

PREPAREDNESS OF DISABLED POPULATIONS DURING FIRE EVACUATIONS
AT ARKANSAS' FOUR YEAR UNIVERSITIES

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Abstract

During disasters, the state of campus preparedness particularly affects the most vulnerable college student population. Among this population might include a student with a disability which could be subjected to increased injury and potential loss of life during a fire evacuation. This study is significant to emergency management because it focuses on the effects of the existing state of preparedness during fire evacuations of multi-level buildings such as classrooms and residence halls. The purpose of this study was to investigate the state of preparedness of the disabled population within four-year universities in Arkansas' as perceived by public safety officers; specifically increasing the awareness concerning the unique needs of the disabled during fire evacuations. The research question for this study was: What is the state of preparedness for fire evacuations of the disabled population within Arkansas' four-year universities?

Participants were invited to participate in a structured interview with the researcher either through Skype or in person that addresses their institutions state of preparedness during fire evacuations in regards to the disabled student population. After conducting the research, the results of the study revealed most universities in Arkansas are equipped with basic preparedness essentials such as appropriate training and equipment necessary to evacuate the disabled from multi-level campus buildings during a fire evacuation. The results comprised guidelines for institutions to increase their state of preparedness regarding the disabled population.

Keywords: emergency preparedness, the disabled, fire evacuation risks, egress safety standards, and campus fire egress considerations

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Chapter I: Introduction

The field of emergency management is responsible for the preparation and response to hazards, such as fires, which require special planning procedures for the disabled population (Anonymous, 2007). Fires create situations, which impact the disabled student in such a manner that evacuation is hindered (Evacuation Plans, 2006). A prime example of the negative impact to a student with a disability during a fire evacuation was illustrated in a case involving a Murray State University student with multiple cognitive disabilities whose request for off campus housing was denied, and subsequently led to his death from a residence hall fire due to emergency response personnel's lack of planning and preparation regarding the disabled (Evacuation Plans, 2006). Therefore, preparation and planning are imperative to meet the needs of the disabled student population.

Disabled students need to be included in campus evacuation plans as well as emergency management exercises to increase personal preparedness and decrease vulnerability during an emergency (Logli, 2009). Logli (2009) states "professionals should ask themselves how to communicate to the hearing or visually impaired, how to help the physically disabled downstairs, and how to include in the plan those who may become incapacitated during an emergency" (p. 44). Another consideration for evacuation plans includes ensuring that procedures will be in place for students with disabilities to seek an area of refuge (Logli, 2009).

In addition, Davis and Mincin (2005) also emphasize designing and incorporating an emergency management exercise that addresses the needs of the disabled student that will allow emergency response personnel to identify and mitigate against any

inaccuracies or complications that might exist in the campus evacuation plan. Davis and Mincin (2005) further address the need to integrate the disabled student population into the campus evacuation plan, which results in better utilization of resources during emergencies. Not only can emergency response personnel be better prepared to respond to an emergency fire evacuation but the students themselves who are disabled or handicapped can also be prepared to evacuate a classroom or residence hall by practicing exercise scenarios that mimic actual situations with other students involved in the exercise who are not disabled (Davis & Mincin, 2005). Davis and Mincin (2005) express the importance of completing mock scenarios in regards to the disabled student evacuating a classroom or residence hall involving other students that are able-bodied within the design of the exercise will prepare the disabled student for the actual fire evacuation (Davis & Mincin, 2005). An additional benefit of exercises is that emergency response personnel will also have the data needed to fulfill the gaps that appear to be preventing the disabled student from evacuating the classroom or residence hall in a timely and orderly fashion (Davis & Mincin, 2005)

An accessible means of egress for disabled students to evacuate a classroom or residence hall should be implemented before an emergency fire evacuation occurs to an existing multi-level campus building (Bukowski & Kuligowski, 2004). According to Bukowski and Kuligowski (2004) egress safety standards that should be included within any classroom or residence hall on campus are: (a) the exit access; (b) an exit; and (c) an exit discharge. Bukowski and Kuligowski (2004) describe the exit access as the area in which the student with the disability must travel to reach the appropriate exit to evacuate a classroom or residence hall during an emergency fire evacuation, such as a: (a) balcony;

(b) porch, aisle; or (c) corridor. In addition to the disabled student having the exit access to evacuate a classroom or residence hall, Bukowski and Kuligowski (2004) emphasize that the disabled student must have an exit. The exit is the “area leading to the passage way of any area of safety that will potentially allow the disabled to evacuate the building such as a ‘stairwell’” (Bukowski & Kuligowski, 2004, p. 2). The exit discharge is the last stage in the process to evacuate a classroom or residence hall where the disabled student must pass to seek an area of safety or refuge (Bukowski & Kuligowski 2004). Bukowski and Kuligowski (2004) describe the exit discharge as “the door to the outside” (p. 2). Implementation of the above egress safety standards will allow the disabled student to seek an area of refuge away from the classroom or residence hall during an emergency fire evacuation on campus (Bukowski & Kuligowski, 2004).

Purpose of Study

The purpose of the proposed study is to increase the state of preparedness for fire evacuations of the disabled student population. It is important that the life and dignity of all, including the disabled student population is protected during an emergency evacuation such as a classroom or residence hall fire on campus (Proffitt-Lavin, Schemmel-Retenmeier, & Frommelt-Kuhle, 2012). Proffitt-Lavin et al., state “the paramount importance for the special needs population is maintaining human dignity throughout the disaster management cycle” (p. 1). An event such as a fire evacuation requires preparation for the protection of all. In particular, members of the disabled student population are susceptible to injury (Proffitt-Lavin et al., 2012). This alarming fact reemphasizes the importance of ensuring a safe means to evacuate is established and obstacles are not present preventing the disabled student from evacuating a classroom or

residence hall in a timely manner (Proffitt-Lavin et al., 2012).

A case involving a disabled student at *Arizona State University* emphasizes the need for improving the state of preparedness for fire evacuations within any college (Evacuation Plans, 2006). It is a prime example of the negative impact personal dignity can have on a student that has a disability who needs to evacuate and becomes hindered due to limitations during a fire evacuation (Evacuation Plans, 2006). According to the case, the university was in violation of the Americans with Disabilities Act as well as the Rehabilitation Act because a group of students' who had disabilities were excluded from campus fire drills within their residence halls, which resulted in improper evacuation procedures, as well as a lack of recognition from emergency response personnel that these students were mobility impaired and needed assistance with evacuation from their rooms (Evacuation Plans, 2006). Failure to include the disabled students in the fire drills and evacuation procedures infringes on individual rights and adversely impacts their human dignity due to inadequate preparation to respond to a fire evacuation on campus (Evacuation Plans, 2006). Ineffective removal of mobility impaired students from their rooms also impacts the disabled students human dignity because "there might be no means of escaping the fire that has occurred except with the assistance of local fire fighters, leaving the disabled student stranded to defend for themselves" (Evacuation Plans, 2006, p. 16).

Significance to Emergency Management

The significance of this study as it relates to emergency management is that the proposed research will focus on the effects of the existing state of preparedness concerning the disabled student population during fire evacuations of multi-level campus

buildings such as classrooms or residence halls. Extraordinary vulnerabilities exist that reflect the need to address the disabled student population during times of disaster (Edson, John, & Webb, 2007). Disabled students have unique needs which render them of special interest when ensuring that appropriate measures are accommodated to evacuate during a fire evacuation (Edson et al., 2007). Inclusion of the disabled student population in the evacuation process will ensure the welfare of all students and enable their protection during a campus fire evacuation.

Additionally, millions of people are disproportionately affected during times of disaster such as a fire evacuation that occurs on a college campus (Edson et al., 2007). According to Proffitt-Lavin et al. (2012), “in the United States, there are 54 million people who fit into the special needs category who are defined as: (a) handicapped; (b) disabled; (c) vulnerable; (d) challenged; or (e) having special needs” (p. 1). During campus fire evacuations that include classrooms or residence halls, the disabled student population needs to be considered worthy of investigation to improve the survival rate of this population (Proffitt-Lavin et al., 2012) and prevent future occurrences of harm such as the aforementioned incidents that occurred at Murray State University or Arizona State University (Evacuation Plans, 2006).

Theoretical Basis for Studying Topic

Justice is an important concept and virtue for life; but concerns of injustice within society during times of disaster require further examination of the true meaning of justice for vulnerable populations such as the disabled (Aristotle, 1941). The principle of justice can be defined as “the ethical obligation to show solidarity and not to discriminate” (Krantz, Sachs, & Nilstun, 2004, p. 175). Catalano (1997) expresses justice as the fair

treatment of all people regardless of disability. Therefore, emergency response personnel have the moral obligation to show solidarity through fair treatment and should not discriminate regardless of students disabilities such as the incidents that occurred at Murray State University and Arizona State University when evacuating occupants from a multi-level campus building during a fire evacuation.

Research Question

What is the state of preparedness for fire evacuations of the disabled at Arkansas' four-year universities?

Summary

During times of disaster, disabled students are negatively impacted in such a manner that fire evacuation is hindered on college campuses (Evacuation Plans, 2006). This limitation increases the need for the disabled student to be included in evacuation plans (Logli, 2009) and exercises (Davis & Mincin, 2005) otherwise facilitated on the college campus. Inclusion of disabled students in evacuation plans and exercises ensures that egress safety standards are followed by emergency response personnel to assist disabled students from evacuating classrooms and residence halls located on college campuses (Bukowski & Kuligowski, 2004).

The human dignity of the disabled population should be preserved by applying the Principle of Justice (Krantz et al., 2004) during the response to emergencies (Proffitt-Lavin et al., 2012), thereby ensuring the protection and welfare of all students during a fire evacuation. According to Edson et al. (2007), the disabled student is particularly vulnerable and disproportionately affected during times of disaster, which further illustrates the need and importance of additional research regarding this particular topic.

Chapter II: Literature Review

Topic Overview

An extensive computerized literature search on the phenomenon regarding *the preparedness of disabled populations during fire evacuations* was conducted using Homeland Security Library, ProQuest, EBSCOhost, Google Scholar, and Google. General key terms were utilized to begin this search to gain an understanding of the risks associated with fires involving multi-level buildings. Key terms included *emergency fire evacuation, multi-level buildings, fire risks and safety standards*. To ensure comprehensiveness regarding the needs of the disabled population, *mobility impaired, hearing impaired, visually impaired, cognitively impaired, multi-level buildings, and egress standards* was searched under keyword, subject, title, and search engine terms. There was no set limit on date of publication. The literature search concerning *the preparedness of disabled populations during fire evacuations* emerged no results or findings on compliance about this particular topic.

Since no results or findings were located about the fire evacuation preparedness and the disabled under the phenomenon, faculty research advisors at Arkansas Tech University Department of Emergency Management were contacted to aid in the discovery of further search terms to narrow the topic being studied. It was suggested that the search include *within Arkansas four-year universities*, since the study focused on the safe evacuation of disabled student populations in the event of a fire.

Another extensive computerized literature search used the same data-bases regarding the phenomenon of *the preparedness of disabled populations during fire evacuations included within Arkansas four-year universities*. Again, keywords for this

search were categorized under both broad and more specific terms. Broad terms included *emergency preparedness, emergency planning, exercise design, multi-level buildings, fire risks, safety standards, fire evacuation, and preparedness strategies*. More specifically, *the disabled, classrooms, residence halls, and university fire egress considerations* were used to highlight universities. To ensure comprehensiveness, the search was conducted under keyword, subject, title, and search engine terms. There was no set limit on date of publication. A plethora of emergency preparedness and fire evacuation literature emerged. One research article, in the emergency management literature, by Evacuation Plans (2006) utilized legal cases to explore the nature and importance of *emergency preparedness for disabled students during fire evacuations on college campuses*.

Therefore, the literature review is organized under *emergency planning and preparedness* in regards to its importance of improving this process of evacuating the disabled during fire emergencies. In addition, the term *safety standards* addresses the fire risks concerning the evacuation of disabled students from multi-level campus buildings. Further, *preparedness strategies and egress considerations* illustrate best practices to improve evacuation procedures within existing classrooms or residence halls on college campuses. The chapter concludes with a summary of the theoretical and research literature regarding the importance of *the preparedness of disabled populations during fire evacuations within Arkansas four-year universities*.

The Fundamentals of Emergency Planning

When developing the emergency evacuation plan, the disabled student must be included in the four phases of the emergency planning process (Haddow, Bullock, & Coppola, 2011). In emergency management, the four phases consist of mitigation,

preparedness, response, and recovery (Haddow et al., 2011) Emergency managers must incorporate these four phases of emergency management and understand their terminology to effectively plan for emergency planning evacuations. One of the first terms that an emergency manager must understand in the emergency planning process is mitigation, which Haddow et al. (2011) defines as “sustainable action to reduce or eliminate the risks of people and property from such hazards and their effects” (p. 69). Mitigation essentially reduces or eliminates the disaster from occurring and saves the lives of people, to include the disabled student and their property (Haddow et al., 2011). Preparedness is the second phase in the emergency planning process and the second term that an emergency manager must understand, which Haddow et al. (2011) defines as “a state of readiness to respond to a disaster, crisis, or any other type of emergency evacuation” (p. 97). Preparedness ensures a state of readiness before a disaster occurs (Haddow et al., 2011).

In addition to mitigation and preparedness, other terminology that emergency managers must understand and incorporate into the emergency planning process includes response and recovery. Response is the third phase in the emergency planning process and the third term that an emergency manager must understand, which Perry and Lindell (2007) define as “official actions immediately before and during disaster impact designed to protect public safety and minimize damage” (p. 29). Response consists of measures implemented before and during an event that protect the lives of others and their property (Perry & Lindell, 2007). Last but not least, recovery is the fourth phase in the emergency planning process which Perry and Lindell defines as “activities beginning after disaster impact is stabilized that focus on restoring functions lost” (p. 29). Recovery includes

activities that restore the community to a state of normalcy including lost functions that functioned properly before the disaster occurred (Perry & Lindell, 2007). All four of these phases are essential to the survival of the disabled student when developing or creating emergency evacuation plans specific to the needs of disabled students on campus: however, this study only focuses on the preparedness and response phases.

The emergency planning process. The Federal Emergency Management Agency (FEMA) (2010) provides further details regarding the components of the planning process: (a) form a collaborative planning team; (b) understand the evacuation procedures; (c) determine goals and objectives; (d) develop the plan; (e) prepare, review, and approve the plan, as well as, (f) implement and maintain the plan (pp. 2.5 – 2.6). The first stage in the emergency planning process is to form a collaborative planning team (FEMA, 2010). According to FEMA, effective response planning includes creativity and innovation gained from relationships formed to protect lives. In addition, the second stage of the emergency planning process is to understand the evacuation procedures (FEMA, 2010). FEMA states “if hazards and threats are viewed as problems and operational plans are the solution, then hazard and threat identification and analysis are key steps in the planning process (p. 2.5). Gaining a thorough understanding of the hazards and threats at hand from the emergency managers who created the plan will give emergency response personnel, a better understanding of the evacuation procedures regarding the disabled student (FEMA, 2010).

The third stage in the emergency planning process is to determine goals and objectives for the plan (FEMA, 2010). To reiterate, FEMA explains the process to obtain goals and objectives “by using information from the hazard profile developed as part of

the analysis process, the planning team thinks about how the hazard or threat would evolve in the jurisdiction and what defines a successful operation” (p. 2.5). The plan itself must be designed and developed to accommodate the needs of a disabled student; therefore, the fourth stage of the emergency planning process is to develop the plan (FEMA, 2010). According to FEMA, this process entails initial actions or procedures that redefine the need for prevention and protection measures. As a result, response alternatives can be implemented in a manner that these alternatives can satisfy the course of action and save the lives of other disabled students during an emergency evacuation on campus (FEMA, 2010).

The fifth stage in the emergency planning process is to prepare, review, and approve the plan (FEMA, 2010). The process involves the creation of multiple drafts of the base plan, necessary revisions, and additions to reiterate key findings, which provide visuals of surrounding hazards that impact fire evacuations (FEMA, 2010). Once the plan has been developed, it must go through a process where the plan is reviewed and approved, so, any necessary changes can be made (FEMA, 2010). This preparation measure enables the campus to be prepared for future campus-wide emergency fire evacuations (FEMA, 2010).

Following plan approval, the sixth and final stage of the emergency planning process is to implement and maintain the plan (FEMA, 2010). Effective plans produce positive responses from well-defined goals and objectives which result from the utilization of training, exercises, and evaluations of real world events (FEMA, 2010).

Gaps with Evacuating the Disabled Student

Students with disabilities should have the same opportunity as able-bodied

students to evacuate a multi-level building (Wagner, 2006). Shannon (2005) states “when people with disabilities go into a building, they deserve to know that there is an effective emergency plan in place to keep them safe” (p. 16). One would believe that all multi-level buildings have plans or equipment that accommodates the evacuation needs of the disabled population; but, other sources state otherwise. For example, Wagner (2006) discusses “when terrorists attacked the World Trade Center and its twin towers began to collapse, hundreds of people crowded into the stairwells as those with developmental and physical disabilities were left waiting” (p. 13).

In addition, Shannon (2005) states “there have been times in which people who use wheelchairs were simply left behind during emergencies without any specific direction or instruction, presumably to wait for rescue” (p. 16). Statistics show emergency preparedness concerning students with disabilities in classroom or residence halls needs improvement to accommodate the needs of the disabled student population; for example, Anonymous (2004) states “each year, nearly 1, 500 fires occur in residence halls and fraternity houses, causing \$9 million in damages (p. 1). Due to the high number of fires that occur to residence halls and fraternity houses on college campuses, there should be an evacuation plan in place that increases the emergency preparedness of students with disabilities to successfully evacuate (Anonymous, 2004).

Evacuation plans are vital for a safe exit process, particularly for students with disabilities; however, with every evacuation plan, gaps exist that must be addressed to remedy evacuation concerns on college campuses (U.S. Department of Education, 2004). According to the U.S. Department of Education (2004) evacuation plans inadequately addressed multiple disabilities as late as the early 1990s and failed to integrate

comprehensive disability scenarios. The data gathered from the U.S. Department of Education (2004) indicates that more evacuation planning needs to be completed in order to address and accommodate all disabilities with the appropriate exercise scenarios to ensure the safety of disabled students in the event a fire occurs on a college campus. Every campus evacuation plan should be customized to meet the needs of the disabled student; although, no one plan should be the same due to unique needs that have to be accommodated in an emergency fire evacuation (U.S. Department of Education, 2004).

University case studies. Numerous case studies have been conducted reemphasizing the problems that have occurred when evacuating students with disabilities from multi-level campus residence halls. One case involved a Murray State University student with multiple cognitive disabilities whose request for off campus housing was denied, and subsequently led to his death from smoke inhalation (Evacuation Plans, 2006). Similarly, another case involved a group of students with disabilities who attended Arizona State University that declared the university was in violation of the Americans with Disabilities Act as well as the Rehabilitation Act because these students felt they were excluded from campus fire drills within their residence hall (Evacuation Plans, 2006). As a result, emergency response personnel failed to recognize the unique evacuation needs of these students with mobility impairments (Evacuation Plans, 2006). The negligence that emergency responders exhibited towards the student with disabilities at Murray State University and Arizona State University (Evacuation Plans, 2006) further exemplifies the emergency responders disregard for the principle of justice and the fair treatment when evacuating the disabled student population from multi-level campus buildings.

Importance of improving evacuation planning for the disabled student.

Institutions can improve evacuation plans to ensure the safety and wellbeing of students with disabilities in the event a fire occurred on the college campus which hinders evacuation due to inadequate building or structure preparation (FireLaw, 2009). The U.S Department of Education (2010) emphasizes “because of recent violent crimes, natural disasters, and other emergencies or crises, colleges and universities are convening committees and task forces to reexamine or conduct a comprehensive review of policies, procedures, and systems related to campus safety and security” (p. 1).

Further exploration regarding emergency preparedness and evacuation planning of the disabled student should be considered on college campuses to specifically focus on the need to protect their human dignity (U.S. Department of Education, 2010). Proffitt-Lavin et al. (2012) reiterate this opinion as it pertains to disaster management. The National Disability Authority (2011) state another importance of improving emergency evacuation planning on college campuses includes development and implementation of systematic procedures to exit the building safely during emergencies, particularly fires. The reexamination of campus emergency evacuation plans ensures the safety and wellbeing of the disabled student population while reducing the risk of further fatalities occurring in the future (National Disability Authority, 2011).

The need for developing evacuation plans for the disabled student. A

disability can be defined in a number of ways depending on the student’s impairment (U.S. Fire Administration, 1999c). According to the Americans with Disabilities Act of 1990 a disability is “(a) a physical or mental impairment that substantially limits one or more of the major life activities of such an individual; (b) a record of such an impairment;

or (c) being regarded as having such an impairment” (U.S Fire Administration, 1999c, p. 7). The type of impairment limits the student’s ability to perform everyday tasks (U.S. Fire Administration, 1999c). Emergency managers should consider the unique dynamics of the disabled student, and this population’s susceptibility to potential hazards during a fire evacuation on a college campus when developing evacuation plans (Logli, 2009). According to Morrow (1999), the needs of vulnerable populations must be addressed as emergency plans are formulated to reduce the risk of potential harm during the evacuation process. For example, Logli (2009) expresses the importance of communication to students with diverse impairments during emergencies, as well as procedures to assist those who become incapacitated. In addition, evacuation strategies must address protocols for the disabled student to shelter in place as necessary during emergencies (Morrow, 1999).

Despite successful development of evacuation plans and identification of vulnerable population needs concerning the disabled student, problematic situations will occur (Morrow, 1999). For example, special transportation needs complicate the evacuation process; vision or hearing impairments prevent students from receiving hazard warnings; and emergency shelters and other facilities are often inaccessible to those who are mobility impaired (Morrow, 1999). Similarly, evacuation to an area of safety is hindered without a plan of action (Morrow, 1999).

According to Logli (2009), in order to mitigate and prevent future problems, emergency managers must keep five specific objectives in mind when developing evacuation plans for the disabled student. Logli (2009) states that these objectives include familiarity with the building design, identification of disabled occupants within the

buildings, assessment of evacuation equipment inventories, staff training, and coordination with other agencies. Inclusion of these five objectives in evacuation plans will ensure that emergency managers have the tools necessary to meet the needs of each and every student, as well as, ensuring those with disabilities have an accessible means of egress during a fire evacuation (Logli, 2009).

The Disability Laws

In 2004, President George W. Bush issued the Individuals with Disabilities in Emergency Preparedness Executive Order to protect and prepare those with disabilities in emergency situations through a coordinated effort between federal agencies (U.S. Department of Homeland Security, 2005). Institutions must consider preparedness measures to ensure the safety of the disabled student, as well as providing the disabled student the opportunity to safely evacuate in a timely manner (U.S. Department of Homeland Security, 2005). In addition, the Architectural Barriers Act of 1968 ensures accessible means of evacuation for the disabled during fire emergencies (U.S. Department of Justice, 2009). According to the U.S. Department of Justice, Civil Rights Division, Disability Rights Section (2009), the Architectural Barriers Act of 1968 also requires campus buildings that are funded with federal tax dollars, such as classrooms or residence halls, must comply with federal standards to accommodate the needs of the disabled student during an emergency evacuation (U.S. Department of Justice, 2009).

Emergency Planning Preparation and Response Strategies

Able bodied populations. The U.S. Department of Education Emergency Response and Crisis Management Technical Assistance Center (2007) has established planning guidelines to accommodate the able-bodied during emergency evacuations

which can be adapted to fire emergencies on campuses. These guidelines allow emergency response personnel to identify existing deficiencies in campus emergency plans, revise procedures to safeguard the campus community, establish command and control that identifies levels of authority, and execute full-scale training exercises in cooperation with emergency response agencies (U.S. Department of Education, 2007). Identification of existing deficiencies can be accomplished by reviewing the current campus emergency management plan(s) using data from vulnerability assessments (U.S. Department of Education, 2007). Gaps that are identified provide steps for improvement of emergency fire evacuation procedures that ensure the safety of the campus community (U.S. Department of Education, 2007). Fire emergencies create the need for emergency response personnel to establish an Incident Command System that identifies and delegates responsibilities within multiple levels of authority (U.S. Department of Education, 2007). It is important to implement functional training exercises with first responders because this will identify solutions within the plan (U.S. Department of Education, 2007). The functional exercises give everyone involved a sense of how an actual incident would play out in a college classroom or residence hall fire evacuation (U.S. Department of Education, 2007).

The U.S. Department of Education Emergency Response and Crisis Management Technical Assistance Center (2007) identified separate guidelines to accommodate the able-bodied during the response phase of an emergency fire evacuation. These guidelines allow emergency response personnel to appoint an incident commander to oversee the incident and resolve conflicts, allocate available resources, initiate procedures within the emergency plan, and facilitate after-action meetings with key stakeholders (U.S.

Department of Education, 2007). The primary purpose of the incident commander is to make effective decisions about the emergency evacuation (U.S. Department of Education, 2007). The U.S. Department of Education (2007) describes the response phase as organized disorganization; for example, during the chaos of a fire evacuation, emergency response personnel must scramble to establish order. Resources must be deployed from the campus or other partners to ensure an effective evacuation response (U.S. Department of Education, 2007). A sound emergency management plan outlines who to communicate with, identifies accountability procedures, as well as recognizes who can effectively make decisions about the evacuation at hand (U.S. Department of Education, 2007). In addition, debriefing meetings involving campus administrators, security, first responders, representatives from the various departments, and student body allows resolution of issues and informs key stakeholders of future response procedures (U.S. Department of Education, 2007).

Disabled populations. Evacuation procedures are important for the safety of the disabled student population due to the need for structure (U.S. Department of Education, 2007). The U.S. Department of Education Office of Safe and Drug-Free Schools (2011) established guidelines to accommodate the disabled in preparation for an emergency evacuation, which allow emergency response personnel to confirm volunteer policies in advance, offer training for students, instructors, and other stakeholders, and rehearse response procedures.

A vital aspect of preparedness involves educating volunteers to assist the disabled during emergency fire evacuations through appropriate training measures (U.S. Department of Education, 2011). In addition, training volunteers and disabled students

facilitates a faster evacuation process and the potential for the implementation of life-saving procedures due to appropriate preparation measures (U.S. Department of Education, 2011). Also, response measures that involve exercises that test the plan's capability and justify unresolved gaps should be practiced (U.S. Department of Education, 2011). According to Edson (2008), "it is clear that planning and exercises are essential to an effective evacuation system" (p. 16). To conclude, established, well-exercised emergency plans ensure that the disabled student can safely and effectively evacuate in a timely fashion (Edson, 2008).

Keys to involving students with disabilities in the planning process. Logli (2009) discusses there are many elements to involving the disabled student in the planning process. One of the most important aspects mentioned above allows the person as well as his or her caregiver to receive the proper training in advance (Logli, 2009). Peace (1999) agrees that "the key to efficient evacuation during an emergency lies in training" (p. 23). Proper training results in a successful retreat to an area of refuge, until emergency response personnel can safely evacuate the student (Logli, 2009). The Federal Emergency Management Agency (FEMA) (2008) states "encouraging individuals with special needs to take responsibility for their own safety and security will benefit emergency managers and responders during an incident" (p. 6).

Communication is another important key to involving students with disabilities in the planning process (Logli, 2009) Activation of the communication plan will assist those disabled students who are mobility, visually, hearing, or cognitively impaired, as well as provide accommodations regarding their specific evacuation needs (U.S. Department of Education, 2011). Specifically, Personal Emergency Egress Plans commonly known as a

“PEEP” explains to the first responder assisting the student which method of evacuation is necessary to accommodate the student and seek a means of egress (FireLaw, 2009) (See Appendices B, C, and D). Therefore, FireLaw (2009) emphasizes when emergency response personnel are developing and implementing the plan, the student with the disability should be involved in all aspects of the planning process for first responders to gather an understanding of the student’s particular needs and impairments regarding evacuation.

According to the U.S. Department of Education Office of Safe and Drug-Free Schools (2011), specific actions should be implemented concerning the proper response measures of assisting the disabled. The U.S. Department of Education Office of Safe and Drug-Free Schools (2011) has established guidelines to accommodate the disabled during an emergency evacuation which allows emergency response personnel to initiate both campus emergency management and communication plans. The emergency management plan specifies exactly what procedures should be followed before, during, and after the emergency fire evacuation (U.S. Department of Education, 2011). This plan also provides specific details as how to correctly respond to special needs populations where accommodations are made that meet the needs of the disabled student (U.S. Department of Education, 2011).

Accessible Means of Egress

According to Emergency Preparedness for People with Disabilities (2004) egress is defined as “a path or opening for going out; an exit” (p. 39). Tactile or visual markings indicated within staircases leading to the exit is an example of accessible egress (Bryant, 2005). Bukowski and Kuligowski (2004) define a means of egress as a “continuous and

unobstructed [path] from any point in the building to the outside” (p. 2). Understanding of this concept promotes a more effective fire evacuation of disabled students provided the building accommodates their needs (Bukowski & Kuligowski, 2004).

A means of egress must include appropriate design measures that allow unobstructed evacuation; these measures must have considerations for door width and direction of swing, ramp incline and staircase layout, proper lighting and tangible markings, and areas of refuge that protect from the effect of a fire (Bryant, 2005; Bukowski & Kuligowski, 2004). In contrast, Bukowski and Kuligowski (2004) suggest the following areas to avoid: limits to the disabled student’s ability to reach a means of egress, obstructed pathways, or a lack of alternate means of egress if the main route is blocked. Improvements to areas of accessible means of egress permit a more rapid and efficient method of escape (Bukowski & Kuligowski, 2004).

Christensen and Salmi (2007) express that a universal design concept provides a more efficient evaluation of multi-level buildings which support evacuation needs of the disabled population. The universal design includes several principles to enhance preparation for a safe means of egress (Story, Mueller, & Mace, 1998). These principles are comprised of practical and applicable procedures that are simple and flexible; information is distinguishable among various disabilities, lenience for mistakes, decreased difficulties in evacuation efforts, and appropriate space for accessible exit (Story et al., 1998).

The Americans with Disabilities Act offers effective guidelines to make buildings more accessible to meet the specific needs of the disabled student and promote a safe means of egress to exit the building during a fire evacuation (Bryant, 2005). Emergency

managers should understand that before an accessible means of egress can be established, three essential components must be visible within the classroom or residence hall which includes: (a) the exit access; (b) an exit; and (c) an exit discharge (Bukowski & Kuligowski, 2004) Bukowski and Kuligowski (2004) describe the exit access as the passageway through which the exit may be reached. Bukowski and Kuligowski (2004) also provide further definitions pertaining to means of egress: the exit is defined as an area of refuge and the exit discharge is a distinct endpoint in the evacuation process (p. 376).

Many measures, therefore, can be taken so that accessible means of egress is accomplished within college classrooms or residence halls. One of these measures is following The Americans with Disabilities Act Accessibility Guidelines for Accessible Egress (National Fire Protection Association, 2007). Evacuation Elevators are a prime example within these guidelines for enhanced preparation during an emergency fire evacuation (National Fire Protection Association, 2007). Christensen, Blair, and Holt (2007) maintain that a benefit of evacuation elevators consists of a heightened sense of security for disabled students to seek refuge. According to Christensen et al. (2007), The Americans with Disabilities Act Accessibility Guidelines for Accessible Egress provides the most pertinent design strategies for accessible egress, as well as a measure that allows evacuation elevators to accommodate the departure of students with disabilities. Horizontal exits are another measure to accomplish accessible means of egress (Christensen et al., 2007). The Americans with Disabilities Act suggests all classrooms and residence halls implement placement of clear and continuous routes to horizontal accesses (Bryant, 2005). Christensen et al. (2007) state, benefits to horizontal exits

include protection from harm when escape is impeded and a secure place to wait at the same level until help arrives.

Another basic consideration that the Americans with Disabilities Act suggest is that all classrooms and residence halls have vertical accesses (Bryant, 2005). Staircases, lifts, ramps, and areas of safe shelter comprise vertical accesses utilized to accommodate the disabled during fire evacuations (Bryant, 2005). When compared to horizontal access, vertical access arrangements will often require more considerations and are potentially more expensive to install within a classroom or residence hall to accommodate the needs of those with physical disabilities (Bryant, 2005). Factors for consideration include identification of suitable locations, equipment costs and budget constraints, and other considerations set forth by The Americans with Disabilities Act (Bryant, 2005).

According to Disability Rights Network of Pennsylvania (2004), an understanding of the term assistive technology must be clarified before technology can be utilized. The Disability Rights Network of Pennsylvania (2004) defines assistive technology as equipment or products that preserve or enhance functional abilities of disabled individuals. Technology is the most effective tool to assist the disabled student during emergency fire evacuations, and include several means of support (Scholes, 2005). One example of technological assistance for the evacuation of the disabled student is the Refuge Call System, which is similar to a fire refuge area (Scholes, 2005). Health and Safety Services (2006) describe fire refuge areas as safe locations within the building for the disabled to wait until evacuation is possible. In the same way, the Refuge Call System is a specialized intercom system that allows the disabled student to use a handset or hands-free telephone device located at the refuge point to notify emergency responders of

the need for evacuation (Anonymous, 2009).

Safe elevators are an additional example of technological assistance for the disabled student during fire evacuations (Proulx & Pineau, 1996). The term *safe elevator* refers to “an elevator that can be safely used by occupants during a fire” (Proulx & Pineau, 1996, p. 6). Students who are trapped and need a safe space away from the fire danger can utilize the safe elevator and wait for assistance from emergency response personnel (Proulx & Pineau, 1996). Bukowski (2007) articulates that future transportation in safe elevators will include all academic institutions and multi-level residential buildings due to the increased need for egress capacities. Bukowski (2003) further expresses that the safe elevator’s popularity generates interest for its utilization on university campuses.

Egress Safety Standards

Within any evacuation plan, there must be standards which serve as a benchmark to ensure that the evacuation plans fits the needs of the audience (National Fire Protection Association, 2007). The National Fire Protection Association (NFPA) (2007) describes three safety standards that must be included in every evacuation plan pertaining to students with disabilities. The three standards are discussed in the National Fire Protection Association Evacuation Guide, which include: “(a) the circulation path; (b) the occupant notification system(s); and (c) directions to and through the circulation paths” (National Fire Protection Association, 2007, p. 13).

Furthermore, the National Fire Protection Association (2007) defines a circulation path as a clear area that allows the disabled individual to travel anywhere within the dormitory to escape the dangers of the emergency and seek an area of safety.

The circulation paths could include but are not limited to smoke proof enclosures and other rooms; doors, elevators, and ramps; fire escapes and other exit pathways (National Fire Protection Association, 2007).

The National Fire Protection Association (2007) also recommends the utilization of the Occupant Notification System. The Notification System serves as a way to alert the disabled student the need to evacuate and seek an area of safety (National Fire Protection Association, 2007). Occupant Notification Systems can include auditory equipment such as bells, horns, and speakers (National Fire Protection Association, 2007). In addition, text displays and lights comprise visual aids (National Fire Protection Association, 2007). Text displays also provide auditory and tactile options (National Fire Protection Association, 2007).

Lastly, directions to and through the circulation path are recommended egress safety standards (National Fire Protection Association, 2007). These directions could entail signs, oral communications, or broadcast instruction via public announcements (National Fire Protection Association, 2007). Consideration of these standards in a classroom or residence hall will enhance preparedness for an emergency and allow easier access to evacuation methods concerning the disabled student population (National Fire Protection Association, 2007).

Egress safety in regards to elements of evacuation. When developing an evacuation plan for the disabled student, it is imperative to incorporate all disabilities such as mobility impairments, visual impairments, hearing impairments, speech impairments, and the cognitive impaired into the planning process (Anonymous, 2007). According to Anonymous (2007), the National Fire Protection Association is a source of

reference that involves planning considerations for evacuating disabled occupants from multi-level buildings. Within this guide of safety standards, Anonymous (2007) states emergency managers “involved in the planning process will learn the four elements of evacuation which include: (a) notification; (b) way finding; (c) use of the way; and (d) assistance” (p. 19). Enabling emergency response personnel to address these four elements of evacuation in the campus evacuation plan during the planning process will equip first responders to be more prepared to accommodate students with disabilities during fire evacuations (Anonymous, 2007).

Disability Specific Fire Risks and Potential Considerations

Most often disabilities are categorized into three unique areas which include: (a) mobility impaired; (b) visually impaired; and (c) hearing impaired (U.S. Fire Administration, 1999a, 1999b, 1999c). The following three categories described by The U.S. Fire Administration discuss why disabled students pose a greater risk in the evacuation process, where fire is involved on a college campus.

Mobility impaired risks and considerations. The mobility impaired pose a greater fire risk because of their limited means of escape (U.S. Fire Administration, 1999c). Accommodations suited for the mobility impaired such as the elevator can become a hindrance and confine the disabled student to the building during a fire (U.S. Fire Administration, 1999c). Students with mobility impairments have a diminished capacity to deal with fire, therefore further complicating the evacuation process (U.S. Fire Administration, 1999c).

Handrails are necessary for the evacuation of a mobility impaired student due to their inability to walk; the disabled student must have handrails to hold onto as the

student evacuates the building (FireLaw, 2009). Both sides must have handrails to accommodate the needs of the disabled student and assist the student during the fire evacuation (FireLaw, 2009). Due to the student's inability to walk, emergency response personnel should consider making the area more accessible for the mobility impaired if long distance travel is necessary (FireLaw, 2009). In addition, if an escape is unmanageable for the disabled student, emergency response personnel should consider the provision and extent of fire compartments where students with mobility impairments can safely find an area of refuge until emergency response personnel can arrive at the scene to assist the disabled student (FireLaw, 2009). Emergency response personnel should also consider that the student is notified of the location in which the evacuation chair is located (FireLaw, 2009).

During an emergency fire evacuation, if the student knows where the evacuation chair is located, the disabled student can safely evacuate the building (FireLaw, 2009). The disabled student must also know the location of any lift. One of the most important considerations that emergency response personnel should consider for the disabled student to evacuate is that staff must be available for assistance during an emergency fire evacuation (FireLaw, 2009).

Visually impaired risks and considerations. The visually impaired also pose a greater risk during a fire evacuation (U.S. Fire Administration, 1999a). The visually impaired are greater fire risks because designated exits are not distinguishable or observable to the student with the impairment (U.S Fire Administration, 1999). When a visually impaired student is placed in an unfamiliar location, designated exits are not always visible which complicates the student's route of evacuation (U.S. Fire

Administration, 1999a). Structures might be new to the student, making the territory unfamiliar to the student with the visual impairment (U.S. Fire Administration, 1999a). Preventing designated exits that are tactile or high-contrast markings from being visible to the human eye makes it very difficult for a student with a visual impairment to evacuate and seek an area of refuge (U.S. Fire Administration, 1999a).

Students with visual impairments require a different type of alarm system to evacuate because the visually impaired are unable to see other students evacuating as a result of their loss of sight (FireLaw, 2009). Disabled students with visual impairments require a warning that is flashing such as a strobe light (FireLaw, 2009). Marking of escape routes must also be visible to the student with a disability, to safely evacuate to an area of refuge (FireLaw, 2009). Orientation information must be addressed with the student to ensure a safe evacuation in the event of a fire evacuation (FireLaw, 2009). Instructions with an accessible format are also important for emergency response personnel to consider when evacuating the visually impaired (FireLaw, 2009).

On the contrary, whether escape routes and stairs have step edge markings is another consideration that emergency response personnel should consider before an evacuation occurs on campus (FireLaw, 2009). Whether stairs have open risers is another consideration that emergency response personnel should consider for the visually impaired (FireLaw, 2009). The building should also have an external open escape route (FireLaw, 2009).

Hearing impaired risks and considerations. The hearing impaired pose a greater fire risk because of their inability to communicate and read the lips of others for directions (U.S. Fire Administration, 1999b). The communication barrier for the hearing

impaired is an issue during a fire evacuation on a college campus because the disabled student's ability to read the lips is obstructed during the evacuation process (U.S. Fire Administration, 1999b). Due to the breathing apparatus being obscured and covered, the ability to receive directions can be masked making the disabled student's ability to read lips unmanageable (U.S. Fire Administration, 1999b).

When a student is hearing impaired, it is best to have a visual warning in the fire alarm system to notify the student to evacuate the building (FireLaw, 2009). A text phone can assist in the warning process, to alert the student to evacuate (FireLaw, 2009). A vibrating pager can also assist in the evacuation warning process to alert the student to evacuate (FireLaw, 2009). Most importantly, a team member, fire warden, the buddy system or a local beacon is essentially crucial in ensuring that the disabled student is able to evacuate the building safely in a timely manner (FireLaw, 2009).

Cognitively impaired risk and considerations. When cognitively impaired students evacuate a multi-level campus building during a fire evacuation these students with cognitive impairments might lack a sense of awareness concerning their disability (Firelaw, 2009). Various impairments of mobility, vision, and hearing further complicate the students' ability to evacuate and classify this category as a fire risk (FireLaw, 2009). Students with cognitive impairments require a different type of alarm system to evacuate because some alarm systems that warn others to evacuate might frighten the student and prevent the student from evacuating the building (FireLaw, 2009). Marking of escape routes are also necessary for emergency response personnel to consider during evacuation (FireLaw, 2009). Orientation information must be addressed with the student to ensure a safe evacuation in the event of fire (FireLaw, 2009).

Instructions with an accessible format are also important for emergency response personnel to consider when evacuating the cognitively impaired (FireLaw, 2009). There must also be step edge markings on the stairs and escape route (FireLaw, 2009). Provision of handrails on escape route and stairs must also be required for a student with a cognitive disability to evacuate properly (FireLaw, 2009). Whether stairs have open risers is also another consideration that must be considered by emergency response personnel for the cognitively impaired to evacuate a building (FireLaw, 2009). A classroom or residence hall should also have an external open escape route (FireLaw, 2009). Designating an accessible external escape route is the last consideration emergency response personnel should consider concerning the cognitively impaired student (FireLaw, 2009).

Summary of Theoretical and Research Literature

Although, *fire evacuation* is a universal term in the emergency management literature, no findings regarding preparedness of the disabled exist for the phenomenon. Only fire evacuation plans and legal cases exploring the nature and importance concerning *preparedness of the disabled* appear. Consequently, there are no guidelines for the *preparedness of the disabled* to evacuate a multi-level building such as a classroom or residence hall consistent with university egress safety standards. Thus, the researcher has been left to gather understandings of the phenomenon from the evacuation plans and legal cases presented in the literature for synthesizing *the preparedness of disabled populations during fire evacuations within Arkansas four-year universities*.

All of the literature reviewed in this chapter and the general theoretical literature link *the preparedness of disabled populations during fire evacuations within Arkansas*

four-year universities to increasing the state of preparedness for emergency response personnel to evacuate the disabled as well as the disabled student taking action and responsibility for themselves during a fire evacuation. *The preparedness of disabled populations during fire evacuations within Arkansas four-year universities* has been equated with the themes of student and emergency response preparedness regarding the disabled and less frequently with compliance ensuring that all multi-level buildings such as classrooms and residence halls have met these standards for the disabled population to evacuate during a campus fire evacuation.

The computerized search of the research literature revealed only one study detailing the nature and importance concerning *preparedness of the disabled* (Evacuation Plans, 2006). Though the study is reported to be qualitative, the researchers resort to categorization and quantification of the study participants' responses. The study does not clarify or discuss the level of compliance regarding each university.

It was clear from this review of literature that a research study on *the preparedness of disabled populations during fire evacuations within Arkansas four-year universities* would fill a gap in the theoretical and research literature. Therefore, a study was conducted on *the preparedness of disabled populations during fire evacuations within Arkansas four-year universities* as perceived by public safety officers using interviews for the primary means of data collection. The methodology utilized for this research follows in the next chapter.

Chapter III: Methodology

This study examined the state of preparedness of four-year public institutions within Arkansas from the perspective of public safety officers. Each interview question was analyzed for similarities among participants through selection of key terms or phrases within the response. Structured interviews helped to “describe and explain” (Leedy & Ormrod, 2013, p. 96) specific themes that provided insight into the existing state of evacuation preparedness concerning four-year public institutions within Arkansas as perceived by public safety officers.

Background and Rationale for Research Method

A review of literature revealed existing egress safety standards of residence halls but identified a gap in preparedness regarding evacuation of the disabled. The focus of this study was to explore and interpret others’ perspective of preparedness concerning evacuation of the disabled. Therefore, a qualitative approach was chosen. Participant responses provided vital information to the emergency management field regarding improved disaster preparedness of the disabled student population during times of disaster.

The purpose of the qualitative descriptive method is to discover patterns and themes about life events (Parse, 2001); specifically for this research, the themes discovered were in regard to the state of preparedness during fire evacuations of the disabled population as perceived by public safety officers. Structured interviews revealed similarities that appeared within each participant’s response. Then themes were formulated relevant to the state of preparedness of four-year public institutions within Arkansas as perceived by public safety officers.

Research Processes

Participant selection. The participants for this study were employees of university police departments at institutions of higher education in Arkansas. All participants were invited by e-mail to participate in a structured interview that examined their institutions' existing state of preparedness regarding the disabled population. Each participant was asked four questions related to the state of preparedness of their institution of employment within Arkansas (See Appendix E).

Protection of participant rights. Due to the sensitive nature of the information provided during the research process, data collected was only visible to the principal investigator and research advisor. Participants consented to interviews that discussed their perspectives regarding preparedness of higher education institutions' egress strategies for the disabled. All hand-written notes of the interview were kept confidential under lock and key for the duration of the study. Each participant was identified by their university of employment using pseudonyms Institution A, B, or C to protect the rights of the individual providing this data and the university being discussed. Once, the research was completed, all documents including interview notes and recordings were destroyed.

IRB. The Institutional Review Board of Arkansas Tech University reviewed and approved this study which ensured the protection of those interviewed. A consent form accompanied the e-mail solicitation explaining the nature of the research process. The information provided to the participant explained the interview process, the length of time the interview should take, and the participant's ability to discontinue the interview if the participant encountered undue harm or increased stress that prevented them from participating in the interview process.

Data collection. An e-mail was sent to each participant asking for their consent and participation to take part in this research. Each participant was then contacted via phone to validate their participation in a structured interview that discussed the nature of the research; any problems or concerns were clarified during the interview. The interview was transcribed and then coded using the Vivo method of translation (Saldana, 2003). According to Charmaz (2006) Vivo Codes protect the means of the participant in regards to their opinion and behavior during the coding process. Moreover, each line of the interview conversation was coded based on key words or phrases provided by the participant. I identified appropriate themes based on the response provided by the research participant. Therefore, the codes and themes were developed based on the response given by the participant to categorize the data collected of the research project.

Rigor and credibility. According to Parse (2001), “specific criteria for appraisal of qualitative research correspond with the four dimensions of the research process: conceptual, ethical, methodological, and interpretive” (p. 244). The Institutional Review Board confirmed that the research being conducted was ethical and no harm would be inflicted upon the participants in this study. When the participant consented to the interview, all data collected was kept confidential under lock and key. The participant was identified using pseudonyms Institution A, B, or C to protect the rights of the individual providing this data and the university being discussed. Structured interviews were utilized in the data gathering process to allow the researcher to gain an understanding of the state of preparedness in regards to the disabled population during fire evacuations as perceived by public safety officers. A transcription of the compiled data was formulated and then coded using the Vivo Code of transcription to identify

similarities among participants. Themes and categories were interpreted to configure the overall state of preparedness regarding the disabled student population as perceived by public safety officers.

Summary

Background for selecting the qualitative research method was discussed to provide rationale for selecting this method as a means of data collection within the realms of study pertaining to the research being conducted. Steps in the research process were presented, which illuminated how the research was conducted. The chapter concluded with a discussion of rigor and credibility to accurately ensure the criteria needed to conduct qualitative research was met in regards to the appraisal process. The findings of this research study are presented in chapter four.

Chapter IV: Results

Participants' viewpoints regarding a particular topic is important to qualitative research data collection. Based on the data collected on the state of preparedness during fire evacuations of the disabled populations at Arkansas four year universities, results were analyzed to formulate themes and categories of the participant's perspective. The themes included: emergency preparedness; agency coordination, effective use of notification devices and planning procedures as well as ease of access and points of safety.

Emergency Preparedness

All participants were asked during the interview to describe their institutional procedures for assisting the disabled during an emergency fire evacuation from a multi-level campus building. Institution A expressed that they were to coordinate evacuation procedures with the Metropolitan Emergency Medical Services department, and utilize other resources such as National Guard Medevac and private ambulances (Anonymous, personal communication, January 30, 2014). In addition, Institution A expressed that their institution trains with the National Guard to evacuate the disabled with equipment such as slings and cots (Anonymous, personal communication, January 30, 2014). Similarly, Institution C expressed that their institution has working agreements with local emergency responders and employees have specialized training to operate an evacuation chair to evacuate the disabled from a multi-level campus building (Anonymous, personal communication, February 27, 2014).

Conversely, Institution B has a different mode of preparation to evacuate the disabled from multi-level buildings. Some buildings at Institution B are equipped with an

area of refuge, or have buddy systems in place to assist the disabled during the evacuation process (Anonymous, personal communication, February 24, 2014). Institution B also is developing an emergency action plan that includes directions for assisting the disabled during an emergency fire evacuation (Anonymous, personal communication, February 24, 2014). More importantly, Institution B coordinates with the Center for Educational Assistance to ensure that faculty, students, and staff have the resources needed to evacuate in the event a fire occurred within a multi-level building on campus (Anonymous, personal communication, February 24, 2014).

Agency Coordination

Additionally, all participants were asked to describe what resources are available within their institution to enhance the preparedness of the disabled population during an emergency fire evacuation from a multi-level campus building. Institution B reiterated their coordination with the Center for Educational Assistance, but also had information regarding disabled evacuation assistance available on their website and as course syllabi insertions (Anonymous, personal communication, February 24, 2014). Similarly, Institution C indicated that more evacuation chairs to assist the disabled are included in preparation plans (Anonymous, personal communication, February 27, 2014). Equally, Institution A stated that disaster coordination efforts were utilized with the Metropolitan Emergency Medical Services department along with the National Guard (Anonymous, personal communication, January 30, 2014). Likewise, Institution C stated that they employed the resources, such as ladders, of the local fire department and provided training to their public safety officers about how to evacuate the disabled during a fire (Anonymous, personal communication, February 27, 2014).

Effective Use of Notification Devices and Planning Procedures

Furthermore, all participants were asked to describe the information that depicted fire evacuation procedures of the disabled within their emergency operations plan. Institution A conveyed that they have an established incident command center with drills, sirens, and overhead pagers that depict how to evacuate the disabled from multi-level campus buildings (Anonymous, personal communication, January 30, 2014). Planning procedures are also important when evacuating the disabled; thus, Institution A expressed that check off sheets to assist disabled students were supplied (Anonymous, personal communication, January 30, 2014). In addition, Institution C stated that their emergency operations plans included annexes that depicted how to evacuate the disabled (Anonymous, personal communication, February 27, 2014). In contrast, Institution B relayed uncertainty pertaining to information included in the emergency operations plan, except for Emergency Support Function 6 that depicted how to evacuate the disabled from a multi-level campus building (Anonymous, personal communication, February 24, 2014). Therefore, clarification of the wording in the Emergency Operations Plan for Institution B should be reviewed to ensure stakeholder awareness of the content to assist those that are disabled (Anonymous, personal communication, February 24, 2014).

Ease of Access and Points of Safety

Finally, all participants were asked to describe what egress strategies were utilized within their institution to accommodate disabled students during an emergency fire evacuation from a multi-level campus building. Institution A expressed disabled students would be evacuated laterally down the stairs and have the ability to rest or turn at a pit stop designed to help complete the egress strategy (Anonymous, personal

communication, January 30, 2014). Similarly, Institution B stated that disabled students would have multiple possibilities to execute a horizontal or vertical evacuation to evacuate the disabled from a multi-level campus building based on the environment (Anonymous, personal communication, February 24, 2014). Alternatively, Institution C acknowledged the existence of areas of rescue or points of collection where the student could congregate until further assistance could be provided to assist in the evacuation process (Anonymous, personal communication, February 27, 2014).

Chapter V: Discussion

The results of this research study revealed four major themes within the preparedness of the disabled during fire evacuations as perceived by public safety officers. Several themes were illuminated throughout the results of this study and included emergency preparedness, agency coordination, effective use of notification devices and planning procedures as well as ease of access and points of safety. Limitations of the study and areas of future research will also be discussed within this chapter.

Emergency Preparedness

Public safety officers must have preparation measures in place and be trained to evacuate the disabled from a multi-level campus building in the event of a fire occurrence on a college campus. Similarly, Peace (1999) argues that successful evacuation relies on proper training. Although, as discovered within the literature, FEMA (2008) infers that students with disabilities have an obligation and responsibility during fire evacuations to take precautions in regard to their own safety. All public safety officers interviewed for this research discussed the preparedness measures their institution implemented during times of disaster when evacuating the disabled from multi-level buildings, but did not indicate that their institution had Personal Emergency Egress Plans in place to accommodate the individual needs of the student.

Agency Coordination

Effective coordination among emergency response agencies other than public safety officials must be established to coordinate roles and responsibilities among agencies efficiently during the evacuation process. Logli (2009) expressed that

coordination with other response agencies is critical to evacuate the disabled from multi-level buildings. In addition, the U.S. Department of Education (2007) stated responsibilities must be delegated within various levels of authority such as the fire department and emergency medical services for an effective evacuation to occur and evacuate the disabled population. All public safety officers discussed within the interview how their institution coordinated with other agencies to accomplish and evacuate the disabled student population properly and successfully during a fire evacuation.

Effective Use of Notification Devices and Planning Procedures

When students with disabilities evacuate a multi-level building during an emergency fire evacuation, public safety officials must have notification devices in place that alert the student that evacuation is necessary. The National Fire Protection Association (2007) expressed that bells, horns, speakers, text displays, and lights are all accessible occupant notification systems to alert the disabled to evacuate the multi-level building. In addition, public safety officers must have planning procedures to evacuate the disabled (FEMA, 2010). FEMA (2010) emphasized that individuals responsible for the planning process of the official plan must understand the evacuation procedures in their entirety. Davis and Mincin (2005) expressed the need for emergency response personnel to include the disabled with the design and implementation of the exercise.

Ease of Access and Points of Safety

Students with disabilities due to their impairments must have an exit strategy in place to accommodate the students' needs and accomplish the evacuation process (Bukowski, 2007). It is the responsibility of public safety officers to ensure students with disabilities have an exit strategy for a means of egress; and if a means is unmanageable,

then an area of refuge should be implemented within the building to allow the student to seek safety until further assistance can be provided to evacuate the building (Bukowski & Kuligowski, 2007). Bryant (2005) reiterates that horizontal and vertical access allow students with disabilities an alternate route to seek a means of egress and safely pursue a strategy to exit the building. However, if a means of egress is unmanageable, public safety officials must have an area of refuge indicated for the student to seek shelter. Bryant (2005) also states that an area of refuge is considered a possible strategy of vertical access. A Refuge Call System where students with disabilities can shelter and wait for further assistance to arrive at the scene demonstrates an example of vertical access, which public safety officers can request to be installed (Scholes, 2005).

Limitations of the Study

A limitation of this research study was that it included a small sample size. The researcher invited 11 public safety officers from various universities within the state of Arkansas, but only 3 of the 11 public safety officers participated in the research study. Therefore, due to the small sample size the findings of this research have very limited generalizability.

Further Research

This research illuminated the need for more public safety officers to become aware of the limitations that students with disabilities undergo when evacuating a building during an emergency. Therefore, one area of future research could include how to get public safety officers more involved in research that includes the disabled population. Also, future researchers could develop more elaborate Personal Emergency Egress Plans that accommodate the specific needs of the disabled student, as well as

initiate functional exercises on campus that include the disabled student population. In addition, due to the lack of equipment that each university has available to evacuate the disabled, another possible area of future research might include methods of funding disability accessible building projects that accommodate the needs of the disabled student population. Finally, another area for future research might include methods of universal training that synthesize how all public safety officers evacuate the disabled population.

Conclusion

The scope of this study examined the existing state of preparedness of the disabled population during fire evacuations at Arkansas' four-year universities as perceived by public safety officers. The research question was: *What is the state of preparedness for fire evacuations of the disabled at Arkansas' four-year universities?*

Future research should involve emergency response personnel's awareness of the potential risks and hazards associated with the disabled population during fire evacuations. In addition, Personal Emergency Egress Plans should be developed to accommodate the disabled and to include their involvement in exercises on campus. Acquisition of funding to obtain more accessible equipment and more standardized training to evacuate the disabled population on campus would clarify the gap within the existing state of preparedness and prepare both the student and public safety officers for a fire evacuation.

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Appendix A

Consent for Permission

Dear Scottish Government,

My name is Joshua Standridge and I am a graduate student at Arkansas Tech University located in the United States. This e-mail is in regards to your government document published on the web titled "PRACTICAL FIRE SAFETY GUIDANCE: THE EVACUATION OF DISABLED PERSONS FROM BUILDINGS" located at <http://www.scotland.gov.uk/Resource/0040/00402451.pdf>. I am writing a master's thesis in the field of Emergency Management and Homeland Security related to improving the accessibility of the disabled population to evacuate from multi-level campus buildings. Specifically within this document there is example templates of a PEEP plan that I would like to put as appendices in my thesis. Of course, I would give credit to your document if I have your permission to include these in my thesis. May I have your permission to include Record of Individual Personal Emergency Egress Plan, Personal Emergency Egress Plan Record Sheet Examples For Standard Plan and Evacuation Options in my thesis?

Thank you,

Joshua Standridge

Dear Joshua

Many thanks for your email below which has been passed to me for reply. As an organization, we do encourage the re-use of public sector information so, on that basis, I'm happy for you to use these pages as part of your thesis. All I would ask (and you've mentioned it yourself) is that you credit the original documents to the Scottish Government ©. May I take this opportunity to wish you luck and success with your thesis.

Kind regards,

Alison Ross

Appendix B

Record of Individual Personal Emergency Egress Plan

Scottish Government ©

Students Name:

Campus Location:

Alternative campus positions:

Reason why a PEEP is required:

Date plan created:

Plan created by:

[Indicate whether there are separate plans provided for this person for other locations or situations.]

Awareness of procedure

A copy of the evacuation procedure has been issued in the following format:

• Braille	• In large print
• Electronic format	• The escape routes have been pointed out
• On tape	
• It has been explained in BSL	

The method of alert in an emergency is by:

- The existing fire alarm system
- Pager
- Visual alarm system
- Members of the campus team (Each named person will require a copy of this sheet)
- The fire wardens on the floor (The fire wardens require a copy of this sheet)

Names _____

Getting out

Assistance is required from ____ people

Names_____

Backup_____

(Each of these people requires a copy of this sheet)

The following is a description of the egress plan

Specialist equipment to assist evacuation is:

- 1.
- 2
- 3.

Practice Dates

Practices should be every ____ months, dates should be put into diaries

Appendix C

Personal Emergency Egress Plan

Record Sheet Examples For Standard Plan

Scottish Government ©

Standard evacuation plan

Assistance from 1 person

Meet assistance in temporary waiting space

Circumstances: Sight is limited and/or orientation is difficult

Evacuation Procedure: The person you are visiting will take you to a temporary waiting space, which is within the escape stair at each level of the building. A member of our fire evacuation team will meet you there and assist you out of the building.

Features to assist the evacuation:

Fire Warden checks

Temporary waiting space

Standard evacuation plan

Carry down by three persons

Circumstances: Mobility impaired. Can walk along the flat but cannot manage stairs at all. Need to be carried down stairs.

Evacuation Procedure: Please make your way to the temporary waiting space, which is within the escape stair at each level of the building. Ring for assistance from the point situated within the temporary waiting space

Our staff are trained to carry down with the use of an office chair.

A team will meet you in the temporary waiting space. You will need to sit on the chair, which has armrests to help support you. The three staff members will then carry you down.

Equipment to assist the evacuation:

Office Chair

Appendix D

Evacuation Options

Scottish Government ©

- Option 1. Use of a lift
- Option 2. Meet assistance at temporary waiting space
- Option 3. Meet assistance at work location
- Option 4. Make own way down stairs slowly
- Option 5. Shuffle or slide down stairs after main flow of people
- Option 6. Use an evacuation chair or similar
- Option 7. Carry down – 2 persons
- Option 8. Carry down – 3 persons
- Option 9. Carry down – 4 persons
- Option 10. Travel down in own chair with support
- Option 11. Cannot transfer readily from wheelchair
- Option 12. Travel down stairs using handrails
- Option 13. Assistance from 1 person
- Option 14. Assistance from 2 people
- Option 15. Orientation information
- Option 16. Tactile map of the building
- Option 17. Color coding or contrasting on escape routes
- Option 18. Step edge markings
- Option 19. Needs to be shown the escape routes
- Option 20. Needs assistance for the person and their dog
- Option 21. Needs doors to be opened
- Option 22. Large print information
- Option 23. Identification of escape routes by reception or security staff
- Option 24. Flashing beacons
- Option 25. Buddy system

- Option 26. Vibrating pagers
- Option 27. Alternative communication system
- Option 28. Additional checks by fire wardens
- Option 29. Horizontal evacuation into another fire compartment
- Option 30. Phased evacuation
- Option 31. Taped information

Appendix E

Self-Created Interview Questions

1. What preparation does your institution have for assisting the disabled during an emergency fire evacuation from a multi-level campus building?
2. What resources are available within your institution to enhance the preparedness of the disabled population during an emergency fire evacuation from a multi-level campus building?
3. What information is included within your campus emergency operations plan that depicts how to evacuate the disabled during an emergency fire evacuation from a multi-level campus building?
4. What egress strategies are utilized within your institution to accommodate disabled students during an emergency fire evacuation from a multi-level campus building?

