preparedness to children will not better prepare them for disaster* was rejected. This indicates that there was a correlation between the teaching of preparedness and the participants' post-test scores. The amount of knowledge the children had prior to the lesson increased, which can be seen in the variance between the pre- and post-test scores.

The average pre-test scores for School B was a 77% and the post-test was a 96%. There was a 19-percentage point increase between the pre- and post-test. Analysis of the results for School B resulted in P-value of .000, meaning that there was a significant correlation between the lesson on preparedness and post-test scores. This illustrates an increase of knowledge pertaining to disaster preparedness, which is illustrated through the test scores of School B. Again as a result of the significance of the findings, the null hypothesis of *teaching preparedness to children will not better prepare them for disaster*, was rejected.

Not captured in the quantitative results found in Chapter IV is the rich qualitative experience of teaching fourth graders disaster preparedness. During my time with the participants, I witnessed a strong desire for knowledge. In addition, several of the participants prior to the pre-test wanted to tell me of their understanding regarding tornados and disaster preparedness. Surprisingly, several of the participants had a great deal of knowledge pertaining to disaster preparedness. Furthermore, during the

instructional phase of the process, the children were very engaged and actively participating in the process. This was evident by them asking and answering questions. In addition, the participants were providing their own personal life experiences. Following the completion of the post-test, I recognized that the participants required less time to complete the post-test than they did for the pre-test.

Methodological Insights

Performing this study, I selected two schools with a close proximity to the Arkansas Tech University campus due to their convenience. However, given the opportunity to recreate this study I would select two different schools: one comprised of students who come from lower-income families and the other consisting of students who come from upper-income families. In addition, I would select schools from different counties throughout Arkansas and neighboring states. Selecting schools from different counties or states would provide for the possibility of a more diverse sample population.

Recommendations for Research

The conducted research exemplified that there was a significant correlation between the introduction of disaster preparedness in the schools and the child's knowledge of disaster preparedness. Future research could entail the examination of additional research questions that include, but are not limited to:

1. Does age limit a person's knowledge pertaining to disaster preparedness?
2. Does gender contribute to a person's knowledge pertaining to disaster preparedness?
3. Does race contribute to a person's knowledge pertaining to disaster preparedness?

In addition, future research could include effective delivery systems for disaster preparedness education. Another area for future research could include the introduction of disaster preparedness at the college-level. In addition, future research could include the development of a standardized curriculum that could be introduced into the school system.

Recommendations for Practice

Children are the future and it is the adults' responsibility to make certain that children are prepared. Therefore, it is imperative that schools incorporate disaster preparedness into their curriculums. Teaching preparedness in the school systems is the best method of delivery (Izadkhah & Hosseini, 2005). Not only will exposing the children to disaster preparedness while at school better prepare them for disaster, but there is a high probability that the children will disseminate their newly acquired information to their friends and family (Izadkhah & Hosseini, 2005).

Before disaster preparedness can be introduced into the school system, it is important to establish a standardized curriculum and method of delivery. In recent years, FEMA and the Department of Education have attempted to do just that (Johnson, 2011). Having a standardized all hazards approach would allow for disaster preparedness to be incorporated into various subjects. For instance, natural disasters could be discussed in various science courses, while terrorism and active shooters could be discussed in government courses.

In addition to introducing disaster preparedness into the school system, a proper method of delivery must be established. No two children learn the exact same way. In fact, there are several various learning styles (Reiff, 1992). For example, some people are

visual learners whereas others are kinesthetic learners. Therefore, it is crucial to ensure that all aspects of learning are incorporated into the method of delivery (Brewster, Bigenho, Enwefa, & Enwefa, 2009).

Summary

The purpose of this research was achieved. According to the findings of this study, teaching children disaster preparedness does better prepare children for possible disasters. The qualitative experience of teaching the fourth grade participants illustrated the children's strong interests of the subject matter, as well as their ability to retain the information provided to them. Therefore, the information gained from this study adds to the body of emergency management knowledge regarding disaster preparedness.

References

American Red Cross. (2014a). *Disney Pillowcase Project*. Retrieved from American Red Cross: www.redcross.org/news/press-release/va/charlottesville/Disney-Pillowcase-Project

American Red Cross. (2014b). *Disaster preparedness*. Retrieved from American Red Cross: http://www.redcross.org/what-we-do/international-services/disaster-preparedness

Back, E., Cameron, C., & Tanneer, T. (2009). *Children and disaster risk reduction: Taking stock and moving forward*. Retrieved from Children in a Changing Climate: http://www.childreninachangingclimate.org/database/CCC/Publications/BackCameronTanner_TakingStockAndMovingForward_2009.pdf

Baker, L. R., & Cormier, L. A. (2012). Disaster preparedness and families of children with special needs: A geographic comparison. *Journal of Community Health*, 106-112. Retrieved from www.web.b.ebscohost.com/ehos/pdfviewer/pdfviewer?vid=22&sid=fc6ce9ac-f08f-4110-8aa4-4b0d8397f158%40sessionmgr198&hid=105

Battersby, S. E., Mitchell, J. T., & Cutter, S. L. (2011). Development of an online hazard atlas to improve disaster awareness. *International Research in Geographical & Enviromental Education*, 297-308. Retrieved from http://libcatalog.atu.edu:2080/ehost/pdfviewer/pdfviewer?vid=8&sid=aefa94d0-3529-49b5-a15e-3a17ad53975e%40sessionmgr114&hid=125

Black, D. (1982). Children in disaster. *British Medical Journal, 285*(6347), 989-990. Retrieved from http://www.bmj.com/content/bmj/285/6347/989.full.pdf

Bordens, K. S., & Abbott, B. B. (2011). *Research design and methods: A process approach* (8th ed.). New York City, NY: McGraw-Hill Companies Inc. .

Brewster, C. C., Bigenho, F., Enwefa, S., & Enwefa, R. (2009). The use of pre-reading, during reading and post reading strategies that match students' primary learning styles: Visual, auditory or kinesthetic to increase comprehension of content area reading. *National Association of African American Studies*, (pp. 209-216). Scarborough. Retrieved from http://search.proquest.com/docview/1289060048/fulltextPDF/34EDFCEB26A84F87PQ/1?accountid=8364

Brinkerhoff, N. (2014). *ACHS seniors teach kids disaster preparedness*. Retrieved from The Nappa Valley Register: http://napavalleyregister.com/eagle/news/local/achs-seniors-teach-kids-disaster-preparedness/article_aa3e96a2-aa0f-55bf-9996-5fdd881cad9d.html

Centers for Disease Control and Prevention. (2014). *How are children different from adults?* Retrieved from Centers for Disease Control and Prevention: http://www.bt.cdc.gov/children/differences.asp

Counts, C. S. (2001). The importance of disaster planning. *Nephrology Nursing Journal*, 485,508. Retrieved from web.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=e46cdebf-611c-4c46-a59e-5f180c2833ea%40sessionmgr198&vid=8&hid=109

Dennis, D. (2011). Stop Disasters! *School Library Journal*, 26-27. Retrieved from www.web.a.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=8eebf375-746c-4169-a793-f8b8c49b83ee%40sessionmgr4005&vid=24&hid=4209

Eriksson, P., & Kovalainen, A. (2008). *Qualitative methods in business research.* Thousand Oaks, California: SAGE Publications Inc. . Retrieved from http://www.sagepub.com/upm-data/28099_Eriksson___chapter_Two.pdf

Explorable Psychology Experiments. (2009). *Random Sampling*. Retrieved from Explorable Psychology Experiments: https://explorable.com/simple-random-sampling

Federal Emergency Management Agency. (2010). Bring youth preparedness education to the forefront: A literature review and recommendations. *Citizen Preparedness Review*(6), 1-22. Retrieved from https://s3-us-gov-west-1.amazonaws.com/dam-production/uploads/20130726-1910-25045-5896/citizen_prep_review_issue_6.pdf

Federal Emergency Management Agency. (2014). *National preparedness*. Retrieved from FEMA: https://www.fema.gov/national-preparedness

Fritz, G. K. (2014). Disasters and trauma: A guide for parents. *Brown University Child & Adolescent Behavior Letter, 30*, 1-2. Retrieved from http://libcatalog.atu.edu:2080/ehost/detail/detail?vid=42&sid=a19a022c-2819-4b9d-b8e4-cf1d26af6a94%40sessionmgr113&hid=115&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3d%3d#db=a9h&AN=93302116

Hamiel, D., Wolmer, L., Spirman, S., & Laor, N. (2013). Comprehensive child-oriented preventative resilience program in Israel based on lessons learned from communities exposed to war, terrorism and disaster. *Child Youth Care Forum*, 261-271. Retrieved from http://web.a.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=11b574d2-1b84-47c5-9690-15ecb740303d%40sessionmgr4002&vid=5&hid=4201

Hauserman, B. (2012). Be prepared now for when disaster strikes: how can psychiatric nurses help? *Journal of Child & Adolescent Psychiatric Nursing*, 57. Retrieved from http://libcatalog.atu.edu:2080/ehost/pdfviewer/pdfviewer?vid=29&sid=69f4b867-dc3b-471e-9e0a-eca6bdf626a9%40sessionmgr114&hid=105

Izadkhah, Y. O., & Hosseini, M. (2005). Towards resilient communities in developing countries through education of children for disaster preparedness. *International Journal of Emergency Management, 2*, 138-147. Retrieved from http://www.environmental-expert.com/Files%5C6471%5Carticles%5C6317%5Cf114108693121572.pdf

Javaid, D. Z., Arshad, M., & Khalid, A. (2011). Child protection in disaster management in south Asia: a case study of Pakistan. *South Asian Studies, 26*(1), 191-200. Retrieved from web.b.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=e46cdebf-611c-4c46-a59e-5f180c2833ea%40sessionmgr198&vid=29&hid=109

Johnson, V. A. (2011). Disaster preparedness education in schools: Recommendations for New Zealand and the United States. *Ian Axford (New Zealand) Fellowships in Public Policy*, 1-76. Retrieved from http://www.fulbright.org.nz/wp-content/uploads/2011/12/axford2011_johnson.pdf

Lazarus, P. J., Jimerson, S. R., & Brock, S. E. (2003). Responding to natural disasters: Helping children and families information for school crisis teams. *National Association of School Psychologists*, 1-6. Retrieved from http://www.nasponline.org/resources/crisis_safety/naturaldisaster_teams_ho.pdf

Lintner, T. (2006). Hurricanes and tsunamis: Teaching about natural disasters and civic responsiblity in elementary classrooms. *The Social Studies, 97*(3), 101-104. Retrieved from www.web.a.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=8eebf375-746c-4169-a793-f8b8c49b83ee%40sessionmgr4005&vid=14&hid=4209

Lopez, Y., Hayden, J., Cologon, K., & Hadley, F. (2012). Child participation and disaster risk reduction. *International Journal of Early Years Education, 20*(3), 300-308. Retrieved from www.web.b.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=7&sid=fc6ce9ac-f08f-4110-8aa4-4b0d8397f158%40sessionmgr198&hid=105

Martin, M. L. (2010). Child participation in disaster risk reduction: The case of flood-affected children in Bangladesh. *Third World Quarterly, 31*(8), 1357–1375. Retrieved from http://www.tandfonline.com/doi/pdf/10.1080/01436597.2010.541086

McKay, J. (2014). *Parents don't take the necessary preparedness measures, report says*. Retrieved from Emergencymanagement: http://www.emergencymgmt.com/disaster/Parents-Dont-Take-Necessary-Preparedness-Measures-Report-Says.html

Miller, P. A., Roberts, N. A., Zamora, A. D., Weber, D. J., Burleson, M. H., Robles, E., & Tinsley, B. J. (2012). Families coping with natural disasters: lessons from wildfires and tornados. *Qualitative Research in Psychology*, 314-333. Retrieved from http://web.a.ebscohost.com/ehost/pdfviewer/pdfviewer?nobk=y&vid=4&sid=0da647ba-8896-4447-a5ce-1e929a5b61c1@sessionmgr4004&hid=4212

Mitchell, T., Tanner, T., & Haynes, K. (2009). *Children as agents of change for disaster risk reduction: lessons from El Salvador and the Philippines.* Retrieved from Children in a Changing Climate: www.childreninachangingclimate.org/database/CCC/Publications/MitchellTannerHaynes_AgentsForChange-WorkingPaper1_2009.pdf

Mohay, H., & Forbes, N. (2009). Reducing the risk of posttraumatic stress disorder in children following natural disasters. *Austrailian Journal of Guidance & Couseling, 19,* 179-195. Retrieved from http://libcatalog.atu.edu:2080/ehost/pdfviewer/pdfviewer?vid=7&sid=a19a022c-2819-4b9d-b8e4-cf1d26af6a94%40sessionmgr113&hid=115

Muijs, J. (2004). *Doing quantitative research in education with SPSS.* Thousand Oaks, California: Sage Publications Inc. . Retrieved from http://www.sagepub.com/upm-data/36869_muijs.pdf

Murray, J. S., & Monteiro, S. (2012). Disaster risk and children part II: how pediatric healthcare professionals can help. *Journals for Specialist in Pediatric Nursing*, 258. Retrieved from http://libcatalog.atu.edu:2080/ehost/pdfviewer/pdfviewer?vid=27&sid=69f4b867-dc3b-471e-9e0a-eca6bdf626a9%40sessionmgr114&hid=105

Murtaza, A. (2013). *Pakistan: Children can play an important role in disaster preparedness*. Retrieved from Prevention Web: http://www.preventionweb.net/english/professional/news/v.php?id=34399

National Disaster Education Coalition. (2004). *Talking about disaster.* Retrieved from National Disaster Education Coalition: http://www.disastereducation.org/library/public_2004/Talking_About_Disaster_Guide.pdf

Osofsky, J. D., & Chartrand, M. (2013). Military children from birth to five years. *Military Children and Families, 23*(2). Retrieved from http://futureofchildren.org/publications/journals/article/index.xml?journalid=80&articleid=590&sectionid=4114

Pynoos, R. S., & Nader, K. (1989). Prevention of psychiatric morbidity in children after disaster. *Prevention of Mental Disorders, Alcohol, and Other Drug Use in Children and Adolescents, 2*, 225-271.

Reiff, J. C. (1992). Learning styles. *Childhood Education, 69*(2), 96E. Retrieved from http://search.proquest.com/docview/210384333?rfr_id=info%3Axri%2Fsid%3Aprimo

Rose, B. (2009). Preparing young children for disasters. *Connections, 22*(1), 1. Retrieved from http://www.calema.ca.gov/planningandpreparedness/documents/cchp preparing children.pdf

Rutherford, A. (2001). *Introducing anova and ancova: A glm approach.* London: Sage Publications, Ltd. Retrieved from http://web.b.ebscohost.com/ehost/ebookviewer/ebook/bmxlYmtfXzI1MTczN19fQU41?sid=a78a1cf7-3c24-470a-9955-901d18470d87@sessionmgr198&vid=0&format=EK&lpid=nav_20&rid=0

Sutton, J., & Tierney, K. (2006). *Disaster preparedness: concepts, guidance, and research.* Retrieved from Fritz Institute: http://www.fritzinstitute.org/pdfs/whitepaper/disasterpreparedness-concepts.pdf

The Department of Homeland Security. (2013). *Plan and prepare for disasters*. Retrieved from The Department of Homeland Security: http://www.dhs.gov/topic/plan-and-prepare-disasters

The United Nations General Assembly. (2010). *The right to education in emergency situations.* Retrieved from United Nations Educational, Scientific, and Cultural Organization: http://www.un.org/ga/search/view_doc.asp?symbol=A/64/L.58&Lang=E

The United Nations Office for Disaster Risk Reduction. (2007). *Towards a culture of prevention: Disaster risk reduction begins at school.* Retrieved from The United Nations Office for Disaster Risk Reduction: www.unisdr.org/files/761_education-good-practices.pdf

Thompson, K., Every, D., Rainbird, S., Cornell, V., Smith, B., & Trigg, &. J. (2014). No pet or their person left behind: increasing the disaster resilience of vulnerable groups through animal attachment, activities and networks. *Animals*, 222. Retrieved from http://libcatalog.atu.edu:2080/ehost/pdfviewer/pdfviewer?sid=69f4b867-dc3b-471e-9e0a-eca6bdf626a9%40sessionmgr114&vid=24&hid=105

United Nations International Strategy for Disaster Reduction. (2011). *UNISDR says the young are the largest group affected by disasters.* Retrieved from United Nations International Strategy for Disaster Reduction: www.unisdr.org/files/22742_2011no30.pdf

Wachtendorf, T., Brown, B., & Nickle, M. C. (2008). Big bird, disaster masters, and high school students taking charge: the social capacities of children in disaster education. *Children, Youth, and Enviroments*, 456-469. Retrieved from http://www.colorado.edu/journals/cye/18_1/18_1_19_BigBird.pdf

Wang, C.-W., Chan, C. L., & Ho, R. T. (2013). Prevalence and trajectory of psychopathology among child and adolescent survivors of disasters: a systematic review of epidemiological studies across 1987-2011. *Social Psychiatry & Psychiatric Epidemiology*, 1697-1717. Retrieved from web.b.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=5e6a94b7-b80d-4301-a7b9-074852e427cb%40sessionmgr113&vid=4&hid=106

Appendix A

- **APPLICATION FOR REVIEW OF HUMAN PARTICIPANTS RESEARCH**

Submit hard copy with signatures to the
Arkansas Tech University, IRB, Jason E. Warnick, Ph.D., Witherspoon Building, Room 350

Email application as an attachment to jwarnick@atu.edu

Principal Investigator(s): *I acknowledge that this represents an accurate and complete description of my research.*

Brian Kendall		01/12/2015
Name of Primary PI	Signature of PI	Date

Additional Researchers' Names

Emergency Management and Homeland Security
Department

1221 N. Jackson Russellville, AR 72801
Mailing Address

(479) 857-2096	Bkendall1@atu.edu
Telephone Number	PI Email address

Adviser (complete if PI is a student): I agree to provide the proper surveillance of this project to ensure that the rights and welfare of the human participants are properly protected.

Dr. Sandy Smith		1-12-15
Name of Adviser/Chair (typed)	Signature of Adviser/Chair	Date

Dean Hall Room 110 402 West O St. Russellville, AR 72801	Ssmith107@atu.edu	(479) 489-6039
Adviser's Address	Adviser's Email address	Telephone

Teaching Preparedness in Schools to Better Prepare to Students.

PLEASE NOTE: All applications should be typewritten and edited prior to submission for review. If sufficient space is not provided below for a complete description of the proposed project, please use additional pages as necessary.

IRB Approval: 2/18/15
Signature of IRB Chair Date

Appendix B

PARENTAL CONSENT FORM FOR STUDY ENTITTLED:
TEACHING PREPAREDNESS IN THE SCHOOLS TO BETTER PREPARE THE CHILDREN

Dear Parents:

My name is Brian Kendall and I am a graduate student in the emergency management program at Arkansas Tech University. On April 17, 2015, I will be presenting information to your son or daughter regarding emergency preparedness. The purpose of the study is to determine if teaching preparedness in the schools can better prepare the children in the event of a disaster. The information that will be instructed will go beyond the basic drills taught in school and will provide your child with information that can reduce the risk of harm related to a disaster event. It is hoped that any knowledge that the children receive will then be shared with the rest of the family as well as friends. I am writing to inform you that in addition to receiving this education, your student will also partake in a pre and posttest over the material. I will be comparing the scores of the students to determine the effectiveness of the education. No identifying information will be collected such as name of your son or daughter. All pre/post tests will be numbered to ensure your child's confidentiality. Should you wish that your son or daughter NOT participate in the testing, please return this signed consent to me indicating so on the day of testing. His or her class grade will not be affected by not participating in this study. If you have any questions or concerns please feel free to contact me or Dr. Sandy Smith at (479) 356-2092.

I _____ give my son/daughter_____ permission to participate in the study concerning disaster preparedness.

I _____ do NOT give my son/daughter _____ permission to participate in the study concerning disaster preparedness.

Researcher

Brian Kendall
Arkansas Tech University
Department of Emergency Management
Dean Hall 110
Phone: (479) 356-2092

Department Head

Dr. Sandy Smith
Arkansas Tech University
Department of Emergency Management
Phone: (479) 356-2092

FORMULARIO DE CONSENTIMIENTO DE LOS PADRES PARA ESTUDIO ENTITTLED:
ENSEÑANZA DE PREPARACIÓN EN LAS ESCUELAS PARA PREPARAR MEJOR LOS NIÑOS.

Queridos Padres,

Mi nombre es Brian Kendall y soy un estudiante graduado en el programa de manejo de emergencia en Arkansas Tech University. En el 17 de abril de 2015 estaré presentando información a su hijo o hija en relación con la preparación para emergencias. El propósito del estudio es determinar si la preparación para la enseñanza en las escuelas mejor puede preparar a los niños en caso de un desastre. La información que se instruyó irá más allá de los ejercicios básicos que se enseñan en la escuela y proveerá a su hijo con información que puede reducir el riesgo de daños relacionados con un evento de desastre. Se espera que cualquier conocimiento que los niños reciban luego será compartida con el resto de la familia, así como amigos. Le escribo para informarle que además de recibir este tipo de educación, su hijo también participará en un pre y post-test sobre el material. Voy a estar comparando las puntuaciones de los estudiantes para determinar la efectividad de la educación. Sin información de identificación se recogerá, como el nombre de su hijo o hija. Se numerarán todas las pruebas pre / post para asegurar la confidencialidad de su hijo. Si usted desea que su hijo o hija no participó en la prueba, por favor devuelva este consentimiento firmado para mí indicando así el día de la prueba. Su grado de escolaridad no se verán afectados al no participar en este estudio. Si usted tiene alguna pregunta o inquietud no dude en ponerse en contacto conmigo o con el Dr. Sandy Smith en (479) 356-2092.

Yo _____ doy a mi hijo / hija
_____ permiso para participar en el estudio relativo a la preparación para desastres.

Yo _____ NO doy mi hijo / hija
_____ permiso para participar en el estudio relativo a la preparación para desastres.

Investigador
Brian Kendall
Arkansas Tech University
Departamento de Manejo de Emergencias
Dean Salón 110
Teléfono: (479) 356-2092

Jefe De Departamento
Dr. Sandy Smith
Arkansas Tech University
Departamento de Manejo de Emergencias
Teléfono: (479) 356-2092

Appendix C

Tornado Preparedness Pre/Post Test

1. What is your race?
   - White
   - African American
   - Hispanic
   - Native American
   - Asian/Pacific Islander
   - Other

2. What is your age?
   - 8 years old
   - 9 years old
   - 10 years old
   - 11 years old

3. What is your gender?
   - Male
   - Female

4. Does your family have an emergency plan in the event of a tornado?
   - Yes
   - No
   - I don't know

5. Which of the following go into an emergency kit?
   - Pictures
   - Watch
   - Flashlight
   - Computer

6. Match the following:
   _____Tornado Warning
   _____Tornado Watch

   A. Possible to happen in the area. Be ready to take cover and monitor radio and television.
   B. Tornado has been sighted in the area. Take shelter immediately.

7. Which of the following is the safest place to go if a tornado is coming?
   - Near an open window
   - Kitchen
   - Outside away from falling trees
   - Basement/room in the middle of the house

8. T/F If outside during a tornado, you should hide under a bridge.
   - True
   - False

9. If a tornado is close by you should do what?
   - Go outside to see and take pictures
   - Keep watching T.V.
   - Take cover
   - Leave the house

10. T/F It is important to practice tornado drills.
    - True
    - False

11. What months are tornados most common?
    - January to February
    - March to August
    - September to October
    - November to December

12. An emergency kit should be kept where?
    - In a closet full of stuff
    - In a shed outside
    - Under the bathroom sink
    - Somewhere easily accessible

13. Which is not a danger sign to look for if you are outside?
    - Large hail stones
    - Dark or greenish colored sky
    - Something that sounds like a train
    - Rain

14. If you live in a mobile home, you should do what?
    - Leave immediately and go to a sturdy building
    - Stay where you are
    - Try to drive away from the tornado
    - None of the above

15. T/F If you are outside when a tornado occurs, should get into a car, put the seat belt on, and cover your head.
    - True
    - False

16. How much water do you need to put into your emergency kit?
    - One gallon of water per person per day
    - One bottle of water per person
    - One bottle of water per family
    - Water does not belong in an emergency kit

17. T/F After a tornado, it is okay to touch downed power lines.
    - True
    - False

18. T/F A tornado and funnel cloud are the same thing.
    - True
    - False

19. Match the following:
    _____Funnel cloud
    _____Tornado

    A. Rotating column of air that does not reach the ground
    B. Rotating column of air that reaches the ground

20. Which has the faster wind speeds?
    - Tornado
    - Hurricane

Appendix D

Schools' Demographics and Test Scores

Student #	Race	Age	Gender	School	Pre-test %	Post-test %
1	1	10	1	1	0.95	1
2	6	10	1	1	0.75	0.95
3	3	9	1	1	0.85	0.9
4	6	9	2	1	0.8	0.95
5	1	9	2	1	0.75	1
6	1	9	2	1	0.75	0.95
7	1	10	2	1	0.7	0.85
8	1	9	2	1	0.7	0.75
9	1	10	1	1	0.8	0.95
10	1	10	1	1	0.7	1
11	1	10	1	1	0.85	1
12	6	11	2	1	0.85	0.9
13	1	10	2	1	0.95	1
14	6	10	2	1	0.9	0.9
15	1	10	1	1	0.55	0.9
16	1	10	2	1	0.7	0.9
17	1	9	2	1	0.9	0.95
18	1	9	2	1	0.8	0.95
19	1	10	2	1	0.65	0.9
20	1	10	1	1	0.8	0.95
21	1	9	1	1	0.85	0.95
22	1	11	2	1	0.7	0.85
23	1	10	2	1	0.9	1
24	1	10	1	1	0.8	1
25	1	10	2	1	0.9	1
26	1	10	1	1	0.75	0.95
27	1	9	2	1	0.8	0.95
28	3	10	1	1	0.75	0.9
29	3	10	1	1	0.75	0.9
30	1	9	1	1	0.7	0.95
31	1	10	2	1	0.8	0.95
32	2	9	1	1	0.7	0.85
101	3	10	1	2	0.85	0.85
102	2	11	2	2	0.85	0.85
103	1	9	2	2	0.85	0.95
104	2	9	2	2	0.85	1

105	1	10	2	2	0.65	1
106	6	9	2	2	0.6	1
107	1	10	1	2	0.8	0.95
108	1	10	1	2	0.7	0.95
109	1	10	2	2	0.9	1
110	1	10	2	2	0.9	0.95
111	1	10	2	2	0.75	1
112	1	9	1	2	0.75	1
113	1	10	1	2	0.85	1
114	1	10	1	2	0.8	0.95
115	1	9	1	2	0.9	0.9
116	3	10	1	2	0.75	1
117	1	10	2	2	0.9	1
118	2	10	2	2	0.7	0.85
119	3	9	2	2	0.75	1
120	1	10	1	2	0.85	0.9
121	1	10	2	2	0.85	1
122	1	9	1	2	0.75	1
123	1	9	1	2	0.8	0.95
124	1	10	1	2	0.8	1
125	1	10	2	2	0.85	0.95
126	1	10	1	2	0.8	1
127	2	10	2	2	0.7	0.9
128	1	10	2	2	0.8	0.9
129	2	9	2	2	0.55	0.8
130	1	10	1	2	0.7	0.95
131	1	10	1	2	0.7	1
132	1	10	1	2	0.7	1
133	1	10	1	2	0.7	1
134	3	10	1	2	0.7	1
135	3	10	2	2	0.75	1