

Running head: ASSISTING PERSONNEL ACHIEVE PROMOTIONAL EXAM SUCCESS

Making the Grade: Assisting Personnel Achieve Promotional Exam Success

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Certification Statement

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of others.

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Abstract

This research problem was Indian River County Fire Rescue (IRCFR) personnel were consistently achieving low scores on written exams that limited their contention or eligibility for promotion. The purpose was to identify contributing factors that resulted in low exam scores so that educational and training recommendations could be made to improve the efficiency of personnel preparing for the promotional process. The descriptive research methodology was used to answer the research questions of what learning methods or styles existed that would assist with exam preparation, and what were the common exam preparation practices used by IRCFR personnel. Also answered were questions that identified how IRCFR developed promotional exams as compared to other organizations, have other fire agencies been affected by low exam scores, and what recommendations did they offer. The procedures included the analysis of a comprehensive literature review from both recent and contemporary sources, personal interviews with field experts, and surveys of both IRCFR personnel and other fire departments to answer the research questions. The results indicated the most prevalent causes of low exam scores to be poor study skills of IRCFR personnel, and deficiencies in the validity, reliability, and objectivity of IRCFR written exams. Included was consideration given to the possibility that undiagnosed learning disabilities or other psychological factors affecting IRCFR personnel existed and contributed as cause. The recommendations are: a) for the IRCFR Training Division to better prepare and administer more effective and accurate written exams; b) for the IRCFR administration to guide personnel suspected of having a learning disability toward getting the appropriate level of assistance; c) for IRCFR personnel to seek assistance through the Employee Assistance Program; and d) for IRCFR personnel to create their own opportunity for promotion by improving their study and test taking skills through the research results of this study.

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Introduction

Making the Grade: Assisting Personnel Achieve Promotional Exam Success.

The problem is Indian River County Fire Rescue (IRCFR) Personnel are consistently achieving low scores on written exams that limit their contention or eligibility for promotion.

The purpose of this research is to identify contributing factors that result in low exam scores so that educational and training recommendations can be made to improve the efficiency of personnel preparing for the promotional process.

The descriptive research methodology will be used to answer the following questions: a) What learning methods or styles exist that would assist with exam preparation?; b) What are the common exam preparation practices used by IRCFR personnel?; c) How does IRCFR develop promotional exams as compared to other organizations?; and d) Have other fire agencies or organizations been affected by low exam scores and what recommendations do they offer?

Background and Significance

The responsibility placed on an organization by its stakeholders or governing body to have the right persons in the right positions does not always mean the best candidate is chosen. In a letter addressed to his personnel, Police Chief Ron Lawrence of the Rocklin California Police Department stated in the Rocklin PD News (2011), "Hiring and promoting the right people for leadership jobs is by far one of the most important aspects of leading any organization" (Lawrence, 2011, p. 1). The difficulties involved with promoting the best candidate to a higher level of responsibility or rank spans beyond the predictive judging of succession planning, or the development of a successor for a key position. As can be expected with any organization that has a hierarchical structure, advancement or promotion within that organization should be determined by some form of evaluation or standard. When this involves a

written exam, the candidate must possess the ability to achieve consideration for that position by attaining an acceptable score. However, based on test scores, an organization's administration may be forced to choose a less than prepared candidate instead. Indian River County Fire Rescue (IRCFR) is without exception, and the inability of key individuals to achieve higher written scores, that would place them higher on a promotional list, is the focus of this research.

IRCFR had humble beginnings in 1923 as the county seat, the city of Vero Beach, first organized the Vero Beach volunteer fire department on December 17, and later became a paid department in 1925 by employing one fire chief and one firefighter. (Indian River County, n.d.) At that time the population of Indian River County (IRC) was 6,724 persons. (U. S. Census Bureau, 2007) As time moved on, the population grew and so did the demands for fire and medical services. In order to keep up with the growing needs of the population, IRCFR eventually developed into a larger department that provides an array of services to the entire county. This expansion brought with it an increased number of personnel, a chain of command, and a rank structure. It also forced IRCFR to establish rules and standards, in the form of exams, for the purpose of promoting the best qualified personnel within this structure.

Today IRCFR consists of 12 fire rescue stations, and employs a diverse assembly of both male and females totaling 225 career personnel. In 2010 IRCFR responded to 22,065 emergencies. (IRC, 2010a) The total work force is divided into two groups; day and shift personnel. Day personnel are those that work a 37.5 hour week. The day personnel are further divided into functional groups that consist of a training division, fire prevention bureau, fire investigation, chief officers and administrative personnel. Shift personnel make up the majority of the fire rescue division's operational workforce. There are three shifts, also called battalions

that are identified by the letters A, B and C. The staffing for each shift consists of 70 personnel that operate on a 24 hour on-duty and 48 hours off-duty schedule.

The primary function of IRCFR is to provide emergency planning, risk reduction and mitigation, in order to ensure the preservation of lives, environment and property for the people of IRC, Florida. These efforts are successfully accomplished by providing prompt, cost-effective fire protection and life safety services, as well as public education programs. IRCFR also responds to all structural, wildland and automobile fires; basic and advanced life support incidents; and includes special operation events, such as: hurricane and radiological disasters; hazardous materials response and mitigation; high angle and confined space rescue; airport firefighting rescue; marine firefighting and dive rescue for the inter-coastal waterway and the Atlantic ocean within its boundaries.

IRC is comprised of 497 square miles of mixed urban and wildland areas with the majority of the population concentrated in an area approximately 25 miles long and 15 miles wide that is situated along the Atlantic coastal region. According to the University of Florida, Bureau of Economics and Business Research (2011), the population of Indian River County, as of April 1, 2011, is estimated at 138,028 and increased during the winter season to 158,890. (University of Florida, 2011, p. 12)

In order to fulfill the requirements of providing the highest level of service to its community, the IRCFR administration will promote those candidates they feel are the most qualified to key positions when vacancies occur; however, this is not always possible because the existing selection process is bound by a contractual agreement. The current practice, as found in the collective bargaining agreement between Indian River County (IRC) and the International Association of Fire Fighters Local 2201, limits the administration's field of choice. "Article 18,

Vacancies and Promotions” of this agreement requires that once the promotional testing is complete, only those candidates ranked within the top three may be chosen from the promotional list. Also, as each vacancy is filled, the candidate ranking is adjusted so that the fourth candidate will have his name moved up to number three and so on. (IRC, 2009)

The written exam scores achieved by candidates seeking promotion to the ranks of Driver Engineer, and Fire Lieutenant have kept many personnel from reaching the top three, and thus prevented any chance of promotion. To be eligible the candidate must score a minimum of 70 points, with a maximum of 100 points on the written exam. In the five year span of 2006 through 2010, the average written score for Driver Engineers was 80.33 points, and 74.46 points for Lieutenants. (IRC, 2010b) Throughout this researcher’s 24 years of service with IRCFR, he had become aware of several occasions where the IRCFR administration had been forced to promote candidates, based on the top three rule, who should otherwise have not been promoted. Unfortunately some of these promotions had resulted in discipline and demotion due to poor decision making, damaged equipment, loss of property, and injury to personnel. There are many qualified candidates who demonstrate a high level of competency when asked to work temporarily in these positions, with some consistently outperforming those who currently hold the rank.

IRCFR has not addressed these challenges, nor does it offer educational or personal assistance to those studying for written promotional exams. The lack of preparation from an organizational perspective is a serious problem. The future of IRCFR’s success in providing an efficient and safe service to its community is dependent on the quality and competency of those persons promoted within its ranks. The potential of promoting individuals, who are not ready, will continue to have a negative impact on IRCFR’s organizational effectiveness. There are

many talented men and women employed by IRCFR that are deserving of promotion; however, low test scores limit their contention or eligibility. The intent of this research is to identify those contributing factors that cause IRCFR personnel to achieve low written exam scores, and to develop tools in the form of study and test taking recommendations that will assist personnel create their own opportunities.

There are relevant linkages between the specific content areas of the national fire academy's course R125, Executive Leadership (EL-R125) and this research problem. Indian River County Fire Rescue Personnel are consistently achieving low scores on written exams that limit their contention or eligibility for promotion. The linkages were established through application of both the primary curriculum theme and the course goal of EL-R125 to this research. The primary curriculum theme and purpose of this course is to bring together all of the educational aspects discovered through the previous three Executive Fire Officer Program (EFOP) courses: a) Executive Development b) Strategies for Community Risk Reduction, and c) Executive Analysis of Fire Service Operations in Emergency Management. EL-R125 also encourages the student to "examine contemporary public sector and fire service issues using a case study approach to enhance the officer's ability to perform at an executive level" (USFA, 2005, p. iii). The comprehensive subject matter of EL-R125 includes the use of feedback, developing leadership, decision making, succession planning, and replacement planning. The goal of this course is "the executive fire officer will develop the ability to conceptualize and employ the key process used by effective executive-level managers" (USFA, 2005, p. SM1-3). Further, this research project directly correlates with the following terminal objectives "...develop an appreciation for workforce planning, development, and succession planning" (USFA, 2005, p. SM 7-2). This research also relates to and supports two of the four United

States Fire Administration operational objectives: a) Improve local planning and preparedness, and b) Improve the fire and emergency services' professional status. (USFA, 2011, p. II-2)

In taking a more proactive approach to succession planning, by way of formulating research findings in order to assist personnel prepare for promotional exams, effective study and test taking recommendations can be developed. These tools will assist the candidates identify through comparison their strengths, weaknesses, or other factors that may have contributed to low exam scores. These tools will allow for corrective actions that will ultimately allow the candidate the opportunity of improving their ranking on promotional exam lists. IRCFR will then have the ability to provide a better service to the community by promoting candidates that meet a higher standard of excellence.

Literature Review

Indian River County Fire Rescue (IRCFR) Personnel are consistently achieving low scores on written exams that limit their contention or eligibility for promotion. The objective is to provide a compressive literature review of recent and contemporary sources relating to this research problem. These findings will be evaluated in an attempt to identify contributing factors that result in low exam scores so that educational and training recommendations can be made to improve the efficiency of personnel preparing for the promotional process. The future of IRCFR's success in providing an efficient and safe service to its community is dependent on the quality and competency of those persons promoted within its ranks. With the potential of promoting individuals who are not ready, and the resulting negative impact to IRCFR's organizational effectiveness, concentration for this research will be directed toward developing tools in the form of study and test taking recommendations that will assist personnel create their own opportunities.

Edward Prime III, the IRCFR Assistant Chief of Operations, stated each individual will learn differently, and that many factors can influence how students or test taker will retain information when studying for exams. He advised that reading or reviewing the material alone may not be sufficient, and that several studying methods may have to be used. Prime explained the importance of understanding individual differences, and that each will have their own methods of learning. Suggestions offered by Prime included that if a study guide was used; personnel should not use the true and false questions or multiple choice questions as written. This was due to the question including a false statement or wrong answer choices. (E. Prime III, personal communication, May 29, 2011)

One such factor is age and maturity. According to the International Fire Service Training Association (IFSTA) Adult learners are often challenged and may find new ways of learning to be difficult. In their Fire Service Instructor manual (1990) the psychology of learning was described as a permanent change in behavior. IFSTA classified three general methods of learning as cognitive, psychomotor, and affective. These methods were expanded upon by including explanations for each as it pertained to the adult learner. This included the negative influences, and the laws for correcting those aspects. IFSTA incorporated a comparison between the five senses and how stimulation of the senses would influence a learner's retention. Also discussed was the use of written exams as both subjective and objective way of measuring understanding and retention, as well as the advantages and disadvantages of each question type. IFSTA included caution to exam writers that each question must be carefully validated for accuracy and reliability. (Monigold, & Vandevort, 1990)

Mel Silberman echoed the words of IFSTA regarding the nature of adult learning in his Active Training manual (1998). He added the philosophies of remembering and forgetting

information, as well as how the brain processes information. Discussed in this manual, through case study, was how the methods used for instruction influenced learning, and offered the retention percentages given to each instructional mode. The methods of learning included lecture, reading, discussion, and demonstration. Silberman added that average retention rates of various instructional modes were difficult to measure, but that they did suggest a progression worthy of discussion. (Silberman, 1998)

A simple understanding of learning methods, or learning styles, was found in the December 2008 issue of *Psychological Science in the Public Interest*. Within this journal, the research conducted by a group of psychologists referred to learning styles as the concept from which individuals will differ in their study methods and use that style they find to be most effective. They continue to explain how the learning style of one student may not be effective for another. Further, they suggest the degree of interest an individual has toward a topic will greatly influence their ability to process the information through motivation. (Bjork, McDaniel, Pashler, & Rohrer, 2008)

On September 6, 2010 Benedict Carey, a journalist and reporter for the *New York Times*, wrote that different approaches toward learning are successful only if the student is motivated. He continued to explain how a few techniques can significantly improve the ability of a student to learn from studying; however, that some of the methods contradicted with those of conventional wisdom. One example offered by Carey is for the student to not limit their studies to a single quiet place. Instead he suggests changing the locations and environment to improve retention. He explained that if a student was to study the same material in a variety of locations or settings, that he or she would develop multiple associations for that same material; thus improving their retention of that material through association. Another technique offered by

Carey was for the student to not focus intensely on a single topic at one sitting, but rather to mix the material in contrast to just one area of study. He explains by varying pertinent and related study material that information is fortified within the brain and therefore more readily recalled when needed. (Carey, 2010)

Research published in *Psychology and Aging* discussed the correlation between memorization and retention of information with the quantity of time spent learning specific study material. Within the study, learning through induction; which is studying and testing, was compared with learning through repetition. Examples were used to describe the retention difference between cramming, or massing information in a short period of time, as compared to spacing the same material over a longer period. This included how subjects who studied material in a short period of time were successful in short term retention, but that the same subjects forgot what they had learned as time progressed. (Bjork, Castel, Eich, & Kornell, 2010)

In a July 2007 article for *Fire Engineering* magazine, Steve Prziborowski, Deputy Chief of Training for the Santa Clara County Fire Department, California, offers the advice of early preparation for promotional exams. He explains the time spent in exam preparation has a direct bearing on the ability of the student to recall pertinent information. Included in the article was reference to time management and organization skills. Prziborowski uses the exam failure rate of candidates within his own department as an example for continual study. He advises that candidates should always be prepared well in advance of an exam and not wait until the announcement of the test date. Prziborowski emphasizes the vast amount of material from which written exams are made can be overwhelming to those that wait for the last moment. He does not recommend cramming as this may be an impractical or impossible task. Rather than cramming the material in a short time period, he recommends reading the material well in advance. This,

according to Prziborowski, allows time for the candidate to review the information at a more leisurely pace. In addition, Prziborowski suggests taking practice tests by using questions found in study guides from the promotional exam reading list. (Prziborowski, 2007)

When asked by this researcher to expand upon written exam preparation, Prziborowski offered information for the test taker. He clarified the meaning of time management as quality time. He advised it was more important for the study time be organized in a productive manner, rather than just spending empty hours reading the material. When asked about suggestions for improving study habits, Prziborowski stated that it would be difficult to give general advice because each person will retain information differently. He added that the hardest part is for each person to figure out what works best for them. Prziborowski did discuss the benefits of flash or note cards, as well as the benefits of making audio recordings from study notes. The study method he personally found to be more successful than others was the gathering of candidates into study groups. (S. Prziborowski, personal communication, June 22, 2011)

In an attempt to identify the study habits and written promotional exam preparation techniques of IRCFR personnel, this researcher had administered a survey (Appendix A). The review of data collected indicated many similarities in their study habits, and the amount of time dedicated to it. Included in their responses are those methods they feel have and have not worked for them. The survey respondents also provided opinions toward identifying the cause of their low scores, and the corrective actions they would give to others. Of the recommendations offered, the leading concern was the limited amount of time they gave to exam preparation. Also identified by the survey was that many of the respondents placed blame for low scores on the exams, and the IRCFR Training Division. The most common responses given for this cause

included: a) poorly written or unclear questions, b) unclear choices, and c) little or no assistance from the training division. (Appendix B)

Rodney K. Johnston, a Battalion Chief of training for IRCFR explained that he was not aware of any personnel ever asking for assistance with written exams; however, he did clarify that a review of the exam was available to personnel upon request. Johnston added that each year some questions had been challenged by personnel during a review, and included how the conflicts were resolved. Johnston placed fault for missed question on the lack of application by the candidate. The exam questions are predominantly written as a multiple choice type with few that require a true or false answer. Every year Johnston creates the promotional exams by using the same procedure each time. This process for writing, choosing, and validating exam questions was shared. Also discussed were the scores themselves. Johnston did not value a specific number as being high or low, but only that it showed an overall average of that particular test. He suggested that personnel who were having difficulty with written exams should seek assistance by asking it, or by taking a college course designed to increase reading comprehension. When asked if the possibility of personnel having a learning disability existed, he was not aware of any. Johnston went on to explain that if he did suspect someone of having a learning disability, he would try to assist while remaining compliant to applicable rules and laws. (R. Johnston, personal communication, June 28, 2011)

A review of Indian River State College's (IRSC) 2010-2011 course catalog showed that college level courses for adult learners seeking assistance with reading comprehension, and basic study skills were available. There were several courses listed, as well as a description of each. Of those found, the following represent the most applicable courses that would be of value to IRCFR personnel: a) REA 0001 college prep reading, b) REA 0002 college prep reading II, c)

REA 1205 advanced college reading, d) REA 1930 reading to learn in the content area, e) REA 2002 introduction to educational psychology, f) SLS 1101 student success, and g) SLS 1501 college study skills. (IRSC, 2010)

The Adjunct Professor's Guide to Success described key elements for developing, administering and analyzing exams. Within this manual, specific advice was offered to test writers regarding effective examination strategies. Multiple choice questions used for exams were considered a good way of measuring a student's aptitude, and knowledge of the material. These question types were described as valid and reliable, but warn that poorly written questions can challenge the validity of the entire exam. True or false questions were also discussed, and discouraged from use. The manual suggests not using them due to the controversy of students having a fifty-percent chance of answering correctly without ever reading the question. Included within the manual was advice for success, and specific pitfall that should be avoided for each question type. (Kysilka, Lyons, & Pawlas, 1999)

The Practitioners' Task Force on Adults with Learning Disabilities (practitioners' task force) has written a set of three technical assistance papers on the policies and procedures in adult general education programs. The areas of study included: a) the rights and responsibilities of adults with learning disabilities and responsibilities of service providers, b) screening for learning disabilities in adult education programs, and c) accommodations for students with disabilities or other special needs. The purpose of these technical assistance papers were written to provide Florida educators a better understanding of state and federal laws, including the Americans with Disabilities Act (ADA) of 1990, and section 504 of the Rehabilitation Act of 1973. (Bestor, 2006a) Within these documents the practitioners' task force defines a learning disability as a permanent disorder that affects an individual's ability of perceiving, and

understanding information. Further, the disorder will involve a deficiency or deficit in the following areas: “attention, reasoning, processing, memory, communication, reading, writing, spelling, calculation, coordination, social competence, and emotional maturity” (Bestor, 2006b, p.4). The practitioners’ task force explained the screening procedures used to identify learners with disabilities. This included a description of the critical components used in the assessment process. The screening purpose was defined as a tool for determining if a formal evaluation was warranted for an individual student, as well as the rights and responsibilities of the student for disclosing and documenting a disability. Examples were also given of approved testing accommodations that can be used for students once disclosure is made. (Bestor, 2006c)

Angela Perry, a licensed school psychologist, and independent contractor for the school district of Lake County Florida was asked to offer assistance with understanding if or how the laws of learning disabilities pertained to IRCFR and the fire service as a whole. She advised when documents refer to a student, that it refers to both an employee and individuals attending school. It was explained that if an employee has a documented learning disability, it was their responsibility to self-identify themselves as having a disability. However, this is private and privileged information that does not required for that person to come forward. She clarified that self-identify referred to the employee coming forward, and was not to be confused with a self-diagnosis. Also, caution was advised if confronting someone suspected of having a disability, as questioning them about it may result in discrimination or the financial responsibility for testing them. Perry explained it was a matter of semantics, or the way it is presented. She added it can be considered appropriate for a concerned leader to discuss the matter with the individual, provided they were sincere about helping. Suggestions were given as to what should and should not be said. In addition, she gave suggestions for guiding those personnel to the appropriate level of

assistance. Based on the fire rescue profession and type of written exam questions given to personnel, Perry also provided recommendations specific to IRCFR for accommodating personnel having a learning disability while still keeping confidentiality. (A. Perry, personal communication, June 14, 2011)

The Employee Assistance Program (EAP) provided by Indian River County's (IRC) Human Resources Department is contracted through Corporate Care Works of Jacksonville Florida. Nora Dillon, a clinician with Corporate Care Works was asked to explain what assistance was available through the EAP for those employees who think they have a learning disability. She advised that a person seeking assistance would be referred to a counselor, or psychologist depending on their need. From there the person would be evaluated to determine the severity of the problem as well as the need for a formal diagnosis and further assistance. Dillon offered other potential psychological reasons for low exam scores to be apathy or lack of motivation, depression, and grief. She explained these possible causes to be worthy of consideration, and that Corporate Care Works did provide assistance for those areas as well. (N. Dillon, personal communication, June 17, 2011)

This researcher had administered a survey of fire rescue departments throughout the State of Florida (Appendix C). The review of data collected indicated many departments offered promotional exams on an as needed basis, and that many had personnel who achieved low scores. The most common responses that impacted those departments included: a) the elimination of personnel from promotional eligibility, b) a limited pool of those that were eligible, c) less senior or less experienced personnel were promoted, and d) filling vacancies by hiring of personnel from outside their department. Current issues regarding low exam scores included poor study habits, limited experience and education of personnel. The most common

study methods used by personnel were offered, as well as recommendations for other departments regarding the validation of exams written in house, and the use of exams purchased through a third party testing service. The review of data collected also indicated zero blame for low exam scores was placed on the exam or those who created them. Further, very few of the respondents had addressed the issue of providing assistance to their personnel. (Appendix D).

In summary of the literature review, this researcher was able to provide a comprehensive research analysis and compare the findings of recent, contemporary and primary sources. Findings that originated from outside the boundaries of the fire service influenced a more in depth understanding and assisted greatly in this research. This was especially true of those findings offered through the educational and psychological communities. The causes for low scores on written promotional exams were identified, as well as the current exam preparation techniques of IRCFR personnel. Included were the viewpoints addressing various learning styles, methods of studying, the development of written exams, how these problems impacted other fire agencies, and the actions they took. And finally this researcher was able to discover the key components necessary to develop educational and training recommendations that will facilitate improved efficiency of personnel preparing for the promotional process.

Procedures

The procedures that were utilized in the development of this applied research project (ARP) were conducted through the succession of steps. Step one was divided into four parts: a) to identify that a problem existed within Indian River County Fire Rescue (IRCFR), b) to find justification from an organizational perspective that this study would assist IRCFR, c) to establish a link between the research problem and specific content areas of the National Fire Academy's (NFA) Executive Fire Officer Program (EFOP) course R125, Executive Leadership

(EL-R125), and d) to establish a link between the research problem and one of four operational objectives specified by the United States Fire Administration (USFA). The research began with listing potential problems consistent with the four parts of step one. This process involved personal knowledge related to IRCFR and utilization of the EL-R125 student manual in order to comply with parts c and d (USFA, 2005).

Step two was choosing, from the aforementioned list, the most significant problem affecting IRCFR, as well as the research methodology used for this study. The problem was Indian River County Fire Rescue (IRCFR) personnel were consistently achieving low scores on written exams that limited their contention or eligibility for promotion. Throughout this researcher's 24 years of service with IRCFR, he had become aware of several occasions where the IRCFR administration had been forced to promote candidates who should otherwise have not been promoted. Unfortunately some of these promotions had resulted in discipline and demotion due to poor decision making, damaged equipment, loss of property, and injury to personnel. There are many qualified candidates who demonstrate a high level of competency when asked to work temporarily in higher ranking positions, with some consistently outperforming those who currently hold the rank. It was determined that the descriptive research methodology would be used to identify contributing factors that result in low exam scores so that educational and training recommendations can be made to improve the efficiency of personnel preparing for promotional written exams.

Step three was to develop a series of questions that would aid the researcher in formulating sound advice to IRCFR personnel. With the potential of promoting individuals who are not ready, and the resulting negative impact to IRCFR's organizational effectiveness, concentration for this research was directed toward developing tools in the form of study and test

taking recommendations that will assist personnel create their own opportunities. The four research questions were as follows: a) *What learning methods or styles exist that would assist with exam preparation?*; b) *What are the common exam preparation practices used by IRCFR personnel?*; c) *How does IRCFR develop promotional exams as compared to other organizations?*; and d) *Have other fire agencies or organizations been affected by low exam scores and what recommendations do they offer?*

Step four was to find answers to each research question by conducting a comprehensive literature review from both recent and contemporary sources. The objective was to analyze and evaluate these findings in an attempt to identify contributing factors that resulted in low exam scores so that educational and training recommendations could be made. The preliminary research began by utilizing the on-line library search of the National Emergency Training Center's (NETC) Learning Resource Center (LRC) for existing literature relating to the preparation for and participation in taking written promotional exams. This included a review of applied research papers written by other executive fire officer students and case studies within technical reports. The literary search was then expanded beyond the boundaries of the fire service to include the writings of professionals within the educational and psychological communities, private and governmental agencies, and news media. This was accomplished by examining articles in journals, periodicals, books and manuscripts. An internet search on the World Wide Web, using search engines such as www.google.com, www.dogpile.com, www.highbeam.com and www.yahoo.com were also utilized to find written exam preparation related material. Additionally, primary sources through interviews with experts associated with specific research questions were sought.

Step five was geared toward creating a foundation for all questions used in this study by first establishing an understanding for how the influences of learning will affect the student or test taker's ability to retain information. Hence the first question, *what learning methods or styles exist that would assist with exam preparation?* This researcher attempted to provide a simple answer by describing the nature of adult learning as found in the International Fire Service Training Association's (IFSTA) publication of "*Fire Service Instructor manual*"; however, it was not sufficient enough to satisfy a clear understanding. A more complex explanation involving the association of learning styles and retention of information, as well as identifying those methods and styles that would assist with exam preparation was sought from the following sources: a) Silberman's publication of "*Active Training*"; b) Research published within the December 2008 issue of Psychological Science in the Public Interest journal titled "*Learning Styles: Concepts and Evidence*"; c) An article written by Benedict Carey in the September 6, 2010 issue of the New York Times titled "*Forget What You Know About Good Study Habits*"; d) Research published within the 2010 journal of Psychology and Aging titled "*Spacing as the Friend of Both Memory and Induction in Young and Older Adults*"; and e) An article written by Steve Prziborowski in the July 2007 issue of firehouse titled "*Prepare for Promotional Exams Now*". (Bjork, Castel, Eich, & Kornell, 2010; Bjork, McDaniel, Pashler, & Rohrer, 2008; Carey, 2010; Monigold, & Vandevort, 1990; Prziborowski, 2007; Silberman, 1998)

A Personal communication with Edward Prime III, Assistant Chief of Operations for IRCFR was conducted. Prime was chosen to assist because of his 31 years knowledge and experience with IRCFR, and 12 years as an adjunct professor for Indian River State College's Fire Science Department. In addition Prime oversees the operations of the IRCFR Training Division, and is responsible for approving all aspects of IRCFR's promotional process. An

additional communication was conducted with Steve Prziborowski, the Deputy Chief of Training for the Santa Clara County Fire Department, California. Prziborowski was chosen because of his certification as a Master Instructor, and his work as a faculty member for the Chabot College Fire Technology Program. Prziborowski was also chosen as a field expert because of his many published articles in firefighting trade magazines that relate to promotion and advancement within fire departments. His personal experience with preparing and administering promotional exams provided helpful information as he further explained learning methods that would assist with exam preparation. (S. Prziborowski, personal communication, June 22, 2011; E. prime III, personal communication, May 29, 2011)

Once a foundation of understanding was established for how learning styles influenced the retention of information, and identifying those methods and styles that would assist with exam preparation was established, step six explored and reviewed information that would aid in answering the second question, *what are the common exam preparation practices used by IRCFR personnel?* This began with the support of Rodney K. Johnston, a Battalion Chief of training for IRCFR. Johnston was chosen to assist in this research because of his knowledge and experience in the promotional process used by IRCFR. Johnston is the person that creates, validates, and administers the annual written promotional exams to IRCFFR personnel. In a personal communication with Johnston, information was given for understanding the 2010 promotional exam summary report. The report provided the names and grades achieved by those IRCFR personnel who sat for the Driver Engineer and Fire Lieutenant written exams over the five year span of 2006 through 2010. This information in turn was used to formulate a list of participants for administering a survey to IRCFR personnel. (IRC, 2010b; R. Johnston, personal communication, June 28, 2011)

In order to identify the common exam preparation practices used by IRCFR personnel, a survey was created for that purpose. The survey can be found in Appendix A, with the responses included in Appendix B. The survey's development was based on the four research questions, findings of the literature review, as well as utilization of personal knowledge and observations. Multiple choice, and closed end questions were primarily used in the survey; however, additional value was added in creating new data by allowing open ended questions where the respondents could offer their own views or opinions. Prior to administering the survey, it was validated by five chief officers who provided input toward question clarity and relevance. The valuers that participated can be found in Appendix E. The sample size of IRCFR personnel selected to participate was 71, which equaled the total number of respondents, or 100 percent. This was determined by the total number of personnel who had taken written promotional exams in the five year span of 2006 through 2010. There were participants who had taken the exams several times over that period, including some who had been promoted; however, regardless of the amount of times an individual had taken an exam, they were only counted as one. The survey was conducted over the three month period of March, April, and May, 2011.

To administer the survey, the researcher constructed a closed cardboard box that could contain the total number of responses. It measured six inches by 14 inches by 12 inches and included a narrow ten inch long slot opening at the top. The IRCFR promotional exam summary report from 2006 through 2010 (IRC, 2010b), and daily rosters containing the names IRCFR personnel were used as a check list of participants. The researcher personally visited each participant at their workplace and hand delivered the survey. The participants were informed that the purpose of the survey was to gather information for use as a comparison in an applied research project, and that the results would be made available to them. Further, the results would

be used to formulate recommendations for assisting them to better prepare for promotional exams. The participants were also informed that the survey answers would not be reviewed until all surveys were complete. In addition, the researcher explained that individual answers would remain anonymous, and that confidentiality would be maintained by not including their names within the research project. The participants were then instructed to answer each question to the best of their ability, and to place the completed survey into the box when completed. The researcher maintained control of the response box, waited for each survey to be completed, then checked the name of each participant on the list as they inserted the survey into the box. Once all the surveys were completed, the box was opened and the survey answers were reviewed.

Step seven involved the evaluation of available resources through answering the third question, *how does IRCFR develop promotional exams as compared to other organizations?* The personal communication with Johnston proved to be invaluable in assisting this researcher better understand the promotional process of how IRCFR creates, validates, and administers the written exam each year. Johnston was specific in how exam questions were created, and how the types of questions were chosen for each exam. More so, he gave a step by step description of the vilification process used for IRCFR written exams. He explained the review process that was available to personnel after the exam, and the course of action taken for challenged questions. The Johnston communication prompted further investigation of the research effort to incorporate additional causes for low exam scores not initially considered. These included the possibility of some candidates having undiagnosed learning disabilities, and possible deficiencies with the exam questions themselves contributing as factors of cause; thus becoming the focus for the remaining literature review so that recommendations can also be made for assisting the IRCFR

Training Division better prepare and administer more effective and accurate written exams. (R. Johnston, personal communication, June 28, 2011)

First it was important continue with answering the third research question by discovering how other organizations developed promotional exams as compared to IRCFR. A survey was created for that purpose and can be found in Appendix C with the responses included in Appendix D. The development of the survey was based on the four research questions, findings of the literature review, along with utilization of personal knowledge and experience. The survey generating tool used to create the survey and gather its responses was provided by www.surveymonkey.com. Closed-ended, multiple choice, and open-ended questions were used in the survey. Each question type was important to include for gathering direct data as well as allowing the respondents to offer their own views or opinions. Prior to administering the survey, it was validated by five chief officers who provided input toward question clarity and relevance. The valuator that participated can be found in Appendix E. The sample size selected from the Florida Fire Chief's Association (FFCA) to participate in the survey was determined by the total number of fire rescue departments in the state of Florida. This included career, combination, and volunteer departments. The number of participants used in the survey was 335, of which there were 64 respondents, or 19.10%. A list of respondents can be found in Appendix E. The survey was conducted over a one month period of May 2011. All participants were informed that the purpose of the survey was to gather information for use as a comparison in an applied research project. It was explained that their individual answers would be anonymous and that the results of the survey would be available to them. Once the survey results were collected and analyzed, the final results were then given to the respondents via electronic mail. Results of the survey can be found in Appendix D.

As prompted from the Johnston communication, it was important to include an understanding of the proper actions needed for identifying and assisting personnel suspected of having a learning disability. Literature provided by the psychological and educational communities was reviewed to provide an explanation. Three technical assistance papers published by the Practitioners' Task Force on Adults with Learning Disabilities (Practitioner's Task Force) were utilized. These papers were written to assist Florida educators better understand state and federal laws as they pertained to adult learners: a) *"The rights and responsibilities of adults with learning disabilities and responsibilities of service providers"*; b) *"screening for learning disabilities in adult education programs; and c) accommodations for students with disabilities or other special needs.* (Bestor, 2006a; Bestor, 2006b; Bestor, 2006c)

The interpretation of state and federal laws, as provided by the Practitioners' Task Force, proved to be complex and warranted the assistance of a field expert in psychology and education for further interpretation. A personal communication with Angela Perry, a licensed school psychologist, and independent contractor for the school district of Lake County Florida was conducted. She was able to better explain how the laws of learning disabilities pertained to IRCFR and the fire service as a whole. Perry was successful in clarifying how the laws associated with learning disabilities were applicable and relevant to this research. She included the potential consequences for non compliance, as well as appropriate actions necessary for preventing pit falls. In addition, she offered recommendations for both those individuals who sought professional assistance and the IRCFR administration who suspected personnel of having a learning disability. The discussion with Perry, of guiding personnel to the appropriate level of assistance, led the researcher to an additional communication. Immediate support is offered through the Employee Assistance Program (EAP) provided by Indian River County's (IRC)

Human Resources Department. This service is contracted through Corporate Care Works of Jacksonville Florida. A personal communication was conducted with Nora Dillon, a clinician with Corporate Care Works. She explained the types of assistance that were available to IRCFR personnel, and how to obtain it. In addition, Dillon identified other possible physiological causes for low exam scores that were not considered previously. (A. Perry, personal communication, June 14, 2011; N. Dillon, personal communication, June 17, 2011)

Also prompted by the Johnston communication was the need to establish a knowledge base of proper exam question writing. This was important so that possible deficiencies in the written questions could be identified. As explained by Johnston, IRCFR written exams were predominantly comprised of multiple choice questions that included a few true and false questions. The International Fire Service Training Association's (IFSTA) publication of "*Fire Service Instructor manual*" was used to gain an understanding between subjective and objective questions. This manual was also used to identify the advantages and disadvantages of multiple choice, and true and false questions. The "*Adjunct Professor's Guide to Success: Surviving and Thriving in the College Classroom*", written by Marcella L. Kysilka, Richard E. Lyons, and George E. Pawlas, was used to gain a more thorough explanation of proper question writing techniques. This manual was also used to discover specific recommendations that regarded the validation, reliability, and objectivity of exam questions. (Kysilka, Lyons, & Pawlas, 1999; Monigold, & Vandevort, 1990; R. Johnston, personal communication, June 28, 2011)

Step eight utilized a survey and a review of literature to answer the fourth and final question, *have other fire agencies or organizations been affected by low exam scores and what recommendations do they offer?* The survey that was administered to the FFCA (Appendix C) also provided valuable information in discovering other fire rescue departments that were

negatively affected by low promotional exam scores, what assistance they offered personnel, and the corrective actions taken to prevent future impacts. Within the results of that survey advice was offered to others who had experienced similar issues. One suggestion offered by the respondents included that personnel seek assistance with reading comprehension through local colleges or other adult education programs (Appendix D). The researcher then reviewed the content provided in the Indian River State College (IRSC) 2010 -2011 course catalog. The information found within the document indicated that several reading comprehension and study skill improvement courses were offered. Each of the courses offered by IRSC included specific descriptions of the subject matter covered. This information would facilitate a more comprehensive recommendation of applicable courses for IRCFR personnel who wished to improve their reading comprehension and or study skills. (IRSC, 2010)

Step nine began with a review of the information gathered in steps one through eight. All the key components discovered from the research questions were grouped together and written on a separate note page. They were then arranged in a sequential order that was consistent with the development of the study. Finally, the results of the findings and key components identified were used to formulate sound advice in the form of: a) Recommendations for the IRCFR Training division to better prepare and administer more effective and accurate written exams; b) Recommendations for the IRCFR administration to guide personnel suspected of having a learning disability toward getting the appropriate level of assistance; c) Recommendations for IRCFR personnel to seek assistance through the EAP; d) Recommendations for IRCFR personnel to improve study habits and reading comprehension skills through IRSC courses; and e) Recommendations for IRCFR personnel to improve their study and test taking skills through the research results of this study. In conclusion, these recommendations will then improve

IRCFR's operational effectiveness, and assist personnel create their own opportunities for advancement by scoring higher on the promotional written exams.

Limitations and Assumptions

The limitations of this study included several factors. First was the limited availability of printed material as compared to that which was available by the use of the internet. Library searches for books, journals and magazines required extensive use of time. There was also the inability to locate an existing applied research paper specific to this research problem to use for comparison and additional data. In many cases, it was discovered that the contents of the material located were not relevant to the project. Next was the use of search engines for related information via the internet proved to be valuable in regards to the ability of making the search more specific; however, the abundance of related information found on the internet became very time consuming. The amount of fire service material was limited regarding study habits and exam preparation, exam question writing, and assisting personnel with suspected learning disabilities. This resulted in a more extensive use of material that originated from outside its boundaries, as well as personal communications with field experts. At times this material was redundant as well as minimal in comparison. Last was the amount of time required to conduct a survey of IRCFR personnel. The assurance that all needed personnel participated in the survey resulted in physically visiting each member. This involved many repeated visits to the same fire rescue stations due to the unavailability of personnel, as they were many times responding to emergencies.

Assumptions initially made by this researcher resulted in a more comprehensive view of the recommendations that were to be offered. It was assumed that the problem lied with the test taker, and their ability to study and retain information. It was discovered through the research

that the test questions themselves should be considered as a possible cause. The same was true of the possibility of personnel taking the exams having an undiagnosed learning disability or other psychological reason for achieving low exam scores. Interesting to note was the assumption made by this researcher that others would have already solved this problem. Many fire rescue departments acknowledged the potential problems associated low promotional written exam scores; yet, few have taken action.

Results

The results discovered from the first four steps of the procedures for this study began with: a) identifying that a problem existed within Indian River County (IRC); and b) finding justification from an organizational perspective that this study would assist Indian River County Fire Rescue (IRCFR). This was answered by the researcher's personal knowledge, experience, and observations that were achieved from 23 years of service with IRCFR. Throughout that time period, it was observed that personnel who received low scores on written promotional exams became ineligible for promotion. This forced IRCFR to promote lesser qualified individuals who should otherwise have not been promoted. Some instances of this action resulted in discipline and demotion due to poor decision making, damaged equipment, loss of property, and injury to personnel. The initial intent of this research, through the descriptive methodology, was to identify those contributing factors that caused personnel to achieve low written scores on promotional exams, and to develop tools in the form of study and test taking recommendations that would assist personnel create their own opportunities.

It was discovered through this research that other factors aside from poor study habits were also worthy of consideration. The results of the procedures for this study prompted this researcher to question the validation process used for IRCFR written exams. Also, that a

potential existed for personnel to have an undiagnosed learning disability. Justification for this research from an organizational perspective included that IRCFR had not addressed these challenges, nor does it offer educational or personal assistance to those studying for written promotional exams. The lack of preparation from an organizational perspective is a serious problem. The future of IRCFR's success in providing an efficient and safe service to its community is dependent on the quality and competency of those persons promoted within its ranks. The potential of promoting individuals, who are not ready, will continue to have a negative impact on IRCFR's organizational effectiveness.

The procedures also resulted with establishing a link between the research problem and the specific content area of the National Fire Academy's (NFA) Executive Fire Officer Program (EFOP) course R125, Executive Leadership (EL-R125). The problem was Indian River County Fire Rescue (IRCFR) personnel were consistently achieving low scores on written exams that limited their contention or eligibility for promotion. The linkages were established through application of both the primary curriculum theme and the course goal of EL-R125 to this research. The primary curriculum theme and purpose of this course is to bring together all of the educational aspects discovered through the previous three Executive Fire Officer Program (EFOP) courses: a) Executive Development b) Strategies for Community Risk Reduction, and c) Executive Analysis of Fire Service Operations in Emergency Management. EL-R125 also encourages the student to "examine contemporary public sector and fire service issues using a case study approach to enhance the officer's ability to perform at an executive level" (USFA, 2005, p. iii). The comprehensive subject matter of EL-R125 includes the use of feedback, developing leadership, decision making, succession planning, and replacement planning. The goal of this course is "the executive fire officer will develop the ability to conceptualize and

employ the key process used by effective executive-level managers” (USFA, 2005, p. SM1-3).

Further, this research project directly correlates with the following terminal objectives

“...develop an appreciation for workforce planning, development, and succession planning”

(USFA, 2005, p. SM 7-2). This research also relates to and supports two of the four United

States Fire Administration operational objectives: a) Improve local planning and preparedness,

and b) Improve the fire and emergency services’ professional status. (USFA, 2011, p. II-2)

The fifth step of the procedures for this study included a review of literature, and personal communications that assisted this researcher in discovering the answer to the first question:

“What learning methods or styles exist that would assist with exam preparation?” The

influences of learning styles were compared with the retention of information as they related to

adult learners. Their meanings were found to be complex and that several sources of literature

were needed to formulate a general understanding. Information found in literature, fire service

related writings, as well as communications from professionals within the fire rescue service

provided the following results.

Three general types of learning were identified in the International Fire Service Training

Association (IFSTA) publication of *“Fire Service Instructor”* as cognitive, psychomotor, and

affective. Cognitive deals with knowledge, psychomotor relate to skills, and affective involves

the attitude of a student toward learning. Discovered was how the three learning types and the

use of all five senses work together and play an important role in learning. The psychomotor

method of learning involves the actual physical act of doing something. This includes using the

senses while building muscle and brain memory. The cognitive method is based on six levels of

learning that are given in a progressive order, where one level must come before the next. They

are: a) Knowledge, which is the recalling of information; b) comprehension, which is the

understanding of information; c) application, which is making use of the new information; d) analysis, which is the shortening of information into smaller parts so that the entire concept can be better understood; e) synthesis, which is reassembling the small parts of information into a new way of looking at it; and f) evaluation, which is using standards and criteria to consider the value of the new information. The affective method involves the willingness, and motivation of the student to learn. As defined by IFSTA, the psychology of learning was considered a permanent change in behavior and that adult learners often had difficulty with change. Through the repetition and reinforcement of information, the student will become more motivated and retain information better.

IFSTA explained that only 1% of learning is achieved through tasting, 1.5% is through touching, and 3.5% is through smelling. Of the senses, the two most affective for learning are hearing, which accounts for 11% , and 83% through seeing. Also discovered was the amount of retention that could be expected. IFSTA defined that individuals will retain only 10% of what they read, 20% of what they hear, and 30% of what they see. IFSTA included that when used in combination, the retention rate is increased. The retention rate of seeing and hearing, when combined results in a retention of 50%. More so, the retention rate of speaking is 70%, and when combined with performing a task, it increases to 90%. (Monigold, & Vandevort, 1990)

The results of the literature review helped identify the average learning retention rate of students as it applies through teaching. Mel Silberman's publication of "Active Training" outlined these rates as: a) only 5% of information retained from lecture; b) 10% through reading; c) 20% through audiovisual aids; d) 30% through demonstration; e) 50% through discussion; f) 75% through doing something; and g) 90% when teaching others. Silberman explains that the brain's function in the adult learner as constantly questioning and comparing new information to

what is already known. He defines this as processing, and added that if the individual is allowed to examine the information and discuss it with others, the brain can do a better job of learning new information. (Silberman, 1998)

The review of literature found in the December 2008 journal of Psychology Science in the Public Interest explain that each individual must determine the most effective learning method for them, and that no two individuals can be expected to learn and retain information in the same way. That study found in the journal entitled "*Learning Styles*", identified through case study that there was no credible evidence to support the existence of learning styles, nor that one style of teaching was better than another. Discovered in that study is that the degree of interest an individual has towards a specific topic or area of study will greatly influence their ability to process the information. (Bjork, McDaniel, Pashler, & Rohrer, 2008)

It was discovered in Benedict Carey's September 6, 2010 New York Times article that few techniques can significantly improve the ability of a student to learn from studying; however, that some of the methods contradicted with those of conventional wisdom. Carey explains that the student should not limit their studies to a single quiet place. Instead he suggests changing the locations and environment to improve retention. According to Carey, if a student was to study the same material in a variety of locations or settings, he or she will develop multiple associations for that same material; thus improving their retention of that material through association. Another technique identified in this article is for the student to not focus intensely on a single topic at one sitting, but rather to mix the material in contrast to just one area of study. By varying pertinent and related study material, information is fortified within the brain and therefore more readily recalled when needed. (Carey, 2010)

Research discovered in the 2010 journal for Psychology and Aging explained the correlation between memorization and retention of information to be directly affected by the quantity of time spent learning specific study material. Repetition of the material is a key component for retention according to this case study. This group of psychologists who wrote the study, "*Spacing as the Friend of Both Memory and Induction in Young and Older Adults*", also explained that learning through induction; which is studying material then testing the knowledge that was just learned, is a very good way of retaining information as well. Also found within this study is cramming for an exam is not recommended. Cramming will not allow time for the student to reflect on what is learned, instead spacing is recommended. This will promote longer retention of the material by spacing the same information in short periods over an extended period of time. (Bjork, Castel, Eich, Kornell, 2010)

Further results of the research found that in a July 2007 article for Fire Engineering magazine, Steve Prziborowski advises to start studying for promotional exams as soon as possible. It was discovered that the time spent in exam preparation has a direct bearing on the ability of the student to recall pertinent information. Included is time management and organization skills, and not to wait until the last moment. The vast amount of material from which written exams are made can be overwhelming to those that wait for the last moment. Prziborowski recommends that cramming should not take place, instead it is recommended to read the material well in advance. This, according to Prziborowski, allows time for the candidate to review the information at a more leisurely pace. In addition, Prziborowski suggests taking practice tests by using questions found in study guides from the promotional exam reading list. He explained this to be a good way of self checking knowledge learned. (Prziborowski, 2007)

In a personal communication with Prziborowski, time management was explained as quality time, and that it is more important for the study time to be organized in a productive manner. Advice offered by Prziborowski includes that personnel should find what works best for them, as each individual will have different learning abilities. Also, flash or not cards that are made into question form are a good way of checking knowledge. He included that personnel should consider using technology to their advantage. This includes making audio recordings of study notes that can be listened to when reading was not possible. The most significant recommended discovered from Prziborowski was for personnel to develop study groups with each other. (S. Prziborowski, personal communication, June 22, 2011) as found in the Prziborowski communication, the results of a personal communication with Edward Prime III gave similar recommendations. Prime suggested that personnel take frequent breaks during study session so they could reflect on what was learned. He included that each individual has to find their own method of study. Also, that combining several methods of study will increase the potential for retention. This included that there is no problem with eating snacks or listening to music during study time if that is what works for an individual. Also discovered is that familiar surroundings will in some cases will foster the recall of learned material. In this recommendation, it is suggested, if possible, that personnel study in the same room that the exam will be given. An additional suggestion offered by Prime included that if a study guide was used; personnel should not use the true and false questions or multiple choice questions as written. This was due to the question including a false statement or wrong answer choices. Instead he suggested rewriting the question so that it becomes a true statement or a fill in the blank type. Prime explained to use flash cards for this type of studying, so that on test day if a multiple

choice question can be answered without looking at the answer choices, then it would most likely result in being the correct choice. (E. Prime III, personal communication, May 29, 2011)

The results found from a review of literature, survey questions, and personal communications in the sixth step of the procedures for this study assisted in answering the second question: “*What are the common exam preparation practices used by IRCFR personnel?*” With an established foundation of understanding for how learning styles influenced the retention of information, and identifying those methods and styles that will assist, it was important to identify the exam preparations used by IRCFR personnel. In a personal communication with Rodney K. Johnston, the 2010 promotional exam summery report was reviewed. This conversation and review of the document resulted in identifying the 71 personnel who had taken the Driver Engineer and Fire Lieutenant written exams over the five year span between 2006 and 2010. (IRC, 2010b; R. Johnston, personal communication, June 28, 2011)

In order to completely answer the second question, a survey was administered to those 71 IRCFR personnel, and of that total there was 100% participation. The survey can be found in Appendix A, and the results found in Appendix B. When asked to indicate all of their study methods used in preparation for written exams, the following results were found: a) 95.7% highlighted material in text books; b) 90.1% reading; c) 71.8% memorized information; d) 67.6% used flash cards; e) 52.1% re-wrote the reading material; f) 50.7% used study guides; g) 22.5% used study groups; h) 18.3% created audio recordings; and i) 5.6% made video recordings. Also identified were those methods they found successful: a) 78.8% highlighting; b) 76.0% reading; c) 60.5% flash cards; d) 50.7% memorizing; e) 45.0% study guides; f) 40.8% re-writing; g) 11.2% study groups; h) 5.6% audio; and i) 2.8% video. The personnel were also asked to indicate those methods that they found to be unsuccessful. These results indicated: a) 45.0% study groups; b)

36.6% video; c) 33.8% audio; d) 25.3% flash cards; e) 25.3% re-writing; f) 22.5% memorizing; g) 15.4% highlighting; h) 12.6% study guides; and i) 11.2% reading. (Appendix B)

The detailed description of the data collected from the research also survey included areas where the participants could offer additional information; this was considerably long and therefore placed in Appendix B. The following survey responses represent the most common answers to the questions asked. When the participants were asked to provide an estimate of when they began studying for the September exams, the majority or 36.6% indicated July. Also discovered was the estimated amount of time spent studying each day. The results of this question were that 76.0% studied between one to two hours, and that 22.5% of the respondents studies between two to four hours per day. Other results from the survey indicated that 21.1% of personnel sought assistance in preparation for the exams. The participants were asked to give their opinion of what they felt was the cause of their low exam scores. Of the responses given, only 23.9% felt the cause was due to poor study habits, where the majority of the responses indicated fault with the exams and lack of support from the training division. (Appendix B)

The results found through a review of literature, survey questions, and interviews that were utilized in the seventh step of the procedures, answered the third question: "*How does IRCFR develop promotional exams as compared to other organizations?*" Several areas related to this research were discovered through the Johnston communication. It was first discovered that IRCFR's Training Division creates, validates, and administers most written exam questions in house. He explained that the majority of questions are multiple choice, with a few true and false questions included. The process for creating and validating questions, as explained by Johnston, is that he writes the questions directly from the text of the study material. The attempt is made for this to be done on a word for word basis. Next he takes the exam himself, grades it,

and then re-checks the question answers with the manual from which it came. This is then followed by having the Captain of Training do the same. The final step in the validation process is to have a union representative review the exams. Johnston added that in order to maintain secrecy, he only allows a few select questions to be viewed. The union representative will simply read the question and ask to see its referenced location in the text. It was found that on occasion a text may offer pre-validated test questions from its publisher. However this accounts for a very small portion of the Driver Engineer exam only. Johnston also explained that the cost of purchasing questions from a publisher or from a third party testing service prevented the training division from using them.

Also discovered through this communication is that Johnston was not aware of any personnel ever asking for assistance in preparing for the exams from training division. He explained that an exam review is offered each year after the exam has been graded. During the review some personnel had challenged questions that they got wrong on the exam. This was due to vague questions, multiple correct answers, and contradiction of material within the study text. Johnston explained that only those individuals who challenged the question and provided a valid reason for change would receive credit for it, and that the same question would remain as a wrong answer for those who did not challenge it. The discussion with Johnston lead to identifying that if an individual does ask for assistance in preparing for the exams, that he would do whatever he could to help them. He added that he would try to find out if they had difficulty learning from written material, and if so he would suggest they take a college course related to reading comprehension. Johnston included that if a learning disability was suspected, he would try to help guide that individual, through applicable disability laws, to getting the appropriate

level of assistance they needed. Further, Johnston stated that he was not aware of any personnel who had a diagnosed learning disability. (R. Johnston, personal communication, June 28, 2011)

With the foundation established for how IRCFR develops promotional exams, a survey was administered to other Florida fire rescue departments so that a comparison could be made. The sample size as determined through the Florida fire Chief's Association is 335. Of that total there were 64 departments, or 19.10% of the total that responded. The survey (Appendix C) and its results (Appendix D) identified that 73.4% of these fire departments had been impacted by personnel receiving low exam scores. The detailed description of the data collected from the research also survey included areas where the participants could offer additional information; this was considerably long and therefore placed in Appendix D. The following survey responses represent the most common answers to the questions asked. 51.6% of the respondents offered promotional exams on an as needed basis. When asked to how their written exams were prepared, the following results were found: a) 35.9% were written in house through the training division; b) 46.9% were validated questions through text book publishers; c) 17.1% purchased questions from a third party testing service; and d) 3.1% utilized other sources. (Appendix D)

The process for properly writing exam questions was discovered through the review of literature from IFSTA's Fire Service Instructor manual. This resulted in finding that exam questions are categorized as either objective or subjective. The subjective type questions are those that do not have a predetermined set answer. They are usually written in an essay format for a higher level of analysis through intellectual thought, or for identifying problem solving skills. The objective questions are those that have a definitive, or one correct answer. Exams that use objective questions should be thoroughly constructed so that different levels of knowledge are challenged. IFSTA explained that instructors will often write an objective question that is

based on simple recall and recognition of the study material. They advise to include objective questions that require the student to interoperate and analyze the question before answering.

These findings from IFSTA include that exams must have validity in matching the student's knowledge with applicable materials of study. Also, that they are reliable in measuring the student's achievement in learning. To accomplish this, they warn to not create questions that are too lengthy, complex, or have a higher reading level than the student audience. Also, assure the questions are written in clear sentence form and not vague. This is especially true of multiple choice type questions according to IFSTA. They suggest avoiding clues within the question that leads to the answer. This is accomplished by avoiding word associations; such as "a" or "an", as well as plural or singular verbs that hint to the correct answer. (Monigold, & Vandevort, 1990)

This research also resulted in finding answers through the literature provided in the Adjunct Professor's Guide to Success. The quality of an effective exam is dependent on three distinct items: a) validity, which is the test's ability to effectively measure what is supposed to measure; b) reliability, which is the consistency of the exam scores; and c) objectivity, which is the evaluation of the test's scores in measuring the student's performance. According to this manual, multiple choice type questions are valid, reliable, and objective, but poorly written questions challenge the validity of the entire exam. Recommendations discovered for creating proper multiple choice questions include: a) writing at the reading comprehension level of the students; b) assure there is only one correct answer choice; c) reduce guessing by providing four to six answer choices; e) assure that wrong choices, or distracters, are plausible; f) make sure the opening statement, or stem, includes all information needed to answer the question; and g) ensure that the distracters cannot be challenged as a correct answer. Also found is that true or false questions are discouraged from use by the authors. This is due to the controversy of

students having a fifty-percent chance of answering them correctly without ever reading the question. (Kysilka, Lyons, & Pawlas, 1999)

As prompted from the Johnston communication in this step of the procedures, the proper actions needed for identifying and assisting personnel suspected of having a learning disability was found within three technical assistance papers published by the Practitioners' Task Force on Adults with Learning Disabilities. The task force identified that a learning disability was subject to state and federal laws, including the Americans with Disabilities Act (ADA) of 1990, and section 504 of the Rehabilitation Act of 1973. (Bestor, 2006a) These laws indicate confidentiality must be protected, and that if an individual has been diagnosed with a learning disability, that it is entirely up to that individual whether or not to come forward, or self identify themselves as having the disability. Any action taken by an institution or an employer that contradicts these laws may result in the discrimination of the individual. The definition of a learning disability offered by the task force was found to be a permanent disorder that affects an individual's ability of perceiving, and understanding information. Further, the disorder will involve a deficiency or deficit in the following areas: "attention, reasoning, processing, memory, communication, reading, writing, spelling, calculation, coordination, social competence, and emotional maturity" (Bestor, 2006b, p.4).

The practitioners' task force estimates that approximately 50-80% of adult learners have a learning disability with a low reading skill that ranges from between the fifth and seventh grade level. They explained that if a learning disability was suspected, a screening process must be conducted before a diagnosis can be made, and that only a licensed psychologist or other qualified person could make the final determination. It was identified that the screening process involved several steps of evaluation, these include: a) work habits; b) work sample, or the level

of achievement; c) informal conversations; d) comments or concerns made by the individual; e) medical history; and f) the review of official records related to disability. Also discovered is that the screening results alone cannot determine the existence of a learning disability. The screening process is a tool for determining if a more formal evaluation is warranted. (Bestor, 2006b)

The review of literature from the practitioners' task force also resulted in discovering that once an individual has been diagnosed, and that they have self identified themselves, accommodations must be made to assist them. With regards to testing or exam taking, the accommodations that were found include: a) providing a flexible schedule. This includes taking breaks during the exam; b) provide flexible seating, this includes sitting in a separate room, and, special lighting; c) flexible response, this includes oral exams; d) flexible presentation, this includes using large print, and oral presentation of the questions; e) Assistive device, this includes the use of calculators; and f) flexible timing, this includes extra time such as time and one half, or double time for completing the exam, not an unlimited time period. (Bestor, 2006c)

The results found in a personal communication with licensed school psychologist Angela Perry provided a better understanding of how the laws of learning disabilities pertained to IRCFR and the fire service as a whole. It was identified that when the documents refer to the student, that it refers to both an employee and individuals attending school. Perry explained that if an employee has a documented learning disability, it was their responsibility to self-identify themselves as having a disability. However, this is private and privileged information that does not required for that person to come forward. She clarified that self-identify referred to the employee coming forward, and was not to be confused with a self-diagnosis. Also discovered through the interview was due to confidentiality laws, if confronting someone suspected of having a disability, to use caution because it could result in discrimination. If someone in

authority suggests that an individual be tested for a learning disability that they could become financially responsible for all the costs associated with the testing. Perry advised not to refer to having a disability, and gave warning of asking specific questions. She explained to never directly ask the person if they have a learning disability, suggest that they might have one, nor ask if they had ever been diagnosed with a disability.

Perry stated that if an individual is suspected of having a learning disability, to give them the opportunity to ask for assistance. She explained that it was a matter of semantics, or the way it is presented. She added it can be considered appropriate for a concerned leader to discuss the matter with the individual, provided they were sincere about helping. Suggestions offered by Perry for appropriate comments include simply asking why they did poorly. Also asking a vague question may lead them to open discussion. An example is saying, "I see you are having difficulty, has this always been a problem for you?" If the response is yes, then follow up with asking if they ever talked to someone about it. If open discussion is achieved, the goal then would be to direct them toward the Employee Assistance Program (EAP). Perry advised that the EAP will assist personnel to discover whether the cause of the low exam scores is due to an anxiety disorder or a learning disorder. She explained that an anxiety disorder is not the same as a learning disorder, but that it would affect an individual's ability to study. She further added that anxiety is a disorder, but that general test taking anxiety is not. An anxiety disorder would encompass all aspects of the person's life, and not just test taking. Advice given by Perry for not singling out any one person is to remind all personnel that assistance is available is through awareness. She suggests that at the same time of exam notification, to post EAP flyers that include the services it provides; especially those that will assist with test taking preparation.

The Perry communication also resulted in discovering recommendations specific to IRCFR for accommodating personnel having a learning disability while still keeping confidentiality. She advised that based on the firefighting profession and that the exams are mostly multiple choice; these are the most appropriate accommodations at this time. Perry explained that some accommodations may compromise confidentiality, also that the accommodations should be based on the disability. For instance, a person with an Attention Deficit Hyperactivity Disorder (ADHD) may have a hard time paying attention to the test; therefore, a separate setting or room, and additional time may be appropriate. A candidate with a reading disability may have difficulty with reading comprehension; therefore, reading the test to him/her may be appropriate. Other recommendations offered by Perry include: a) special lighting; b) if math is involved, provide calculators to everyone. Providing calculators to everyone would help all candidates and confidentiality would not be compromised; c) give an extended time limit; d) offer the exam orally; e) provide a workshop on study habits and test taking skills. Perry explained that exam preparation is not mandated by the ADA, but it would be a good practice. (A. Perry, personal communication, June 14, 2011)

The Employee Assistance Program (EAP) provided by Indian River County's (IRC) Human Resources Department is contracted through Corporate Care Works of Jacksonville Florida. The results of a personal communication with Nora Dillon, a clinician with Corporate Care Works helped to discover the type of assistance available through the EAP for those employees who think they have a learning disability. It was found that the services offered through this program are available on a twenty-four hour basis to all employees at any time they feel the need. She advised when a person seeking assistance calls the Corporate Care Works office, they speak directly to a certified clinician who will refer the person to the appropriate

licensed mental health professional; such as a counselors or psychologist depending on their need. From there the person would be evaluated to determine the severity of the problem as well as the need for a formal diagnosis and further assistance. Discovered through the Dillon interview, was that other psychological causes aside from a learning disability or anxiety could also contribute to of low exam scores. She included apathy, which she defined as a lack of motivation, or lack of interest in matters of importance. She added that grief , as well as depression should also be considered. Dillon advised that regardless of the cause, or what the person thinks is the problem, that Corporate Care Works will assure the individual receives the most appropriate assistance. (N. Dillon, personal communication, June 17, 2011)

The eighth step of the procedures for this study included a review of literature, and survey questions that assisted this researcher in discovering the answer to the fourth and final question: *“Have other fire agencies or organizations been affected by low exam scores and what recommendations do they offer?”* It was discovered through the survey administered to Florida fire rescue departments (Appendix C) that many had been negatively affected by low promotional exam scores. When asked to explain how they were affected by personnel receiving low promotional exam scores, the most common responses included: a) the elimination of personnel from promotional eligibility; b) a limited pool of those that were eligible; c) less senior or less experienced personnel were promoted; and d) filling vacancies by hiring of personnel from outside their department. The current issues regarding low exam scores discovered by this survey include poor study habits, limited experience, and limited education of personnel. When asked if the cause of low exam scores had been identified, the respondents offered the following: a) 64.0% attributed it to poor study habits; b) 39.0% had not identified the cause; and d) 26.5% place blame on limited experience, and limited education. The review of data collected also

indicated zero blame for low exam scores was placed on the exam or those who created them. Further, very few of the respondents had addressed the issue of providing assistance to their personnel. Of the recommendations offered by the respondents, the most significant is to advise personnel to seek assistance in study habits and reading comprehension through adult education and college level courses. (Appendix D)

Discovered in a review of the literature provided in the Indian River State College's (IRSC) 2010-2011 course catalog showed that college level courses for adult learners seeking assistance with reading comprehension, and basic study skills were available. There were several courses listed, as well as a description of each. Of those found, the following represent the most applicable courses that will be of value to IRCFR personnel: a) REA 0001 college prep reading. This course provides study in critical comprehension skills; b) REA 0002 college prep reading II. Continues with the review of literal and comprehensive skills learned in REA1001; c) REA 1205 advanced college reading. This course concentrates on test taking techniques and rapid reading skills; d) REA 1930 reading to learn in the content area. This course concentrates on improving reading comprehension and critical thinking; e) REA 2002 introduction to educational psychology. This course teaches the strategies of learning and problem solving; f) SLS 1101 student success. This course provides extensive instruction in study skills and strategies; and g) SLS 1501 college study skills. This course concentrates on improving academic study skills taught in SLS 1101. (IRSC, 2010)

In the final step of the procedures, a comprehensive analysis of the data was conducted. This resulted in the development of recommendations that were consistent with the answers found to the four research questions: a) *What learning methods or styles exist that would assist with exam preparation?*; b) *What are the common exam preparation practices used by IRCFR personnel?*;

c) *How does IRCFR develop promotional exams as compared to other organizations?;* and d) *Have other fire agencies or organizations been affected by low exam scores and what recommendations do they offer?* These recommendations will be utilized to formulate suggestions and advice in the form of: a) Recommendations for the IRCFR Training division to better create, prepare, and administer more valid, reliable, and objective written promotional exams; b) Recommendations for the IRCFR administration to guide those personnel suspected of having a learning disability toward the appropriate level of assistance; c) Recommendations for IRCFR personnel to seek assistance through the EAP; d) Recommendations for IRCFR personnel to improve study habits and reading comprehension through IRSC courses; and e) Recommendations for IRCFR personnel to improve their study and test taking skills through the research results of this study.

Discussion/Implications

The first area of discussion involves the results found through a review of literature, and personal communications to identify learning methods or styles that will assist Indian River County Fire Rescue (IRCFR) personnel better prepare for written promotional exams. As indicated in the results of this study, the three most common types of learning were identified as cognitive, psychomotor, and affective. These methods were found in the International Fire Service Training Association's (IFSTA) publication of *"Fire Service Instructor"*, as well as Mel Silberman's publication of *"Active Training"*. (Monigold, & Vandevort, 1990; Silberman, 1998) For the purpose of discussion, when this researcher began the initial search for learning styles, several other publications were redundant in comparison by including these same three methods. Also, there were many that included learning methods that specifically related to the classroom environment and were not necessarily appropriate for the self study that IRCFR personnel would

be doing in preparation for promotional written exams. Therefore, due to the non relevance, as felt by this researcher, the other methods were not included in this study.

Interesting to note was an unexpected discovery and contradiction regarding learning styles. Found in the December 2008 journal of Psychology Science in the Public Interest is a study entitled “*Learning Styles*”. The study identifies, through case study, that there is no credible evidence to support the existence of learning styles, nor that one style of teaching was better than another. (Bjork, McDaniel, Pashler, & Rohrer, 2008) Though that study disagreed with the notion of a specific style, it did explain that each individual must determine the most effective learning method for them, and that no two individuals can be expected to learn and retain information in the same way. This was supported by many other sources used in this research. As indicated by Edward Prime III, and Steve Prziborowski, as well as the results from the review of literature, there is no set learning style that is best for all persons. It is up to each individual to identify what does and does not work for them. (Bjork, Castel, Eich, & Kornell, 2010; Bjork, McDaniel, Pashler, & Rohrer, 2008; Carey, 2010; E. Prime III, personal communication, May 29, 2011; Monigold, & Vandevort, 1990; Prziborowski, 2007; S. Prziborowski, personal communication, June 22, 2011; Silberman, 1998)

This researcher can appreciate the notion of finding what works best. However, this researcher also disagrees; what about the individual that has not figured it out yet? What about those very persons for which this research is intended? If they knew the answers of what worked best, there would be no need for this study. The issue then becomes getting personnel to reevaluate how they are studying and figure out what is not working for them. Once these deficiencies are identified, other ways of studying can be explored, introduced, and used. The problem is that adult learners are hesitant to change, but according to the literature reviewed, in

order to learn, a change in behavior has to occur. In other words, adult learners need to get out of their comfort zone, put fear aside, and discover new strategies or approaches of learning. (Bjork, Castel, Eich, & Kornell, 2010; Carey, 2010; Monigold, & Vandevort, 1990; Silberman, 1998)

In order to introduce new approaches, it is first important to understand what is involved with the three most common methods. The psychomotor method of learning is mostly a hands on approach for learning a skill, this involves developing the brain to muscle memory, and therefore not applicable for IRCFR personnel who are preparing for written exams. Affective is not really a true style or method; as it relates more to the student's attitude toward the material being learned. However, having a positive attitude is extremely important, and will foster the willingness to learn. This willingness in turn becomes motivation, and the degree of interest an individual has towards a specific topic or area of study will greatly influence their ability to process the information. This is a key element; if personnel can find a source of motivation toward the study material, then it would be expected that they improve on the retention of the material learned. Though it can be difficult for the individual to self motivate, or use the affective approach, it is still a very important aspect of learning. The importance of motivation was repeated, stressed, and supported within the writings of many sources of literature used in this study, as well as in the opinions of Prime, and Prziborowski. (Bjork, Castel, Eich, & Kornell, 2010; Bjork, McDaniel, Pashler, & Rohrer, 2008; Carey, 2010; E. Prime III, personal communication, May 29, 2011; Monigold, & Vandevort, 1990; Prziborowski, 2007; S. Prziborowski, personal communication, June 22, 2011; Silberman, 1998)

The cognitive method of learning is directly linked to the brain's awareness of the knowledge gained, how it is obtained, and the ability to recall the information when needed. This also involves the ability to comprehend the material, and the ability to apply what has been

learned. In other words, comprehension is crucial for learning and retaining information. When reading material from a text book, the most significant aspect of the cognitive method is to not just read or memorize what the author has written, but to understand what the author is saying. Simply put; if the concept of something is known and understood, then there should not be any way of asking a question about it that could not be answered. (Carey, 2010; Monigold, & Vandevort, 1990; Silberman, 1998)

The key to solving the mystery of learning, and the retention of that material, is to identify how information is processed by the brain through the different manners or influences in which it is introduced. The brain's function in the adult learner is to constantly question and compare new information to what is already known. This means that the learner is continuously rationalizing to understand the material until it makes some form of sense to them. The influence from which the information is introduced involves use of the five senses in conjunction with the manner it is used. An example may include seeing the written material, reading it, and then interpreting what was seen and read by comparing with something the learner already understands. Another example may be to hear instruction from someone speaking, and then decipher the concept as it is explained. Of the senses, taste, touch, and smell are not applicable for written exam preparation, therefore the two most affective for learning are hearing, and seeing. (Carey, 2010; Monigold, & Vandevort, 1990; Silberman, 1998)

Important to note is when used alone each learning form only account for a small percentage of learning. It is when they are combined that learning is increased and retention is higher. For example the retention rate of seeing is 30%, and hearing is 20%, but when combined the results of retention increase to 50%. More so, the retention rate of speaking is 70%, and when combined with performing a task, it increases to 90%. This combining of methods is the most

important factor for learning. With the 90% retention that can be expected by combining seeing, hearing, speaking, and doing, it should be included in the study regiment of IRCFR personnel. The hard part is to explain to them how to combine these methods when preparing for a written exam. For example, a text book on tactics and strategies may describe a situation of which IRCFR personnel have not seen or experienced. In that case they will be hard pressed to understand the concept because they have no frame of reference to compare it to. The key here is to develop a self realized artificial or virtual experience. This is done by reading what the author is saying, seeing examples or pictures on the text pages, pause and reflect on what they just learned while imagining themselves doing, or experiencing, what they are reading about, then explain and discuss it with others. (Carey, 2010; Monigold, & Vandevort, 1990; S. Prziborowski, personal communication, June 22, 2011; Silberman, 1998)

The perfect venue for this type of learning is in a group setting. The study group method will allow for discussion and feedback from the participants. If an unclear or new concept is being learned, it may be advantageous to get different perspectives of interpretation from others learning the same thing. In order for a study group to be affective, it must be small, and the participants must be willing to work as equal partners. If there are multiple promotions expected, this team approach will bring members closer together in reaching their goals. However, in the case of only one or a few possible promotions, as is often the case with IRCFR, this method will not work. In this situation competition will make studying as a group very difficult. It may be expected that some members will listen to what others say, while holding back what they believe to be secret knowledge or what they think is their advantage over the next person. (E. Prime III, personal communication, May 29, 2011; Monigold, & Vandevort, 1990; Prziborowski, 2007; S. Prziborowski, personal communication, June 22, 2011; Silberman, 1998)

Other recommendations for improving study and retention that were found included the quantity and quality of time spent studying, changing the location of where the studying occurs and to space the intervals between study material and study sessions. The quality and quantity work hand in hand with studying. It is important to put in the hours, but only to a certain point. If the material is taken in quickly, as is the case with cramming, then it will be forgotten quickly. On the other hand, if the same material is learned over a longer period of time, then it will be retained longer. This does not mean reading or studying for more hours; instead break it down into separate study sessions. This will give the learner an opportunity to reflect on what was just learned. This stopping to reflect is also very useful when memorization of material is required. This is done by simply breaking the material into small parts, memorizing it, and then pause to reflect. An example would be a child learning the pledge of allegiance for the first time. In this case the first six words would be learner, and then repeated. After the child is successful in remembering them, the next seven would be added. This would continue until the entire pledge is memorized. (Bjork, Castel, Eich, & Kornell, 2010; Carey, 2010; E. Prime III, personal communication, May 29, 2011; Monigold, & Vandevort, 1990; Prziborowski, 2007; S. Prziborowski, personal communication, June 22, 2011; Silberman, 1998)

The changing of location is considered contrary to old beliefs of having a single quiet and controlled environment to study in. However, if the same material is studied in different locations and environment, then the learner will develop multiple associations for that material. Another recommendation included for the student to try and study in the same room that the test will be given it. The thought behind this is that on test day they will be in familiar surroundings that may allow them to recall the information quicker because of the association of the material to that room. Another contrary method involves breaking up, or mix up the material being

learned. This means instead of studying just one topic, to add other topics that are related to it. An example would be studying vertical ventilation, then include building construction, the use of hand or power tools, and fire behavior. This will give the learner the ability to review different aspects needed to understand the need for vertical ventilation, how vertically ventilate a particular building, and the tools needed to perform the task. This will improve the learners understanding of the concept being learned. Other recommendations include repetition of the study material. This means reviewing the material through flash cards, highlighting text books, re-writing notes from the highlights, and using audio or visual recordings of the notes when reading is not possible. Finally, self testing of knowledge is recommend for checking study progress and retention. This involves using study guide questions that may be purchased from the text publishers. By periodically answering questions in these guides, the learner will know what areas of the material they may need to review more. Further it was suggested to change the true and false questions and multiple choice questions found in study guides to the fill in the blank type. This is to prevent remembering false statements or wrong answer choices. (Bjork, Castel, Eich, & Kornell, 2010; Bjork, McDaniel, Pashler, & Rohrer, 2008; Carey, 2010; E. Prime III, personal communication, May 29, 2011; Monigold, & Vandevort, 1990; Prziborowski, 2007; S. Prziborowski, personal communication, June 22, 2011; Silberman, 1998)

The second area of discussion involves a survey (Appendix A) that was used to identify the more common exam preparation practices of IRCFR personnel. This researcher was pleased to receive 100% cooperation from the 71 personnel who participated. The survey's development was based on the four research questions, findings of the literature review, as well as utilization of personal knowledge and observations. This researcher had asked participants to indicate all of the study methods they used in preparation for written exams. It was explained to not pick one

best answer, but to include any combination of methods that had been used by them. They had responded to indicate: a) 95.7% highlighted material in text books; b) 90.1% reading; c) 71.8% memorized information; d) 67.6% used flash cards; e) 52.1% re-wrote the reading material; f) 50.7% used study guides; g) 22.5% used study groups; h) 18.3% created audio recordings; and i) 5.6% made video recordings. The personnel were also asked to identify from those they chose which methods they found to be most successful. These results are: a) 78.8% highlighting; b) 76.0% reading; c) 60.5% flash cards; d) 50.7% memorizing; e) 45.0% study guides; f) 40.8% re-writing; g) 11.2% study groups; h) 5.6% audio; and i) 2.8% video. (Appendix B)

Included in this question was for personnel to indicate those methods that they personally found to be unsuccessful. These results indicated: a) 45.0% study groups; b) 36.6% video; c) 33.8% audio; d) 25.3% flash cards; e) 25.3% re-writing; f) 22.5% memorizing; g) 15.4% highlighting; h) 12.6% study guides; and i) 11.2% reading. (Appendix B) At the time when these results were analyzed, it was surprising to this researcher that the respondents chose to include reading as a method that did not work for them, but it was not questioned. Later as the research progressed, it became apparent that the possibility of personnel having a learning disability existed. Though it is mentioned in this area of discussion, learning disabilities will be discussed later in the fourth area of discussion for this study.

A second survey administered to fire rescue departments throughout the state of Florida (Appendix C) asked a similar question of its participants. They were asked, if known by them, to indicate which methods of study their personnel used in preparing for written promotional exams. The answers given are: a) 100% reading; b) 73.4% highlighted material in text books; c) 43.7% memorized information; d) 43.7 used study guides; e) 32.8% used flash cards; f) 21.8% used study groups; g) 14.0% used video; h) 3.1% re-wrote the reading material; and i) 0.0% used

audio. (Appendix D) In reviewing and comparing the results of these questions, it is clear that many of the same methods are used. However, it is noted that IRCFR personnel utilized flash cards, and re-wrote from the reading material significantly for than others throughout the state.

Of the survey questions asked of IRCFR personnel, the most surprising to this researcher are the responses given as to when they began studying for the September exams, and to estimate the average amount of hours spent studying each day. The majority or 36.6% indicated they begin studying in July; which is only two months before the exams. Also, 76.0% of the personnel surveyed indicated that they only studied for one to two hours per day. As indicated by most all of the literature reviewed, and the communications with Prime and Prziborowski, personnel should not wait until the last moment to begin studying. They should be prepared by making time to study, and to do so as soon as possible. Further, when asked to indicate their opinion as to what they thought was the leading cause to low scores, only 23.9% felt the cause was due to poor study habits. The majority of the responses place blame on poor exam questions, and lack of support from the training division. (Appendix B) Yet according to Rodney K. Johnston, Battalion Chief of Training for IRCFR, no personnel had ever come forward to ask for assistance. (Carey, 2010; E. Prime III, personal communication, May 29, 2011; Monigold, & Vandevort, 1990; Prziborowski, 2007; S. Prziborowski, personal communication, June 22, 2011; R. Johnston, personal communication, June 28, 2011; Silberman, 1998)

The third area of discussion involves a review of literature, survey questions, and personal communications to explain how IRCFR develops written promotional exams as compared to other organizations. Before a comparison can be made, it is important to discuss how the exams are prepared by IRCFR. The communication with Johnston revealed that he personally creates, validates, and administers the written exams that are taken by IRCFR

personnel each year. The exams are multiple choice type questions, and on occasion some true and false questions are added. The questions are written almost word for word from the text, and the exam questions are validated in house by him and others once the test is completely written.

The validation of the exam questions consists of Johnston writing the questions, taking the exam, and checking the answers against the material from which it came. Next he has the Training Captain take the exam, and verify the answers again against the material it came as well. Once they have done this, a union representative of local 2201 looks at a few of the questions, and the text from which the question came. The reason Johnston does not allow for the entire test to be viewed by the union representative, is to maintain secrecy. This means the validation process used by IRCFR is incomplete, and that only a few select questions go through all the procedures. In addition, Johnston admits that over the years there have been challenges to some of the questions. This is done through the review process after the exam is complete and graded. The problem is when a candidate can show just cause, multiple correct answer choices, or contradiction within the text the question came from, that candidate is the only person who will receive credit for the error. Unless others identify the same problems, their scores will remain the same without correction. Though Johnston says he tries to remove challenged or bad questions from the test bank, this is not always the case. This researcher has personal knowledge that some of the questions had reappeared over the years, thus resulting in the same challenges. (R. Johnston, personal communication, June 28, 2011)

In the survey administered to IRCFR personnel, (Appendix A) the respondents were asked to include their thoughts as to why they received low scores on the promotional written exams. Many had indicated that they felt the exam questions and answers were poorly written, unclear, or too vague. (Appendix B) Questions were asked of those who participated in the

Florida fire rescue department survey (Appendix C) that helped identify how they prepared written exams for their personnel. The results (Appendix D) indicated that unlike IRCFR, many others only administered exams on an as needed basis. 35.9% of the respondents indicated that they prepared written exams in house through their training personnel. However, rather than writing the exam questions themselves, most purchased pre validated questions directly from the publisher of the text used. Also, third party testing services were hired to administer exams in other departments. (Appendix D) When he was made aware of these findings, Johnston responded by stating only a select few of the text used by IRCFR offer validated questions. In addition IRCFR will not allow the hiring of an outside third party service due to the cost involved. (R. Johnston, personal communication, June 28, 2011) The survey also revealed that nearly three quarters of those departments who responded had been impacted in some way by personnel receiving low exam scores. Interesting to note is that in comparison with the survey administered to IRCFR personnel, that the survey administered to other fire rescue departments (Appendix C) indicated the causes for low exam scores to be the fault of those persons taking the exam, and that zero blame placed on the exam itself or those that created it. (Appendix D)

Both IFSTA and the literature found in the *“Adjunct Professor’s Guide to Success”* state that exam questions are categorized as either objective or subjective. The subjective type questions are those that do not have a predetermined set answer. This type of question is not applicable for the exams used by IRCFR because are usually written in an essay format for a higher level of analysis through intellectual thought, or for identifying problem solving skills. IRCFR does include true and false questions within the exams; however, both of these manuals discourage their use. This is due to the controversy of students having a fifty-percent chance of answering them correctly without ever reading the question. The objective questions are

suggested for use by IRCFR in the form of multiple choice type questions. These questions are those that have a definitive, or one correct answer. IFSTA and the adjunct professor's guidebook recommend for these questions to be thoroughly constructed so that different levels of knowledge are challenged. Objective questions are usually based on simple recall and recognition of the study material. A more thorough test of the student's knowledge is to include objective questions that require the student to interoperate and analyze the question before answering. IFSTA and the adjunct professor's guide both feel that the quality of an effective exam is dependent on its: a) validity, which is the test's ability to effectively measure what is supposed to measure; b) reliability, which is the consistency of the exam scores; and c) objectivity, which is the evaluation of the test's scores in measuring the student's performance. This is accomplished by not creating questions that are too lengthy, complex, or have a higher reading level than the student audience. Further it is important to assure the questions are written in clear sentence form and not vague. According to these manuals poorly written questions challenge the validity of the entire exam. The multiple choice type questions used by IRCFR should avoid using clues within the question that leads to the answer. This is accomplished by avoiding word associations; such as "a" or "an", as well as plural or singular verbs that hint to the correct answer. Also, they should include that the opening statement, or stem, has all information needed to answer the question, and that there is only one correct answer choice. (Monigold, & Vandevort, 1990)

The fourth area of discussion was prompted from the Johnston communication. At the time of this discussion he was not aware of any personnel ever asking for assistance in preparing for the exams from training division. Further, if an individual does ask for assistance, he would do whatever he could to help them. The conversation included that a possibility existed for some personnel to have learning disability. Johnston stated that he was not aware of any personnel who

had a diagnosed learning disability, but added if one were suspected, he would research applicable disability laws so that he could help guide that individual to getting the appropriate assistance they needed. (R. Johnston, personal communication, June 28, 2011)

The possibility that some IRCFR personnel have a learning disability is real. This is based on the estimate that 50-80% of adult learners have a learning disability that involves a low reading skill ranging from the fifth to seventh grade level. A learning disability is a permanent disorder that affects an individual's ability to perceive, and understand information. The disorder will involve a deficiency in a person's attention span, and the ability to reason or process information. It will also affect an individual's memory, reading and writing skills. An anxiety disorder is not the same as a learning disorder, but it will affect an individual's ability to study. However, general test taking anxiety is not a disorder, as it relates more to a feeling of apprehension or fear. A true anxiety disorder will encompass all aspects of the person's life, and not just test taking. Aside from anxiety or learning disabilities, other psychological causes that may contribute to low exam scores include depression, grief or loss. Consideration should also be given to apathy, or the lack of motivation or interest in matters of importance. (A. Perry, personal communication, June 14, 2011; Bestor, 2006a; Bestor, 2006b; Bestor, 2006c; N. Dillon, personal communication, June 17, 2011)

The ability to assist IRCFR personnel suspected of having a disability is a difficult task, as outlined in the communications and the review of literature used in this study. The three technical assistance papers written by the Practitioners' Task Force on Adults with Learning Disabilities discuss state and federal laws as they pertain to students with learning disabilities. This includes the Americans with Disabilities Act (ADA) of 1990, and section 504 of the Rehabilitation Act of 1973. Interpretation of the laws, as assisted by school psychologist Angela

Perry, say that confidentiality must be protected, and if an individual has been diagnosed with a learning disability it is entirely up to that individual whether or not to come forward, or self identify themselves as having the disability. Any action taken by an institution or an employer that contradicts these laws may result in the discrimination of the individual. (A. Perry, personal communication, June 14, 2011; Bestor, 2006a; Bestor, 2006b; Bestor, 2006c)

The intentions of these laws are to give support to those with disabilities while protecting their individual rights. However, they also make it difficult for others to assist. The disability laws as they pertain to IRCFR and the fire service as a whole prevent employers from directly asking a person if they have a learning disability, suggest that they might have one, or ask if they had ever been diagnosed with a disability. If someone in authority suggests that an individual be tested for a learning disability, they can become financially responsible for all the costs associated with the testing. It is considered appropriate for a concerned leader to discuss the matter with an individual, provided they are sincere about helping. The suggested course of action is to give the individual suspected of having a disability the opportunity to ask for assistance. This is accomplished through semantics, or the way it is presented. (A. Perry, personal communication, June 14, 2011; Bestor, 2006a; Bestor, 2006b; Bestor, 2006c)

An appropriate comment that will lead to open discussion should consist of a vague question. An example may be, "I see you are having difficulty, has this always been a problem for you?" If open discussion is achieved, and the individual asks for assistance, the next goal is to direct them toward the Employee Assistance Program (EAP). The EAP available to IRCFR personnel is provided by Corporate Care Works of Jacksonville Florida. Once the individual contacts the EAP, a clinician will assist in determining what type of help is appropriate. Regardless of the cause, or what a person thinks may be the problem, Corporate Care Works will

assure the individual receives the most appropriate assistance. If a learning disability is suspected, a screening process must be conducted before a diagnosis can be made. The screening process results alone cannot determine the existence of a learning disability; it is only a tool for determining if a more formal evaluation is warranted. If further evaluations are warranted, only a licensed psychologist or other qualified person can make the final determination of the individual's condition. After the diagnosis confirms a disability, and the individual chooses to self identify the information to an employer, accommodations must be made to assist them. (A. Perry, personal communication, June 14, 2011; Bestor, 2006a; Bestor, 2006b; Bestor, 2006c; N. Dillon, personal communication, June 17, 2011)

In discussing accommodations, the results of this study found that some actions may compromise confidentiality, also that the accommodations should be based on the disability. For instance, a person with an Attention Deficit Hyperactivity Disorder (ADHD) may have a hard time paying attention to the test; therefore, a separate setting or room, and additional time may be appropriate. A candidate with a reading disability may have difficulty with reading comprehension; therefore, reading the test to him or her may be appropriate. Perry disagreed with providing all of the recommendations listed by the practitioner's task force. Instead, Perry suggests that based on the firefighting profession and that the exams are mostly multiple choice; these are the most appropriate accommodations at this time: a) special lighting; b) if math is involved, provide calculators to everyone. Providing calculators to everyone would help all candidates and confidentiality would not be compromised; c) give an extended time limit; d) offer the exam orally; e) provide a workshop on study habits and test taking skills. Perry explained that exam preparation is not mandated by the ADA, but it would be a good practice. (A. Perry, personal communication, June 14, 2011; Bestor, 2006a; Bestor, 2006b; Bestor, 2006c)

The fifth area of discussion involves the results found through a review of literature, and survey questions used to identify if other fire agencies have been affected by low exam scores, as well as recommendations they wished to offer. The survey administered to Florida fire rescue departments included questions specific to this area of discussion. (Appendix C) It was unexpected to discover that 73.7% of the respondents had been negatively affected by personnel receiving low scores on promotional written exams, and that very few had taken corrective actions, or offered assistance to their personnel. It is also interesting to note that the most common responses given for how low scores impacted their departments are very similar to those experienced by IRCFR. These responses include: a) the elimination of personnel from promotional eligibility; b) a limited pool of those that were eligible; c) less senior or less experienced personnel were promoted; and d) filling vacancies by hiring of personnel from outside their department. Nearly every respondent who offered a recommendation to other departments suggested they utilize exam questions that have been written and validated by the text publisher, and to be aware of all conflicts, or contradictions within text material. The most significant recommendation given by these respondents to other fire rescue personnel who wish to achieve higher written promotional exam scores is to seek assistance with study habits and reading comprehension through adult education and college level courses. (Appendix D)

The survey recommendation offered by the Florida fire rescue departments for personnel to seek assistance with study habits and reading comprehension through adult education and college level courses (Appendix D) is strongly supported by Prime, Prziborowski, and Johnston. In their interviews each had suggested this as a positive course of action. The local and most convenient facility offering adult and higher education that is accessible to IRCFR personnel is Indian River State College. This institution offers several college level courses for adult learners

seeking assistance with reading comprehension, and basic study skills. The analysis of each course indicated seven that would be of value to IRCFR personnel. The analysis of each course description also indicated that some of the courses require successful completion of others as a prerequisite before students would be allowed to enroll. For example, REA 0001 must be successfully completed in order to be eligible to enrolling in REA 0002. Also SLS 1101 is a prerequisite for SLS 1105. Of all the courses listed, the four that would be most recommended are: a) REA 0001 college prep reading. This course provides study in critical comprehension skills; b) REA 1205 advanced college reading. This course concentrates on test taking techniques and rapid reading skills; c) SLS 1101 student success. This course provides extensive instruction in study skills and strategies for test taking; and d) SLS 1501 college study skills. This course concentrates on improving the academic study skills and test taking strategies taught in SLS 1101. (E. Prime III, personal communication, May 29, 2011; IRSC, 2010; R. Johnston, personal communication, June 28, 2011; S. Prziborowski, personal communication, June 22, 2011)

The final area of discussion and perhaps the most alarming finding from an organizational perspective included the fact that some of the most experienced and exceptional candidates are being passed over for promotion due to their low test scores. The results of this study identified deficiencies in both the exam preparation practices of personnel and the construction of exam questions used by the training division. Additionally revealed in this research project is the possibility of personnel having undiagnosed reading and/or learning disabilities that adversely affect test results. These problems continue today as IRCFR has not addressed these challenges, nor does it offer educational or personal assistance to those studying for written promotional exams. The potential of promoting individuals, who are not ready, will continue to have a negative impact on IRCFR's organizational effectiveness. The probable future

impact on IRCFR's success in providing an efficient and safe service to its community is dependent on the quality and competency of those persons promoted within its ranks. The time has come for this issue to be addressed by taking a proactive approach, and not wait until tragedy occurs, before responding with a solution. The recommendations offered within this study will serve to assist personnel create their own opportunities for advancement by scoring higher on the promotional written exams, improve IRCFR's organizational effectiveness, increase the safety and overall expertise of personnel, as well as provide a higher level of service to the community.

Recommendations

The recommendations provided by this researcher are based on the problem that Indian River County Fire Rescue (IRCFR) Personnel are consistently achieving low scores on written exams that limit their contention or eligibility for promotion. The probable future impact on IRCFR's success in providing an efficient and safe service to its community is dependent on the quality and competency of those persons promoted within its ranks. These recommendations clearly support the data presented and the results found by answering the descriptive research questions. Their purpose was to identify contributing factors that result in low exam scores so that educational and training recommendations can be made to improve the efficiency of personnel preparing for the promotional process.

This includes recommendations for the IRCFR administration to guide personnel suspected of having a learning disability toward getting the appropriate level of assistance needed, and for the IRCFR Training Division to better prepare and administer more effective and accurate written exams. As well as recommendations for IRCFR personnel to seek assistance through the Employee Assistance Program, and IRCFR personnel to improve study habits and reading comprehension through college level courses. In addition, this also includes

recommendations for IRCFR personnel to create their own opportunity for promotion by improving their study and test taking skills.

As a result of this study the following represents the short and long term recommendations for IRCFR:

- Acknowledge the problem. IRCFR personnel are consistently achieving low scores on written exams. The possibility that some have a learning disability is based on the estimate that 50-80% of adult learners have a learning disability that involves a low reading skill ranging from the fifth to seventh grade level.
- Show a commitment for solving the issue. In doing so, the Indian River County (IRC) Director of Emergency Services/Fire Chief shall first meet with the Assistant Chief of Operations, and the Assistant Chief of Support Services and Training. This meeting shall be to discuss the need for developing a plan for assisting personnel who are having difficulty with written exams.
- The IRC Director of Emergency Services/Fire Chief shall meet with the Human Resources Director to discuss and assess the problem. A request for further assistance shall be made from IRC Employee Assistance Program (EAP) provided through Corporate Care Works of Jacksonville Florida.
- The IRC Director of Emergency Services/Fire Chief, and Human Resources Director shall schedule and hold a meeting with a Corporate Care Works representative. This meeting will be used to discuss:
 - Pertinent state and federal laws regarding disabilities. They will include but are not limited to the Americans with Disabilities Act (ADA) of 1990, and section 504 of the Rehabilitation Act of 1973.

- The best course of action for assisting personnel suspected of having a learning disability.
- Schedule a training session for educating IRCFR personnel of the services provided by the EAP. It is important to include all available services, and not limit the information to learning disabilities.
- Conduct the EAP informational training sessions with IRCFR personnel. Scheduling shall include three separate dates in order to accommodate all three shift personnel.
- Develop a committee that consists of the Assistant Chief of Operations, the Assistant Chief of Support Services and Training, all Training Division Officers, and one bargaining unit member designated by Local 2201 of the International Association of Firefighters (IAFF).
- The committee shall meet and begin discussion to provide workshops, and training for personnel on study habits and test taking skills. The committee members shall develop a training plan for assisting personnel with study skills and test taking strategies. It is expected that outside sources from the educational community, and private consultants be sought for assistance. Any costs or fees must be approved by the IRC Director of Emergency Services/Fire Chief prior to being incurred.
- The IRC Director of Emergency Services/Fire Chief shall be kept abreast of all findings and results of subsequent meetings.
- The committee shall meet no less than once every week for up to four weeks. At that time the committee is expected to have developed a completed training plan for assisting personnel with study skills and test taking strategies.

- The committee shall then meet with the IRC Director of Emergency Services to explain the training plan. At this point questions or concerns that may be answered by the committee members. If the plan is disapproved, the committee shall have one week to correct or amend the plan as discussed in this meeting.
- Upon approval of the training plan by the IRC Director of Emergency Services/Fire Chief, the training sessions shall then be offered, at no cost to personnel.
- Scheduling shall include three separate dates for each training segment, if more than one session is needed, in order to accommodate all three shift personnel.

The following recommendations and general information is intended for use by the IRCFR administration for guiding personnel suspected of having a learning disability toward getting the appropriate level of assistance:

- Seek assistance first. The ability to assist IRCFR personnel suspected of having a disability is a difficult task. Personnel with a disability are protected under state and federal laws. It is suggested to first consult with the IRC Human Recourse Department, and the Employee Assistance Program (EAP) provided through Corporate Care Works of Jacksonville Florida for guidance of appropriate actions before attempting to offer assistance to personnel.
- Review and use reference material. The technical assistance papers written by the Practitioners' Task Force on adults with learning disabilities is a good source of helpful information. These documents were written to provide Florida educators a better understanding of state and federal laws, including the Americans with Disabilities Act (ADA) of 1990, and section 504 of the Rehabilitation Act of 1973.

Note that when the documents refer to the student, it is implied that it also refers to an employee. These documents may be downloaded and are as follows:

- The rights and responsibilities of adults with learning disabilities and responsibilities of service providers.
 - <http://www.broward.k12.fl.us/ctace/adult-education/Adult-New/TAP/Rights%20TAP.pdf>
- Screening for learning disabilities in adult education programs
 - <http://www.broward.k12.fl.us/ctace/adult-education/Adult-New/TAP/Screening%20TAP.pdf>
- Accommodations for students with disabilities or other special needs.
 - <http://www.fldoe.org/workforce/AdultEd/pdf/ALD-TAP-C.pdf>
- The disability laws as they pertain to IRCFR and the fire service as a whole prevent employers from directly asking a person if they have a learning disability, suggest that they might have one, or ask if they had ever been diagnosed with a disability.
- Use caution. Any action taken by IRCFR that contradicts disability laws may result in the discrimination of the individual.
- Warning. If someone in authority suggests that an individual be tested for a learning disability, they can become financially responsible for all the costs associated with the testing.
- Confidentiality must be protected, and if an individual has been diagnosed with a learning disability it is entirely up to that individual whether or not to come forward, or self identify as having a disability.

- A good way of maintaining confidentiality, and still get personnel to consider asking for assistance is to post or distribute information about the EAP to all employees at the same time notification is given for the written promotional exams. Flyers or other forms of informational advertisement should outline specific services offered through the EAP, and especially if it outlines those that will assist personnel who think they may have a learning disability.
- It is considered appropriate for a concerned leader to discuss the matter with an individual, provided they are sincere about helping. The suggested course of action is to give the individual the opportunity to ask for assistance. This is accomplished through semantics, or the way it is presented.
- An appropriate comment that will lead to open discussion should consist of a vague question. An example may be: “I see you are having difficulty, has this always been a problem for you?”
- If open discussion is achieved, and the individual asks for assistance, the next goal is to direct them toward the EAP. The toll free telephone number for Corporate Care Works is 1-800-327-9757. Once the individual contacts the EAP, a clinician will assist in determining what type of help is appropriate.
- Accommodations must be made to assist an individual who has chosen to come forward and self identifies. However, some actions may compromise confidentiality.
- Accommodations should be based on the disability. Especially when taking written promotional exams. For instance:

- A person with an Attention Deficit Hyperactivity Disorder (ADHD) may have a hard time paying attention to the test; therefore, a separate setting or room, and additional time may be appropriate.
- A candidate with a reading disability may have difficulty with reading comprehension; therefore, reading the test to him/her may be appropriate.
- Based on the firefighting profession and that the IRCFR written exams are mostly multiple choice; these are the most appropriate accommodations at this time:
 - Special lighting
 - If math is involved, provide calculators. Providing calculators to everyone would help all candidates and confidentiality would not be compromised
 - Give an extended time limit, this may be time and one half, or double time. Not an unlimited amount of time.
 - Offer the exam orally

The following recommendations are intended for use by the IRCFR Training Division as advice to better prepare and administer more effective and accurate written exams:

- Avoid using true and false questions. This is due to the controversy of personnel having a 50% chance of answering correctly without ever reading the question.
- Know the material used for creating exam questions. Avoid questions that are in conflict between text books or other study material. Also assure the question does not contradict itself within the same text.
- Assure that there is only one correct answer choice.
- Avoid using vague language. Make sure the questions are clear to the reader.

- Admit to mistakes, and remove bad questions from future use. If a bad question is discovered, give credit to all participants not just to those that had challenged it.
- Validate all exam questions written in house. To prevent controversy, allow the union representative to review the entire exam, and not just a select few questions.
- Assure for the exam's quality and effectiveness. This is dependent on:
 - Validity, which is the test's ability to measure what is supposed to measure.
 - Reliability, which is the consistency of the exam scores.
 - Objectivity, which is the evaluation and comparison of all test scores in measuring the performance of all students.
- Do not creating questions that are too lengthy, complex, or have a higher reading level than the personnel taking the exams.
- Do not include or use clues within the question that lead to the answer. This is accomplished by avoiding word associations; such as "a" or "an", as well as plural or singular verbs that hint to the correct answer.
- The opening statement must have all information needed to answer the question.
- Construct questions so that different levels of knowledge are challenged.
- Include objective questions that require thought and analyzing before answering.
- Purchase pre-validated exam questions through the same publisher of the text.
- Consider hiring, or contracting with a third party testing service for providing and administering written promotional exams.

The following recommendations include general information and advice that is intended for use by IRCFR personnel seeking assistance through the Employee Assistance Program:

- The Employee Assistance Program (EAP) provided by Indian River County's (IRC) Human Resources Department is contracted through Corporate Care Works of Jacksonville Florida.
- Assistance provided through the EAP is available to any county employee and member of their immediate family.
- It is important to know that your confidentiality will be strictly maintained.
- The EAP is always available to you and your family at any time on any day. You may contact Corporate Care Works directly by telephone toll free at 1-800-327-9757.
- If you think or feel you have a problem or that you need assistance in coping with any issue, do not hesitate to contact them. It is important to remember that the services provided through the EAP are not limited to any one area of concern. Some areas include:
 - Stress
 - Anxiety
 - Grief or Loss
 - Substance abuse
 - Marital problems
 - Learning disabilities
 - Financial difficulties
 - Apathy or lack of motivation
- When you call, a licensed clinician or counselor will answer the phone. That person will do whatever they can to help, and put you in contact with an appropriate professional for your specific need.

The following recommendations are intended for use by IRCFR personnel seeking advice and assistance with reading comprehension, and basic study skills through college level courses.

- Indian River State College offers college level courses for adult learners seeking assistance with reading comprehension, and basic study skills.
- You should schedule an appointment with the college's Guidance Department for further information prior to registering through the Admissions office.
- The more applicable courses for improving reading comprehension, and basic study skills are included here in a suggested order of completion:
 - REA 0001 college prep reading. This course is used for developing critical reading comprehension skills.
 - REA 1205 advanced college reading. This course concentrates on test taking techniques and rapid reading skills.
 - SLS 1101 student success. This course provides extensive instruction in study skills and strategies.
 - SLS 1501 college study skills. This course concentrates on improving academic study skills taught in SLS 1101.
 - REA 0002 college prep reading II. Continues with the review of literal and comprehensive skills learned in REA1001.
 - REA 1930 reading to learn in the content area. This course concentrates on improving reading comprehension and critical thinking.
 - REA 2002 introduction to educational psychology. This course teaches the strategies of learning and problem solving.

- Continue with furthering your education. Become educated and build your knowledge base. Take as many fire and rescue related classes and courses as you can. This will only strengthen your abilities as a professional firefighter, as well as help with reading comprehension and study skills.

The following recommendations include general information and advice for IRCFR personnel wishing to improve their study and test taking skills:

- The recommendations listed here are only suggestions. There is no one style or method of learning that is best for everyone and no two persons can be expected to learn the same way. It is important that you find what works best for you. The key is to figure out what is not working, and then discover new strategies or approaches to learning.
- Try to find a way to get motivated or find interest in the study material. A positive attitude will allow you to improve your retention of the material.
- Studying for the annual promotional written exams should begin a minimum of six months prior to the September exam date.
- Studying for a longer time period is preferred over cramming. By spacing the intervals between study material and study sessions, you will allow yourself time to reflect and understand what is being learned. This will then increase your retention of the material. Cramming in a short period of time will only result in forgetting the information quicker.
- Spacing can also be used when it is necessary to memorize specific lists or steps in a procedure. This is done by breaking the material into smaller parts, memorizing it, and then pause to reflect. Once you can repeat the small section without fail, add a bit

more. Continue adding small parts until you can repeat it all without looking at the text. An example might be how a child learns the pledge of allegiance. They start with the first few words, and then build upon it.

- Another form of spacing is to mix the material being learned. This means instead of studying just one topic, add others that may be related. An example may be studying vertical ventilation, then include building construction, the use of hand and power tools, and fire behavior. This will help you understand the needed considerations involved.
- As you study the reading material, try to study the same material in different locations. By doing this, you will develop multiple association for the same material.
- If possible, study at the testing location, or room the exam will be given. This may help you recall the information quicker during the exam because of the familiar surroundings.
- For those that are easily distracted, a single quiet and controlled environment may be better. This may include clearing the study space of clutter or other distractions.
- Time of day is another consideration. Some may find early morning best, while others prefer to study late in the evening.
- Change the lighting during your study time. This means reading both indoors and out.
- The quality of study is much more effective than the quantity of time you spend reading. When reading the material, it is important to take breaks. There is no set time limit, but it is suggested that studying be conducted for more than two hours throughout the day if possible. As you progress in your studies, you will find the session may increase in time.

- Remember to take breaks. If you read a section and cannot remember what you just read, it's time for a break.
- Never be afraid to ask for help. It is important that you understand what you are reading. If you do not understand what you just read, try reading it again. If that does not work read the next section or paragraph, as it may offer an explanation. If you still do not understand what the author is saying, ask or discuss it with others who may know.
- Study groups work well if they are small, and all the members are willing to participate as a team. Discussion and feedback may help to understand an unclear or new concept by getting a different perspective or interpretation from others learning the same thing.
- It is important that you comprehend the material. Do not try to read and memorize what the author has written. It is more important to understand what the author is saying. Simply put; if the concept of something is known and understood, then there should be no way of asking a question that you could not answer.
- Don't be afraid of combining different study methods. By combining you increase the retention rate of just one method alone. Some of the methods to consider include:
 - Read the text material.
 - Highlighted material in text books.
 - Memorized information.
 - Used flash cards.
 - Re-write the reading material.
 - Used study guides.

- Used study groups.
 - Created audio recordings of your notes or the text.
 - Made video recordings of you reading the note or text.
 - Use audio books if available.
 - Any other way you can find.
- New technology is created every day, the internet is a great place to find information. Begin exploring on your own, you never know what you will find that can be helpful.
 - Experience is a great point of reference. If you have seen or done something, you may be more likely to remember it. Use this to your advantage and recall that experience when reading from the text. If you are hard pressed to understand the concept because you have no frame of reference to compare it to, consider artificial experience. This is done by reading what the author is saying, seeing examples or pictures on the text pages, pause and reflect on what you just learned while imagining yourself doing, or experiencing, what you are reading about, then explain and discuss it with others.
 - Self testing is important to check your progress, or to identify areas you need to work at. This can be done by using study guides created by the text publisher.
 - Do not study true and false questions. Why study something that is false. Change it to a true statement instead.
 - Do not study multiple choice questions. Each question will have one correct answer and usually three false choices. Why study three wrong answers to the question? Do not take the chance that on test day that the only thing you remember about the question is the wrong choice you had studied. Instead re-write the question so that it

is a fill in the blank. This is a great way of using flash cards. Write the question on one side, and the one correct answer on the back.

- When taking the exam, change the multiple choice question to fill in the blank. This means cover the answer choices with your hand or piece of paper, and try to answer without looking at the choices. If you can, and that choice is there, it will most likely be the correct answer.
- If you do not know the answer, do not just guess at it. A true and false question can be tricky, but may have clues to guide your decision. Read it carefully. If you have to guess there is a 50% chance of getting the correct answer. When you do not know the answer of a multiple choice questions, instead of taking a one in four chance of getting correct, increase your odds by eliminating what you do know. In other words, if you know what an answer choice is, and it does not relate to the question, eliminate it from contention. If you are successful, you may eliminate all three wrong choices. Therefore, even if you do not know the true answer, the process of elimination has left you with the correct answer.

The expected organizational benefits of assisting personnel identify their strengths, weaknesses, or other factors that may have contributed to low exam scores include:

- Giving Personnel an avenue to seek the appropriate level of assistance they may need.
- Assisting personnel create their own opportunities for advancement by scoring higher on the promotional written exams.
- Promoting candidates that meet a higher standard of excellence.
- Increase the overall expertise of personnel
- Improving IRCFR's organizational effectiveness.

- Providing for the safety of all IRCFR personnel.
- Improved public perception of IRCFR.
- Providing an efficient and safe service to the community
- Supporting 2 of the four United States Fire Administration (USFA) operational objectives:
 - Improve local planning and preparedness,
 - Improve the fire and emergency services' professional status. (USFA, 2011,, p.II-2)

In conclusion, the recommendations that this researcher would extend to IRCFR and future researchers who may wish to replicate some or all of this study are:

- Be proactive and do not wait until a tragedy occurs before acknowledge the problem.
- Try to view the impacts such recommendations would have from many different perspectives. This should include training, personnel, and the operational needs.
- Reach out beyond the fire service, psychological and educational communities for assistance. Consider others such as military, corporate, or privet industry.
- Consider including how the problem presents to between age groups or generations.
- Consider identifying the level of education held by personnel.
- Include the experience level of personnel, including years of service.
- When conducting surveys, it is important to share the survey results with respondents.
- Use caution when developing a measuring tool for the success and failures of a study skill and test taking workshop. Evaluating the success of this type of training program may be difficult due to the many variables associated with learning.

- Promote using the EAP, assure personnel that they matter, and always continue to search for additional ways to offering assistance. If only one person benefited from the results of this study and from the recommendations offered, then it was worth doing and should be considered successful.
- If trying to replicate the study, the only other advice to offer is keep looking for more information. Perhaps additional information will become available from other fire departments, industry or other professionals using this approach.
- The final and most sincere recommendation this researcher can offer is to personally assist and answer questions. Contact this researcher at Indian River County Fire Rescue, 4225 43rd Avenue, Vero Beach Florida, 32967.
- Be Safe!

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APPENDIX A
Survey of Indian River County Fire Rescue Personnel

Making the Grade: Assisting Personnel Achieve Promotional Exam Success

The information gathered from this survey will be used as statistical data in an Applied Research Project for the National Fire Academy's Executive Fire Officer Program; "Executive Leadership" course.

Survey results will be made available; while personal information will remain confidential.

Estimated time of completion is 10 minutes.

Please complete this survey before June 1, 2011

The title of this research paper is

"Making the Grade: Assisting Personnel Achieve Promotional Exam Success".

The purpose of this research is to identify contributing factors that result in low exam scores so that educational and training recommendations can be made to improve the efficiency of personnel preparing for the promotional process.

Thank you in advance for your assistance.

Be Safe,

Ron Angelone

1. IRCFR promotional written exams are taken in September each year. When do you typically begin studying for them?

- January of that year
- February of that year
- March of that year
- April of that year
- May of that year
- June of that year
- July of that year
- August of that year
- September
- October for the next year
- November for the next year
- December for the next year

2. Estimate the average hours per day you spend studying for the written exam.

- Between 1 to 2 hours
- Between 2 to 4 hours
- Between 4 to 6 hours
- Between 6 to 8 hours
- Between 8 to 10 hours
- Between 10 to 12hours
- More than 12 hours

**3. How do you study/prepare for the written exams?
(check all that apply)**

- Reading
- Highlighting
- Rewriting
- Flash/Note Cards
- Audio
- Video
- Study Groups
- Study Guides
- Memorization
- Other please specify

**4. What HAS worked for you?
(check all that apply)**

- Reading
- Highlighting
- Rewriting
- Flash/Note Cards
- Audio
- Video
- Study Groups
- Study Guides
- Memorization
- Other please specify

5. What has NOT worked for you? (check all that apply)

- Reading
- Highlighting
- Rewriting
- Flash/Note Cards
- Audio
- Video
- Study Groups
- Study Guides
- Memorization
- Other please specify

6. Have you sought assistance in preparing for written promotional exams?

- Yes
 - No
- If Yes please specify

7. Are you satisfied with your written exam scores, and your method of preparation?

- Yes
 - No
- Please explain why

8. If YOU have received low promotional written exam scores, in your opinion, what do you think is the cause? Have your personnel experienced low written exam scores? (check all that apply)

- The cause has not been identified
- Poor study habits
- Your limited experience
- Your limited education
- Poorly written exams
- Unclear questions
- Unclear answer choices
- Limited or no assistance from the Training Division
- Other please specify

9. What are your thoughts? What suggestions would you give others to improve their exam scores?

10. What are your thoughts? What suggestions would you give The Training Division for exam improvement?

APPENDIX B
Survey Results of Indian River County Fire Rescue Personnel

Making the Grade: Assisting Personnel Achieve Promotional Exam Success

The sample size of IRCFR personnel selected to participate was 71, which equaled the total number of respondents, or 100 percent. This was determined by the total number of personnel who had taken written promotional exams in the five year span of 2006 through 2010. There were participants who had taken the exams several times over that period, including some who had been promoted; however, regardless of the amount of times an individual had taken an exam, they were only counted as one. The survey was conducted over the three month period of March, April, and May, 2011.

1. IRCFR promotional written exams are taken in September each year. When do you typically begin studying for them? Respondent Percent Respondent Count

<input type="radio"/> January of that year	0.0%	0
<input type="radio"/> February of that year	5.6%	4
<input type="radio"/> March of that year	2.8%	2
<input type="radio"/> April of that year	5.6%	4
<input type="radio"/> May of that year	8.4%	6
<input type="radio"/> June of that year	18.3%	13
<input type="radio"/> July of that year	36.6%	26
<input type="radio"/> August of that year	22.5%	16
<input type="radio"/> September	0.0%	0
<input type="radio"/> October for the next year	0.0%	0
<input type="radio"/> November for the next year	0.0%	0
<input type="radio"/> December for the next year	0.0%	0

2. Estimate the average hours per day you spend studying for the written exam. Respondent Percent Respondent Count

<input type="radio"/> Between 1 to 2 hours	76.0%	54
<input type="radio"/> Between 2 to 4 hours	22.5%	16
<input type="radio"/> Between 4 to 6 hours	1.4%	1
<input type="radio"/> Between 6 to 8 hours	0.0%	0
<input type="radio"/> Between 8 to 10 hours	0.0%	0
<input type="radio"/> Between 10 to 12hours	0.0%	0
<input type="radio"/> More than 12 hours	0.0%	0

**3. How do you study/prepare for the written exams?
(check all that apply)**

	Respondent Percent	Respondent Count
<input type="radio"/> Reading	90.1%	64
<input type="radio"/> Highlighting	95.7%	68
<input type="radio"/> Rewriting	52.1%	37
<input type="radio"/> Flash/Note Cards	67.6%	48
<input type="radio"/> Audio	18.3%	13
<input type="radio"/> Video	5.6%	4
<input type="radio"/> Study Groups	22.5%	16
<input type="radio"/> Study Guides	50.7%	36
<input type="radio"/> Memorization	71.8%	51
<input type="radio"/> Other please specify	0.0%	0

**4. What HAS worked for you?
(check all that apply)**

	Respondent Percent	Respondent Count
<input type="radio"/> Reading	76.0%	54
<input type="radio"/> Highlighting	78.8%	56
<input type="radio"/> Rewriting	40.8%	29
<input type="radio"/> Flash/Note Cards	60.5%	43
<input type="radio"/> Audio	5.6%	4
<input type="radio"/> Video	2.8%	2
<input type="radio"/> Study Groups	11.2%	8
<input type="radio"/> Study Guides	45.0%	32
<input type="radio"/> Memorization	50.7%	36
<input type="radio"/> Other please specify	0.0%	0

**5. What has NOT worked for you?
(check all that apply)**

	Respondent Percent	Respondent Count
<input type="radio"/> Reading	11.2%	8
<input type="radio"/> Highlighting	15.4%	11
<input type="radio"/> Rewriting	25.3%	18
<input type="radio"/> Flash/Note Cards	25.3%	18
<input type="radio"/> Audio	33.8%	24
<input type="radio"/> Video	36.6%	26
<input type="radio"/> Study Groups	45.0%	32
<input type="radio"/> Study Guides	12.6%	9
<input type="radio"/> Memorization	22.5%	16
<input type="radio"/> Other please specify	0.0%	0

6. Have you sought assistance in preparing for written promotional exams?

- | |
|--|
| <ul style="list-style-type: none"> <input type="radio"/> Yes <input type="radio"/> No <p>If Yes please specify</p> |
|--|

Respondent Percent Respondent Count

21.1%	15
78.8%	56
19.7%	14
5.6%	4
2.8%	2
2.8%	2
8.4%	6

Most common responses

1. Study with others.
2. Ask for help in weak areas.
3. Seek help from personnel currently in position tested for.
4. Talking to other people who have taken the exams.

7. Are you satisfied with your written exam scores, and your method of preparation?

- | |
|---|
| <ul style="list-style-type: none"> <input type="radio"/> Yes <input type="radio"/> No <p>Please explain why</p> |
|---|

Respondent Percent Respondent Count

69.0%	49
30.9%	22
59.1%	42
38.0%	27
21.1%	15

Most common responses

1. No: Should spend more time, or applied more effort.
2. Yes: Satisfied with study method. Scores were not low.

8. If YOU have received low promotional written exam scores, in your opinion, what do you think is the cause?

Have your personnel experienced low written exam scores? (check all that apply)

- | |
|---|
| <ul style="list-style-type: none"> <input type="radio"/> The cause has not been identified <input type="radio"/> Poor study habits <input type="radio"/> Your limited experience <input type="radio"/> Your limited education <input type="radio"/> Poorly written exams <input type="radio"/> Unclear questions <input type="radio"/> Unclear answer choices <input type="radio"/> Limited or no assistance from the Training Division <input type="radio"/> Other please specify |
|---|

Respondent Percent Respondent Count

21.1%	15
23.9%	17
15.4%	11
11.2%	8
25.3%	18
32.8%	21
21.1%	15
25.3%	18
0.0%	0

9. What are your thoughts? What suggestions would you give others to improve their exam scores? **Respondent Percent** **Respondent Count**

<u>Most common responses</u>	95.7%	68
1. Read the material more carefully.	36.6%	26
2. Study longer.	11.2%	8
3. Take fire related classes.	12.6%	9
4. Start slowly, and go over everything.	2.8%	2
5. Pick out information that could be a question, and put it on note cards.	8.4%	6
6. The more times you take the exam, the better you will know the exam process.	25.3%	18
7. Know the material, don't memorize it.	8.4%	6
8. Ask people who have taken prior exams for help.	25.3%	18
9. None; because it a competition.	33.8%	24
10. Try not to over think the questions and read them twice for a clear understanding of what is being asked.	15.4%	11
11. Repetition.	5.6%	4
12. Figure out what works for you.	2.8%	2
13. Be more serious about testing.	2.8%	2

10. What are your thoughts? What suggestions would you give The Training Division for exam improvement? **Respondent Percent** **Respondent Count**

<u>Most common responses</u>	90.1%	64
1. It's not the training department's job for writing exams.	12.6%	9
2. It is up to the candidates to prepare themselves.	11.2%	8
3. Be more specific as to what to study.	25.3%	18
4. Make questions more appropriate for the job description.	25.3%	18
5. Make the questions less vague.	15.4%	11
6. Write questions that are not confusing.	36.6%	26
7. Offer a training class on how to study.	33.8%	24
8. Offer a workshop on the books used.	45.0%	32
9. Hire an outside company to administer exams.	12.6%	9
10. Balance all the material, don't overuse one book.	22.5%	16

APPENDIX C
Survey of Florida Fire Departments

Making the Grade: Assisting Personnel Achieve Promotional Exam Success

The information gathered from this survey will be used as statistical data in an Applied Research Project for the National Fire Academy’s Executive Fire Officer Program; “Executive Leadership” course.

Survey results will be made available; while personal information will remain confidential.

Estimated time of completion is 5 to 10 minutes.

Please complete this survey before June 1, 2011

The title is: “Making the Grade: Assisting Personnel Achieve Promotional Exam Success”.

The purpose of this research is to identify deficiencies or other contributory factors that result in low written exam scores so that educational and training recommendations can be made to improve the efficiency of personnel preparing for and participating in the promotional process.

Thank you in advance for your assistance.

Be Safe,

Ron Angelone

Indian River County Fire Rescue

1. Survey Respondent Information

- Please indicate your Department’s name.
- Any other information is optional.
- The Survey Results will be made available.
- Personal information will remain confidential.

**2. How often are promotional exams given within your department?
(check all that apply)**

- Annually
- Bi-Annually
- As Needed
- No Written Exams Given
- Other please specify

**3. How are your department's written promotional exams prepared?
(check all that apply)**

- In House by the Training Division
- Validated Questions from Text Book Publisher
- Purchased, and or Administered through a 3rd Party Promotional Testing Service
- Other (please Specify)

4. If written exams are prepared in house, how are they written, and how are they validated? (please include if exam questions are written word for word from the text or if the wording is changed.)

5. If known, what study methods would you say your personnel use the most? (check all that apply)

- Reading
- Highlighting
- Rewriting
- Flash/Note Cards
- Audio
- Video
- Study Groups
- Study Guides
- Memorization
- Other please specify

**6. Have your personnel experienced low written exam scores?
(low may be defined as below 80%)**

- Yes
- No
- Unknown

7. If "YES" to number 6, how have low exam scores affected your department?

**8. If “YES” to number 6, has the cause of low scores been identified?
(check all that apply)**

<ul style="list-style-type: none"><input type="radio"/> No, The Cause Has Not Been Identified<input type="radio"/> Poor Candidate Study Habits<input type="radio"/> Limited Experience of the Personnel<input type="radio"/> Limited Education of the Personnel<input type="radio"/> Unsure<input type="radio"/> Other please specify
--

**9. If “YES” to number 6, have corrective actions been taken,
or assistance to personnel been offered?**

<ul style="list-style-type: none"><input type="radio"/> Yes<input type="radio"/> No<input type="radio"/> No, It is the Candidates Responsibility <p>If “YES” Please include a comment explaining the “Actions Taken” and/or “Assistance Given”</p>
--

**10. If “YES” to number 9, was your department successful in
their corrective actions, or assistance to personnel?**

<ul style="list-style-type: none"><input type="radio"/> Yes<input type="radio"/> No <p>Please include a comment “Why” or “How”</p>

**11. What recommendations can you offer other personnel
To achieve higher written promotional exam scores?**

**12. What recommendations can you offer other departments
regarding written promotional exams?**

Thank You!

If I can be of assistance to you, or if you can offer more information that will help with my research, please contact me.

Be Safe,

Ron Angelone

ronangelone@gmail.com

1-772-633-8616

APPENDIX D
Survey Results of Florida Fire Departments

1. Survey Respondent Information

	Respondent Percent	Respondent Count
The sample size selected from the Florida Fire Chief’s Association to participate in the survey was determined by the total number of fire rescue departments in the state of Florida. This included career, combination, and volunteer departments. The number of participants used in the survey was 335, of which there were 64 respondents, or 19.10% of the sample size. The survey was conducted over a one month period of May 2011.	100.0%	64

2. How often are promotional exams given within your department?

(check all that apply)	Respondent Percent	Respondent Count
<input type="radio"/> Annually	42.1%	27
<input type="radio"/> Bi-Annually	20.3%	13
<input type="radio"/> As Needed	51.6%	33
<input type="radio"/> No Written Exams Given	17.1%	11
<input type="radio"/> Other please specify	0.0%	0

3. How are your department’s written promotional exams prepared?

(check all that apply)	Respondent Percent	Respondent Count
<input type="radio"/> In House by the Training Division	35.9%	23
<input type="radio"/> Purchased Validated Questions from Text Book Publisher	46.9%	27
<input type="radio"/> Purchased, and or Administered through a 3 rd Party Promotional Testing Service	17.1%	11
<input type="radio"/> Other (please Specify)	0.0%	0

4. If written exams are prepared in house, how are they written, and how are they validated? (please include if exam questions are written word for word from the text or if the wording is changed.)

	Respondent Percent	Respondent Count
<u>Most common responses</u>	64.7%	45
1. Word by word from text.	35.9%	23
2. Words are changed and the test are validated by having test taken by personnel already in that position.	17.1%	11
3. The exam questions are copied directly from the instructor materials for the referenced texts.	9.3%	6
4. Taken from a battery of questions that are developed by the state fire academy.	7.8%	5

5. If known, what study methods would you say your personnel use the most?

(check all that apply)

	Respondent Percent	Respondent Count
<input type="radio"/> Reading	100%	64
<input type="radio"/> Highlighting	73.4%	47
<input type="radio"/> Rewriting	3.1%	2
<input type="radio"/> Flash/Note Cards	32.8%	21
<input type="radio"/> Audio	0.0%	0
<input type="radio"/> Video	14.0%	9
<input type="radio"/> Study Groups	21.8%	14
<input type="radio"/> Study Guides	43.7%	28
<input type="radio"/> Memorization	43.7%	28
<input type="radio"/> Other please specify	0.0%	0

6. Have your personnel experienced low written exam scores? (low may be defined as below 80%)

	Respondent Percent	Respondent Count
<input type="radio"/> Yes	73.4%	47
<input type="radio"/> No	12.5%	8
<input type="radio"/> Unknown	14.0%	9

7. If “YES” to number 6, how have low exam scores affected your department?

	Respondent Percent	Respondent Count
<u>Most common responses</u>	67.1%	43
1. Elimination of personnel from promotional eligibility.	82.8%	53
2. Limited pool of those that were eligible.	32.8%	21
3. Less senior or less experienced personnel promoted.	64.0%	41
4. Filling vacancies by hiring of personnel from outside their department.	3.1%	2

8. If “YES” to number 6, has the cause of low scores been identified?

(check all that apply)	Respondent Percent	Respondent Count
<input type="radio"/> No, The Cause Has Not Been Identified	39.0%	25
<input type="radio"/> Poor Candidate Study Habits	64.0%	41
<input type="radio"/> Limited Experience of the Personnel	26.5%	17
<input type="radio"/> Limited Education of the Personnel	26.5%	17
<input type="radio"/> Unsure	3.1%	2
<input type="radio"/> Other please specify	0.0%	0

9. If “YES” to number 6, have corrective actions been taken, or assistance to personnel been offered?

	Respondent Percent	Respondent Count
<input type="radio"/> Yes	3.1%	2
<input type="radio"/> No	53.1%	34
<input type="radio"/> No, It is the Candidates Responsibility	43.7%	28
If “YES” Please include a comment explaining the “Actions Taken” and/or “Assistance Given”	0.0%	0.0

10. If “YES” to number 9, was your department successful in their corrective actions, or assistance to personnel?

	Respondent Percent	Respondent Count
<input type="radio"/> Yes	1.5%	1
<input type="radio"/> No	1.5%	1
Please include a comment “Why” or “How”	0.0%	0

11. What recommendations can you offer other personnel To achieve higher written promotional exam scores?

	Respondent Percent	Respondent Count
<u>Most common responses</u>	79.6%	51
1. Study earlier.	32.8%	21
2. Ask for help from others that have been promoted.	26.5%	17
3. Take college or adult education courses on reading comprehension.	90.6%	58
2. Take classes on study habits, and test taking strategies.	76.5%	49
3. Search the internet for assistance.	64.0%	41
4. Take fire/rescue classes.	10.9%	7

12. What recommendations can you offer other departments regarding written promotional exams?

	Respondent Percent	Respondent Count
<u>Most common responses</u>	73.4%	47
1. Utilize exam questions that have been written and validated by the text publisher	67.1%	43
2. Be aware of all contradictions in text	20.3%	13
3. Be aware of all conflicts between study material	7.8%	5
4. Offer an in house class on how to study.	10.9%	7
5. Suggest personnel to take reading comprehension classes	48.4%	31
6. Use a third party testing service.	14.0%	9

APPENDIX E
Survey Validation and Florida Fire Departments Respondents

Survey Validation

Clark, Scott. Deputy Chief of Operations
Tulsa Fire Department, Oklahoma
sclark@cityoftulsa.org

McLaughlin, Michael. Fire Chief
City of Merced Fire Department, California
mclaughlinm@cityofmerced.org

Prime, Edward III. Assistant Chief of Operations
Indian River County Fire Rescue, Florida
bburkeen@ircgov.com

Prziborowski, Steve. Deputy Chief of Training
Santa Clara County Fire Department, California
sprziborowski@aol.com

Sunderman, Lori. Fire Chief
City of Stuart Fire Rescue, Florida
lsunderman@ci.stuart.fl.us

Florida Fire Departments Survey Respondents

Alachua County Department of Public Safety

Bay County Emergency Services

Bayshore Fire Rescue

Bradenton Fire Department

Brevard County Fire Rescue

Brooksville Fire Department

Broward Sheriff Office Fire Rescue

Cape Canaveral

City of Coral Springs Fire Rescue

City of Cocoa Beach Fire Department

City of Gainesville

City of Lecanto

City of Marco Island Fire rescue

City of Miami Fire Rescue

City of Oldsmar Fire Rescue

City of Port Orange Fire Rescue

City of Seminole Fire rescue

Columbia County Fire Department

Coral Springs Fire Department

Deltona Fire Department

Dunedin Fire Department

East Naples Fire Rescue

Escambia Fire Rescue

Flagler Beach Fire Rescue

Gitchrist County Fire Rescue

Hardee County Emergency Management

Hialeah Fire Department

Hollywood Fire Rescue

Indian River County Fire Rescue

Jacksonville Fire Rescue

Jasper Fire Rescue Department

Kissimmee Fire Department

Lynn Haven Fire & Emergency Service

Martin County Fire Rescue

Melbourne Fire Rescue

Miami Dade Fire Rescue

Nassau County Fire Rescue

North Bay Fire Control District

Ocala Fire Rescue

Orange County Fire Rescue

Orlando Fire department

Ormond Beach Fire Department

Osceola County Fire Rescue

Oviedo Fire Department

Palm Beach Gardens Fire Rescue

Palm Beach Shores Fire Department

Panama City Beach Fire Department

Pasco County Fire Rescue

Pensacola Fire Department

Plant City Fire Rescue

Plant City Fire Rescue

Polk County Fire Rescue

Ponce Inlet Fire Rescue

Port Orange Fire Rescue

Punta Gorda Fire Department

Putnam County Department of Emergency Services

Sanibel Fire Rescue District

Seminole County EMS/Fire/Rescue

Seminole Tribe Fire Rescue

Spring Hill Fire Rescue

Southern Manatee Fire Rescue

South Trail Fire District

St Cloud Fire Rescue

Stuart Fire Rescue

Sumter County Fire Rescue

Sunrise Fire Rescue

Tallahassee Fire Department

Tampa Fire Rescue

Taylor County Public Safety

Winter Garden Fire Rescue Department

West Manatee Fire Rescue