A CASE STUDY OF A COMMUNITY COLLEGE'S BASIC FIREFIGHTER PROGRAM AND ITS CAPACITY TO MEET REGIONAL FIREFIGHTING REQUIREMENTS

A Dissertation
by
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Abstract

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The purpose of this study is to gain a better understanding of the firefighter training programs offered at a local community college and the capacity of these programs for meeting the needs of local stakeholders. The stakeholders that were considered include current students, graduates, local firefighting officials, and citizens who are currently served by this county's emergency services. A review of the current firefighter program components at this North Carolina community college will be used to determine whether changes should be made to better prepare firefighting candidates for professional departments within the local county. The study applies a case study research design using data derived from surveys, interviews, an analysis of the current curriculum, and regional emergency response data. Overall, this study illustrates an industry shift and a need to modify the current training program. Recommendation were made for these modifications consistent with study's results.

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Chapter One

Introduction

Since the beginning of America colonization in the 1600s, a new group of citizens joined together and offered services expected in a civilized society; thus, early in American history, roads, sea ports, and basic sanitation services were developed. These services continued to grow and expand as population increased. Local, state, and national government organizations grew and took on more responsibilities as the young nation grew. Eventually, services dedicated to public safety, such as police and firefighting, emerged. As America grew and industrialized, so did the need for a strong firefighting force. Firefighters protected not only government infrastructure but private citizens' lives and property. Since the establishment of these first fire companies, our nation's firefighters have continued to take on more and different duties deemed essential to protecting America from fire, hazardous materials, and medical emergencies.

Firefighters protected the nation's citizens from fire, smoke, and heat. In general, Americans have had a healthy fear of fire and have taken preventative precautions in their homes and businesses. Fighting fires is now a small fraction of the services provided by America's fire service. The fire service is responsible for emergency medical care, hazardous material incidents, technical rescues, and fire prevention. Though most citizens understand the importance of services provided by firefighters, it is likely that few everyday citizens dedicate much time to considering methods for training our firefighters. This chapter will provide a historic perspective for the advancement of America's fire protection services and provide a foundation for understanding the training needs for state and local government

agency employees. Furthermore, this chapter will provide the framework for an analysis of a local community college program charged with training firefighters.

Historic American Fires and Community Responses

Throughout American history, the country has experienced many tragic fires, and, in every scenario, firefighters have been on the frontline. It is important to understand these fires and their consequences, so tragedies can be prevented. Most Americans are familiar with the Great Chicago Fire of 1871 and the story concerning the ignition of the fire (Loyd & Richardson, 2014). The most popular and accepted story indicates that a cow, owned by a woman named Mrs. O'Leary, knocked over a lantern and ignited the blaze that killed over 300 citizens. Though most fire experts dismiss this local legend of the fire's origin due to several inaccuracies, the fire's impact was devastating. Experts believe the fire actually was started from a nearby forest fire which was burning north of the city. Regardless of the origin, the fact remains that fire is a constant threat to American society. The Great Chicago Fire of 1871 left 100,000 citizens homeless and, in addition, destroyed one-third of the city. Furthermore, 73 miles of road, 120 miles of sidewalk, and 17,500 buildings were destroyed in the blaze. With such destruction, not all was lost (Gess & Lutz, 2003). Firefighters saved thousands of citizens and did eventually halt the Great Chicago conflagration. This disaster led to the City of Chicago's first comprehensive fire code and the establishment of its first firefighter training program (Loyd & Richardson, 2014).

Later, in 1903, and also in Chicago, the Iroquois Theatre Fire, apart from terrorism, yielded the greatest loss of life in the United States, to date, with the deaths of 600 citizens (Klinoff, 2011). The Iroquois Theatre Fire highlighted the lack of firefighting equipment and fire codes for high occupancy assembly buildings. This event precipitated the beginning of an

evolution in American society. Americans began to understand that fire was a real threat, and the need for firefighters became paramount. As with the Great Chicago Fire, the fire service adapted. Fire equipment purchasing became a priority for the city, and fire codes began to address occupancy issues inside buildings. Additionally, communities began designing municipal water systems with fire protection needs as a cornerstone (Klinoff, 2011). These two devastating Chicago fires are the primary reason that every public building in the United States is inspected by fire officials and the number of civilians allowed in the structure is posted.

Introduction of Hazardous Materials and the Industrial Revolution

Though the Industrial Revolution brought economic prosperity to the United States, it was also the beginning of chemical manufacturing and iron production. According to Noll and Hildebrand (2014), in the mid to late 1800's, hazardous materials were becoming a concern in the United States. The byproducts of chemical and iron production were disposed of using dangerous methods such as dumping them in streams and lakes. While these products were used to contribute to increased production, most chemicals could only be used once before they had to be disposed. In the early 1900s large trucks, capable of moving these hazardous materials, began being used to haul away these dangerous byproducts using America's roadways.

As these hazardous materials began to be moved for disposal, firefighters were once again needed to ensure public safety; however, it was not until the mid-1970s that we saw the industry begin to change their handling methods. During this time, state boundary laws were repealed, and hazardous materials could be transferred across state lines at will. Firefighters once again adapted to the changing needs of the community and began training to new standards. The Superfund Amendments and Reauthorization Act of 1986 (SARA) brought

federal funding to fire service to provide firefighters and first responders with training (Noll & Hildebrand, 2014). This led to fire service training in hazardous material incident mitigation. Training included chemical identification, leak control, large evacuation procedures, and the use of advanced detection equipment. Firefighters are now considered the leading experts in this field.

New Training Focused on Post 9/11 Issues

On September 11, 2001, the United States of America was attacked by al-Qaeda terrorists. This attack was the largest terrorist attack on domestic soil, and 3,000 Americans lost their lives that day, including 343 firefighters (Ward, 2015). Terrorists flew commercial aircraft into New York City's World Trade Center towers causing them to erupt in fire and eventually collapse. The firefighters that heroically battled this attack were immediately applauded for their efforts. While most United States' citizens watched the events unfold on their televisions, they could not help but feel helpless and confused; firefighters from New York City and most of the northeastern United States fought the blaze and searched for survivors. This disaster forever changed the fire service and the public's perception of firefighters. After the attack, firefighters of all ranks and from all areas of the country have received extensive additional training in responding to terrorist attacks, including chemical, biological, and nuclear weapons of mass destruction (International Association of Fire Chiefs, 2010).

National Support for Firefighter and Community Paramedicine

With every great disaster in American society, firefighters answered the call and ultimately advanced their professional standards, which created a systemic change in training curriculum. Community paramedicine is no different. President Barack Obama's Affordable Care Act (ACA) included a new area of responsibility for America's firefighters. Beyond

providing emergency care, the ACA allowed fire fighters to begin rendering routine, in-home care (O'Connor, 2015). In some models, paramedics and firefighters provide treatment to citizens with chronic conditions. They may visit the elderly or handicapped for health screening or to ensure that they are following their medical provider's instructions. Other duties may include follow-up visits to recently discharged patients to prevent unnecessary hospital readmissions. In more developed models, community paramedicine may encompass well care, immunizations, vaccinations, substance abuse counseling and mental illnesses. Though many of the models are still developing, this idea clearly illustrates a need for continued firefighter certification training and an evaluation of curriculum on a regular basis.

21st Century Firefighter Standards, Training Programs, and Hiring Practices

Though the idea of training America's frontline firefighters may seem fundamental, the process involves a multitude of standards, guidelines, and educational programs. State agencies, local governments, national standards, and individual departmental hiring practices all impact how firefighters are ultimately trained for the job. This is a rather large undertaking, because America's fire service is comprised of 1,134,400 career, volunteer, and combination firefighters, housed and divided among the United States' estimated 29,980 fire departments (National Fire Protection Association, 2016). There are also different types of firefighters, which may require different types of training. Career firefighters are those who work for professional full-time agencies for a salary and benefits, while volunteer firefighters have other full-time jobs and answer fire and medical calls based on demand. Volunteers are typically used in cities and counties with less than 15,000 in population and have suffered an 11% decrease since mid-1980s (Brown & Urbina, 2014). Partially due to the erosion of the volunteer fire force in America, there is a new population of firefighter known as the

combination firefighter, a relatively new term used for the fastest growing population of firefighters, who are paid to supplement staffing for volunteer agencies. Volunteerism decreases are attributed to American's urbanization and overall longer worker hours make it difficult to dedicate time outside the family household. As of 2014, two-thirds of the U. S. population was protected by career fire departments and the remaining by volunteer or combination departments (Brown & Urbina, 2014). Clearly, the breakdown of individual fire departments and the means by which they are staffed can become cumbersome; however, regardless of the type of department, every firefighter must be trained.

Evolution of a Profession: A Response to Community Needs

To complicate training even more, over one million firefighters have seen their profession evolve on a multitude of fronts. In 1986, fire departments nationwide received approximately 11 million calls for service. Of those 11 million calls, 19% were fire-related and 54% were medical related (Luthern, 2014). By 2014, the most recent year available from the United States Fire Administration, departments received more than 23 million calls. Of these 23 million calls, 5% were fire-related and 64% were reported as medical emergencies (United States Fire Administration, 2016). Other calls include false alarms, good intent, public service, mutual aid, and hazardous materials. Thousands of departments reported medical call numbers that exceeded 75%, of their total calls, a number that had increased steadily since 1986 (United States Fire Administration, 2016). As the total number of calls continued to rise, the gap between the percentage of fire and medical calls became more apparent. Currently, medical emergencies comprise the largest category within the national records management systems.

These data indicate a dramatic increase in the need for medical services and a complete shift in the day to day emergencies handled by our nation's firefighters. Although medical calls are constantly increasing, national data indicate that as many as 34% of fire departments do not have formal medical training programs. Additionally, National Fire Service Needs Assessment (2016) revealed that 73% of all communities demonstrated a need for fire departments to perform emergency medical services at least in some capacity (National Fire Protection Association, 2016). In North Carolina, these trends have been addressed through hiring practices in most departments. According to Smith (2017), most career departments require entry level firefighters to obtain, at least, the North Carolina Emergency Medical Technician Basic (EMT-Basic) certification. A survey of 45 North Carolina fire departments found that 96% require EMT-Basic as a job requirement, and 69% require EMT-Basic as a prerequisite to employment (Smith, 2017).

An additional training issue is that smaller departments rely heavily on local community colleges to supplement the basic training and education they offer. These programs typically only focus on Firefighter I & II training, so medical certifications require enrollment in a separate program with additional coursework. Such an obvious increase in medical incidents is not the only reason medical training is critical, but firefighter injury rates also continue to rise (Ward, 2015). Firefighters must have the ability in an emergency incident to care for their own as well as citizens. Current emergency medical training required for most firefighter jobs is an additional 250 hours and often occurs after firefighter training is complete. One might argue medical training should be completed prior to firefighter training (North Carolina Office of Emergency Medical Services, 2017). This would add a layer of safety to a training process that is already somewhat dangerous. Though

comprehensive training is important to every community, the training standards do not yet adequately reflect the actual job.

There is little doubt firefighters play an extremely important role in our society, and we have seen their ability to adapt to changing community needs. The statistics shared previously illustrate that EMT-Basic and North Carolina Firefighter I and II are the minimum requirements for employment as a firefighter. However, while seems that firefighting and emergency medical services are inseparable, very few, if any, firefighter training programs offer a combined medical and firefighter course of study. Employers and communities alike need an avenue to effectively and efficiently train their firefighters. In North Carolina, most of this fire and medical training burden is placed on North Carolina Community College System. The fire service training methods must continue to adapt as it has with fire prevention, fire equipment, municipal water systems, hazardous materials training, domestic terrorism, and now community paramedicine.

National Firefighter Incidents and Training

In 1986, fire departments nationwide received approximately 11.9 million calls. Of those, 19% were fire-related, and 54% were medical related (Luthern, 2014). By 2014, the most recent year available from the United States Fire Administration, departments received more than 23 million calls, of which 5% were fire-related and 64% were reported as medical emergencies (United States Fire Administration, 2016). Other calls include false alarms, good intent, public service, mutual aid, and hazardous materials. Thousands of departments report medical call numbers that exceed 75%, and those numbers have continued to increase steadily since 1986. As the total number of calls continues to rise, the gap between the percentage of fire and medical calls becomes more apparent. Currently, medical emergencies

comprise the largest category within the national records management system (United States Fire Administration, 2016).

This data indicates a dramatic increase in medical services, and even a culture shift in the day to day emergencies answered by our nation's firefighters. Although medical calls are constantly increasing, national data indicates that there are as many as 34% of fire departments that do not have formal medical training programs (Federal Emergency Management Association 2015). Additionally, in 2016, the National Fire Service Needs Assessment revealed that 73% of all communities need fire departments to perform emergency medical services at least in some capacity (National Fire Protection Association, 2016). The need for a new type of firefighter is emerging across the nation. Fire fighters will need emergency medical training incorporated into current training programs.

Trends in North Carolina State Firefighter Calls and Training

North Carolina statistics show a similar widening gap in types of emergency calls. Data from the North Carolina Fire and Rescue Commission (1996) indicates that fire departments responded to around 223,904 incidents. Of these, only about 27% of the total response incidents were attributed to medical or Emergency Medical Service (EMS) calls. The most recent data indicate calls have increased sharply. In 2013, of the 754,531 total incident calls, about 63%. 59% of were rescue or EMS related (North Carolina Fire and Rescue Commission, 2014). As with national trends, the state has increased the total number of responses from fire departments and increased the disparity between medical and non-medical calls.

In North Carolina, the increased need for emergency medical services has been addressed in most hiring practices. Most career departments require entry level firefighters to

obtain, at minimum, a North Carolina Emergency Medical Technician Basic (EMT-Basic) certification as a condition of their employment. A 2017 survey of 45 western North Carolina fire departments found that 96% require EMT-Basic as a job requirement, and 69% require EMT-Basic as a prerequisite to employment (Smith, 2017). These statistics illustrate that EMT-Basic and North Carolina Firefighter I and II are the minimum requirements; however, there are currently no firefighter training programs that offer a combined medical and firefighter course though, as the data illustrates, the duties are inseparable and will likely continue. Employers and communities alike need an avenue to effectively and efficiently train their firefighters. Though, most of this burden is placed on North Carolina Community College System, making the need for a combined EMT-Basic and Firefighter I & II curriculum a necessity.

In North Carolina, smaller fire departments rely heavily on local community colleges to supplement training and education for employees. Medical certifications take additional training. Such an obvious increase in medical incidents is not the only reason medical training is critical as firefighter injury rates also continue to rise (Ward, 2015). Firefighters must have the ability in an emergency incident to care for their own as well as citizens in the community. Current emergency medical training required for most firefighter jobs is an additional 250 hours over the requirements of basic firefighter training. One might argue medical training should be completed prior to firefighter training (North Carolina Office of Emergency Medical Services, 2017) in order to increase safety during an already somewhat dangerous training. Though firefighting is important to every community, the training standards are yet to reflect the actual job.

Initially, EMT-Basic and Firefighter I & II training programs were only offered in North Carolina through the community college system. These policies were created in July 1989 when the North Carolina Legislature passed a bill that changed the makeup of the Fire Commission (North Carolina Department of Insurance, 2000). The NC Fire Commission became the North Carolina Fire and Rescue Commission, which duplicated responsibilities in the area of rescue that was previously held for fire officials only. The Department of Insurance began to serve as staff to the Commission. Today, the NC Fire Commission currently has a permanent staff of seven working on their projects. Since the passage of this legislation and changes to the Commission in 1989, firefighter certification programs were designated to be offered through the North Carolina community colleges. Now, however, training programs can be offered through each individual fire department as well.

In addition to providing funding for training, the policies that were created along with the North Carolina Fire and Rescue Commission mandated that firefighter training programs would base learning standards on the national recommendations from the National Fire Protection Association (NFPA). These standards are found in the NFPA 1500 training manual and are required by all training programs throughout the state (K. Gordon, personal communication, November 3, 2017). The standards cover a wide range of skills and learning criteria that must be met to obtain Firefighter I, Firefighter II, or Firefighter I/II certifications. Minimum age requirements and education requirements must also be met prior to certification. Although certification is guaranteed to any candidate who successfully meets each requirement and completes the training programs, this does not automatically assure employment. Continuing education is also required to maintain the North Carolina

certification. Also, it is important to note that EMT training is not part of the overall initiative.

Current Firefighter Training Methods

Firehouse-based training programs for firefighters in North Carolina have been proven to be relatively successful. Throughout the state, there have been few deaths in the line of duty caused by inadequate training. Overall, North Carolina only contributes to an average of 5. 5% firefighter deaths in the line of duty throughout nation (Federal Emergency Management Association, 2014). Of these deaths, none have been reported in Iredell county since 2009 (North Carolina Department of Insurance, 2017). In addition, a majority of deaths are due to heart-attack or overexertion while responding on emergencies or within twenty-four hours of responding (Federal Emergency Management Association, 2015). United States Fire Administration (2016) reports that the current training methods have not only contributed to low firefighter fatality rates, but the training is also credited with lower citizen deaths and injuries for fires. North Carolina accounts for an average of two deaths and nine injuries per 1,000 fires, as compared to the national average of two with three deaths and four injuries per 1,000 fires (United States Fire Administration, 2014).

In entry level firefighter programs, well-defined learning objectives and specific expected outcomes are provided by each state, but the methods for instruction within these training programs are not completely standardized throughout the nation. Traditionally, firefighters are instructed through a combination of coursework and manipulative or hands-on methods. Course instructors will also demonstrate and perform certain skills in the training environment, and then the firefighter trainee will replicate each skill until it is

mastered. This typical type of training has been conducted since the fire service industry recognized a need to provide career firefighters (Ward, 2010).

Iredell County Firefighter Calls and Training

At the local level, statistics uphold the previously described national and state trends with increases in the number of medical and EMS calls among fire departments in Iredell County. Of the reporting departments in 2005, 5510 calls were received by local fire departments, with about 23% being medical or EMS calls (North Carolina Fire and Rescue Commission, 2005). In the past ten years, both the total number of calls and incidents related to medical and EMS has increased dramatically. Incidents reported in Iredell County for 2014 indicate that there were 15,250 calls, of which 56% were medical or EMS related (North Carolina Fire and Rescue Commission, 2014). In order to meet the demands for firefighters, the county depends on the local community college to provide fire, medical, and rescue training for potential candidates. Training occurs in partnership with Mitchell Community College.

Mitchell Community College Firefighter Training Programs for Iredell Region

In 1988, North Carolina Community College System partnered with North Carolina Office of State Fire Marshal to begin providing certification training to fire departments. Later that year, Mitchell Community College, located in Iredell County, began conducting fire fighter training. During this time period, insurance companies began a nationwide movement for better fire protection with the goal of reducing property loss. Formalized training programs were a major component in achieving the goal. The North Carolina Office of State Fire Marshal is operated by North Carolina Department of Insurance. Ultimately,

these factors led to funds being approved by the state legislature to aid with certification training for the fire service (D. Bullins, personal communication, June 6, 2017).

In the late 1980s, 79% of North Carolina's geographical area was protected by volunteer fire departments (K. Green, personal communication, June 10, 2017). These departments were staffed with farmers, factory workers, and mill employees. When the alarm sounded in these typically rural communities, the volunteers responded to the call. The volunteers did very little training, however. In fact, most performed as little as twenty-four hours of training per year and rarely participated in an initial training program. As North Carolina's population grew, the need for better fire protection grew. Furthermore, the volunteer fire service began to dwindle. The factory and mill industry were decreasing within small communities. This left a void of firefighters that could respond during the day (K. Green, personal communication, June 10, 2017).

By the mid-1990s, 50% of North Carolina's geographical area was protected by strictly volunteers firefighters (T. Bradley, personal communication, June 2, 2017). Local governments began to hire part-time firefighters, and many departments transitioned from volunteer to professional departments. Obviously, those individuals who worked as volunteers were most qualified for the part-time and professional fire service jobs. This created a situation where volunteer firefighters living in rural areas had a better opportunity to get jobs as firefighters than those living in urban areas where no volunteer fire departments existed.

Statesville Fire Chief David Bullins and Mooresville Fire Chief Curt Deaton met with Mitchell Community College (MCC) in 2005. The fire chiefs explained their individual problems and how MCC could help their departments. They explained the problem was state-

wide, but Iredell County seemed to especially suffer. They wanted to partner with MCC to develop a program where all students had equal access to training opportunities. The result was a basic firefighter training academy offered at MCC. Previous MCC training programs had only been offered at rural volunteer fire departments. The program allows someone with no firefighting experience to take a six-month class and graduate with all the requirements to become a firefighter (MCC Advisory Committee Notes, 2005).

Research Purpose/ Problem

The purpose of this study is to gain a better understanding of the firefighter training programs offered at Mitchell Community College and their ability to meet the needs of local stakeholders. For this study, stakeholders are defined as current students, program graduates, local firefighting officials, and the citizens within the Mitchell Community College service area. A review of the current curriculum program at this North Carolina community college will be used to determine if improvements are necessary to better prepare firefighting candidates for professional departments within the local Iredell County. The questions that guide the research are as follows:

1. In what ways does Mitchell Community College fire fighter training program meet the needs indicated by local emergency response data and stakeholders?
2. What, if any, modifications should be made to the community college's firefighter training program based on (1) local response data, (2) analysis of firefighter training programs based on state and national standards, (3) survey responses from current students and graduates of the training programs, and (4) interviews with local firefighting personnel?

Methodology

This study will use a case study research design that has embedded quantitative aspects within a qualitative focus. Although there are many types of research designs, for this study, one type of data will clearly be supplemental to the other (Creswell, 2013). The study will occur in two distinct phases. During the initial phase, students who were previously enrolled and currently enrolled in firefighter training programs at Mitchell Community College will be identified. These students will be interviewed and questioned on their understanding of the program, current employment status, and their perceived knowledge gained during their time in Mitchell Community College Basic Firefighter Training Program. Interviewees will be selected based on their willingness to participate, and no limitations will be placed on the requirements, since there are very few potential students who enroll and complete these courses. These students will be asked to complete detailed surveys that focus on firefighter training and knowledge about hiring qualifications.

Phase two of the study will entail detailed interviews with key hiring officials in surrounding fire departments served by Mitchell Community College. This phase will take place over the summer of 2017 and the fall of 2017. Participants will be selected through convenience sampling, and no limitations will be placed on participants. In general, solicitation will be used to locate key local professionals that have formal knowledge about current training methods and current job responsibilities within career fire departments. Interviews will focus on issues related to training and hiring practices and qualifications. Human resources representatives as well as administrative personnel will be sought to participate.

Significance of the Study

There is a growing body of research that surrounds firefighter training (Baumann, Gohm, & Bonner, 2011; Bliss, Tidwell, & Guest 1997; Cha, Han, Lee, & Choi, 2012; Fisher, 2015; Moreno, Posado, Segura, Arbelaiz, & Garcia-Alonso, 2014; Roades, 2015). However, this research primarily focuses on the credibility of firefighters to meet local needs. While most of these studies indicate that simulation training and virtual reality training have marked advantages, such as increased safety, these training methods do not address the need for additional medical training that is required for the career.

Since there are so many delivery methods and ways to provide training for firefighters, it seems feasible that medical training should be included. Today's fire service has seen request for medical aid more than quadruple between 1980 and 2013, to more than 21 million incidents, according to the National Fire Prevention Association (McCheesney, 2015). This means for every residential or commercial building fire that a fire department responds to, it receives 44 medical calls, on average. Should firefighter training incorporate EMT-Basic training into a combined curriculum? This would be especially beneficial in North Carolina firefighting regions since most professional fire departments require EMT-Basic certifications in addition to Firefighter I & II training.

Unfortunately, there is limited empirical research to demonstrate how combined curriculum training programs influence hiring upon successful completion. In this study, I propose the introduction of both Fire Fighting I & II training along with EMT-Basic training to increase the effectiveness of our current program. The purpose of this research project is to examine the current firefighter training program at one community college in western North Carolina and determine whether the use of a combined curriculum could better meet

the needs of the local regions and promote better hiring qualifications for future career firefighters. My goal is to understand the perceived student, professional firefighter, and community need for a combined firefighter-EMT program; the strengths, weaknesses, and opportunities that a combined curriculum offers; and the possible issues involved with program change at the community college. I hope to provide a framework for developing a new program curriculum that would be able to effectively include both firefighter and emergency medicine certifications.

In order to accomplish my goal, it is important to review the current research in firefighting regarding training methods, understand how training has evolved, determine the perceived needs of the local firefighting community, and examine hiring qualifications. This study will aim to expand current research so that it includes better ways to deliver combined firefighter and EMT-Basic training courses for potential firefighters. The research will also attempt to determine whether current administrators and professionals in fire departments feel that firefighters are adequately prepared, and if not, what could be done in their perspectives to provide a curriculum that aligns more with what qualifications are needed in the field.

Framework: Bolman and Deal's Four Frame Model of Organization and Change

Often, organizations go through stagnate periods or have problematic issues that should be addressed. By using a lens to reframe an organization, those in leadership roles can analyze these aspects and begin to offer new solutions to solve problems. Consequently, reframing requires numerous strategies and the right perspective. These strategies are often difficult for most leaders and must involve analyzing the organization and the means by which it functions. Bolman and Deal (2017) present the idea that an effective leader must

have the ability to analyze a problem in more than one way. Both private industries and government agencies have difficulty creating change, although often the government has been viewed as continually problematic. The media has full access to almost every action that government agencies take through open public records, and this has led to a culture where society expects the government to fail.

Bolman and Deal (2017) provide a mechanism to allow even government agencies to elicit change. Through reframing, a mental model is used to understand and negotiate certain "territory." These frames make it easier for administrators and leaders to understand individual organizational problems and how to appropriately understand the specific context for change. Additionally, these frames help to determine what can be done to address the problems. The frames include lenses focused on organizational structure, human resources, politics, and symbolism. Reframing offers the idea that the analysis of organizational health can come quickly and become second nature. These frames can be used when reviewing firefighter training and how it relates to the profession by meeting the needs of the local community. Organizational change may be needed to ensure better alignment between the two entities, especially in cases where training occurs in a community college, as with Mitchell Community College and Iredell County. Therefore, it is anticipated that this study will provide data related to the needs of the local area and community college firefighter and EMT response to the needs.

Assumptions

The assumption is that this research will find that there is a need to include medical training for current firefighter training programs. In other words, all firefighters need to be EMT-B in order to be qualified for the job. It is also assumed that the students enrolled in

firefighter training at Mitchell Community College can provide insight into the effectiveness of the current program. Since the current program is of primary interest in this research, it is assumed that the information gathered will provide additional learning opportunities and help the researcher understand the current climate. This may include student knowledge gaps, curriculum issues, and inadequate methods not sufficient for training candidates.

Lastly, an additional assumption is that the lack of adequate communication among hiring agencies and training programs leads to ineffective training programs. In my experiences, agencies struggle to promote the use of combined firefighter and EMT-Basic training programs. Acknowledging that I work within a fire fighting training program, and as a professional firefighter, I recognize that there are many issues related to changing a curriculum. Of course, staffing and department budgets are a contributing factor to the challenges associated with any program change, as well as organizational support. One last assumption is that the organization will offer support for changes necessary to provide students with a better training curriculum.

Definition of Terms

The purpose of this study is to gain a better understanding of the current firefighter training programs, and how they align to best practices and hiring qualifications and requirements. For the purposes of this research, several variables will be defined as follows:

- Firefighter training: Firefighter training is the initial training for firefighters. This first level of training provides the student with the initial knowledge needed to serve as a firefighter.
- EMT-Basic training: EMT-Basic training is Emergency Medical Training Basic level. This is the minimum certification needed to serve as a firefighter in most career

departments. The basic level introduces skills such as CPR, diabetic emergency mitigation, and hemorrhage control.

- Career fire departments: Career departments are typically municipal agencies that employ firefighters. These departments have extensive hiring and training methods.
- Volunteer fire departments: Volunteer fire departments are agencies that use local community members as their fire fighting force. These members are trained by either local fire departments or the North Carolina Community College System. Individual rules and training levels are set by the individual fire department.
- Combination fire department: Combination fire departments are a mix of career and volunteer. Many have a paid fire chief that deals with day-to-day operations. Others supplement their volunteer staff with 24-hour employees. These departments are on the rise due to the decline of volunteerism.
- School director: School director is a position identified by North Carolina Office State Fire Marshal. This position is responsible for ensuring adherence to their rules for fire and rescue training. This includes testing procedures and practical evaluations.
- National Fire Protection Agency: NFPA is widely known as a national codes and standards organization. The agency's mission is to provide the fire service with information and knowledge needed for the job of firefighter. The more than 250 technical committees, comprised of approximately 9,000 volunteers, review public input and vote on the revisions in a process that is accredited by the American National Standards Institute. NFPA provides free online access to its codes and standards.

- Stakeholders: Stakeholders are defined as community/society members, local fire officials, programs graduates, and current students.

Summary

The importance of training our nation's firefighters cannot be overstated. Firefighters provide frontline protection every day in response to almost every emergency we can imagine. While firefighters were initially focused on mitigating fire hazards, non-fire related calls are now the predominant component of emergency responses. This has caused a shift in training needs for those entering the field. Unfortunately, many training programs have not adequately adapted to the needs of fire departments. Though this research focuses on a local service area, national and state trends must be considered. In addition, federal and state government provides oversight for both fire and medical training throughout North Carolina.

Locally, Mitchell Community College provides entry level training through standardized credentialing programs. Though the college currently meets national and state standards, whether the community college's programs are mostly meeting the needs of the county's firefighting employer's remains in question. North Carolina has an established history of provide fire training curriculum to the community colleges through the Office of State Fire Marshal. Through research we will seek to identify the ever-changing environment and develop new methods to adjust using organizational change theory.

Each year we see an evolution in the fire service, and the Mitchell Community College service area is no different. As clearly illustrated in regional data, a large percentage of emergencies are medical emergencies or a multitude of reasons, fire departments assist emergency medical services with responding to these incidents (United States Fire Administration, 2016). The primary reason lies with the fact that fire departments are

strategically located in communities all throughout the United States. In many areas, medical emergencies far exceed those of other incident types, mainly fires. Employers have recognized this trend and began to require both fire and medical training to work as a firefighter. Though this has become standard practice for the continued credentialing for employers, it has not always transcended to entry-level credentialing programs.

As with many professionals, entry-level positions require the needed credentials to begin a job. Hiring requirements, training methods, and credentialing will be analyzed to better understand the current state requirements and the extent to which those are embedded in Mitchell Community College's firefighter training program. Though it is known that a gap exists between training and hiring requirements, this study will determine if the gap is significant for Iredell County. Using the Bolman and Deal (2008) change model as a fluid framework, this study will seek to articulate the change needed and, more importantly, provide solutions moving forward. This overall goal will assist students and employers throughout the Mitchell Community College service area and serve as a model for North Carolina's fire service.

Chapter Two

Literature Review

Mitchell Community College (MCC) has long been an organization that supports the communities within Iredell County, North Carolina. Mitchell Community College was founded in 1852 as a Presbyterian female college. It did not become Mitchell Community College until 1972. Davidson College and Mitchell Community College were actually sister colleges. During its 150 years of operation, the college has shown a remarkable ability to meet challenges and adapt to changing times. It has been that ability that allowed MCC to survive when, so many similar contemporary institutions failed (Moose & Mitchell Community College, 2005). The reasons are simple, MCC's mission is to provide education to the citizens of Iredell County, and the college constantly evaluates programs for providing that education. This progressive thinking keeps the organization moving forward. (T. Brewer, personal communication, June 8, 2017).

In the same spirit as Mitchell's history, the college administration currently seeks to ensure every program is designed to meet the needs of the community. The fire service is no different. This chapter will provide standards and curriculum that addresses fire service training methods and explain the need for professional standards to address the MCC programs and provide insight with a change framework. The historical implications of reframing organizations will be used as a foundation and rationale for using an organizational framework for the program review. Next, this chapter will address how Bolman and Deal (2008) organizational theory can be implemented to examine the context of firefighter training and the issues surrounding hiring qualifications. Relevant research in firefighter training will be examined to gain additional insight into how other states and programs have

implemented training programs that meet firefighting demands and relative successes of each.

Professional Standards

The concept of a profession began to take shape in relation to the stratification of classes. Certain practices, skills, and knowledge were recognized by the upper-class as paramount for the successes of society. These practices focused on the monopoly of the provision of services, maintaining and sharing knowledge, continuing to be culturally and socially relevant, all while excluding "ineligible" individuals from the practice (Macdonald, 2013). Eventually, the advancement of modern society created an opportunity for these "professions" to assimilate and create organizations that could regulate conduct, explore opportunities, and set standards of quality for individuals in their respective fields. In America, the historical "progressive movement" during the early 1900s sought to address public discourse for many social, cultural, and economic factors. During this time many occupations sought "professional" status by trying to determine qualifications for professionals, identifying the profession's jurisdiction, establishing ways for obtaining a monopoly, and carrying out scientific programs to build a knowledge base for assessing professional expertise (Shah, 2006). Since the progressive movement, many careers and occupations have sought to gain national recognition and obtain "professional" status.

For any occupation standards of professionalism generally focus on recommendations for successful management. These guidelines are important because they aim to help all members or individuals within the organization meet designated goals. Although no profession is exactly like another, professional standards have similar characteristics. Many professional standards revolve around the following concepts:

- A profession involves a skill based on theoretical knowledge.
- The skill requires extensive and intensive training and education.
- The professional must demonstrate competence by passing a test and relevant evaluations.
- Integrity is maintained by adherence to a code of conduct.
- The professional service is licensed, sanctioned by the community, and indispensable for the public good.
- Professionals regularly contribute to professional development.
- Prestige is based on a guaranteed service and is widely recognized. (Kultgen, 1988)

As with any profession, utilizing performance management, accountability systems, and evaluations are necessary when trying to determine the overall success of the organization. Employees, supervisors, and the organization itself need to be periodically evaluated to validate internal and external performance standards. Often, professionally pertinent criteria are external to the concerns of the practitioners of the organization, but are used to assess the overall quality and work (Nielsen, 2013, p. 15). Any professional organization should consider mandating evaluation policies that require regular assessments to gather data for supervisors and auditors.

Historical overview of professional standards.

Professional standards and training for many career jobs have developed significantly throughout the past 100 years of U. S. history. Since the 1960s and 1970s numerous federal rules and guidelines have been developed to ensure professional standards, training, and evaluations. The Equal Employment and Opportunities Commission (EEOC), Title VII of the Civil Rights Act of 1964, and the Occupational Safety and Health Administration

(OSHA) have provided specific federal guidelines for public and private agencies that address equal opportunity employment, training, data gathering, evaluations, and even the development of organizational statements that ensure workers are physically able to complete job responsibilities. For example, EEOC guidelines related specifically to training and evaluation include

- Review, evaluate and control managerial and supervisory performance in such a manner as to insure a continuing affirmative application and vigorous enforcement of the policy of equal opportunity, and provide orientation, training and advice to managers and supervisors to assure their understanding and implementation of the equal employment opportunity policy and program.
- Establish a system for periodically evaluating the effectiveness of the agency's overall equal employment opportunity effort.
- Provide the maximum feasible opportunity for employees to enhance their skills through on-the-job training, work-study programs, and other training measures, so they may perform at their highest potential and advance in accordance with their abilities.
- Appraise its personnel operations at regular intervals to assure their conformity with its program (Code of Federal Regulations, Title 29 Part 1614).

Firefighters have begun moving towards professional standards since the Johnson Foundation put together a national ad hoc committee to review current practices in firefighting and make recommendations based on broader issues and technological advances that were taking place nationwide. The foundation's1966 committee looked at a previously published 1965 report by the Office of Civil Defense, titled "National Fire Coordination

Study, Phase I Report," that addressed particular deficiencies in fire service, management systems, and enhancing coordination of fire functions beyond the local level (Wingspread Conference Final Report, Foreword, 1966). The recommendations of the Johnson Committee included twelve statements that ranged from new demands being imposed on fire services, the public's perception of firefighting, communication between the public and fire services, professional standards and education, educational requirements, career development of fire executives, and the traditional concept of responsibility at the local level (Wingspread Conference Statements, 1966).

Like fire services, emergency service workers, such as EMS and Paramedics have also gone through a movement of professionalism. Prior to the 1960s, emergency medical services only took place during war time. During war times, volunteer and even some private industry systems started to take care of soldiers returning from war and their families. This eventually gave way to a patchwork of unregulated systems that provided outside medical specialization (Shah, 2006). In the United States little consideration had been given to any type of structured, professional, prehospital care. Beginning in the late 1950s public health began to receive significant interest. "By the late 1960s and early 1970s legislation, funding, development of research, education, environmental modifications, and advancing technology increased professional standards nationwide for EMS (Shah, 2006, p. 414)." A convergence of political and medical actions, such as the President's Commission on Highway Safety and the National Academy of Sciences, led to the Highway Safety Act of 1966. This act specifically provided federal involvement within EMS plans and led to further legislation and regulations that addressed research, training, staffing, and other professional standards (p.

417). Additional requirements were addressed in the EMS Systems Act of 1973, which regulated training and evaluations to provide grants for EMS agencies. These areas include

- (xiii) Provide for (I) periodic, comprehensive and independent review and evaluation of the extent and quality of emergency health care services provided in the system's service area.
- Submission to the Secretary of the reports of each such review and evaluation (EMS Systems Act of 1973, SEC. 1206, 1973).

Additionally, law enforcement agencies throughout the United States went through distinct periods of "professionalism," in which training standards, hiring qualifications, probationary periods, and performance evaluations were created and mandated for all levels of law enforcement throughout the nation. Beginning in the early 1900s, local law enforcement agencies in the "reform agenda of the professional movement" developed specific recommendations to improve policing practices, such as raising personnel standards and introducing principles of modern management, and to help define it as a profession (Walker & Katz, 2013). Within the principles of modern management, authority and responsibility for supervisors, as well as overall order of an operation, were necessary components that required the need for evaluations. "These evaluations would provide accountability for the responsibility supervisors had and allow for employees to understand policies and rules (Hill & McShane, 2008, p. 129)." The "reform agenda" achieved important successes towards establishing goals for modern policing and the idea of policing as a profession.

Firefighter Training Programs

Firefighter training has progressed through the past few decades. In United States, the fire service has a progressive history of taking on new roles and responsibilities in American society. The original intent of the firefighting profession was simply to prevent conflagrations in their respective neighborhoods; however, as society evolved, so did the types of hazards society faced. The Industrial Revolution brought large manufacturing machines, poor working conditions, and new advancements in technology. These advancements were primarily designed to generate profit for the owner; workers' safety was not a consideration. During this period, the firefighting profession began to include rescue services and extricating workers from machines that were often dangerous. Furthermore, firefighters often provided basic life support in the event of a mutilation or amputation (Ward, 2010). Formal training and credentialing did not come until much later.

In the 1970s, more chemicals and other hazardous materials began to be transported on America's roads. This created emergency situations on America's highways. Due to the fact that fire departments were already responding to vehicle emergencies, they were obviously the best positioned to handle hazardous materials incidents. Again, firefighters answered the call and began training personnel for their new roles. At this point, firefighters began to train, respond, and mitigate hazardous materials emergency in their communities (Klinoff, 2011). It became common practice and even a requirement, in most jurisdictions, for entry-level firefighters to obtain hazardous materials training prior to employment as a firefighter, as both Firefighter I & II curriculum.

In late 1990s and 2000s, firefighters were forced to enter the fight against terror. The most notable incident was 9/11; however, there were many other less memorable events

during the Clinton administration where the fire service was called to action. In each evolution of the service, there is at least a convenience reason why fire service was called to assist or begin mitigating new emergencies. In the case of terrorism, it was the fire service's understanding and constant use of the incident command system that put them on the forefront of domestic terrorism incidents. In fact, after September 11, 2001, President George W. Bush created the Federal Emergency Management Agency (FEMA) and immediately charged that agency with developing a National Incident Management System (NIMS). The National Fire Academy (NFA), a subset of FEMA, was ultimately charged with developing the system (United States Fire Administration, 2011). Today, as part of Firefighter I & II, all firefighters must be trained in NIMS prior to employment or credentialing.

Little research has been published related to medical or EMS training in the United States. This can be contributed to the wide variety of emergency medical response systems throughout the United States. Many states have private ambulance systems. These systems are often for profit or hospital operated (Poulin, 2003). In these states and jurisdictions, fire departments often respond as supplemental medics as communities' fire stations are more strategically located. In some jurisdictions, we see that the EMS is operated by the fire department. Those jurisdictions will employ a mix of paramedics and Basic-EMT's responding together, often on a fire truck and a standard advanced life support ambulance (Limmer, O'Keefe, & Bergeron, 2012). In North Carolina and throughout the south, most advanced life support services are operated by individual counties and rarely by for-profit organizations. Due to strategically positioned stations, North Carolina firefighters have been responding to medical emergencies since the mid-1980s. However, the EMT-Basic training has never been offered concurrently with firefighter training (Bullins, 2017).

In relation to incorporating medical training into existing firefighter training, research has indicated mixed results throughout different countries. In Australia, firefighters that participated in a required first-responder program felt that it was a positive addition to the current training; however, they felt that more practical experience was warranted and the reality of EMS services was not reflected accurately with training (Smith, Rich, Pinol, Hankin, & McNeil, 2001). In the United Kingdom, medical training is incorporated into about 65% of the fire brigades across the country, but the extent of training and skills varies widely (Quinn, Challen & Walter, 2009). With firefighters in the U. K. , training should be standardized since many calls relate to emergency care, but no national policy currently exists, so the amount of training that any firefighter has will be dependent on the department (Quinn, Challen & Walter, 2009).

Current Firefighter Training Methods

Many community college training programs experience an inability to adequately provide fire training programs to address medical certification needs. Today's fire service is more demanding than ever. Municipalities are requiring more services by departments with less staffing. Within the field, there has also been a multitude of advancements in information technology, performance measurements, and science that impacts the decision making, as well as the strategy and tactics during emergency incidents and responses (Rhoades, 2015). Though progress is good, the industry is often left trying to manage and provide all the needed training. Furthermore, change is difficult, and many departments still educate and train employees exactly as they did 30 or 40 years ago.

The firefighting profession is currently seeking to improve upon professional training opportunities. Though some departments continue to be resistant to new methods, others

have begun looking at alternative training methods and using techniques such as simulation training, virtual training, and debriefing. Many of these methods have been adapted from other industries such as health care, the United States military, and aviation (Boosman, Lamb, & Veroef, 2015). Each of these methods is designed to imitate real life scenarios or reflect on situations firefighters may have faced previously. The hope is that these methods will ultimately increase firefighters' ability to make appropriate decisions during emergency situations.

Traditional Training Methods

As long as there have been firefighters, there has been some type of training for them. Early firefighters were volunteers and were trained by community members. The training was primarily focused on psychomotor skills and was experienced based. As the fire service professionalized in the mid-1800s, training methods became more formal and were modeled after military training (Roades, 2015). These methods were relatively simple. Needed skills were established by individual departments and those skills were taught in a formal manner much like United States military training. Early traditional training methods primarily focused on physical psychomotor skills related to the use of the newly developed equipment; however, these methods have been adapted to include classroom instruction and intensive boot-camp style physical components. The Fire and Emergency Services Higher Education (FESHE), as part of the U.S. Fire Administration, and the National Fire Protection Association provide educational models and recommended guidelines for training. Topics range from leadership techniques to hazardous material training. Generally, after the classroom work has been completed, firefighters are provided with skills training where they

develop a practical knowledge of the equipment and physical aspects of the job (Finger, 2016).

Simulation Training Methods

With today's technology, simulation training can be realistic and applicable. The use of firefighter simulation training has been on the rise in the last ten years. The effectiveness of these simulations has mixed reviews. Most of these simulations began as computer desktop type scenarios. The pitfall of this type of training is vast. The job is stressful, and decisions are made during emergency situations. Baumann, Gohm, and Bonner (2011) assert that if students learn the scenario, they can predict what will happen in that one scenario, but learners cannot predict what will happen in situations that look a little different. However, if the students learn general principles, then they can predict what is going to happen in a wide range of situations. This assumes different levels of training from the learner. With this type of training, it is important to increase the range of scenarios that the firefighters are exposed to, so firefighters can reduce the amount of stress they may ultimately encounter on the job. Desktop-based simulators are available to supplement live-fire training with a variety of scenarios to enable trainees to learn basic principles, even though such simulators cannot replicate a live-fire environment. Regardless, the more stress firefighters are exposed to regularly, the higher risk of associated health problems. For firefighters specifically, the stress has been linked to increased risk of alcohol abuse, cardiovascular disease, and posttraumatic stress disorder (Baumann, Gohm, & Bonner, 2011).

Other simulation software in firefighting focuses on different aspects of the job. For example, one such simulator offers different scenarios concerning fire spread. If the learner introduces more oxygen, the fire gets bigger. This type of simulation software demonstrates

the difference in fire spread and growth. With situations such as forest fires, the software can introduce different types of topography, and the learner must discern firefighting strategy based on the different landscapes. The advantage with this type of software is that it does bring together situations and tactics which is important to the learning process (Moreno, Posado, Segura, Arbelaiz, & Garcia-Alonso, 2014).

Simulation training research is used and is effective in both fire and medical training. Emergency medical simulation technology provides a realistic learning environment whereby the emergency medical technicians can perform real scenario-based training (McGaghie, 2010). Emergency medical care instructors can use simulation-based learning to reduce errors and improve patient safety when the simulation is designed and delivered appropriately. Patient and student safety is heightened because all procedures are completed on a full-size, life-like computer mannequin, and not upon human subjects (Bradley, 2006). These mannequins are fully functional through integration with computer programs that allow student-to-mannequin interaction. The student and the instructors are active participants throughout the learning experience. Some of the advanced mannequins can actually speak in order to verbalize complaints and have the capability to generate heart rates, blood pressures, and other vital signs. This is all managed through an instructor who controls the parameters of the scenario with a computer program that alters the course of the patient's condition based upon the actions of the medical team. Through the use of simulation, the students can reinforce old tasks and simultaneously build on these experiences to perform more complex tasks. This form of education promotes problem-based learning (Hunt, Nelson, & Shikofski, 2006). Although the use of this technology has expanded greatly in

recent years, more research needs to be conducted as evidence of the benefits of this technology is limited (Bradley, 2006).

Fire training also uses extensive simulations to conduct training. Like with emergency medicine, firefighting simulations allow the student and teacher to operate in a safe environment. Many departments employ some form of performance-based certification utilizing simulations to certify company officers and battalion chiefs. Likewise, incident simulations are commonly used to test new officers for promotions. Simulations are built using computer programs or "table top" style scenarios. For entry-level credentialing, firefighters are asked to use a multitude of simulation-style training methods (Nee, 2016). These methods range from simple to advanced. A simple simulation may place a victim on the third floor of an apartment complex and request the entry level firefighters remove the victim using the instructor's predetermined methods. An advanced simulation may include removing multiple victims from the third floor of an apartment complex that is filled with smoke. These are sometimes conducted with computer programs, but they are often conducted using an acquired apartment complex or training center (Nee, 2016). Again, these simulations allow the student and teacher to operate in a safe environment while replicating an emergency.

Virtual Reality Training Methods

Though computer-based simulation training has many uses, virtual reality training is viewed as a better alternative. Virtual reality has the advantage of projecting realistic spatial environments. One such virtual reality training focuses on teaching firefighters to navigate the interior of buildings and different topography of forest fires. Firefighters often operate in unfamiliar buildings filled with smoke. These buildings are often inaccessible before an

actual fire; therefore, training cannot be done in real life. Virtual reality recreates the inaccessible environments and provides the learner with the actual landscape to navigate (Bliss, Tidwell, & Guest 1997). Again, this method comes with pitfalls. Though the learner can get simulated environments with actual floorplans, virtual reality cannot accurately simulate smoke-filled environments and stressful life or death situations. An additional issue has been conducting these training sessions in real time, since there is no possible way to determine how long it takes to fill a building full of smoke in real life scenarios.

A study by Cha, Han, Lee, & Choi (2012) attempted to deal with this issue of fire spread time. Fire spread rate depends on materials on fire, integrated interior suppression system, available oxygen, and overall building construction. Smoke and heat conditions also impede a firefighter from navigating inside a structure. The all-inclusive term is called fire dynamics. The experiment used data from different types of buildings to inject fire dynamics into virtual reality software programed with computational fluid dynamics (CFD) to better determine spread rates (Cha, Han, Lee, & Choi, 2012). The fire CFD data helped to further improve the effects of the fire training and provide useful knowledge to the inexperienced users, but this was an expensive alternative to develop and properly display and would be cost prohibitive for many fire departments and community colleges.

Live Fire Training Methods

Live fire training methods originated from military operations. Early on in American history, the military began conducting live training drills on a regular basis for all branches of the armed forces. Depending on the service and its responsibilities, live training ranged from live weapons firing to extensive multi-day scenarios. The purpose for this type of training was an attempt to replicate scenarios that soldiers may encounter in the field. These

replications include weather, terrain, housing situations, and most importantly the stressful environment. The fire service field is no different. Live fire training methods include setting and then combating fires in different environments and replicating conditions (Ward, 2015). Like with military training, mirroring stress is important to ensuring the firefighter can perform during an emergency incident.

There are clear disadvantages of live fire training. Most importantly, live fire training is extremely dangerous and has yielded several deaths. In order to conduct this type of training, acquired structures, vehicles, or land are set on fire, and firefighters are charged with putting out the fire. The National Fire Protection Agency (NFPA) 1403 is a standard that guides procedures for conducting live fire training (International Association of Fire Chiefs, 2010). As with most firefighter standards, this standard was developed in response to the deaths of two firefighters who were killed in a training accident in 1982. The death was happened due to live fire instructors using old tires as fuel and failing to ensure proper personal protective gear was being worn (Ward, 2015). A committee was formed, and NFPA 1403 standards were developed to establish safe practices for live-fire training evolutions. The first edition was of NFPA 1403 was issued in 1986. The standards were then updated in 1992, and again in 2002, and the most recent edition was released in 2007. The latest version has revisions pertaining to requirements for live-fire training structures, exterior props, and Class B fires (National Fire Protection Agency, [NFPA], 2015).

Finger (2016) further discusses the most recent live burn standards and issues related to the training methods. New standards have more clearly defined vague requirements in previous version of the NFPA 1403, such as having EMS on site and making adequate preparations. It was documented that 100% of the firefighters that had participated in live

burns were dehydrated prior to the training, so ensuring that the structure and the firefighters were fully prepared for the training is imperative. Finger (2016) also noted that there is a lengthy protocol in securing, preparing, and conducting a live fire training session, so fire departments need to be aware of the intricacies of how to correctly have a compliant live burn.

Additionally, Smith, Petruzzello, Chludzinski, Reed & Woods (2001) focused on physical and psychological effects of live fire training. This research determined that there was considerable cardiovascular strain on firefighters immediately following these training sessions and perceived psychological impacts, such as exertion, thermal sensations, and respiratory distress, all increased (Smith, Petruzzello, Chludzinski, Reed & Woods, 2001). A similar study attempted to explain the impact of live fire training on different types of firefighters. Petruzzello, Poh, Greenlee, Goldstein, Horn, and Smith (2016) researched live-fire training and the impact on both career and volunteer firefighters. Since about 70% of firefighters that protect communities are volunteer, it is important to understand the differences in training effectiveness on volunteer versus career firefighters. Results from the study indicated that career firefighters had lower physical and psychological effects compared with volunteer firefighters (Petruzzello, Poh, Greenlee, Goldstein, Horn, and Smith, 2016).

Mitchell Community College Firefighter Training Methods

Mitchell Community College was one of the first community colleges to offer an entry-level fire program that incorporated all the skills needed to become a firefighter in Iredell County's two career fire departments. MCC's first Basic Firefighter Training class was offered in spring 2007. One year of planning and hiring adjunct instructors prepared

MCC for its first ever firefighter career development program. The program was a success. Each student did well, graduated credentialed, and ready to work. Within two years, many of those students had found employment as career firefighters. During that time period, Statesville and Mooresville Fire Departments required a certification called North Carolina Emergency Medical Responder. The course was 80 hours and was offered concurrently with Basic Firefighter Training program (D. Bullins, personal communications, June 6, 2017)

Unfortunately, North Carolina Office Emergency Medical Services stated that it planned to eliminate this certification in 2009. Statesville and Mooresville Fire were forced to adjust their hiring standards and begin to offer Emergency Medical Technician Basic level (EMT-Basic). This certification is 200 hours, and at the time college officials felt the academic rigor of EMT-Basic training and physical demands of Basic Firefighter Training were too much to offer in one semester. In addition, the change occurred so quickly that MCC staff did not have time to adjust. They made the decision to remove medical training from Basic Firefighter Training and give students priority admission into the next semester's EMT-Basic training program. Obviously, this created a situation where students must stay at MCC longer to obtain a credential. Almost instantly, a credentialing program that could be obtained in one semester was converted to a two-semester program.

MCC clearly follows the guidelines set forth by the North Carolina Office of Emergency Medical Services (NCOEMS) and the North Carolina Office of the State Fire Marshal (NCOSFM) but they also strive to assist students with credentialing. Traditional, simulation, virtual reality, and live fire methods are used in both medical and fire training. MCC has some of the state's best firefighting instructors and a myriad of the newest training tools such as simulation software, fire equipment, and facilities. This allows the school to

prepare firefighters to enter the profession with the skills needed to keep them safe in emergency incidents. In addition, MCC has invested heavily in emergency medical training tools. Recently, simulation and virtual reality tools have been added. MCC offers EMT-Basic, EMT-Intermediate, EMT-Paramedic, and an advanced associate degree that incorporates EMT-P (Bullins, 2017). These programs continue to improve, but an examination of the credentialing process is necessary.

Clearly, firefighter training is a complex issue. When considering the need for firefighters to spend more time on medical and EMS-related calls, training programs should incorporate more ways to receive the necessary certifications for the job requirements. In smaller areas, such as Iredell County in North Carolina, the majority of this training occurs through the local community college. It is important for college administrators and coordinators to understand the unique needs of the students enrolled in these programs to help them become successful firefighters in the field. Local departments need the ability to train their current and future firefighters with all the certifications necessary to secure employment. Currently, these are the courses offered in Basic Firefighter Training and EMT-Basic.

Credentialing in Fire Training Programs

Along with the type of firefighter training methods an organization may choose to employ, comes the credentialing of the individuals that work in the field. Since departments use a variety of different training programs, many departments also push for employees to obtain certifications via third-party agencies, such as Pro Board, the Commission for Professional Credentialing, and the International Fire Service Accreditation Congress (Vinci, 2016). While these credentialing associations are not affiliated with any fire training

program, individuals who choose to pursue them are much more likely to be considered as a qualified candidate and are more likely to become employed within a professional fire department.

Firefighters began moving towards including professional standards and credentialing for additional hiring qualifications since the Johnson Foundation put together a national ad hoc committee to review current practices in firefighting and make recommendations based on broader issues and technological advances that were taking place nationwide. This 1966 committee looked at a previous 1965 published report by the Office of Civil Defense, titled "National Fire Coordination Study, Phase I Report," that addressed particular deficiencies in fire service, management systems, and enhancing coordination of fire functions beyond the local level (Wingspread Conference Final Report, Foreword, 1966). The recommendations of the Johnson Committee included twelve statements that ranged from new demands being imposed on fire services, the public's perception of firefighting, communication between the public and fire services, professional standards and education, educational requirements, career development of fire executives, and the traditional concept of responsibility at the local level (Wingspread Conference Statements, 1966).

Currently, there are several credentialing expectations that a service member should complete include the following:

- Firefighter I and II
- Emergency Medical Technician
- Technical Rescuer
- Hazardous Materials Technician
- Fire Instructor I and II

- Fire Officer I and II
- Driver Operator:
- Emergency Vehicle Driver
- Rapid Intervention Team
- National Incident Management System

Although, firefighter training programs often do not include these credentialing components, a need for them certainly exists. Each of these elements provides value to every community. In addition, the credentials are nationally recognized by the National Fire Academy (NFA), and International Fire Services Accreditation Congress (IFSAC). While some employers may train their firefighters to these standards, others depend on programs such as state fire academies and community college programs.

In order to assess the current curriculum training program, having a clear framework can provide insight into possible changes that should occur. Lee Bolman and Terrance Deal (2008) suggest four organizational frames through which to observe and direct complex organizations: Structural, Human Resource, Political, and Symbolic. These frames provide leaders the framework to create meaningful change (Bolman & Deal, 2008). Bolman and Deal's framework will be used as a lens to guide needed research into current training programs and methodologies within North Carolina's Fire Service.

Classical Organizational Change Literature

As extensively described in Chapter 1, the fire service is rich in tradition which often impedes change. While the American fire service takes on more duties and the service progresses, the initial training and training standards must change. National, state, and local standards also drive training at all levels and can create a stagnant situation. John Kotter

(1996) is known for his 8-step change model which is often used by private and public organizations. Kotter's model is among one example of change strategies that may help fire service training models progress.

Change is among the most difficult but necessary task any leader will undertake. Kotter (1996) points out that change only occurs when leaders are working hard. Organizational change requires planning carefully and building the proper foundation. If you are too impatient, and if you expect too many results too soon, your plans for change are more likely to fail. Create a sense of urgency, recruit powerful change leaders, build a vision and effectively communicate it, remove obstacles, create quick wins, and build on your momentum. Kotter believes you can help make the change part of your organizational culture.

While the Kotter model offers a comprehensive step-by-step guide, Heiftiz and Linsky (2002) challenge leaders to evaluate the situation before making change. Before change can occur leaders must ask, "What is really going on here?" This requires leaders to "get off the dance floor and take a look from the balcony." The authors explain that self-reflection is one of the most important and difficult actions required to elicit change. Humans inherently have an animalistic herd mentality. It is much easier to move with others, even if they are taking us in the wrong direction. In context, fire service is much like a herd, or at least a family. Firefighting crews work 24-hour shifts, sleep in the fire station together, and share meals every shift. Further, groups can easily suppress ideas or marginalize others to advance their own agenda (Heiftez & Linsky, p51-75, 2002).

While the "balcony" metaphor may seem simplistic, it points to an important process. All too often managers assume they know the issues in their organizations and are unwilling

to admit a different vantage point is necessary. “Moving to the balcony,” so to speak, allows leaders the ability to see who is dancing, what is their skill level, how comfortable they are with the task, and how often the dancers are hitting the dance floor. In addition, other important questions are answered, such as

- What patterns emerge?
- Who is participating?
- Who is capable?
- What behaviors emerge?
- What challenges emerge and are they technical or adaptive?

While Hiefez and Linsky provide a model for organizational change for all leaders, they have a special bond with the fire service. Their book “Leadership on the Line” has been used as a teaching tool at the National Fire Academy since 2007. Through the National Fire Academy Executive Fire Officer Program (EFOP), academy leaders learned that firefighters have a difficult time transitioning from “buddy to boss.” They are accustomed to the camaraderie and brotherhood found in station life which makes it difficult for them to view themselves or others as leaders once promoted (Clark, 2015). The EFOP program is an elite program designed to teach experienced fire service leaders new organizational management skills. These leaders are often Fire Chiefs or training coordinators with responsibilities for leading large numbers of firefighters. Clark (2015) explained it is important for fire service leaders to look beyond traditional fire service text and study models for change. These types of change models will help fire service leaders navigate local, state, and national level problems and begin to instill progressive thinking.

Historical Implications of Reframing Organizations

Organization has been a part of human culture since prehistoric times. Competition and cooperation were early aspects of how humans began to organize into groups. Early humans had to cooperate with one another in order to gather food, build shelter, and protect their children. Once their physiological needs were met, early humans gathered for social time including religion, games, art, and music (Hatch, 2013). Here we also begin to understand the importance of competition. Competition may seem counterproductive, but it is, in fact, necessary. Early competition began by competing with the environment, including animals. Prehistoric humans had to compete with the environment to ensure they harvested their food and killed their prey before other animals or rival human tribes did. In addition to competition, cooperation is equally as important. We see this with the most basic of species. Ants form colonies and bees build hives for the purpose of the greater good (Hatch, 2010). On this basic level, these species cooperate with each other simply for survival, but many organizations are fighting for survival also.

There is little organizational theory research documented prior to the European and United States industrial age. Consequently, the Industrial Revolution brought about two groups seeking information. First, executives and consultants wanted to know best practices to enhance their productivity. Secondly, sociologists and economists became interested in organizations within industrialized nations. These ideas extended to public sector organizations and their respective bureaucracies. As consultants, executives, and academics became more knowledgeable, solutions to problems began to present themselves. During this 1900-1950s era, authors and researchers such as Taylor, Fayol, Weber, and Barnard presented ideas that changed the practices of organizations (Hatch, 2013). This time period is

known as prehistory, and served as the foundation for further inquiry. Bolman and Deal (2008) use these perspectives to provide a historical foundation for each of their frames

In 1950s, biologist Ludwig von Bertalanffy suggest a theoretical merging of all the sciences called general systems theory. Bertalanffy's idea was based on his work observing that societies contain groups, groups contained individuals, individuals are comprised of organs, organs of cells, cells of molecules, molecules of atoms, and so forth. Biologists are often trained to only study one of these at a time. For example, you may have a social biologist or a molecular biologist, but not one that studies all of the systems as a whole. Bertalanffy began thinking of these as a holistic system and pointed others in that direction as well (Hatch, 2013). The notion of an open system is simply the idea that organisms and populations of organisms exist in a continuous cycle within their environment. Thus, open systems are living systems that are in a constant state of internal transformation, output, and feedback. The term open is meant to illustrate the relationship between the environment and the internal function of the system. This idea places environment and system in a constant state of interaction, continuously striving to sustain itself (Morgan, 2006). In summary, a living organism, social group, and organization is a fully open system.

A later developing perspective, the symbolic-interpretive researcher defined symbols as anything that represents a conscious or an unconscious association with some wider, usually more abstract, concept or meaning (Hatch, 1993). The symbolic perspective became prevalent in the 1980s and is constructed using multiple interpretations by subjects of knowledge. Here we begin to understand that organizations have rituals, activities, and symbols that produce specific outcomes within organizations. Symbolic organizational theorists analyze organizational culture through assumptions, values, artifacts, and practices.

Using this perspective, truth or reality is socially constructed by multiple interpretations and frames (Hatch, 2010).

In the 1990s, the post-modern era began. One of the first post-modern theories to challenge previous thought was proposed by Stewart Clegg. Clegg (1990) suggested that today's organizational structures cause members to create dependence on elite members of the hierarchy who then gain the necessary power to define the organizational realities (Clegg, 1990). According to Clegg, the best way to alleviate this issue is through dedifferentiation, which is in essence, the opposite of integration. Clegg recommends that organizations need to integrate activities by allowing people to self-manage and coordinate their own activities (Hatch, 2013). Although this suggestion seems counterproductive, it can be seen throughout workgroups and specialized task-committees in today's workforce. These types of self-regulated groups are given a broad goal or task and allowed autonomous management.

Though Bolman and Deal (2008) borrow from all perspectives, their four-frame model is primarily a systems theory of addressing organizations. They want leaders of organizations to look at issues through all four frames which include the following: structural, human resources, political, and symbolic. Each of these has specific functions and places within every organization. Their hope is that fully understanding these problems will lead to solutions for organizational issues and promote effectiveness.

Reframing Organizations

Reframing organizations or even individual programs within organizations requires numerous strategies. These strategies are difficult for most leaders and must involve analyzing the organization and the means by which it functions. Bolman and Deal (2008) present the idea that an effective leader must have the ability to analyze a problem in more

than one way. Private industry and government both struggle to create change; however, the government is the most polarizing. The media has full access to almost every action the government takes through open records, and this has led to a culture where society expects the government to fail. These issues have created the consultant industry, which has claimed to have the answers for businesses, schools, military services, hospitals, and any government function that exists.

Consultants often provide little direction or long-term solutions. For example, the United States has been trying to reform public schools for decades with little success. In every election cycle, we see a new president with a new educational philosophy, but mainly the system has been left unchanged. Bolman and Deal (2008) contribute this to compartmentalizing problems. Sure, student test scores might be an issue, but poor teaching is not the only issue that may directly or indirectly influence student test scores. Student learning is a complexity of compounding problems that can include a wide range of issues, from unidentified learning disabilities to something as simplistic as the student's parents not having the financial means to provide the student with breakfast, which may create an inability to focus. Similar issues arise within firefighting. The complex organizational structure and needs are so varying that the system is often left unchanged; however, the demands on the organization evolve, even if the organization does not.

Bolman and Deal (2008) illustrate that change is possible, and it begins with reframing. They define a frame as a mental model used to understand and negotiate certain "territory" (p. 58). Obviously, organizations do not come with step-by-step blueprints, so frames make it easier to understand problems. Even more importantly, these frames help to determine what can be done to modify the organization and solve organizational issues.

Reframing offers the idea that through using the four-frame model, solutions to known and unknown issues can become apparent, and organizations can remain effective.

Structural Frame

Bolman and Deal (2008) define the structural frame as one that focuses on the architecture of organization which includes management processes, division of labor, coordinating mechanisms, feedback loops, rules and roles, goals and policies. Each of these shapes decisions and actions, but they are ingrained in the culture and skeleton of every organization (Bolman and Deal, 2008). Consider trying to change a single employee's work responsibilities and the issues that may cause. This seems like it should be a simple change, but now the employee feels he or she has done something wrong, or the manager who the organization has pulled the employee away from feels a certain way about the move. Many other changes also accompany the initial change, such as the creation of a new organizational chart, division of labor methods, and likely the output of the employee.

Structural frames can be the most difficult to change, and many of the changes are well documented. After the tragedy of September 11th, President George W. Bush ordered all agencies responsible for the safety of the domestic United States to merge into a new agency that would become the Department of Homeland Security. This idea meant the Federal Emergency Management Agency (FEMA) would report to Department of Homeland Security. These agencies' differing missions caused problems that took years to correct. FEMA was the agency that handled domestic disasters such as hurricanes, tornadoes, and earthquakes while the new Department of Homeland Security was mainly focused on domestic terrorism. This new system made perfect sense to political leaders, but not so much for the employees and even leaders inside the agency (Bolman & Deal, 2008). Not only did

the merger cause internal problems within the new Department, but FEMA's effectiveness was eventually tested during Hurricane Katrina. FEMA's handling of the aftermath of Hurricane Katrina was a well-documented disaster that led to real-life tragedies for American citizens.

The creation of the United States Department of Homeland Security is an example of complexity growth. Organizations add layers in an attempt to become more intelligent, and though this is often a positive step, leaders must realize that continued coordination and strategy is important for the overall success. Rules, policies, and commands have to be supplemented by lateral strategies. Bolman and Deal (2008) provide six assumptions organizations should use in analyzing the organization's structure:

- "Organizations exist to achieve established goals and objectives.
- Organizations increase efficiency and enhance performance through specialization and appropriate division of labor.
- Suitable forms of coordination and control ensure that diverse efforts of individuals and units mesh.
- Organizations work best when rationality prevails over personal agendas and extraneous pressures.
- Structures must be designed to fit an organization's current circumstances.
- Problems arise and performance suffers from structural deficiencies, which can be remedied through analysis and restructuring" (Bolman & Deal, 2008).

The structural frame encourages organizations to place the right people in the right positions. This places an importance on designing positions, roles, and responsibilities. Suitably designed, formal agreements and job descriptions can create unity between

organizational goals and individual differences (Bolman & Deal, 2008). Successful organizations must continue to evaluate their formal and informal structure. Next, the Human Resources frames will be reviewed, which focuses on motivating people.

Human Resources

Bolman and Deal's human resource framework helps an institution align individual and organizational needs, improves human resource management, and promotes positive labor management relations, including perceptions, attitudes, motivation, participation, training, respect for diversity, and job satisfaction, among others (Bolman & Deal, 2008). The term "human resources" is as it sounds. Humans are as important to organizations as organizations are to people. One of the first main contributions to human relations theory came from psychology. Abraham Maslow developed a theory of motivation that included a hierarchy of needs. These needs are progressive and include physiological, security, social, ego, and self-actualizing (Marion & Gonzales, 2014). The foundational aspects of the theory suggest that as humans personally develop, they move from basic needs such as physiological or security, through to social needs. Emergency services work is often a job where people seek job satisfaction and social acceptance; however, proper training is necessary before the employee will feel secure and accepted.

The theory that Bolman and Deal adapted suggested that human motivation was not increased by rewards, but instead different needs. This idea has very powerful implications for bureaucratic organizations who only seek to provide motivation through money or job security, because those aspects only apply to lower level needs (Morgan, 2006). Management theorists soon recognized that companies needed to be redesigned to create conditions that could contribute to personal growth, which was a higher-level need.

Maslow's theory suggested that there were multiple ways that employees would increase their involvement and commitment, and these ways did not necessarily require additional monies. Job enrichment, along with a more participative, employee-centered style of leadership, could create conditions that would increase productivity (Morgan, 2006).

Organizational theory is entrenched in the idea of organizational needs, and the largest resource of any organization is its human capital. Since the modern era perspective, we have a clear and obvious understanding that employees perform their best work when they are motivated by the task they perform. Motivation in this context is defined by the organization's ability to satisfy the employee's personal needs. This idea seems obvious; however, prior to the modern perspective, researchers such as Fredrick Taylor believed people worked because they needed to, and their satisfaction was not a consideration. His worked focused on completing every task in the most efficient manner possible (Morgan, 2006). Essentially, he viewed human capital as one equal component of completing a task.

Though Taylor's work provided a foundation for organizational theory, the Hawthorne studies were the catalyst for change. Elton Mayo led the effort to understand worker productivity through analyzing worker conditions and incidences of fatigue and boredom (Morgan, 2006). Mayo began by looking at issues like workspace lighting and the number and lengths of breaks throughout their shifts. This work quickly shifted to worker satisfaction and the importance of motivating workers (Landsberg, 1958). Mayo realized people need emotional components like acceptance and appreciation. Mayo provided powerful support for the idea that there can be methods of managing organizations that are human capital centered but within the context of strong leadership (McAuley, Duberley, & Johnson, 2007). Firefighters often are self-motivated and rewarded by the impact they are

able to provide to their community; however, they do need the tools to do their jobs. In addition, they cannot be seen as a simple workforce where human capital and task completion are on equal ground as Fredrick Taylor suggests. Firefighters' training and, ultimately, their abilities become the actual product.

Following earlier theorists that fused psychology and management, Karl Weick looked at treating organizations as a cognitive process. He suggested that members of an organization were part of cognitive maps that make up a socially-constructed reality. Organizations are products of a collective search for meaning by which experience is ordered, and the ordering occurs through the enactment of beliefs about what is real. He proposed that sense-making is not about discovering the "truth" but creating an experience in ways that produce understanding (Hatch, 2013). The social aspects of the theory demonstrate a shift in paradigm perspective that includes shared meaning-making, thus recognizing that individuals influence organizations. In today's environment, cognitive maps impact organizations by providing an explanation for behavior that rational perspectives cannot, such as the bandwagon effect.

While organizational behavior and human capital studies are extensive in private industry, they are rare in emergency services. Bolman and Deal suggest preparing workers and giving them the tools they need to succeed will ultimately create successful workforce. Training today's emergency responders in both medical and fire fighter skills will give them the confidence they need to succeed in an ever-changing environment. New firefighters are entering a world they are often unprepared to perform in and current fire fighters are seeing the world change quickly around them. Providing a combined curriculum will prepare them to mitigate emergencies for their communities and their organizations.

Political Frame

Bolman and Deal's political frame considers the difficult progression of making decisions and allocating resources using finite resources, differing perspectives, and divergent interests (Bolman & Deal, 2008). This political frame is not the politics that we typically think about, such as elected officials, although politicians in government bureaucracies are often affected by elected leaders' decisions. Instead, Bolman and Deal (2008) use the political frame to explain methods to deal with power and conflict, build coalitions, improve political skills, and deal with both internal and external influences that impact all organizations.

Politics is particularly important today. Currently, politics plays a powerful role in American society. Powerful political influences have brought about a decrease in funding, as well as a reduction in resources, for many organizations including schools, colleges, and universities. Organizations are comprised of personality types and operational styles. Stakeholders' consensus around how to achieve organizational improvements, or whether improvement is even necessary, remains an ongoing discussion. In North Carolina, state funded community colleges are required by law to report to boards, and many have other funding such as endowment funds. Funding mechanisms are not the only reason stakeholders oppose change. Often, underlying problems exist, and they may be difficult to predict. Though it may seem fundamental, the process of redesigning traditional curriculum or courses brings together several stakeholders, yet each may have different reasons for opposing the curriculum (Lyons, Nadershahi, Nattestad, Kachalia, & Hammer, 2014). Redesigning firefighter curriculum will also be difficult due to the number of stakeholders

involved. Leaders must work to understand the opposition and work towards a compromise in order to be successful.

Politics exists in every organization including family, government, business, non-profits, and education. The methods used to navigate political systems within an organization depend upon the "-cracy" suffix which means nature of power. The suffix is paired with a prefix or root that specifies the precise nature of the power of rule being applied. Organizations that are autocratic, bureaucratic, or technocratic have as much political significance as those dominated by systems of worker control. Their political nature is simply of a different kind, drawing on different kind, drawing on different principles of legitimacy. Codetermine organizations share power between employer and employee. Politics are essential for existence in codetermine organizations (Morgan, 2006).

In most organizations, these concepts exist in layers though a manufacturing setting may see more autocracy while a government worker may experience more bureaucracy. Morgan (2006) defines the different "-cracies" as:

- Autocracy is defined as absolute government where power is held by an individual or small group supported by control or critical resources, property ownership rights, tradition, charisma, and other claims to personal privilege. Essentially, the powerful dictate "this is how we will do it."
- Bureaucracy is defined as power through written rule which provides the basis for a rational-legal type of authority, or "rule of law." The power player in these situations state: "this is how we are supposed to do it."

- Technocracy is exercised through use of knowledge, expert power, and the ability to solve relevant problems. These leaders rely on others needing them and often state: "it's best to do it this way."
- Codetermination is the form of rule where opposing parties combine in the joint management of mutual interests, as in coalition government or corporatism, each party drawing on a specific power base. Codetermination asked the question: "how shall we do it?" (p. 10).

Bolman and Deal work through these "-cracies" in the form of power and authority. They explain that at every level alliances begin to form and interests align. For any group or person to accomplish a goal, the group or person must have power. Power can be viewed and explained through multiple lenses. In structural frame, power is explained as authority or often called legitimate power. Basically, there is one person or one group that can actually make a decision. The human resources frame encourages employee empowerment versus power. In the political frame, authority is only one such form of power. First, individual needs are important but often are conflicted with other individual's needs when resources become scarce. Here we see individuals or individual groups competing for those resources, and this creates a conflict. Second, political position are often both authorities and partisan. This is the relationship between two antagonists, and we think about this as what we see in American politics. Here the power lies with the group or person in control; however, the ones in control often have to convince other group members their idea is the right direction. Finally, we see conflict in political frame as a positive. There are never enough resources to give all parties everything they want, so groups or individuals must compete for power and

resources (Bolman & Deal, 2008). A leader must understand the importance of the power structures and not just in the political lens but in all four frameworks.

Internal and external politics occur in every organization. No matter whether internal or external, political arenas and agents within those arenas exist in every organization. Effective managers must understand political agents will have their own agendas, resources, and strategies. Each arena will have competition and internal politics. These competitors will have different interests and goals. Rules of individual organizations will ultimately govern how these competitors accomplish their goals. This perspective provides us the understanding that almost every occurrence within an organization is political in nature (Bolman & Deal, 2008).

Symbolic Frame

Bolman and Deal (2008) offers the following definitions of the term symbolic: "something that stands for or suggests something else; it conveys socially constructed means beyond its intrinsic or obvious functional use" (P. 157). Symbols are a part of everyday life, and when people identify with a specific symbol, it gives them energy and stimulates creativity. Symbols lurking in everyone's brain are often like a slideshow of information and correlations. For example, fall leaves may remind some people of Halloween or jumping in a pile of leaves their grandfather raked for them as children. Those moments represent happiness and maybe a time they want to relive with their own children. At sporting events, we usually hear the National Anthem, eliciting certain reactions that causes the slideshow in our brain to fire rapidly. We may think of a parent in the military, or our first baseball game, or our own patriotism (Bolman & Deal, 2008). For fire service, the image of the firefighters standing on the pile of rubble holding an American flag after September 11th is very symbolic

to all Americans, but especially firefighters. Firefighters feel a sense of pride, honor, and brotherhood when they see that image. These symbols are most relevant to a person in times of victory, pride, and even grief.

The symbolic frame seeks to focus understanding on the meaning of symbols and the rationale that makes symbols so influential. These concepts are not part of organizational charts, human resources policies, or rigid structures. Symbolic frame engages in the understanding of human culture, organizational meaning within that culture, and the means by which organizations use specific symbols as a path to success (Bolman & Deal, 2008). Simply put, symbols are deep-rooted in the human psyche and pull thoughts from a person's subconscious.

Bolman and Deal (2008) relied heavily on a diverse multitude of disciplines, including prominent organizational theory and sociology. Pulling diverse disciplines together to create new ideas is not a new concept. Symbols have long been a way to understand psychology and sociology. Psychiatrists Carl Jung and Sigmund Freud analyzed symbols as a path to probe the human unconscious. Anthropologists have long used sociology, human psychology, and symbolism to understand past human cultures. The symbolic frame pulls these disciplines together to create the following five beliefs:

- "What is most important is not what happens but what it means.
- Activity and meaning are loosely coupled; events and actions have multiple interpretations as people experience life differently.
- Facing uncertainty and ambiguity, people create and actions have multiple interpretations as people experience life differently.

- Events and processes are often more important for what is expressed than for what is produced. Their emblematic form weaves a tapestry of secular myths, heroes and heroines, rituals, ceremonies, and stories to help people find purpose and passion.
- Culture forms the superglue that bonds an organization, unites people, and helps an enterprise accomplish desired ends" (Bolman & Deal, 2008).

Almost every organization has a symbol, and that symbol becomes entrenched in the organization's culture. Think about the Geico Company's gecko, Target's bull's-eye, or Budweiser's Clydesdales. Though McDonald's and Ray Kroc are known inside the business community for their sophisticated and rigid systems, they are known throughout the world by their large "M" signs, known as golden arches. These symbols take different meanings inside and outside organizations and are highlighted by looking at myths, vision, and values (Bolman & Deal, 2008).

Myths, especially those containing motivating and positive beginnings, provide the organization's culture with a certain pride and even an expectation for performance. These myths provide support to an organization's values. Values are those important qualities and commitments for which an organization stands. This must be more than information transcribed on a mission statement. It is important for every manager to understand what the real values are and look past the actual written values. Values provide a sense of identity and make all employees prideful about their job. Finally, vision provides organizations with a glimpse of the future. Every member of the organization should be able to visualize a better organization once certain benchmarks are accomplished (Bolman & Deal, 2008).

Myths, values and visions may seem like simplistic concepts when given the simple definition; however, applying and understanding these concepts become much more difficult when applying them to organizations. It is often necessary for organizations to use metaphors. Metaphors simplify complicated issues into comprehensible images, and that encourages employees' attitudes and actions. Organizational theorists such as Gareth Morgan (2006) offer specific metaphors designed to help organization's synthesis problems. Furthermore, he explains organizations that do not use metaphors become bogged down by the rationalization that a needed change could not possibly work for their organization. These concepts are important for successful and struggling organizations. Though it may not seem necessary for successful organizations, Morgan (2006) points out several organizations that chose not to look at metaphors, myths, and visions, and they were simply unable to adapt to change. These examples are best seen with companies such as Sears and Kodak. Obviously, the inability to change breeds failure in this fast-paced world.

Other organizational theorists that recognized symbolic perspectives included Etienne Wenger and Jean Lave (1998, P. 61). Wenger and Lave proposed the concept of communities of practices in organizations. A community of practices is defined as a self-designing and self-managing group that forms when people collectively develop ideas, knowledge, and practices as they learn together (Hatch, 2013). These communities can cross hierarchical and unit boundaries and are often a result of spontaneous response to a particular need or interest. An organization's social structure can support multiple communities of practice, so individuals can move freely between them while sharing knowledge.

From a managerial perspective, understanding how to use communities of practice and supporting the connections are highly effective when innovating. Many companies and

organizations use these strategies to develop new ways of thinking (Bolman & Deal, 2013). It is easy to understand how firefighters fit into a community, but they may be missing an opportunity to train and integrate with medical and law enforcement communities which could ultimately provide better service. Unfortunately, when companies try to institutionalize communities of practice, it may undermine the efforts by creating responsibility and setting expectations that are not aligned with the true purpose of the group. Leaders that understand symbols and symbolic frame can use it as a strategy to shape a more cohesive and productive organization (Bolman & Deal, 2008).

Critique of the Theory as a Framework for Understanding and Analyzing a Firefighting Curriculum and its Ability to Meet Local Needs

Bolman and Deal (2008) provide a symbolic systems theory framework that uses a four-frame model that has evolved since their original book in 1984 titled *Approaches to Understanding and Managing Organizations*. That first book transitioned to *Reframing Organizations* and is now in its fifth edition. Though this is a proven model, it is not without flaws or critiques. Even Bolman and Deal recognize these frames may not work for every leader but explain that today's leaders must have the ability to analyze the organization as a whole and understand individual problems within the organization. Those leaders that choose not to use the frames must understand a multi-view approach is necessary.

Others inside academia have used the four-frame model and found a few critiques. While analyzing librarians' places within a faculty and/or staff cast system, Fleming-May and Douglas (2014) found that not all four frames were useful. This article found that changing the ancient hierarchy of university system would be too difficult for the librarians themselves to negotiate and equally as difficult for administrators; therefore, the structure

frame is not helpful in this situation. However, the article does explain the other three frames are useful. The authors suggest librarians should focus on political frame, and symbolic factors, such as obtaining doctoral degrees, management of tensions, building support for acquisition of institutional resources, and teaching research-oriented sources (Fleming-May & Douglas, 2014).

Though Bolman and Deal's (2008) four-frame model has largely stood the test of time, it's important for another to continue to examine theoretical models. Mary Jo Hatch (2013), for example, spends an entire book explaining and synthesizing organizational theory in modern, symbolic, and post-modern perspectives. In her final chapter, however, she highlights improvements and future ideas in organizational theory. She lays out new ideas such as organizational learning, knowledge management, organizational aesthetics, and hermeneutics, she wishes to examine. These are concepts and ideas she feels have a real chance at changing organizational theory and moving past post-modern concepts. Bolman and Deal must certainly begin to look at the next phase of ever-changing organizational theory.

Summary

Above, Bolman and Deal's structural, human resource, political, and symbolic frames were presented and supported as lenses through which to examine a firefighting program and offer possibilities for improvement. Using these lenses, as both an internal view on the organization and a tool by which to navigate change, will help leaders better understand challenges and opportunities. Intentionally anticipating, considering, and strategically addressing stakeholder needs in each of these frames will support more efficient and

powerful change. Curriculum reform is difficult especially when it involves multiple agencies, as does our fire training curriculum merger.

The Chicago Fire Department, arguably one of the most famous fire departments in the world, is also home to one of the most famous fire service sayings: "200 years of history unimpeded by progress" (Neville & Salka, 2004). This is not only a slang saying and popular watercooler joke, but the city has banners hanging in several fire stations across Chicago stating the motto. It is not my assertion that all fire service organizations correlate to Chicago Fire, but it is one example of difficulties to change. Furthermore, it does indicate the fire service culture can be slow to change and even has a tendency to celebrate its historic stature. The American Fire Service is one of the oldest government institutions in the country, and they display their pride in resistance to change.

Though change may be difficult, Bolman and Deal offer four-frames to assist organizations and institutions with this difficult task. Their model, clearly designed for individual organizations, has the elasticity to provide directions for change for entire North Carolina fire service. In North Carolina, and more specifically, in Iredell County, the change will be challenging, and all four frames will be needed. Of the four frames, the political frame will be among the most difficult. Though the North Carolina Community College System has the ability to inhibit change, the System will also need to promote the change politically. It will still be problematic for the system to allow change, and Mitchell Community College be able to move forward with new initiatives in firefighter training. Currently, merging emergency medical training and firefighter training will be much easier with buy-in from North Carolina Office of State Fire Marshal and North Carolina Office of Emergency Medical Service. Both of these agencies answer to different members of North

Carolina Council of State, elected positions, and each has governing boards that are appointed. While the political frame may be easiest to synthesize, each of these frames offers perspective that will promote not only a needed curriculum change, but also a cultural change that could follow.

Chapter Three

Methodology

This study will focus on firefighter training programs currently offered through Mitchell Community College in Iredell County, determine community firefighter training credentialing needs, and examine ways in which the community college's firefighter training programs might provide more current training for meeting the community's response needs. Case study methodology will be used to conduct this study.

Case Study Methodology

Case study methodology is the first type of qualitative research that academia employed (Stake, 1995). This methodology is referenced in many scholarly articles and books we use for research. Disciplines, including psychology, history, education, and biology, use case study methodology as a foundation in scholarly research and teaching. While case study methodology is usually viewed as an approach within qualitative research, it may also incorporate a combination of qualitative and quantitative data sources to accomplish its purpose (Starman, 2013). There are several situations that prompt researchers to consider case study (Baxter & Jack, 2008), and one such situation is found in this project. Stake (1995) describes a case study as an examination strategy in which the researcher seeks in depth knowledge of a program, event, or activity. Here the researcher seeks to analyze contextual conditions because they are relevant to the training issues in a credentialing program. In other words, does a current community college firefighter credentialing program meet the community's response needs and the expressed needs of the region's fire chiefs who lead in and staff these departments?

A case study is not simply analyzing one issue or phenomenon but looking at a complex problem through different lenses while still valuing the researcher's view. While this study used a variety of data sources and a change framework, the researcher's experience and knowledge also played a role (Baxter & Jack, 2008). To get a sense of this complex problem, the researcher must understand the totality of historic and modern fire service response to community emergency situations, the changing nature of training methods, emergency medical training practices, hiring practices, and recent changes in each of these components. This knowledge would be difficult to understand without extensive background in the field and specific data defining adequate community needs.

When conducting a study of a particular program, it is important to consider an appropriate methodology for the study. Although there are various alternatives for a researcher, the use of a case study promises to be most beneficial. A case study involves real-life, contemporary contexts and settings within a bounded system (Creswell, 2013). The community college's current firefighting program will serve as the primary unit of analysis. The researcher will be able to provide a detailed, in-depth collection of data involving multiple sources, which will ultimately lead to a deeply detailed case description and analysis upon the conclusion of the research (Creswell, 2013).

An important first step to a case study is for the researcher to be able to identify the specific case, as well as the bounded parameters (Creswell, 2013). The purpose of this study is to conduct a program analysis for the firefighter training program at Mitchell Community College during an academic year in the context of the local service needs identified during the same period. Case studies must also identify the intent of the research, dependent on the unique case, unusual interest, or understanding of a specific issue or problem (Creswell,

2013). In this research, the issue of interest to the researcher is the effectiveness of the current firefighter training program due to the changing needs for credentialing firefighters for regions of North Carolina. Through an analysis of multiple sources of data, common themes will emerge for further analysis. Ultimately, this research promises to provide a description of the case and present assertions derived from the data analysis.

Lastly, a case study should be driven by a framework that acts as a guide for further inquiry into the analysis (Creswell, 2013). In this case, the research is focusing specifically on an analysis of one community college's firefighting credentialing programs. The overall organizational structure of the college has a large impact on the way that the current program is administered and will have an effect on any future changes. Therefore, reviewing a framework that incorporates aspects of organizational structure would be beneficial to the study. In addition, the program exists within a specific community and focuses on meeting the credentialing needs of firefighters in the region. The framework for reviewing the program extends outward into the local firefighting region and community.

Research Purpose and Questions

The purpose of this study is to gain a better understanding of the firefighter training programs offered at Mitchell Community College and the capacity of these programs for meeting the needs of local stakeholders. Stakeholders refers to current students, graduates, local firefighting officials, and citizens currently served by Iredell County emergency services. A review of the current firefighter program components at this North Carolina community college will be used to determine if changes should be made to better prepare firefighting candidates for professional departments within the local Iredell County. The questions that guide the research are as follows:

1. In what ways does the local community college fire fighter program meet the needs indicated by local emergency response data and stakeholders?
2. What, if any, modifications should be made to the community college's firefighter program based on (1) local response data, (2) analysis of firefighter programs based on state and national standards, (3) survey responses from current students and graduates of the programs, and (4) interviews with local firefighting personnel?

Research Design

This study employed case study research design. In this type of research design, one type of data is complementary to the other as the aim is to provide a thick description of the case. The initial part of the study entailed an analysis of local firefighter response data generated through Iredell County's records management system. These data were analyzed to reveal purposes for 911 calls relayed to district firefighting units, including fire, medical emergencies, and human rescue, among other requests.

The second aspect of the study included an analysis of current program components using state and national standards including those available from the North Carolina Community College System, North Carolina Office of State Fire Marshall, and National Fire Protection Agency. The protocol for this examination was based on the primary components of each set of standards. Data was generated for each component of each set of standards. Also, included in this analysis were recent accreditation reports generated by the community college in response to its accreditation protocols.

The third part of the study involved current students and those who were previously enrolled in firefighter training programs at Mitchell Community. Comprehensive participant lists were generated by the college's Office of Institutional Research and Grants (OIRG).

Each current and past student was contacted through email, provided with a brief explanation of the study and with a request to participate. The researcher also works within the training program, so additional solicitation was used through prior students whom the researcher knew. Ultimately, survey participants were determined by their willingness to participate in completing the online survey. The study produced 70 participants from the 101 students contacted, for a 71% response rate.

The fourth part of the study entailed detailed interviews with fire chiefs from the Mitchell service area, including those from paid and volunteer organizations. An invitational letter was provided for each chief followed by an invitational phone call. Participants were interviewed at a place convenient to them. Initial interviews lasted approximately one hour. Follow-up interviews for the purposes of clarification of information lasted up to 20 minutes and took place by phone.

Data Sources

Data for this research included surveys, interviews, curriculum documents, state and national standard reviews, local response data, and documents associated with current hiring practices. Each of these components was essential to the case study. Curriculum documents and standards reviews were among the most basic data sources and were important to understanding the historic nature of the problem and, as well, to understanding the methods effectively employed to create change to the Basic Firefighter Training Program. This case included a thorough review of program offerings based on state and national firefighting standards and local program reviews.

Current and graduated students were surveyed to determine an understanding of their basic knowledge of their own credentialing process and, for those who are employed, to seek

their understandings of gaps in their training. The development of the questions was deliberate and targeted. In addition to student surveys, semi-structured interviews were conducted with local fire chiefs and human resource directors. The goal was to understand the nature of current hiring processes and, more importantly, to understand in what ways Mitchell Community College's current program met the needs of the individual firefighting agencies. Mitchell is a one-county service area community college within the North Carolina Community College System; therefore, it was essential to know whether the college's programs met the needs of the community it served.

Design Rationale

This study sought to answer two major questions and the design centered on a firefighter credentialing program evaluation. In addition, this design provided a pathway for complex change using the Bolman and Deal's (2008) organizational framework model. This model included the structural, human resources, political, and symbolic frames that were applied to the programs. Emergent themes led to a case description and the framework led to further understanding of the impact of these themes on the change process (Bolman & Deal, 2008; Creswell, 2013).

Though change is never easy and often more difficult than expected, Bolman and Deal's four frames, as outlined in Chapter 2, offered a conceptual pathway to assist with this difficult task. Their model, clearly designed for individual organizations, had the elasticity to provide a framework that could influence other community college regions of the state. In any organization, enacting change is challenging, and all four frames provide needed guidance. Of the four frames, the political frame had the potential to be among the most useful in understanding how to effect chance. Though the North Carolina Community

College System had the ability to engage in change, it was noted that the college administration would need to understand how to promote change on a political level as a means of enhancing the safety of local communities. Merging emergency medical training and firefighter training should be much easier for community college programs to enact with buy-in from North Carolina Office of State Fire Marshal and North Carolina Office of Emergency Medical Service. Both of these agencies answer to different members of North Carolina Council of State, elected positions, and each has appointed governing boards. Through the use of the Bolman and Deal change model, multiple pathways could be created and charted if the public safety was kept at the forefront of the process.

Surveys and Data Collection Protocols

Surveys were administered to students who were currently or had previously been enrolled in the fire training program at Mitchell Community College. The participants were chosen through purposeful sampling techniques, with no limitations, since the number of possible participants was limited. Prior to the administration of the survey, each participant was informed, through an invitation to participate in the study. Also, a copy of the informed consent letter outlining the purpose of the study and the process for completion of the survey was provided. Additionally, participants were informed that they could expect anonymity as the identities of survey participants would not be traceable and surveys are designed primarily to produce quantifiable, non-personalized data.

Each survey included questions that primarily generated scaled data followed by a limited number of open-ended questions seeking student and graduate perspectives on areas where they felt well trained and areas where they would have liked more substantive training. Invitations to participate, consent letters and surveys were distributed by email. The intended

goal for the survey was to gain perspective on how much the participating students understood about firefighter training and the fire services industry before coming into the program, expectations for employment after completing the program, and an assessment of the usefulness of various aspects of the training programs. The questions and prompts for current and graduated students were based on the following questions:

1. Explain how your training system prepared you for the job of firefighter.
2. Explain how your training prepared you for the local hiring processes.
3. In what ways did your basic fire training program certificate meet the minimum qualifications for hiring?
4. In what ways did the college articulated an entry level firefighter career path effectively?
5. What components of the program did you find to be most effective in your training?
6. Are there aspects of your training program that you wish had been enhanced or areas where you did not receive training but wish you had?

Interviews and Data Collection Protocols

Semi-structured interviews occurred with participants who served the local firefighting departments. Interviews targeted four service administrators who worked in different local fire departments and were representative of officers in the field. These individuals embodied specific insight into service needs, hiring practices and qualifications within their departments. Since the researcher worked within the filed, purposeful selection methods were used to enlist participants. All potential participants received letters of invitation through postal mail and invitational phone calls followed. After the interview participants were selected, a printed interview consent form was provided to each for a signature. Interviews were conducted in a location of their choice.

Participants, in this case, were asked a series of questions designed to ascertain their perception of the current basic fire training program. In addition, questions surrounding hiring rates and candidate preparation were also asked (Creswell, 2013). During the initial interviews, the researcher explained the purpose of the study and how the process would work. General questions were based on basic information about the participants, their perspectives on local firefighting response needs, their experiences in the firefighting profession, and their perspectives on qualified candidates. Ultimately, each fire chief was asked a series of questions designed to gauge need, preparedness, and overall program effectiveness. While the same questions were asked of all four participants, the firefighter officials were allowed to elaborate and draw on their personal experiences (Seidman, 2013).

The interviews were guided by the questions below. Interviews were audio recorded and later transcribed for further analysis and coding. The initial fire official interviews lasted approximately one hour. Since interviews focus primarily on the firefighter credentialing program, there was minimal risk to participants, some of whom were local service employees while others were employed by firefighter corporations. The guiding questions were as follows:

- What are your credentials for the firefighting profession, what types of positions have you had, and how many years have you been in firefighting?
- How would you describe the local response needs in your area?
- What have been your experience(s) in hiring firefighters for the profession?
- What qualifications exist for decisions to hire in your department?
- Do you feel that basic firefighter training is sufficient for entry level firefighting positions within your department?

- Do you feel candidates who graduate from firefighter training programs are adequately prepared for the requirements of the employer?
- Are there additional requirements or qualifications you feel that incoming candidates should possess?
- What aspects of the community college's basic firefighter training program do you find to be important for firefighters in your department?
- Are there any specific firefighting or response knowledge areas you would like for the community college's programs to address that are not currently addressed?

Interviewees were told that follow-up questions or interviews might be necessary, the interviewer gained needed responses during the first interviews. Data and responses from the initial interviews were audio recorded and transcribed.

Role of Researcher

When using and qualitative methods such as case study, it is important for the researcher to acknowledge his or her role and experience associated with the research topic. The researcher should, as well, reflect on the implications of these personal experiences on conducting the research and engaging in analysis of findings (Creswell, 2013). Thus, the researcher should reflect on personal experiences and position himself in the study while understanding that he may bring personal biases about the questions he seeks to answer. His awareness of personal bias is important to the success of the study. In this case, I am a firefighter in the community where the study was conducted.

This study was conducted at Mitchell Community College Fire Service Training Center and regional fire departments for which Mitchell is currently providing entry level training. Thus, this study was conducted at the community college where I also serve as a

manager and has an interest in the local program's effectiveness. in meeting the current needs of the community. The community college gave permission for its program and related data to be used in the study.

Researcher's Experience

As a researcher, I was interested in conducting this study due to my extensive professional background in the training North Carolina Firefighters. At an early age, I frequently visited fire stations. My grandfather had helped build the fire station that protected his home in rural western North Carolina, and my father was a volunteer firefighter in a separate farming community, also located in western North Carolina. Like most young boys, I was intrigued by the large trucks, sirens, and overall excitement of firefighting. Probably somewhat different than most, however, was that I was allowed to respond on calls with my father. The rule was simple. I had to be in the truck by the time we left, and I had to stay in the truck once we arrived to the emergency incident. This was not only exciting but served as a bonding experience for me and my father as he was a small business owner and farmer, both of which took an extraordinary amount of his time away from the family.

When I turned 14, I was allowed to join the Union Grove Volunteer Fire Department as a junior firefighter. My mother wanted me to be a medical doctor as I was very interested in biology and chemistry. It seemed like a natural progression; however, I never really wanted to be a medical doctor and the idea never took hold for me. I did enjoy anything to do with the fire department, and I was allowed to begin my fire training at age 16. The classes were offered at my local fire department, and adjunct instructors came from Mitchell Community College. I was able to earn college continuing education credit. Though I was not supposed to enter burning buildings due to my age, my father was able to convince the

instructors that I had been around the fire service since a very young age, and I would be safe. I entered my first burning building in a live burn training scenario at age 16.

Interestingly, when I was 17 my small rural fire department began medical training. I was not allowed to participate because the state law required a student to be 18 years old. While I could not officially participate, I attended the classes and learned skills such as hemorrhage control and Cardiopulmonary Resuscitation (CPR). Not long afterwards many of my colleagues received their medical training, the law changed and the new standard allowed 17 year-olds to take training as long as they completed the training on or after their eighteenth birthday. I began my Emergency Medical Technician Basic level training while I was a senior in high school. Very shortly after high school, I finished my fire training and was hired by the Statesville Fire Department.

My experience led me to want to train others. Soon after being hired, I started working at Mitchell Community College as an instructor and began mentoring other young firefighters. Due to my involvement, in 2008, I was asked to lead the first self-contained training program that was offered to everyone, held on the college's main campus. The goal was to allow those with no volunteer experience the opportunity to receive training. This program evolved into an entry-level credentialing program that is still offered. I am no longer the coordinator, but I am the director of all fire and rescue training and still supervise the current coordinator. This is the ninth year of the program that was once a first in the industry for North Carolina.

This brief background is shared for the purpose of providing an understanding of my vantage point while conducting this case study. Furthermore, I do not directly or intimately manage the day to day operations of the Mitchell Community College Basic Fire Training

Program, but rather serve as a coordinator of all fire service programs in the area. I will work towards gathering the data, documenting the interviews, analyzing past problems, and working with stakeholders. However, it is the intent of the research to maintain the operation and integrity of the program and look towards improvements on meeting the current needs of the local service area.

Data Analysis

I analyzed data collected through the study. These data sets consisted of interview notes, survey results, synthesized training standards, categorized hiring practices, and an analysis of the training program using state and national standards. Data analysis ultimately began with the very first interview conducted and was a continual process through the duration of the research study. I often used emerging insights to guide the next phase of the data collection, so the refinement of questions and investigations was part of a simultaneous activity. With qualitative work, inductive reasoning was also used to analyze and develop common themes and patterns in the research.

While a step-by-step process may not be the best avenue for complete data analysis, the following processes were used. Basic categories or themes were constructed through the reading and re-reading of interview transcripts and survey results and through the analysis of program components based on standards. These general themes, or open-coding, were relevant pieces of information extracted from the various documents that relate directly to the research questions. The next step in data analysis was going back through the codes and grouping similar ones into larger categories, which is referred to as the process of axial coding. Lastly, these larger categories were grouped into characteristics or themes that are

prevalent across all the data. These themes directly related to the purpose of the study, were exhaustive across all elements of the data so that data fits into one of the themes.

In addition to the qualitative research, a statistical comparison was used to determine the effectiveness of current firefighter training programs, comparing completion rates to employment. Data collected from the participants who completed surveys provided both descriptive and inferential statistics on particular categories of questions. Questions focused on strength of basic fire training and emergency medical training. In addition, the surveys sought to identify strengths and weaknesses of current job preparation programs at the community college. These questions provided data and direction on the effectiveness of current training methods. Effectiveness was defined as a student's ability to obtain a job once he or she completed initial training programs.

With the collection and analysis of the data, a thick description of the program's capacity to meet community response needs emerged. Experiences of students enrolled in firefighter training programs will emerged along with an in-depth description of the perception of professional firefighters. The perspectives of current and graduated students also identified how training programs impacted their understandings of future and current work as a firefighter. These descriptions served several purposes. Current successful training program knowledge and methods were highlighted along with the issues related to weaknesses in current or absences of needed training areas.

Delimiting Factors

Delimiting factors associated with the current study should be addressed since these were conditions that could not be controlled by the researcher. The main delimiting factor for this case study is the inability to generalize findings beyond this particular community

college program and its community context. With any qualitative work, the purpose is to gain a deeper understanding of the identified issue. In this case, identifying best practices and aligning the current training program with qualifications and job duties outside of the institution would sought. Therefore, any findings would not be considered to be causal or correlational, since results are not replicable. Instead, the study sought to provide a thick descriptive picture of the community college's program in its regional firefighting context.

Additionally, since with qualitative work, the researcher's presence can impact the participants' responses. It was important for me to situate myself within the context of the study and acknowledge personal biases that might influence the results. These biases were clearly illustrated and documented throughout the work (Creswell, 2013).

Researcher Consent

Survey and interview participants were informed of the study and the minimal risks prior to providing information. Informed consent meant the knowing consent of an individual without undue inducement or any element of force, fraud, duress or any other form of constraint or coercion. For the study, a research consent letter was provided to each participant—students, graduates, and fire chiefs—and was included in the general purpose of the research, a brief description of the procedures, a statement that participation is voluntary, that participants could withdraw at any time, and contact information if there were questions about the research.

Participant Confidentiality and Anonymity

Data collected through electronic surveys of current students, graduates, and transcription of interviews with firefighter personnel were stored on a secure flash drive and housed in a safe with the researcher. Data analysis and other related documents, such as

audio recordings and interview notes, were stored on the researcher's password-protected computer. The data will be maintained for a period of five years, after which it will be destroyed by permanent deletion all the files. No other research will be conducted with the data. Interview and other qualitative data will also be kept anonymous by using random IDs for records so it will not be possible to link data to particular participants. Any information that is given to the researcher that may be linked to the participant will not be shared.

Summary

In summary, the American Fire Service is one of the most dynamic and change-ready domestic defense systems in the United States. It is clear the service has evolved and now includes numerous emergency needs such as basic and advanced rescue, hazardous materials emergencies, wildland fire fighting, search and rescue, and varying degrees of medical services depending on area of the United States. North Carolina has a long and capable history of providing both medical and fire training. In fact, the state provides free training for both through the state's fee waiver program (Bullins, 2017). Community colleges are considered delivery agencies, and they provide both entry-level training and continuing education for paid, volunteer, and combination workers.

It seems clear that North Carolina is on the right path with training methods for both fire and medical training. Advanced methods are currently used, including live fire, traditional methods, virtual reality, and emergency simulations. Though these methods are sound, a gap appeared between job requirements for the position of firefighter and the credentialing being offered by North Carolina Community College System. The North Carolina Office of State Fire Marshal and North Carolina Office of Emergency Medical Services have worked diligently to comply and promote national standards throughout the

state. This research held promise to provide a needed analysis of current job requirements, training methodology, and credentialing programs used in one firefighting region and its supporting community college firefighting program.

Chapter Four

Results

Brief Description of Study

This chapter focuses on the results of the case study. The purpose of this study was to gain a better understanding of the firefighter training programs offered at Mitchell Community College and their ability to meet the needs of local stakeholders. For this study, stakeholders were defined as current students, program graduates, local firefighting officials, and the citizens within the community college's service area. Considering the local district's current trends in requests for services from local fire departments and employees, an analysis of the current firefighting curriculum program at this North Carolina community college was conducted to determine whether improvements were indicated to better prepare firefighting candidates for professional service within the local district. Data supporting this curriculum analysis were derived from local emergency management requests, interviews with firefighter officials, and surveys of current students and graduates.

Overall, 101 former students from fall semester 2008 until June of 2018 were asked to participate in a survey. Of those, 70 students returned the survey, a 71% response rate. The goal of the surveys was to determine the program's ability to meet student need. Furthermore, four local fire officials were interviewed. These interviews were essential to understanding local firefighting employers' current and future needs. These data sets, along with local emergency management 911 incident data, were then used to determine if improvements were indicated for local firefighter training programs and if so what the nature of these improvements were.

Organization of Chapter

In short, for this study, 911 data and the most closely involved stakeholders related to firefighting and the community college's fire fighter preparation curriculum were analyzed. Surveys, interviews, stakeholder data review, and a curriculum analysis was conducted. The surveys were designed to gather information concerning the student's past and future experiences while the interviews were designed to understand the local firefighting employers prospective. The survey data were uploaded into the software Statistical Package for the Social Sciences 24 (SPSS). Tables were developed based on descriptions, frequencies, and percentages. A curriculum analysis was conducted for the purpose of understanding local, state, and national training requirements. The college's ability to meet those training requirements are essential for the citizens of Iredell County.

Local Fire Department and 911 Data

Stakeholder data became an important research point. Early in the study, it became apparent that incident data would be needed from fire departments and Iredell County Emergency Communications (911 center). Before a firefighter training program can be analyzed for effectiveness, it is important to understand the type of emergencies the trainees would mitigate in their future careers. On a national level, medical calls began to increase around 1986, and in some ways this data is reflected at local level (Luthern, 2014). By 2014, the most recent year available from the United States Fire Administration, departments received more than 23.3 million calls, of which 5% were fire-related and 64% were reported as medical emergencies (United States Fire Administration, 2016). Other calls include false alarms, good intent, public service, mutual aid, and hazardous materials. Thousands of departments reported medical call numbers that exceeded 75%, of their total calls, a number

that had increased steadily since 1986 (United States Fire Administration, 2016). See a summary of local data in Figure 1.

Figure 1

Percentage of Emergency Incidents by Category in Iredell County

Fire Department	Medical Calls	Fire Calls
Iredell Communications	81%	NA
Statesville Fire Department	71%	< 1%
Mooresville Fire Department	81%	< 1%

Note: Due to confidentiality requirements, no data counts were extracted, only percentages were available.

For this research, we analyzed three organizations data sets, all impacted by the community college's program. Statesville Fire, Mooresville Fire, and Iredell Communications data was reviewed. Due to confidentiality requirements and extensive data extraction issues, the organization only provided percentages of emergencies incidents by category. Iredell Emergency Communications reported that 81% of all calls they receive are medical in nature. Statesville Fire Department reported that 71% of their responses are medical in nature and 1% are actual fires. Mooresville Fire Department reported that over 81% of their responses are medical and less than 1% are actual fires. These data are reflective of national trends.

Survey Participants

Surveys were used as a means of collecting quantitative and qualitative data related to graduates and current students of the community college's firefighting program. Graduates and current students were asked 24 questions. Graduates and current students included every student that had previously completed the MCC Basic Firefighter Training Program, which began in fall of 2008. A survey was sent electronically to every student email Mitchell Community College had on file. The spring class of 2018 were finishing their program

during the time the surveys were emailed out and completed the survey as they completed the program. Of the 121 possible graduates and current students, email addresses were available for 101 of those graduates. A full copy of the survey can be found in Appendix A.

Survey Results

Each respondent was asked to verify what year they graduated from the Mitchell Community College (MCC) program and what program or programs they completed. The results are presented below in Table 1 and Table 2. Most of the respondents graduated from the program in 2010 or later (98.6%). Additionally, 100% of the respondents graduated from the Basic Fire Training (BFT) program, but a much smaller number also graduated from Basic Emergency Medical Technician (EMT), 20 or 28.5%, or from the Associates in Applied Science (A.A.S.) degree in Fire Technology at 3 or 4.28%. See Table 2.

1. What year did you graduate MCC program?

Table 1

Graduation Year by Frequency and Percentage (n = 70)

Year	Frequency	Percentage
2008	1	1.4%
2010	10	14.3%
2011	11	15.7%
2012	5	7.1%
2013	11	15.7%
2014	8	11.4%
2015	5	7.1%
2016	12	17.1%
2017	7	10.0%
Total:	70	100.00%

2. What program(s) did you complete at Mitchell Community College (MCC)?

Table 2

Program Completion Type by Frequency and Percentage (n = 70)

Type	Frequency	Percentage
Basic Fire Training	70	100.00%
Emergency Medical Technician-B	20	28.57%
Associate in Applied Science/ Fire Degree	3	4.28%
Other	2	2.86%

Respondents were also asked to identify the most helpful aspects of the Mitchell Community College program. Overall, respondents felt that the time or duration of the program, the instruction in the program, and the practical components of the program were most useful. The results are presented below in Table 3.

3. What part of the basic fire training was the most helpful to you?

Table 3

Basic Fire Training Helpfulness Type by Frequency and Percentage (n = 70)

Type	Frequency	Percentage
FITNESS	7	10.0%
FORMAT	13	18.6%
Instruction	16	22.9%
Location	1	1.4%
MEDICAL	1	1.4%
PRACTICAL	15	21.4%
Duration of Program	16	22.9%
NA	1	1.4%
TOTAL	70	100.00%

Respondents were also asked what they felt could be improved to the MCC program. In general, most respondents felt that the program did not need any changes; however, career information (10 or 14.3%), medical training (8 or 11.4%), and more practical training (8 or

11.4%) were the most recommended. Below, Table 4 represents each of the recommended improvement categories by frequency and percentage.

4. What could be improved/enhanced/added to your basic program?

Table 4

Basic Firefighter Training Improvement Areas by Frequency and Percentage (n = 70)

Type	Frequency	Percentage
AASCRED	3	4.3%
CAREER	10	14.3%
CERT	1	1.4%
DIVERS	1	1.4%
EQUIP	5	7.2%
FITNESS	3	4.3%
INST	5	7.1%
MED	8	11.4%
PRACTICAL	8	11.4%
RESC	2	2.9%
SOCIAL	1	1.4%
NA	21	30.0%
Total:	70	100.00%

Additionally, respondents were asked if there was anything, they wished the MCC program had included. While NA is a large category, some respondents did not make recommendations or felt program was on right path. Out of the responses, 28.6% reported that they would have liked for the EMT Certification to be included. Each category is presented in Table 5 below.

5. Was there anything you wish your basic program had included?

Table 5

Basic Firefighter Training Inclusion Type by Frequency and Percentage (n = 70)

Type	Frequency	Percentage
AASCRED	1	1.4%
CAREER	6	8.6%
CERT	1	1.4%
EMT	20	28.6%
EQUIP	2	2.9%
PRACTICAL	4	5.7%
NA	26	37.1%
Total:	70	100.00%

Respondents were also asked if they were satisfied with the program at MCC. All of the respondents agreed that they were satisfied. Table 6 below represents the results of the program satisfaction at MCC.

6. Overall, were you satisfied with your MCC program?

Table 6

Program Satisfaction by Frequency and Percentage (n = 70)

Satisfaction	Frequency
Yes	70 (100.00%)
No	0 (0%)
Total	70 (100.00%)

The next group of questions asked respondents if they were employed, where they were employed, and in what capacity they were employed. Out of the 70 respondents, 60 or 85.71% were employed (See Table 7). Additionally, 43 or 61.43% were employed full time with a professional firefighting department (Table 8). An additional 6 or 8.5% and 4 or 5.74% worked in positions supported by the community college's firefighting programs;

these were as volunteer firefighter or EMT employees. Table 7, Table 8, and Table 9 provide a full breakdown of employment rates, employment types, and employment status.

7. Are you currently employed?

Table 7

Employment Status by Frequency and Percentage (n = 70)

Employment Status	Frequency
Yes	60 (85.71%)
No	10 (14.29%)
Total	70 (100.00%)

8. If you are employed, where?

Table 8

Employment Type by Frequency and Percentage (n = 70)

Type	Frequency	Percentage
Full-Time FD	43	61.43%
Volunteer FD	6	8.57%
EMS Dept	4	5.72%
Non-Fire	7	10.00%
Not Employed	10	14.28%
Total	70	100.00%

9. If you are employed, in what capacity are you employed? What is your job title?

Table 9

Full-Time Employment Status by Frequency and Percentage (n = 70)

Status	Frequency	Percentage
Full-Time FD	43	61.43%
Other	27	38.57%
Total	70	100.00%

Out of the employed respondents, the average amount of time from Basic Fire Training graduation to employment was approximately a year and three months ($\mu = 14.81$; $\sigma = 11.881$). In addition, 35% of respondents were not employed at least 12 months after graduation. Table 10 below provides a breakdown of months prior to employment after graduation.

10. How long after the time of graduation did it take for you to become employed?

Table 10

Months Prior to Employment by Frequency and Percentage (n = 60)

Month(s)	Frequency	Percentage
0	3	4.3%
1	3	4.3%
2	2	2.9%
3	2	2.9%
4	1	1.4%
5	1	1.4%
6	6	8.6%
8	2	2.9%
10	2	2.9%
12	18	25.7%
18	2	2.9%
24	13	18.6%
36	3	4.3%
48	1	1.4%
60	2	2.9%
Total:	60	100.00%

Out of the respondents, the average number of jobs they applied for is four and a half ($\mu = 4.67$; $\sigma = 4.035$). Interestingly, 53.60% of respondents applied for 10 or more jobs. Below, Table 11 has a breakdown of job applications by frequency and percentage.

13. How many jobs have you applied for?

Table 11

Job Applications by Frequency and Percentage (n = 67)

Applications	Frequency	Percentage
0	2	2.9%
1	5	7.2%
2	10	14.5%
3	13	18.8%
4	8	11.6%
5	14	20.3%
6	4	5.8%
7	6	8.7%
8	1	1.4%
9	1	1.4%
10	1	1.4%
15	1	1..4%
30	1	1.4%
Total:	67	100.00%

Respondents were also asked to rank a series of statements that related to the MCC program, perceived requirements for employment, EMT or medical requirements, gaps in employer hiring, and combining certifications. Table 12 represents the average (mean) of the responses and the Standard Deviation (SD).

Questions 14-21 & 23

Table 12

Means and Standard Deviations for Participants (n = 70)

Variable	*Min*	*Max*	*M*	*SD*
14. I had a positive fire training experience.	1	2	1.06	.234
15. After the training program was complete, I felt prepared to enter a career in firefighting.	1	4	1.89	.971
16. I felt the basic fire program fully prepared me for my employment.	1	5	2.67	1.380
17. I understood that the basic fire training course was the only requirement for employment.	1	4	1.39	.728
18. I felt that the medical training component was adequately addressed during training.	1	5	3.54	1.337
19. When I was in the program, I felt that additional medical training would be beneficial.	1	5	2.14	1.354
20. As I interviewed for jobs, I began to wish I had completed the medical (EMT) training.	1	5	1.30	.906
21. I felt that there was a gap between employer requirements and job advertisements.	1	5	1.37	.887
23. I currently feel that medical, fire, and rescue certification should be combined.	1	2	1.10	.302

Note. Scores ranged from 1 (Strongly Agree) to 5 (Strongly Disagree).

Based on the previous questions, respondents were asked what were the program gaps they observed (if they observed any). First, each response was coded and classified in Table 13. Then frequencies and percentages were derived. Overall, 35.8% of respondents felt that EMT was required by fire departments, EMT was not required but necessary to be hired, or EMT and Rescue Certifications were required. A breakdown of perceived gaps is presented in Table 12.

23. If you agreed with the question above (#22), what was the nature of the gaps you observed?

Table 13

Coding and Classifications for Perceived Gaps

Coding	Definition
EMT NRBN	EMT Certification was not required but was needed
AAS NRBN	Associates Degree was not required but was needed
CERTIFICATION NRBN	Multiple Certifications were not required but were needed
EMT REQ	EMT Certification was required
EMT RES NRBN	EMT and Rescue Certifications were not required but needed
EMT RES REQ	EMT and Rescue Certifications were required
NA	Not Applicable
NO EMT	EMT was not required and was not needed

Table 14

Gaps by Frequency and Percentage (n = 69)

Gaps	Frequency	Percentage
EMT NRBN	28	40.0%
AAS NRBN	1	1.4%
CERTIFICATION NRBN	4	5.7%
EMT REQ	20	28.6%
EMT RES NRBN	2	2.9%
EMT RES REQ	3	4.3%
NA	11	15.7%
NO EMT	1	1.4%
Total:	70	100.00%

Lastly, for Question 24, a crosstabulation was run to determine if there was a perceived difference in the fire training program, gaps, and employment between respondents who were employed verses those who were not employed. In general, employment did not impact a perceived positive impact of the MCC program because 100% of respondents that were both currently employed and not employed agreed it was positive. On the other hand, 100% of those not employed understood that only Firefighter I & II training was required for employment, whereas only 86.6% of those employed felt that way. This indicates that there

is a discrepancy between the understanding of hiring requirements and an understanding of what the program currently offers. This is further addressed because 100% of those not currently employed felt that they wished they completed EMT, felt that there was a gap between employer requirements and job advertisements, and that EMT-B, Rescue Certifications, and Firefighter certifications should be combined. A breakdown of the responses by employment status is presented in Table 15 below.

Table 15

Crosstabulation for Likert Questions and Employment Status (n = 70)

Variable	Employment	
	Yes	No
I had a positive fire training experience.	60 (100.0%)	10 (100.0%)
After the training program was complete, I felt prepared to enter a career in firefighting.	44 (73.3%)	7 (70.0%)
I felt the basic fire program fully prepared me for my employment.	25 (41.6%)	8 (80%)
I understood that the basic fire training course was the only requirement for employment.	52 (86.6%)	10 (100.0%)
I felt that the medical training component was adequately addressed during training.	10 (16.6%)	5 (50.0%)
When I was in the program, I felt that additional medical training would be beneficial.	40 (66.6%)	5 (50.0%)
As I interviewed for jobs, I began to wish I had completed the medical (EMT) training.	51 (85.0%)	10 (100.0%)
I felt that there was a gap between employer requirements and job advertisements.	50 (83.0%)	10 (100.00%)
I currently feel that medical, fire, and rescue certification should be combined.	60 (100.0%)	10 (100.0%)

Note. 1 (Strongly Agree), 2 (Agree), 3 (Neither Agree nor Disagree), 4 (Disagree), 5 (Strongly Disagree). For Likert analysis, "1" or "2" indicates "Yes" and a "4" or "5" indicates "No." Numbers in parentheses indicate column percentages.

Interview Participants Profiles and Analysis

In addition to the survey data from graduates and students of the community college's firefighting programs, this study included interviews of four of the primary firefighting officials working in the service area. The interviewees were chosen due to their agency's reliance on Mitchell Community College's Basic Fire Training Program. In addition, each participant is uniquely situated to influence change and as important these participants are lead officials of the largest fire service employers within the Mitchell Community College service area. Essentially, MCC provides training for these organizations' new hires and the community college generally serves to train new hires. Thus, these organization's students are the college's student base. There is a strong stakeholder relationship among these interviewees and the community college.

Figure 2

Participants' Profile and Fire Service Experience

Alias	Position	Years of Fire Service
A001	Assistant Chief of Training	22
A002	Fire Chief	20
A003	Battalion Chief of Training	18
A004	Fire Chief	10

Participant A001

This participant has served as a southern rural fire department employee for 22 years. As assistant chief, he is responsible for hiring, firing, and training new firefighters. Like other cities within the county, he hires many community college graduates and those needing training after their hire are often sent to MCC for further training. As a certified North Carolina Office of State Fire Marshal fire officer and instructor, the chief has an extensive knowledge of training firefighters in hometown. Furthermore, the chief in addition to his

career role, has served his local volunteer department for 28 years and spent much of that time training new fire fighters.

Participant A001 works extensively with his city human resources department to hire and train new firefighters. The assistant chief's position made him a good interview participant. While he works with human resources to hire, he also coordinates training once the entry-level fire fighter is hired. The chief stated all new hires must learn the department's way and therefore will undergo some training even if credentialed. New employees must learn how to use the department's specific equipment and simple things like where each fire station is located. In the last five years, his department hired 16 fire fighters and most of these hires came from volunteer fire departments. However, most of these volunteers had little experience with their volunteer department. Participant A001 stated most had less than two years' experience.

When asked about credentialing and hiring practices, the chief stated his department wanted to hire the most qualified applicants. Their minimum qualification is a high school diploma, North Carolina drives license or equivalent from another state, and a minimum age requirement of 18. Once the applications are reviewed, the department looks for the applicant that has fire and ems credentials. The department does not allow fire fighters to work in the field until they have North Carolina EMT-B and North Carolina Firefighter I and II. Though in the past, they have hired applicants without the credentials, and this has created a situation where they had to pay the new hire until they were fully trained. The chief stated this was not ideal for the department or the new hire. Furthermore, the chief sees an issue with job advertising and even some internal hiring practices; however, he has been unable to convince human resources to change their processes.

When asked about Mitchell Community College, the chief stated that he has proudly served as an advocate for both the fire and EMS programs since he entered the fire service 28 years prior. He stated that is important to have a local school that supports public safety, and predicted that in the near future, incorporating technology into the firefighting curriculum will be essential to young new hires. Participant A001 recognized that the medical and fire fields had merged over the last two decades. He felt that having fire and EMS credential in the same semester could help his department and make it easier for aspiring firefighters to receive training prior to applying.

Participant A002

Participant A002 has been an employee of another small city fire department for two-years. He is responsible for budgeting, managing, and leading this department which currently has 72 firefighting or department related personnel. This participant was hired in 2016 and came to the area with 20 years of fire service experience and with 10 of those years in management. Participant A002 is considered one of seven department heads within his area of the region. In addition to his great number of responsibilities, Participant A002 is considered the fire chief and has the sole hiring and firing responsibility for the fire division. While he is responsible, he uses an internal hiring committee to assist him with the process. He is the committee chair, but the members help facilitate all components of the hiring process including interviews, written exams, and physical ability course.

While Participant A002 has extensive fire service experience, the chief has limited experience with this particular firefighting organization. When discussing recent hires, it was important that he highlighted the partnership with Mitchell Community College: “Most of our department’s hires train or have trained at MCC.” In the last fire years, the department

has hired 17 to 20 applicants. The chief stated their department only requires a high school diploma and valid driver license to apply. While he did not know the history of the requirements, the chief felt human resources often published broad application criteria to ensure the city had a large applicant pool. Participant A002 did say he would like to work with human resources to better define entry-level requirements. His department does require new hires to have their fire and EMS credential before beginning work.

When asked about MCC services, this participant stated his department was fortunate to have the local college as a resource. To have fire and EMS training accessible, does save the department money. In recent years, there has been a shift in types of emergencies. Medical and hazardous materials calls are on the rise. Participant A002 would like to partner with MCC to evaluate current training and future needs. It would help his department to have a system for fire and EMS credentialing to occur in one semester or even a shorter amount of time if feasible. The chief did recommended combining fire, EMS, and possibly an associate degree into one self-contained program.

Participant A003

Participant A003 has been an employee of a local fire department for 18 years. Once his supervisor selected new hires, this participant is responsible for training them. He currently leads the department's accreditation and training programs and has served in that capacity for five years. As a certified North Carolina Office of State Fire Marshal fire officer and instructor, the chief has an extensive knowledge of training firefighters for this department. Once an employee is hired, Participant A003 trains and evaluates the employee. Depending on their credentials upon hire, the chief often must partner with MCC to provide

needed training. Additionally, he has served on several committees within the department including training and hiring committees. These facts made him a good interview participant.

In addition to training, the chief is also the department's data analyst. Without hesitation, he was able to tell me that the department hired 17 applicants in the last five years and 15 of them had their EMT-B. If the new hire did not have their EMT-B, they were sent to MCC to obtain before being allowed to begin responding to emergencies. When asked about the applicant's knowledge of the EMT-B requirement, the chief stated:

> Yeah, I mean they understand they have to do it once they are hired. I'm not sure they understand before they're hired. But you know the entire thing is difficult. EMT is a difficult course and to take it while you adjusting to the fire service is stressful for most.

The chief was able to recall a time when the department did require EMT-B and stated that was a better system. Furthermore, the chief felt if MCC knew what the departments within the county needed they could train accordingly.

The chief did feel MCC worked hard to provide quality training and he recalled a situation where his department received a grant to hire five new fire fighters at one time which was unusual for the department. Each new employee was put through Basic Fire and EMT-B whether they had the credential or not. Participant A003 stated this worked well but it took about nine months and that was just too long. The department had increased overtime and that ultimately hurt their operating budget. Working with MCC, the chief would like to see a more streamlined program. Completing fire and EMS training in less that five months would help the department. Long-term, the chief does believe the department will begin to look for applicants with diverse skills such as data collection and analysis.

Participant A004

Participant A004 has been the fire chief for a county volunteer fire department for 10 years. The department is considered a combination fire department. Combination departments use a variety of paid, volunteer, and paid on call to provide fire service. They are funded by local fire tax and those funds are administered by a board of directors. Participant A004 was hired by that local board of directors as a paid fire chief. The chief is responsible for hiring, firing, and recruiting volunteers and paid part-time staff. In addition, he must ensure his staff is trained and prepared to mitigate emergencies. The chief's experience as a combination fire chief provided a unique prospective to this interview.

Though Participant A004 firefighters are part-time or volunteer, the chief has hired 10 employees in the last five years. Participant A004 stated:

> As you know, I am the only full-time employee. We have part-time employees and no real good way to train them. I require them to be FF I and II and EMT-Basic upon hire. With a volunteer department, my budget cannot support hiring and then training.

For part-time employees the chief required fire and EMS credentials and stated this in his job advertisement. But, for volunteers, training must be offered in some way or obviously recruiting volunteers would be difficult. The chief utilized MCC to train his new volunteers and often encouraged them to attend Basic Fire Training. Often this was difficult due to the daytime schedule. The new volunteers often attend night classes offered in modules, which can take over a year for NC Firefighter I and II portion. Since few hires go on to EMT-B, and part-time employees must be relied on to answer medical emergencies; therefore credentialing the part-time workforce is imperative.

When asked about MCC's performance, the chief stated he appreciated the college as a resource. In addition, the chief stated:

> I think we can do a better job of laying out a path for firefighters. Many of my volunteers struggle to understand what is required and what options are available if they'd like to make a career out of it. They also really need to understand we don't spend much time running into burning buildings anymore. We do more medical and wrecks than anything.

Because he works with volunteers, the chief stated that he needed options and as many options as possible. His fire department is comprised of volunteers that work on farms, third shift at local factories, operate their own businesses, and even serve as full-time police officers. Having options will allow the chief to market options to his volunteers and hopefully keep them as productive has possible for the community and his department.

Major Themes for Fire Departments

Three major themes emerged from participant interviews. These themes were (1) methods for training with a limited budget, (2) hiring credentials, and (3) change in students and new fire fighters. Budget theme refers to the identification of issues associated with an agency's overall ability to plan for and finance their new hire's initial training. The credential theme includes information associated with discussions of the minimum credentials needed for a new fire fighter. The last major theme related to change is entry-level firefighters and their desire to use technology. Current, training methods rarely utilize technology Furthermore, technology is being used more in the fire service and integrating some technology training may be necessary in the future. Medical calls are on the rise and entry-level firefighters need medical credentials.

Figure 3

Major Themes for Fire Departments

Themes	Sub-Themes
Methods for Training with a Limited Budget	Limited Scope of Fire Administrators Difficulty Planning Necessary Budgets
Hiring Credentials	Lack of Understanding of Necessary Credentials Difficulty in Setting Basic Requirements Ensuring Effective Hiring Requires More than Minimum Standards
Change in Fire Service	Overall Changing Professional Needs towards Medical and Technology Older Firefighters Need Technology Training

Interview Results

The four individuals profiled above were interviewed to gain insight into program improvements and job qualifications. Out of the four interviewees, four (100%) discussed each of the nine interview questions in detail. The first question asked respondents to discuss how many individuals had been hired within their respective departments within the past five years. 100 firefighters they hired between respondents hired between 10 to 20 individuals within the past five years. Conversely, only one respondent said that all new hires were EMT trained prior to starting but 100% of interviewees acknowledge it is necessary. Three out of four (75%) interviewees also stated that a majority of those hired within their respective departments came from previous volunteer fire departments.

In regard to how many entry-level fighters are hired within the respective fire departments annually, all four of the respondents indicated there were four to seven each year. On the other hand, only one of four responded that the credentials listed on the job advertisement was consistent with the training levels of new hires. All of the other

interviewees stated that entry level fire fighters came in with more credentials than the minimum listed. When asked if the interviewees felt that the fire service was changing, each respondent answered, “Yes.” All but one answered medical calls were on the rise and fires were down, the other highlighted the need for technology training.

Additionally, three of four (75%) respondents felt that fire training methods and curriculum should change and one respondent (25%) felt like it should probably change. The interviewees felt that the new focus in fire services and the new generation were cited as the main reasons change was necessary. Four of the four interviewees (100%) acknowledged that curriculum changes should occur for technology. Other cited curriculum changes focused on medical training, hands-on training, and hazardous material training.

Lastly, in regard to what Mitchell Community College can do to better align with anticipated needs in the future, two of four (50%) of interviewees stated that they would like more medical training, while two of four (50%) suggested extending the length of the program. Additionally, one of the four (25%) suggested that the program timeline needs to align better with hiring dates.

North Carolina Fire Training Curriculum Analysis Results

In North Carolina, the fire fighter certification program is guided by National Fire Protection Association (NFPA) Professional Job Qualification Standard 1001 for Fire Fighter (National Fire Protection Association, 2013). Every five years, NFPA establishes a new NFPA 1001; however, the 2018 version has yet to be released. Their use of the term *job qualification* simply means the minimum training a fire fighter must receive before entering the workforce. NFPA is considered the authority on national standards and as such fire training curriculum should model after these standards. Obviously, if every fire program in

United States modeled their entry-level training programs after NFPA 1001, all of our nation's fire fighters would be trained in a similar manner creating continuity across cities, counties, and states. This would certainly be beneficial when disasters strike, and first responders must assist each other from varying areas.

To determine the standard, the National Fire Protection Association (2018) uses a job task analysis for the position of fire fighter. Essentially, each duty or task of a fire fighter is analyzed and placed into categories. These categories are then used as a content basis for required courses. The NFPA describes a job task analysis in following four areas:

- Determines what an individual does in a specific job
- Describes duties performed on the job
- Develops relevant tasks
- Organizes tasks into primary areas of responsibility

In addition, there is a specific committee associated with each standard. Each committee serves to assist in identifying compliance issues and associated skills for each standard. Committee members are selected from organizations that advocate for America's fire service and include the following: International Association of Fire Fighters, International Association of Fire Chiefs, National Volunteer Fire Fighters Council, National Fallen Fire Fighters Foundation, National Building Code Institute, and equipment manufacturers (National Fire Protection Association, 2018). Representatives from these groups analyze the industry, fire service trends, new technology, personal protective equipment, and NFPA's job task analysis. Once their recommendations are captured, the NFPA staff establish the standards. The final document is then approved or denied by the NFPA committee. This committee can approve certain sections and not others. At that point,

the NFPA works with the committee to modify sections that the committee rejects. This process is used for every standard NFPA develops. In this analysis, the NFPA 1001 committee works through this process. The collective standards then become the prevailing national overarching standard for the next five-year cycle.

Once the standards document is approved, the North Carolina Fire and Rescue Commission (NCFRC) reviews the collected standards and accepts or rejects them for use in North Carolina. Historically, the commission has accepted the newest standards document and 2013 was no exception; however, due to the standard's release date and the timing of the NCFRC's quarterly meeting, the newest standards document was not officially approved until January 2014 (notes North Carolina Fire and Rescue Commission, January 10th, 2014). After commission approval, the North Carolina Office of the State Fire Marshal's Research and Development division provides updates to the past training standards. In addition, this division develops any new courses that need to be added to the firefighter curriculum. The updates and additions were completed in July of 2014 and approved by North Carolina Fire and Rescue Commission in July 2014 (North Carolina Fire and Rescue Commission, July 8, 2014). After approval, the final course curriculum is released to all the delivery agencies for implementation. In North Carolina, all 58 community colleges qualify to deliver fire and rescue training for certification.

The 2014 version, the last revision, of NFPA 1001 included the addition of four courses. These new courses were (1) Fire and Life Safety Preparedness, (2) Wellness and Fitness, (3) Safety and Survival, and (4) Mayday. Health and wellness and Safety and Survival both meet the NFPA 1001 standard while Wellness and Fitness falls short of the job performance requirements described in NFPA. Therefore, Wellness and Fitness course

content falls short. The course titled “Mayday” is still a North Carolina course, but it is not described in the standard. This illustrates that the North Carolina fire fighter certification program mirrors the NFPA 1001 for about 90% of the overall courses. Furthermore, in at least eight courses or 46% of all the courses North Carolina’s program exceeds NFPA 1001 standard (Appendix E).

While the fire courses are important, the interesting discovery was a section of NFPA 1001 that discusses emergency medical services. The NFPA 1001 states: “Minimum emergency medical care performance capabilities for entry-level personnel shall be developed and validated by the authority having jurisdiction and must include infection control, CPR, bleeding control, and shock management” (National Fire Protection Association, 2013). Included in North Carolina’s fire fighter training program is a medical course; however, it does not contain CPR or shock management protocols. North Carolina also accepts North Carolina Emergency Medical Technician in lieu of the Emergency Medical Care course (Appendix E). This means the fire fighter program falls short but there are other options available to students such as completing an emergency medical technician (EMT-B) course.

This curriculum analysis illustrates changes and mergers are possible. Currently, Mitchell Community College must follow state guidelines for fire and EMS training; however, as long as minimum standards are met programs can be modified. The current medical program offered as a module within NC Fire Fighter I and II does not meet national standards but does satisfy state standards. It seems important for MCC’s program to meet both national and state standards. By adding EMT-B to Basic Fire Training, MCC could

ensure students meet state and national standards while also meeting the needs of all stakeholders identified in this study (Appendix D).

Summary

The purpose of this study was to gain a better understanding of the firefighter training programs offered at Mitchell Community College and the capacity of these programs for meeting the needs of local stakeholders. Stakeholders refers to current students, graduates, local firefighting officials, and citizens currently served by Iredell County emergency services. A review of the current firefighter program components at this North Carolina community college was used to determine if changes should be made to better prepare firefighting candidates for professional departments within the local Iredell County. For this study, regional emergency 911 call data, each firefighting program and firefighter official stakeholders current and past program enrollers, along with the curriculum were analyzed.

Regional response data, student/graduate surveys, firefighter official interviews, and curriculum analysis were analyzed. The surveys and interviews reveal that in general the program was accomplishing what the stakeholder's expected. However, the surveys clearly revealed disconnects between current hiring requirements, the training currently offered, and student expectations. For example, in general employers require only a high school diploma; however, these same employers want their potential hires to have prior firefighter and EMT training. Further, MCC's Basic Firefighter Training program provides the needed fire training but not the needed medical training supported by the region high 911 call data, requiring medical and other non-fire responses, by student surveys responses, and employer interviews.

Interviews were conducted to help understand the needed of fire service officials within Iredell County. Interviews highlighted major themes: (1) methods for training with a limited budget, (2) hiring credentials, and (3) change in students and new fire fighters. Budget theme refers to an agency's overall ability to plan and finance their new hire's initial training. The credential theme discusses the minimum credentials needed for a new fire fighter. The last major theme related to change, which was discussed in relation to new fire fighters and their ability to adapt to paramilitary organizations.

Finally, a curriculum analysis was conducted. This analysis revealed current standards are being met, however, a change in requirements may be necessary to meet the needs of the changing fire service environment. The fire service is currently responding to more medical emergencies than in the past. To meet medical emergency needs, departments must rely on EMT-Basic programs to supplement their firefighting programs. Basically, fire fighter educational programs falls short but there are other options available to students such as completing an emergency medical technician course.

Chapter Five

Discussion and Conclusions

This chapter provides a discussion of the study's findings in terms of foundational and current firefighting and training literature. The chapter then discusses the Bolman and Deal's (2017) conceptual framework and how it was foundational in facilitating this study's analysis and led to a fuller understanding of the current fire service training efforts at Mitchell Community College. This study also provides the bases for modifications to the current firefighting curriculum, the results of which will lead to better response services. Additionally, this section will address areas where further understanding and support of current firefighter training efforts may occur. Furthermore, implications from the study will be discussed for practitioners, community governmental units, and especially the regional community college firefighter training program. Recommendations for future research will follow.

Literature Analysis Correlations

Throughout this process I sought to outline the evolution of the American fire service leading the methods used for training during modern era. More specifically, I wanted to understand if Mitchell Community College's fire service training methods were sufficient for the service area. Evidence of training firefighters was found as early as 1600's with America's first colonies (Loyd & Richardson, 2014). But training really came into national focus with the identified need for hazardous materials training in the mid-1980's and more attention was brought after the 9/11 terrorist attack. Mitchell Community College first began training firefighters in late 1980 and began a Basic Firefighter Training program in 2008. The

focus of this research was on Basic Firefighter Training which is an entry level training program. Furthermore, the questions that guide the researcher are as follows:

1. In what ways does the local community college fire fighter program meet the needs indicated by local emergency response data and stakeholders?
2. What, if any, modifications should be made to the community college's firefighter program based on (1) local response data, (2) analysis of firefighter programs based on state and national standards, (3) survey responses from current students and graduates of the programs, and (4) interviews with local firefighting personnel?

State agencies, local governments, national standards, and individual departmental hiring practices all impact how firefighters are ultimately trained for the job. This is a rather large undertaking because America's fire service is comprised of 1,134,400 career, volunteer, and combination firefighters, housed and divided among the United States' estimated 29,980 fire departments (National Fire Protection Association, 2016). There are also different types of firefighters, which may require different types of training. Career firefighters are those who work for professional full-time agencies for a salary and benefits, while volunteer firefighters have other full-time jobs and answer fire and medical calls based on demand.

The literature review revealed that in 1986, fire departments nationwide received approximately 11.9 million calls; of those 19% were fire-related, and 54% were medical related (Luthern, 2014). By 2014, the most recent year available from the United States Fire Administration, departments received more than 23.3 million calls, of which 5% were fire-related and 64% were reported as medical emergencies (United States Fire Administration, 2016). Other calls include false alarms, good intent, public service, mutual aid, and hazardous materials. Thousands of departments reported medical call numbers that exceeded

75% of their total calls, a number that had increased steadily since 1986 (United States Fire Administration, 2016). As the total number of calls continued to rise, the gap between the percentage of fire and medical calls became more apparent. Currently, medical emergencies comprise the largest category within the national records management systems. Surveys revealed that students did not understand that much of their job as a firefighter was mitigating medical emergencies. An increase in medical calls requires new firefighters to receive adequate medical training. Not only did surveys reveal medical training lacked emphasis, the interviews revealed that fire chiefs need their new employees to have thorough medical training. One interviewee stated:

> Fire is no longer the focus. We only run about three fires per month here, I mean actual fires. We have some smoked up homes and things like that. Medical is a big part of what we do. We'll run around 500 medical calls monthly.

Lastly, literature revealed medical calls are constantly increasing and national data indicate that as many as 34% of fire departments do not have formal medical training programs. Additionally, National Fire Service Needs Assessment (2016) revealed that 73% of all communities demonstrated a need for fire departments to perform emergency medical services at least in some capacity (National Fire Protection Association, 2016). In North Carolina, these trends have been addressed through hiring practices in most departments. According to Smith (2017), most career departments require entry level firefighters to obtain, at least, the North Carolina Emergency Medical Technician Basic (EMT-Basic) certification. A survey of 45 North Carolina fire departments found that 96% require EMT-Basic as an entry-level job requirement, and 69% require EMT-Basic as a prerequisite to employment (Smith, 2017).

Addressing Gaps

While firefighter historic, training, and scholarly literature provided pertinent information and a foundation for this study, the scholarly work in this field is limited. Many articles focused on training methods and historical aspects of the fire service but few addressed methods and effectiveness. Obviously, human resource issues are pertinent discussion in every field including the nation's fire service, but little information was available, especially when examining hiring, credentialing, training, and entry-level recruitment. Further, many of the articles, books, and other research were from trade magazines and were not peer reviewed research-based studies.

The nation's fire service does have a program titled the "National Fire Academy Executive Officer Program" funded by federal government. This program seeks to enroll "key leaders" in the nation's fire service and specifically chief officers with a minimum of bachelor's degree and significant leadership experience. Currently, the program requires a two-week residency for four consecutive years and the completion of an applied research project after each year of study (United States Fire Administration, 2018). Once students complete their research projects, these projects are published by United States Fire Administration. These research projects represent a practicum-type research. While this program and its research publications are resources, these studies are not scholarly, peer-reviewed research. In addition, most lack qualitative and quantitative research that ultimately validates the problems they identify.

Mitchell Community College is a service driven local institution dependent upon understanding the needs of the local community, and, as with many areas, it is sometimes difficult to find reliable, compiled information about community needs. Furthermore,

community members at large may not understand comprehensive, basic needs. Stakeholder input was essential to begin to understand the status of current firefighting training and future need. This study was necessary to begin identifying tangible training needs within the fire services in Iredell County.

While there is important work happening locally, regionally, and nationally, there is no systematic way to address local community needs through a body that regularly collects data for the use of firefighting/emergency response improvement. Furthermore, scholarly work is limited due to lack of data. New training methods are often discussed and even written about; however, there is rarely research completed on the effectiveness of new training methods. During this process, I found the fire service needs more studies and data especially in the training content and effectiveness areas.

Limitations

Limitations of a study are characterized as influences or data interpretations that effect the overall results (Cresswell, 2013). As such, in this study, it was, because of the parameters of the study itself, results cannot be generalized to the wider population or used for programmatic changes in any other training program. While concentrating on Mitchell Community College service area and stakeholders, state and national implications can be considered but not proven. For example, we know that across the nation medical emergency responses have tripled since 1986 (Luthern, 2014), and we can determine that these responses have doubled in Mitchell Community College's service area. Therefore, we can conjecture that merging emergency medical training and firefighter training are both essential for the local community and could be beneficial to communities across United States where similar statistical responses exist.

An additional limitation of this study is causality. Causality cannot be determined due to the nature of the qualitative study. The surveys, interviews, and curriculum review revealed gaps in training, credentialing, and job advertisements but did not seek the root of these gaps. These gaps provide results, implications, and even an overall future direction for Mitchell Community College fire training programs but it was not within the purpose of this study to determine how or why various gaps have developed.

The final limitation surrounds the researcher's possible bias, which could impact the results. While this research was conducted with academic standards and integrity, the researcher is an expert in fire service training. This creates certain legitimate preferences even when crafting survey and interview questions. I created the first MCC Basic Firefighter Training program and has an interest in the program's future. While training fire fighters, I also an active fire fighter and has witnessed the rise of numbers of medical emergencies throughout his community. Furthermore, I understand the need for constant improvement and wants the credentialing program he created to be as effective as possible when serving the local community.

Implications

In 2008, Mitchell Community College began a fire service training program primary to serve the career departments located in Iredell County. The program went through multiple progressions and has graduated over 140 firefighters. When graduates were asked if they were satisfied with the program, all 70 surveyed or 100% indicated satisfaction with the program. Though survey results illustrate all graduates were satisfied with the program, the results also indicate that there is a necessity for change. Most applicants did not acquire full-

time employment until both fire and emergency medical training were completed. Obviously, this highlights the need for combined fire and emergency medical training.

In addition to graduates' results, the interviewees reported that medical calls were on the rise exponentially and Emergency Medical Technician Basic Level (EMT-B) had become a requirement for entry-level firefighters. Furthermore, 58% survey participants responded that EMT-B was an unstated requirement for an entry-level firefighter position though it was not advertised by the local fire department. All four interviewees painted a picture of a changing fire service. Firefighters no longer simply prevented conflagrations as they did in early days of American colonization (Loyd & Richardson, 2014). Medical, hazardous materials emergencies, and rescue incidents are on the rise and the need for qualified applicants is increasingly important to their agencies. They cited the need for medical and fire training to occur in one college semester.

With the stakeholders providing a vivid view of the changing fire service and graduates stating a medical credential would be useful to hiring process, EMT-B should be integrated as a requirement within Firefighter I & II training at Mitchell Community College's Basic Firefighter Training program. This change would ensure local fire departments have trained and credentialed applicants available for hire. In addition, the local community would have an additional avenue affordably to train the volunteer fire fighting force.

Methods for Training with a Limited Budget

While budgeting is always an important consideration to government administrators, for fire service it can cause additional stressors for budgeting managers. In reflecting on budgeting issues, each interviewee mentioned budgeting as a challenge in regard to training,

hiring, and managing personnel. The limited scope of fire service administration adds to the overall challenge of budgeting as well as the difficulty in planning necessary budgets due to unforeseen circumstances such as retirements or injuries on the job. This finding correlates with survey findings, as well. As indicated, 58% of survey participants found EMT-B to be a requirement for hire. If administrators hire credentialed applicants, training cost is saved. Furthermore, departments limit overtime when they do not have to cover an employee who is attending classes for certifications. In most cases, when an employee leaves the department, there is an immediate vacancy. It takes longer to fill the vacancy if the desired new employee is not credentialed. Before beginning work, the employee must complete their training; therefore, overtime must be paid to fill the vacancy.

Limited Scope of Fire Service Administrators. This theme explained by the participants is one of difficultly. Fire officials and administrators are charged with budgeting and managing limited budgets. Fire departments exist on a local city or country government level; therefore, annual budgets are established by elected leaders. This fact alone makes it a rigid system where flexibility is rare. Typically, tax money is collected from local citizens by the individual local governments and those funds are used for budgeting purposes in a system. Participant A002 stated:

> Staff has [publishes] that exact number but I'm thinking 5-6 every 18 months. The year we received SAFER [Staffing for Adequate Fire and Emergency Response] grant and it provided additional 6 firefighters to better meet standard. Much of my hiring is based on budgeting. Of course, my budget is based on City Council and the budget they provide for fire department. This changes year to year with the ad valorem tax they receive.

As this stakeholder identifies, budgeting for new employees is difficult for local fire officials. This makes local training programs important. As an open community college system, MCC's program allows any community member to attend fire and ems training. The more

community members that attend, the easier the recruitment for local fire officials becomes. In addition, it is important for stakeholders to agree on the minimum credentials so those credentialing programs can be offered by local community college. This ultimately saves fire departments budgeted monies if they can hire credentialed entry-level employees.

Difficulty Planning Necessary Budgets. Fire departments are only one service within a local government system, and, therefore, these organizations must compete for funds with other governmental departments such as law enforcement, streets, and sanitation. For budgetary issues, the author understands that budgets are granted annually and follow a fiscal cycle commensurate with the State of North Carolina budgeting process and requirements. The issues highlighted show that it is difficult to plan for training when retirements and career ending injuries cannot be predicted. Participant A001 states:

> Mitchell's program is solid and gives us avenues to get interested people trained. I think a one or two semester program where the student receives all the necessary training would be good. Currently, we need MCC to conduct our training. We simply do not have the resources to do on our own. The fire department is one of several departments within the City and we are always competing for funds with other departments and many times this is political. Other times it's simply math. There's only so much money.

Hiring Credentials

Every profession has a minimum credential set needed to start the job. The fire service is no different. Each participant discussed credentialing in a different manner but there was consensus that aspiring firefighters did not fully understand their path to obtaining a career in the fire service. For government employees such as fire fighters, it can be difficult for a fire official to set credentialing requirements. Participant A003 stated:

> We say you only need a driver's license, but I only recall us hiring one with no training or experience and that was before my time. It was somewhere around 2009 and we put him through MCC's Basic Fire course and then EMT. Much of this criteria is decided by [the governmental] HR manager.

Fire service officials must navigate these difficult situations but also ensure they have a trained and effective fire fighting force. This likely indicates local fire officials need a plan to help applicants understand what is or what will be required if they are hired. 86% of surveyed participants revealed that they entered the program believing Basic Firefighter Training was the only requirement for obtaining a job. Furthermore, 28% said EMT was needed as part of Basic Firefighter Training.

Lack of Understanding Necessary Credentials. The participants acknowledged that it is typical that someone interested in fire service might not understand the necessary credentials because only minimum requirements are posted in job advertisement and the required training for fire fighters is not widely known among citizens. Participant A003 stated, "I'm not sure they [recruits] understand before they're hired. But, you know, the entire thing is difficult. EMT is a difficult course and to take it while you adjusting to the fire service is stressful for most." Interviewees also discussed the fact that the more credentials a candidate had, the more likely the candidate would be hired. And, in addition, an applicant with EMT-B along with Fire Fighter I & II, is the best hire for the job. As participant A002 noted, "Well, we all want candidates in the process that meets the minimum, but the more certifications and qualifications one has, the better their opportunity."

Additionally, fire fighter officials acknowledge that minimum requirements are posted even though it's difficult to train recruits on the job due to the strain debarments place on a department. The more qualifications a recruit comes in with, the better. A003 said, "Hiring someone without Basic Fire and EMT took well over a year to complete. That part hurts our department's staffing." So, ensuring that incoming recruits understand the minimum standards versus the actual hiring qualifications is important for departments.

Lastly, participant A002 further discussed the inconsistency between the hiring credentials posted in job advertisements as compared to what is needed for the job and how this leads to many applicants not having what they need. Participant A002 stated,

> There is no consistency with credentials mentioned in job advertisements. Ideally, I need to hire people with their certs and put them on the truck after a short 2-week orientation. Right now, many of our applicants don't have everything they need. We state high school diploma and driver's license, but we often give preferential treatment to certified candidates and really those that have been through MCC's program.

This point is also highlighted in survey results with 86% of respondents stating they were led to believe North Carolina Fire Fighter I and II were the only requirements for employment. However, all local departments stated both fire and emergency medical services credentials were needed for hire or shortly after entry-level employee is hired.

Difficulty in Setting Basic Requirements. While most professions have no issue requiring specific qualifications, it seems the fire service has problems doing so. This is heavily reflected in the survey results and the fire administrators agreed. Participant A001 stated:

> We say you only need a driver's license, but I only recall us hiring one with no training or experience and that was before my time. It was somewhere around 2009 and we put him through MCC's Basic Fire course and then EMT. Much of this [sic] criteria is decided by HR manager.

Further, participant A003 stated:

> Well we take everyone in [into] the process that meets the minimum but the more certifications and qualifications one has the better their opportunity. I would think this is true with any job. But the minimum does only say 18 years of age, high school diploma, and driver's license. I've always been told this is set by HR.

Interview respondents and survey participants both highlighted that local departments have a job advertising problem or a requirement problem. While they advertise only a driver license and a high school diploma is needed, local departments are primarily hiring entry-level

employees with fire and emergency medical services credentials. This is creating a county-wide culture where job seekers are unsure of actual requirements. Essentially, it appears, in most cases, applicants with both fire and emergency medical services training have an unstated advantage over those applicants without both credentials.

Ensuring Effective Hiring Requires More than Minimum Standards. In smaller departments like those in this study, it was noted that there is a lack of budget and a limited amount of time to allow for a lot of additional training; therefore, the better qualified someone is prior to being hired, the more likely they will be selected. Participant A001 stated, "The town doesn't like the idea of hiring them and then firing them if they can't complete EMT training. We have found it best that we hire EMT-Bs." This statement correlates to the survey respondents who stated they found EMT-B to be an important requirement before they could secure employment as a firefighter.

Change in Fire Service. The interviewees each described a changing fire service, and this emerged as a theme. Change in any profession often happens without credentials or planning. Those in the profession evolve through on the job training or in-service experience. However, those looking at the profession may not understand what it takes to perform well in this job, or they may be ill suited. Many millennials struggle with paramilitary style training while those currently in the profession may struggle with technology changes, as discussed below. As the service changes, so must training methods and even fire department recruiting strategies.

Overall Changing Professional Needs towards Medical and Technology. All the participant agreed that the fire service industry is changing, and the needs of the department are evolving. Many participants felt that service calls and medical calls are now out

shadowing fire calls and practitioners need to be aware of the changing landscape. Participant A001 stated that,

> Fire is no longer the focus. We only run about three fires per month here. I mean actual fires. We have some smoked up homes and things like that. Medical is a big part of what we do. We'll run around 500 medical calls monthly.

This statement was seconded by participant A003, who noted that "we are becoming more service oriented to other areas, instead of focusing on firefighting and mitigation." Data highlights both participants are correct. There is an established increase in medical calls locally and nationally.

Recruits Do Not Have Paramilitary Style Training. While there are many new ways to deliver training and necessary skills, it was stated that the newer generations are not as focused and have a hard time learning through tactile and kinesthetic means. Since the delivery of fire training requires hands-on experience, this has become a challenge for new recruits. Participant A003 highlights this idea by stating that,

> The new generation of firefighter has been taught by the use of technology in the school system. They seem to have a shorter attention span and less desire to touch and learn the actual equipment.

Older Firefighters Need Technology Training. On the contrary, older recruits need more technology-based training because there are many aspects of the job that require use of equipment. Participant A001 discusses technology and the various uses in the field moving forward by saying,

> We need them to understand technology and different records management systems, but they must be good on the fireground too. Of course, medical care is becoming important. Many California and mid-West departments are doing paramedicine. I can see that becoming a big thing here. The EMTs go in and take blood pressure and vitals and ensure patients are taking their medicines. This

could stop unnecessary doctor and hospitals visits, saving insurance and taxpayers billions of dollars.

The data gathered was divided into three themes: Methods for Training with a Limited Budget, Hiring Credentials, and Change in Fire Service. Surveys, interviews, and curriculum review was used to guide recommendations. These themes were found throughout the gathered data and provide local fire officials and Mitchell Community College with options for the future. In summary, the configuration of the current programs is working but the curricular offerings can be improved and modified to better meet stakeholders needs.

Recommendations

Based on implications of this study, changes in community needs will impact the community college's program. First, a curriculum change would need to occur. Currently, North Carolina Fire Fighter I and II certification is a minimum of 428 hours while North Carolina EMT-B level certification is a minimum of 180 hours. If programs are combined, this brings total hour requirement to 608 which is difficult to obtain in one 16-week college semester even at eight-hour days. However, the curriculum for both programs can be modified, and the modifications are fall within standards for both programs. Through a state standard review, three curriculum changes appear to be necessary and affects both credentials in the ways outlined below:

- Eliminate course titled "Emergency Medical Care" from NC Fire Fighter I and II certification. This curriculum change eliminates fifteen-hours.
- Combine NC Fire Fighter I and II course titled "Rescue" and EMT-B module title "Vehicle Extrication." This curriculum change would eliminate eight-hours.
- Both credentials have victim management components that should be shared. Victim management curriculum teaches methods for dealing with injured patients. This

curriculum change would eliminate eight-hours but still teaching the student needed skills.

These highlighted changes would eliminate thirty-one hours from the program which makes combining the program a good option for stakeholders.

Recommendations for Program Administrators

These changes would allow MCC to schedule both EMT-B and Fire Fighter I & II credentials in one 16-week college semester. While the changes seem simplistic, they are important distinctions. First, this illustrates to the student that fire, rescue, and emergency medical services are, in practice, one skill. Secondly, the idea of victim management training allows students to understand how to handle victims and work together with all professions. Finally, this accomplishes the expressed need of the local fire officials of moving the program from a one-year to a six-month program.

Recommendations for Local Fire Departments

This study also provides implications for local fire departments. Though the surveys clearly show applicants do not get hired without EMT-B, the interviews point out that this has not been an advertised requirement. Basically, paid departments within Iredell County are advertising that only a high school diploma is needed; however, a high school diploma, NC Firefighter I and II, and North Carolina EMT-Basic are required prior to hire or before actually being placed on active duty. Further, as a partner to local fire departments, Mitchell Community College is marketing North Carolina. Additionally, local fire department officials, as illustrated through regional data, indicated that medical calls made up most of their responses. Furthermore, interviews revealed a changing fire service profession. Local fire officials need their personnel to have medical and fire training to mitigate emergencies.

Officials will need to work with their respective human resources departments, Mitchell Community College, and their internal hiring committees to overhaul recruitment efforts and credential requirements.

Revisiting Conceptual Framework

This research sought to understand a local community college's basic firefighter training program and the program's ability to meet the needs of the community. To do so, the author analyzed current standards, trends, human resource practices, and overall program success while looking through the lens of classic change theory. Change theory was considered even while developing the course of this research. The first action was analyzing self-assessment research which teaches the idea of taking a step back or taking the balcony view (Heiftez & Linsky, 2002). This means the researcher needed to look at the entirety of the circumstances and evaluate the situation, comprehensively and without bias. Obviously, this can be difficult. In this study, the author explained his personal bias and investment in the fire training program; therefore, using this lens was a necessary step. Furthermore, fully understanding an issue helps guide the questions needed for improvement. This idea is a key foundation to system-thinking and change modeling.

The data gathered revealed that while the program was a success, there are implications and those implications, if accepted, promise to improve the program. The program, now 10 years old, will take system-wide change. Change is difficult in any organization but even more difficult when multiple agencies or even interagency departments are involved. Bolman and Deal (2017) offer a system's thinking framework for change that uses a four-frames, or lenses, to aid in searching out solutions to known and unknown issues that become apparent. By engaging these frames, Bolman and Deal posit that organizations

can remake themselves and remain effective. They suggest these four frames: Structural, Human Resources, Political, and Symbolic.

The author is recommending an internal curriculum change and program modification. Bolman and Deal (2017) define the structural frame as one that focuses on the architecture of organization which includes management processes, division of labor, coordinating mechanisms, feedback loops, rules and roles, goals and policies. According to Bolman and Deal, these frames individually impact decisions and actions and are together ingrained in the culture and skeleton of every organization. Mitchell Community College and local fire departments will look at the structural frame to make these changes. After the initial change, such as new schedule and combining the curriculum, the college will need to look at those employees providing the programs. The current structure will need adjustment to accommodate the necessary collaboration between the EMS and Fire Coordinator

While the structural frame may be the most important, the political frame will also assist in moving the proposed new program modification forward. The political frame is not politics in the traditional sense, such as elected officials, although politicians in government bureaucracies are often affected by elected leaders' decisions. As an alternative, Bolman and Deal (2017) recommend use of the political frame to explain methods to deal with power and conflict, build coalitions, improve political skills, and deal with both internal and external influences that impact all organizations. In this study, politics is divided into two categories: internal and external.

Internally, the curriculum analysis and curriculum change require approval from all levels of the college and ultimately approved by the president. As Bolman and Deal (2017) illustrate, the political frame will highlight potential winners and losers. Compromise will be

key. In fact, simply the approval to conduct the study was a political event. At MCC, we have a division dedicated to research and accreditation. Any outside research must be approved by this division before ever landing on a vice-president's or president's desk. Understanding the internal politics was important. I first made my proposal to the research and accreditation division and helped them understand that my research would further their work. Understanding that a coalition with their division was important, they assisted me in moving my project forward. In addition, when I needed assistance with internal data, they were supportive. Thus, they assisted with my research and gained institution research that could aid in program effectiveness. Furthermore, this helped me understand the value of long-term organizational relationships and the importance of taking input from others.

External politics were also important here as well. Local fire departments, 911 agency, Mitchell Community College students/graduates, and certain fire officials had to provide answers to questions about their experiences and agencies. They all report to elected officials and have public safety responsibilities. This is sometimes an area where organizations do not like to provide data, especially response, training, and hiring practices information. Due to the researcher's good standing in the county with years of service to the community, surveys were completed, and interviews were granted without significant challenge. While it was outside the scope of this study, the Bolman and Deal framework could function as a model for understanding the state's firefighting program needs and both the political and structural frames could be useful. Currently, in this state, there are two different boards that govern fire and EMS training; one for each discipline with the boards being comprised of political appointees, respectively.

While each frame within the model is important, the human resource frame also provides some clear direction for this study. Table 17 reveals 100% of survey respondents believe medical training should be included in the Basic Fire Training Program. Bolman and Deal (2017) suggest that preparing workers and giving them the tools they need to succeed will ultimately create a successful workforce. Training today's firefighters in both medical and fire fighter skills will this workforce the confidence they need to succeed in an ever-changing environment. Entry-level firefighters are working in a world for which they are often unprepared to perform. In addition, current firefighters are seeing the world change quickly around them. Providing a combined curriculum will prepare them to mitigate emergencies for their communities and their organizations.

In Chapter 2 of this study, the researcher explains the fire service's cultural norms and the importance of symbolism. Recall 9/11. To this day, the picture of firefighters raising the American flag is one of the most important and symbolic images this nation holds. Furthermore, many Americans look up to firefighters. They are heroes to children and adults alike. Many images exist of firefighters carrying children down ladders and pulling civilians from danger. As the data indicate, medical emergencies are on the rise and fire emergencies are on the decline. Additionally, the researcher introduced this new idea of community para-medicine. Firefighters and medics are performing post-hospital care in some parts of the country. These shifts will certainly change the fire service culture. Along with it, Americans will begin to view firefighters differently and firefighters will ultimately follow suit and view themselves differently, too. This shift in perspective could lead to identification with new symbols and a new type of dedication to the profession,

Recommendations for Future Research

Future research should focus on three areas. First, conduct quantitative study in North Carolina to determine if individuals in combined EMT-B and Firefighter I & II training programs are more successful in becoming employed than those who only take Firefighter I & II. This study has shown that Mitchell Community College graduates have a better opportunity of employment when they complete both EMT-B and Firefighter I and II. The question becomes: Does employment through completion of both programs hold true throughout North Carolina and the remaining 57 community college regions and 1300 fire departments affected? It seems likely that most jurisdictions are experiencing increase medical call volume and the need to cross-train is prevalent throughout the state.

Second, it will be important to determine if current training programs are meeting the needs of the participants and employers. North Carolina is large state with numerous types of career, combination, and volunteer fire fighters. However, each department is now responsible for medical, hazardous materials, and fire emergencies. Research should be conducted to ensure that the state's community colleges are meeting the needs of every North Carolina community. Also, a statewide curriculum change may be necessary to meet the needs of the changing fire service. This research, and the changes, recommended here could be implemented statewide.

Finally, research is needed in the area of training methods. While not directly related to this study, several of the interviewees stated technology should be incorporated into fire service training. Traditionally, fire fighter training employs a rigid, manipulative paramilitary style training. However, reductions in budgets makes it more difficult for departments to send trainees off for extended periods of time. In addition, the new generation of fire fighters

grew up using and learning with technology. Several different methods of training entry-level fire fighters were found but full incorporation and curriculum changes has not yet surfaced.

This study highlights the need for future research on firefighter and emergency medical training. As illustrated, Iredell County and Mitchell Community College have a need to merge fire and emergency medical training. While it can be presumed that the rest of North Carolina, or even the United States, is experiencing trends similar to those referenced here, further research is needed to verify the trend. This study did demonstrate an increase in medical calls nationally and an increase in medical responsibilities for all first responders. With the ability of United States fire services to adapt to identified societal response needs, firefighters will continue their commitment to provide communities with all-hazards responses and emergency mitigation. The future will decide how we train these first responders and they will answer the call.

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Appendix A

Survey Questions

Open End Question

Please answer fully.

1. When did you graduate?
2. What program(s) did you complete at Mitchell Community College (MCC)?
3. What part of the basic program was helpful to you?
4. What could be improved/enhanced/added to your basic program?
5. Was there anything you wish your basic program had included? Please explain.
6. Overall, were you satisfied with your MCC program?
7. Are you currently employed?
8. If you are employed, where?
9. If you are employed, in what capacity are you employed? What is your job title?
10. How long after the time of graduation did it take for you to become employed?
11. If you are still not employed, why do you think that is?
12. If you are still not employed, how long have you been searching for a job?
13. How many jobs have you applied for?
14. How many interviews have you had?

Rating Questions:

Please rate yourself on the following items by selecting the statement that you feel most accurately represents your opinion:

15. I had a positive fire training experience?
16. After the training program was complete, I felt prepared to enter a career in firefighting.
17. I felt the basic fire program fully prepared me for my employment.
18. I understood that the basic fire training course was the only requirement for employment.
19. I felt that the medical training component was adequately addressed during training.
20. When I was in the program, I felt that additional medical training would be beneficial.
21. As I interviewed for jobs, I began to wish I had completed the medical (EMT) training.
22. I felt that there was a gap between employer requirements and job advertisements.
23. If you agreed with the question above, what was the nature of the gaps you observed?
24. I currently feel that medical, fire, and rescue certification should be combined.

Appendix B

Interview Questions

Date: _____

Interviewee: _____

Position: _____

1. How many firefighters have you hired in the past five years?
   Of those hired, how many were new to the profession?

   How many of these new hires had completed basic firefighting previous to employment?

   How many received training after employment?

   How many had EMT when they were hired?

   Have you required/urged these newer hires to become certified as EMTs?

   Are there other types of training these recruits had that you found to be valuable?

2. How many of these new firefighters came to you with experience from other units? Could you briefly describe the credentials of new hires with experience?

   How much experience did these hires bring with them?

   Was their training similar to that of firefighters currently employed in your unit or did they have training/certifications others on the force lacked? Explain.

3. How often you hire entry-level fire fighters?

4. Is the training level of your new hires consistent with the credentials mentioned in your job advertisements?

5. Do you feel that firefighting service is changing? If so, in what ways?

6. Do you feel training methods/curriculum should adapt? If so, in what ways?

7. In what ways do you believe the training/credentials, or requirements for firefighters could or should be improved?

8. In what ways could Mitchell Community College help you with current credentialing of firefighters or anticipated needs in the future?

9. Do you have suggestions for the Mitchell Community College firefighting curriculum?

Appendix C

Notice of IRB Exemption

To: Joshua Smith
Doctoral Program angelrb@appstate.edu
CAMPUS EMAIL

From: Monica Molina, IRB Associate Administrator
Date: 4/04/2018
RE: Notice of IRB Exemption
Agrants #:
Grant Title:
STUDY #: 18-0019
STUDY TITLE: A CASE STUDY OF A COMMUNITY COLLEGE'S BASIC FIREFIGHTER PROGRAM AND ITS CAPACITY TO MEET REGIONAL FIREFIGHTING REQUIREMENTS

Exemption Category: (2) Anonymous Educational Tests; Surveys, Interviews or Observations

This study involves minimal risk and meets the exemption category cited above. In accordance with 45 CFR 46.101(b) and University policy and procedures, the research activities described in the study materials are exempt from further IRB review.

Appendix D

Mitchell Community College Acknowledgement Letter

Dr. Roma Angel, Professor
Professor of Leadership and Educational Studies
Appalachian State University
Boone, North Carolina 28608

Dear Dr. Angel:

Please be advised that Mitchell Community understands and approves the following activities to be conducted by Josh Smith in the pursuit of his doctoral degree:

- Review of current public safety curriculum
- Use of any past data collected by the programs
- Interviews of current and / or past Mitchell Community College public safety students

If you need additional information, please do not hesitate to contact me.

Sincerely,

Carol G. Johnson

Carol G. Johnson
Vice President for Workforce Development

Appendix E

NC Fire Fighter I and II Curriculum and NFPA 1001 Crosswalk

NC Fire Fighter I and II Curriculum and NFPA 1001 Crosswalk			
College ID	NC Fire Fighter I and II Course	Required Hours	Meet NFPA 1001
FIP-3001	Orientation & Safety	16	Yes
FIP-3003	Alarms & Communications	16	Yes
FIP-3004	Fire Behavior	12	Yes
FIP-3005	Portable Extinguishers	8	Yes
FIP-3006	Personal Protective Equipment	20	Yes
FIP-3007	Forcible Entry	12	Yes
FIP-3008	Ventilation	20	Yes
FIP-3009	Ropes	12	Yes
FIP-3010	Ladders	16	Yes
FIP-3011	Fire Hose, Streams, and Appliances	20	Yes
FIP-3012	Foam Fire Streams	8	Yes
FIP-3013	Fire Control	36	Yes

FIP-3014	Loss Control	16	Yes – In NFPA it is two classes titled salvage and overhaul but content is present in this course.
FIP-3016	Emergency Medical Care	12	No – This course does not contain needed CPR and some hemorrhage control. NC EMT-B is accepted in lieu of this course and it does meet NFPA 1001.
FIP-3017	Rescue	20	Yes
FIP-3018	Water Supplies	20	Yes
FIP-3019	Sprinklers	16	Yes
FIP-3021	Fire & Life Safety Preparedness	12	Yes
FIP-3022	Building Construction	16	Yes
FIP-3024	Health & Wellness	8	No
FIP-3025	Safety & Survival	16	No – this course is part of NC but not NFPA 1001. It is covered under a different standard: NFPA 1407
FIP-3026	Mayday	8	Yes – Covered in NFPA 1001 and NFPA 1407

Vita

Joshua James Smith with was born in Statesville, North Carolina to Pamela and Rudy Smith. He attended North Iredell High School and graduated in May of 2000. In 2002, he began a career with the Statesville Fire Department and completed his associate's degree in 2004. The following fall, he began his bachelor program at Gardner-Webb University. He was awarded his a Bachelor's of Science in August 2007. In spring of 2008, Smith began his Masters of Public Administration degree at Appalachian State University and graduated in 2010. Three years later, he returned to Appalachian State University to complete his Education Specialist degree in Higher Education. He was awarded his Ed.S. in December 2013. In August 2015, he commenced work toward his Ed.D. in Educational Leadership at Appalachian State University.

Mr. Smith is currently a Battalion Chief with the Statesville Fire Department and is assigned to the suppression division. In addition, Joshua serves as Fire Service Training and Curriculum coordinator at Mitchell Community College. He has been heavily involved in fire and rescue training for over 10 years. As such, he was appointed by North Carolina Insurance Commissioner to serve on North Carolina Fire and Rescue Commission. This commission sets policy for fire and rescue training statewide. In addition, he serves as Political Director for Professional Fire Fighters and Paramedics of North Carolina. This position allows him to advocate for fire fighters and work on important legislation. He lectures across United States on methods for passing legislation in non-collective bargaining states. He currently resides in Statesville, North Carolina.