

**Improving Written Exam Scores for Promotional Candidates in the
Norwich Township Fire Department**

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CERTIFICATION STATEMENT

I hereby certify that the following statements are true:

1. 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 another.

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ABSTRACT

The problem this research project intended to address is that the NTFD has failed to properly prepare candidates to take written exams. It researched literature to determine how adults can best learn new material and what techniques for preparing for exams worked best. The purpose was to discover methods that could be taught to candidates that would improve their retention of test materials, thus improving their individual test scores. This research paper also surveyed department members who have been part of the testing process to see what methods they used to prepare and how that related to their test scores. The research attempted to answer the following questions. How do fire department adults best learn and prepare for exams? What study techniques are commonly used by exam participants? What techniques or combination of techniques can be used to better prepare exam participants? Finally, with this information can NTFD improve the existing test process?

The survey showed that members used a wide range of techniques to prepare for the test. It also showed that there was no one best method or combination of methods that would guarantee better test performance. The literature review and the examining of past test scores indicated that tests scores are more related to the material than how members prepare. The research showed that adults learn best when they are provided with information that fits within their past experiences and learning. Learners struggle most with new material that is in conflict with the learners' experiences or are totally new.

As a result of this research the NTFD will be able to adjust its testing materials and training program to allow members to be better prepared for future testing. It has also given insight into ways to implement other changes, within the department, that were outside the scope of this project.

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INTRODUCTION

Statement of the Problem

In recent years members of the Norwich Township Fire Department [NTFD] have expressed concerns about the department's promotional process. These concerns include feelings that the process is not fair, that scoring is biased and that the entire process needs redone. The research necessary to completely redo the exam process is beyond the scope of this project, it is the intent to look at one segment of the process and to develop ways to improve that segment of the exam process. It has been shown in exam scores that candidates have not done well on the written exam. The problem this study will address is that the Norwich Township Fire Department has failed to properly prepare promotional candidates to take written exams. As a result, written exam scores have been traditionally low. While this has not had an affect on overall officer performance it has lead to concerns that the department is not developing the best candidates for promotion. Historically, NTFD has done very little to prepare fire fighters for promotion. The exam process was, in some cases, the first opportunity for members to be exposed to making officer level decisions. This was evident during oral exam when the exam board had to clarify from what position the candidate was addressing the problem, fire fighter or officer.

The NTFD has been giving written promotional exams as part of our promotion process for the past fifteen years. The written portion of the process accounts for 40% of the candidate's total score, and is the largest section of the exam process. In evaluating written exam results over these years it was noted that scores were low with most candidates not scoring what is traditionally considered a passing grade. Prior to 2004, there was no minimum passing score established for the written exam. In 2004, practices were changed to establish a minimum

passing score for the written exam. Candidates now have to have a minimum score of 62% before being eligible to complete the remainder of the exam process.

In an effort to assure exam validity NTFD uses written exam produced and administered by the Ohio Fire Chief's Association (OFCA). The department would select books from a list that was provided by the Association. Typically, four to five text books would be selected covering topics such as fire tactics, building construction, hazardous materials, safety and leadership. The Association would then develop a multiple choice exam consisting of two hundred questions from these materials. After each exam the materials used would be reviewed, and comments would be solicited from those taken the exam to assure that the exam covered appropriate topics.

With the latest written exam the department, for the first time, has received exam scores that were broken down by text book so a better evaluation of exam scores and the exam materials can be accomplished.

Purpose of the Study

The purpose of this research project is to look at how adults best learn and how can the Norwich Township Fire Department better prepare candidates for written exam. Ideally, with this information the department will be able to better prepare candidates for promotion and also better prepare them for other written exam used in the fire service.

Research Questions

The following questions will be answered by this descriptive research:

1. How do fire department adult learners best learn and prepare for exam?
2. What study techniques are commonly used by exam participants?

3. What techniques or combination of techniques can be used to better prepare exam participants?
4. Can Norwich Township improve the existing exam process?

BACKGROUND AND SIGNIFICANCE

The Norwich Township Fire Department (NTFD) is a full time career fire department. It has a total staffing of eighty seven full time fire fighter/paramedics. The NTFD operates out of three stations, on a three platoon system. Each shift has a staffing of five officers and twenty one firefighter/paramedics.

The membership is covered by a collective bargaining agreement between International Association of Fire Fighters Local 1723 [IAFF] and the Township, that agreement requires the Township to maintain an active promotional eligibility lists for the ranks of lieutenant and captain. Each list is active for a period of two years and also establishes an out of class list for the two year period. The exam process consist of a written exam, developed and administered by the Ohio Fire Chief's Association, an assessment center developed and administered by department officers, and a final oral interview conducted by the Board of Township Trustees. Scores from the three exam components are compiled to establish the eligibility list for the next two years (IAFF Collective Bargaining Agreement [CBA] Local 1723, 2007). The written exam accounts for 40% of the candidates total score. Prior to 2004 there was no minimum passing exam score established. In 2004, contract changes were made that required candidates to have a minimum written exam score of 62% in order to complete the remaining sections of the process. Members receiving a written score of less then 62% are removed for the exam process (IAFF CBA Local 1723). This change resulted in members eligible for the promotional process not submitting their letter of intent to take the exam stating concerns about not doing well. For the May 2007 Lieutenant's exam, the department had 59% of those eligible to take the exam submit letters requesting to be part of the exam process. Of those that submitted

letters to be part of the exam process 12% withdrew their letters just prior to the exam date stating “they did not feel they were prepared to take the exam” (NTFD, 2007).

The CBA outlines specific eligibility requirements for members wishing to take promotional examinations. These requirements include a minimum amount of seniority in the rank below the exam rank. Firefighters seeking promotion to lieutenant must have a minimum of five years of full time experience with the department. Those lieutenants seeking promotion to captain must have two years of experience as a lieutenant before they are eligible for promotion to captain. Eligibility is determined from the members’ date of appointment as a full time firefighter, or as a lieutenant, through the expiration date of the current list for the exam position. At this time NTFD has no other requirements for promotion.

As a final selection process the Board of Trustees have the ability to select from the top three candidates for each position. When there is a vacancy, the chief of the department will give the trustees a list containing the top three candidates along with his recommendations. The board will then select the candidate for the new promotion from one of these three names. In most cases they have taken into consideration the recommendations of the chief for this selection process.

All of the department’s current officers, except the Chief, have been promoted using this exam process. The chief’s position is an appointed position that does not go through the promotional exam process. This is an agreement established between the union and the trustees in the interest of allowing for internal promotion into the chief’s position. As the department looks at the current group of officers it finds a broad range of skill sets and abilities. Those officers that scored well on the written test and thus were on the top of the list they were

promoted from, in general, show stronger leadership skills and a greater ability to adapt to changes within the department.

In order to get a better understanding of why candidates do not score well on written exam there is a need to understand how members prepare for exam and what skills tend to lend themselves to a better understanding of the exam materials. There is also a need to look at why members do not exam other than out of concern about “not doing well” in the process. It is a concern that there might be multiple reasons why members do not seek promotion including a failure to want to take on the additional responsibility, outside commitments or others that are not clear to the department at this time.

As the department looks at adult learning, it will find that the physiologic process of learning is the same for adults and children (Ashman and Conway, 1997). The issue for most adults is not the ability to learn new material but that they have more distractions in their life (Imel, 1988). These distractions, including family commitments, make it difficult to spend time learning new material. By looking at how members use their study time and under what conditions they attempt to study, NTFD should be able to help develop recommendations for candidates to better prepare for promotional exam. By teaching members how to better prepare for the exam process the department will be helping prepare them to become better officers. As an additional benefit to the department, these members will be better prepared to study material and complete certification programs with less anxiety and in less time.

LITERATURE REVIEW

In their book *An Introduction to Cognitive Education*, Ashman and Conway (1997) identify that we all learn the same. The physiological process of learning is essentially the same in all humans. They point out that as you get older your learning process changes in form but not in process. As you age your learning is influenced by past experiences and knowledge. You are better able to learn and remember things that you are able to link to your past experiences. These experiences can also be blocks to learning new material or material that does not fit our normal.

As you look at adult learners there are outside influences that affect their ability and/or desire to learn. Tzu Judy Huang (2005) described how the adult learner is affected by both positive and negative influences in the learning process. If the negative influences, such as family commitments, job responsibilities, or dissatisfaction with the material, outweigh the positive influences, such as the possibility of promotion, the learner is more likely to not do well in the process or will drop out of the process. These two factors may lead to members not taking the exam, removing their name from the list or not scoring well. This information could be evaluated by conducting an interview process with these candidates to better understand their motivations.

Learners have different learning styles that affect how they relate to the material and how it is learned (Felder and Spurlin, 2005). They discuss that understanding the learning styles of the learner will allow for the teacher to better present the material so that the learner is best able to comprehend it. They also discuss that the evaluation of learning styles is not absolute and that the evaluator has to use the information with caution. This information may allow an

exam provider to adjust the exam process, or the materials being covered to allow for a better overall exam process.

If there is a mismatch in the way material is presented or taught and the way a learner best learns or their learning style, there is a high incident of the learner losing interest in the material or dropping out (Felder and Silverman, 1988). They have identified thirty two different learning styles. As most promotional processes only give the learning material in one or two styles, there will be a great number of candidates that are trying to relate to the material being presented to them in a format that is difficult for them to comprehend.

In a study conducted with in the Birmingham Fire Department they found that the failure of the exam material to be related to the member's job was a major factor in how the process was perceived. In a survey of twenty six officers, twenty expressed dissatisfaction in the exam material and how it related to their job (Deadman, 2001). They recommended that job performance evaluations be done and the result used to develop their exam process.

How do we better prepare candidates for exam?

Ronald Deadman's study indicated that most of the members surveyed indicated that receiving help from others was a big factor in raising their exam scores. This was deemed more important than past job experience, in-service training, or other outside training. About half, however, did indicate that previous formal education did help them raise their score. (Deadman, 2001).

How the learners feel about themselves will influence how they learn. A learner with a negative attitude towards themselves or a feeling of being inadequate will block their ability to learn (Wlodkowski, 1999). Many adult learners have little confidence in their ability to learn (Kallenbach and Viens, 2002). This feeling may be situational in that a learner may be physically

adept but struggle academically (Pintrich and Schunk, 1996). In the fire service this would relate in the form of fire fighters with good hands on skills but have difficulty taking exam or dealing with classroom situations. As adult learners this feeling of doubt can be very strong and is reinforced by family and friends around them questioning their reasoning for learning or exam (Knox, 1977). These feelings are more likely as the learner ages.

Many experts recommend study techniques for students, which have shown to improve retention of the material. These techniques include a process for reviewing the material so that the reader will better understand what they are reading. The University of Minnesota recommends a process known as CPR. They recommend, Checking the material over before reading, Plan your reading strategy and Reviewing the material (Mischiski, 2007).

In the last promotional exam three books were used for the written exam, Fundamentals of Fire Fighter Skills, Fire Officer Principals and Practices, and Effective Supervisory Practices (NTFD, 2007). Of these three books the first two were new books used for the first time in the department's process, the final book has been used twice before. The Fundamentals of Fire Fighter Skills book covered basic fire fighting tactics and skills; this is information that should be familiar to all fire fighters. The Fire Officer Principals and Practices book built off the Fundamentals book but introduced leadership materials that would be new to most fire fighters. Finally, the Effective Supervisory Practices book presented supervisor and leadership material that again would be new to most fire fighters. However, this book as noted was used in previous exam and would have been studied by members prior to taking this exam. As you look at the results 73% of the members taking the exam did best on the questions from the Fundamentals of Fire Fighter Skills book, 27% did best on the questions from the Effective Supervisory Practices book. None of the candidates did best on the section of questions from the Fire Officer Principals

and Practices book which was new to all those exam and presented new material. Exam security does not allow the department to tell if of those, that performed best, on the Effective Supervisory Practices booked how many had taken the exam before and therefore had the advantage of studying the book prior to this exam.

In a survey conducted within the NTFD questions were asked about reasons members did or did not participate in the exam process. The largest single factor cited for members not participated in the process was lack off confidence in the exam process. When asked if the system was unfair 76.9% agreed, does the process allow for favoritism 76.9% agreed, and is the process unprofessional 46.2% agreed. These percentages point towards the need to completely overhaul the promotional process, which will require changes in the collective bargaining agreement and were well outside the scope of this project (Warren, 2007).

While looking at these research numbers 15% of those that responded stated a concern for poor performance as a factor in there decision not to participate in the exam process. This is a segment of the department that can be affected without wholesale changes in the exam process. In addition, even with changes in the exam process this same 15% of the members will have concerns about their abilities and would most likely still not participate. This 15% is within the scope of this research project.

PROCEDURES

The initial research for this project was conducted looking at local library resources. Several books were studied to gain an understanding on how adults learn and what allows adults to better retain information. Further research was done reviewing university web site to gain access to further information on learning and retention. In addition, fire department records were reviewed to understand the exam process, how many members were eligible to participate in the process and how many actually participated. Collective bargaining agreements were researched to understand the promotional process and eligibility requirements.

Research was conducted by surveying members of the department who had been a part of the exam process in the past. The intent was to see how they prepared for the written exam and how that preparation prepared them for the exam process. Members who were eligible to take the exam were surveyed to gain an understanding on why they chose to take the exam or not take the exam; this helped establish what other factors influenced their decision beyond being prepared for the written exam. It also allows the department to see if other adjustments to the promotional process will be necessary.

A draft survey was submitted and approved by the program director. This survey was made available to all members of the fire department by placing it in a web based survey platform. It was geared toward those members that have been a part of at least one exam process. The survey asked about the study habits used by the members in the past and what techniques worked best for those candidates. The survey asked specific question aimed at those members that were a part of the last exam process administered by the department in May 2007. It asked about how they prepared for that exam specifically, so that a comparison could be made to the last exam and previous exam.

The web site link for the survey was E-mailed out to all members of the department using the department's internal e-mail system. This E-mail contained information on the purpose of the survey and the target audience. The initial E-mail was sent by the Department's Promotional Practice Committee requesting members to take time and fill out the survey. This initial E-mail was followed up by a second E-mail from the chief of the department requesting that all members participate in the survey so that the department could build a better data base of information to assist in improving the process. This E-mail set a deadline for filling out the survey so that data could be collected in a timely fashion. Both E-mails assured the participant that the information was confidential and that there was no intent to link the information to the participants. The information from this survey was compiled by the web site host. It was then down loaded into an Excel spread sheet by the author. The author then evaluated how this information related to this project.

Additionally, further literature review was conducted to better define adult learning and retention. This included looking at what learning techniques were best adapted for fire fighters taking written exam, be it for promotion or certifications, which will allow for a better retention of the required material.

Limitations of the Study

This study was limited to members of the Norwich Township Fire Department. This provided only a small sample group for the purpose of conducting a survey. It also only looked at exam results over the past two years. Exam information prior to that time was unavailable.

RESULTS

The results for this research project came from reviewing previous applied research projects in the fields of adult learning, exam and exam procedures. It also contains information from text books, fire department records, and collective bargaining agreements. A survey was prepared and distributed to members of the Norwich Township Fire Department using a web based survey. It was made available to all members who have taken part in the promotion process in the past and had specific questions for members who were part of the exam process in May 2007. In all forty four members responded to the survey, this represented 77% of the department members that meet the criteria for the survey. Of those forty four respondents, twenty two were candidates that participated in the May 2007 exam process; this represents 100% of those candidates that participated in that process.

How do fire department adult learners' best learn and prepare for exam?

Ashman and Conway identified that humans all learn the same. That is that the learning process is the same in adults as it is in children. They pointed out that, as adults develop, their learning process does not change. However, as adults age, and as they learn, their learning is influenced by their past experiences and learning. They point out that adults are better able to learn if they can connect what they are learning to their past experiences. Research indicates that there is no difference between a third grader studying for a history exam and a fire fighter preparing for a promotional exam. The learning process is the same. As adults we struggle when the information being presented conflicts with our past experiences and our learning history. This conflict will result in poor acceptance of the new material.

Tzu Judy Huang described that as adults there are other factors that affect the learning process. Adults are affected by positive and negative outside influences. Strong negative

influences can outweigh positive ones. Negative influences such as family issues, job responsibilities and the fear of change can overcome positive outcomes such as a promotion or a pay increase as a result of a promotion this negative influence can result in poor exam results. In looking at research results conducted by Warren, he found that these negative influences can result in eligible members not even taking the exam. Of those surveyed, 77% expressed concerns that the exam was unfair, 31% had family conflicts that interfered with studying, and 77% expressed that they were content with their current assignment. All these items would interfere with the learning process as described by Huang.

Survey results indicated that most adults used multiple method to study the material provide for the written exam. When all respondents were asked what methods of studying best prepared them for the exam 53.8% indicated that they used a combination of techniques to prepare for the exam. The use of work books was the most common study technique used, 60% of the respondents listed the use of workbooks. Response to the question about how candidates studied included, reading each book once, reading each book multiple times, used on line study guides and the use of on line exam were all listed by about 50% of the respondents.

What study techniques are commonly used by exam participants?

In a survey, candidates were asked to select from a list of study techniques to determine what methods are being used. They were asked to select all that apply to them. The list included the following items:

- Read each book once
- Read each book multiple times
- Tape and listen to the material
- Use a workbook

- Use online study guides
- Use online sample exams
- Develop flash cards
- Have others quiz you on materials
- Participated in study groups

The most common method was the use of workbooks, 60% of the respondents listed this item. This was followed closely by reading the material once, reading the material multiple times, and the use on online study guilds and exam. These all were used by 50%-52.5% of the respondents. The least common method of preparing was having the material place on an audio tape and then listening to the material, only 7.5% of the respondents used this method. The responses indicated that most respondents used multiple methods to prepare. Details of the survey indicated that two respondents only used the technique of reading the material once. They indicated that this was their only study method. The remaining respondents indicated that they used at least two methods to prepare for the exam.

What techniques or combination of techniques can be used to better prepare exam participants?

In reviewing how candidates participating in the 2007 exam process prepared for the written exam and then comparing that to exam scores there was no clear indication that one method was better then another. The majority, 95.5%, of these candidates responded that they used multiple methods to prepare for this exam. Only two respondents stated that they only used a single method to prepare. These two candidates indicated that they only read the material once. When comparing this information to exam scores, one candidate indicated that they scored between 70% and 80% and the other indicated a scored between 62% and 70%.

Among the respondents that indicated they scored over an 80% on the exam they all reported using similar study techniques in preparation for the exam. They all indicated that they read the material and supported that reading by using workbooks when available. They also took advantage of any web based exam provided by the publishers of the text books. Finally, these respondents indicated that they developed flash cards to help them reinforce important information. Of the respondents that reported an exam score that was less than 80% on the exam, 88% read the materials only once, 50% used workbooks, 56% used web based exam, and 33% used flash cards.

Many experts recommend study techniques, for students, which have shown to improve retention of the material. These techniques include a process for reviewing the material so that the reader will better understand what they are reading. The University of Minnesota recommends a process known as CPR. They recommend, Checking the material over before reading, Plan your reading strategy and Reviewing the material (Mischiski, 2007). Techniques used by those respondents that indicated a score greater than 80%, indicated using study methods that support the CPR process recommended by the University of Minnesota. By reading the materials and then using study guides and sample exam, they are reinforcing the materials read.

There was an exception to the effectiveness of the techniques used by those scoring over 80%. One respondent indicated that they had an exam score that was less than 62%. This respondent further indicated that they had used the same techniques used by those scoring above 80%. This indicates that technique alone may not assure good retention of the materials. Other factors may have influenced their ability to retain the material.

Time spent studying was also researched. The respondents were asked on average how many study sessions they used per week and how much time they spent per session. The

responses when combined indicated that the respondents spent between one hour and twenty-one hours per week studying. Those respondents that indicated they scored above an 80% spent an average of 11.5 hours studying per week; those that indicated they scored between 70% and 80% spent an average of 9.8 hours per week. Those that indicated they scored less than a 70% spent an average of 5.2 hours per week studying. Of the respondents indicating a score above 80% they indicated a low of six hours per week and a high of eighteen hours per week spent studying. The group that indicated a score of between 70% and 80% indicated a low of one hour and a high of twenty-one hours per week studying. Those that scored under a 70% indicated a low of one hour and a high of nine hours per week.

Respondents were also asked about changes in study habits in the two weeks prior to the exam. Survey results indicated that 59% of the respondents increased the number of study sessions per week and that 55% increased the amount of time spent per session. Of the group of respondents that scored above an 80% on the exam, 75% increased both the number of sessions and the amount of time per session. Of the remaining respondents 55% increased the number of study sessions and the amount of time spent studying per session.

Can Norwich Township improve the existing exam process?

Ashman and Conway point out that an adult is better able to learn if they can connect what they are learning to their past experiences. Research indicates that there is no difference between a third grader studying for a history exam and a fire fighter preparing for a promotional exam. The learning process is the same.

In 2007 Norwich Township administered a promotional exam for the position of Lieutenant. For this exam candidates were given three books to study to prepare for the written exam. These books included Effective Supervisory Practices, ICMA; Fire Officer Principles and

Practice, Jones and Bartlett; and Firefighter Principles and Practices, Jones and Bartlett. The Effective Supervisory Practices book had been used by the department on previous written exams. It covered supervisory theories and practices. This book was familiar to those that had taken earlier exam. The Fire Officer Principles and Practices and the Firefighter Principles and Practices books were new to all candidates taking the exam. Firefighter Principles and Practices covered basic firefighter skills and theories. Fire Officer Principles and Practices built off the Firefighter Principles and Practices book and expanded on the material as it applied to an officer.

After the May 2007 exam The Ohio Fire Chiefs provided a summary report of exam scores. This report included an individual score for each candidate for each text book and a total score for each candidate. This break down allowed the Department to look at how each candidate did on each book which allowed for a better understanding of the exam results.

Of the three books used for this exam 73% of the candidates accomplished their highest individual score on the Firefighter Principle and Practices text. Furthermore 97% of the candidates scored either their highest or second highest score on the questions from this text. The Firefighter Principle and Practices book contained information that should have been familiar to most of the candidate as it covered basic fire fighting skills. The information in this text built upon most firefighter's base experience.

The Effective Supervisory text was a text that had been used on exams prior to the May 2007 exam. Candidates that had been part of the testing process in the past would have had the advantage of studying this text more than once. In reviewing the scores from the 2007 exam, 27% of the candidates received their highest score on these questions. A total of 72% received their highest or second highest score on this material.

The final text used was Fire Officer Principle and Practices. This book covered material that was new to all the candidates covering leadership and management topics. None of the candidates received their best score and only 27% received their second highest score on this material.

DISCUSSION

With this research project I had planned to identify study techniques that would help members of the Norwich Township Fire Department better prepare for written promotional exams. It was hoping that by teaching study techniques, to the candidates, the material would be better retained, exam scores would improve and the overall knowledge of the candidates would be improved. As I looked at the survey results I found that department members used a wide range of techniques to prepare for the written exam as shown in Figure 1.

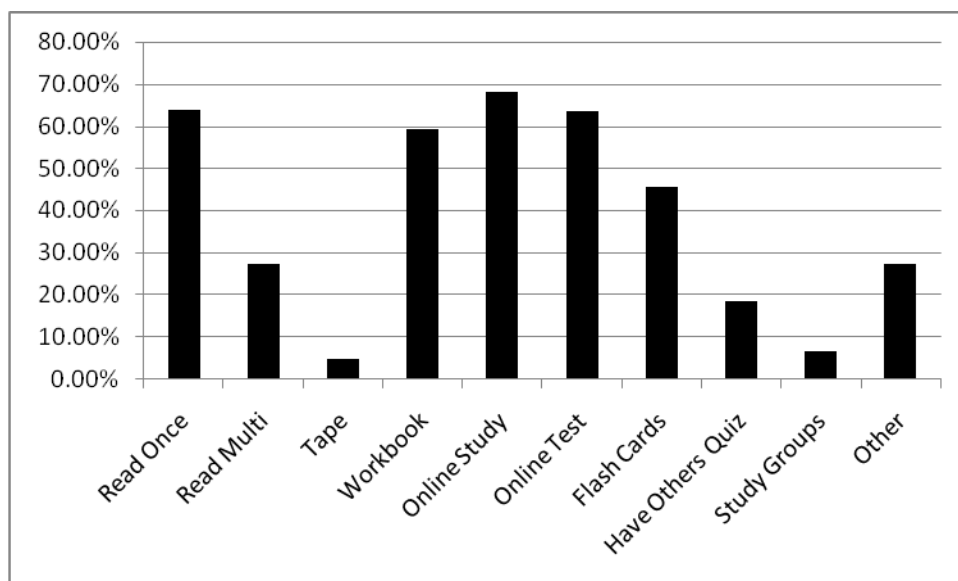


Figure 1. Methods used to prepare for written exams.

When comparing these techniques to exam score ranges, I found no clear indication that any one technique or combination of techniques was better than others. Members using the same methods to prepare had widely different exam scores. The only common technique found was that all the members that scored in the above 80% category used flash cards to help them prepare. However, members in the lower score groups also used flash cards but did not score as well.

When I studied the exam scores from the written exam, given by this department in May 2007, I noted some trends in the exam scores. The majority of those that took this exam scored best on the material that covered basic fire fighting skills. The book that was used on previous exam and would therefore have been familiar to members taking the exam the second time had the second highest numbers of members scoring best. None of the candidates received their best score on the material that was from the one book that presented new material and had not been used on prior exams.

This information seems to support the findings of Ashman and Conway. They stated in their book, that all humans learn the same. As adults however, our learning abilities are affected by past learning and experience. Exam materials that built on past learning or experience received higher exam scores than the materials that were new and possibly in conflict with past learning and experience.

It appears from this research that how members prepare for an exam has a smaller impact on their final exam score than I anticipated. It seems that using exam materials that build on previous knowledge and past experience would have a greater impact on retention of the material and improve exam scores.

RECOMMENDATIONS

In order for the Norwich Township Fire Department to have the greatest affect on written exam scores we will need to improve the method by which materials are selected. It will be important that materials build on or at least match past knowledge and experiences of the candidates. In the past books were selected almost randomly from a list provide by The Ohio Fire Chiefs' with little regard as to how it relates to our department. By having a promotional exam committee review the materials to assure that it does not conflict with department policies, procedures, and training we would stand a better chance of improving exam scores then trying to change study habits.

I would further recommend that text books being considered for use or being used on a promotional exam be part of the department's normal training program. That would make the context of the materials familiar to the candidates and allow for them to better prepare for promotional exam. This formal training on the materials would also assure that those candidates would be better prepared to assume leadership positions within the department. Currently the Norwich Township Fire Department does very little leadership training. The lack of formal leadership training would result in the exam materials being unfamiliar to the candidate resulting in them having a greater difficulty in retaining the new material.

Some of the research did indicate that study techniques such as the CPR method suggested by The University of Minnesota could help candidates prepare for exam. It would be beneficial to the department if all members were taught how to study and these study techniques became a part of our training program. This information could be presented by a local high school or college instructor.

While the research did not indicate that any one technique was best for preparing to take a written exam the scope of the survey was narrow. It is possible that had the survey been presented to a larger group of candidates the results might have been clearer. It might have also been possible to use similar survey questions and administer the survey to college level students looking at how they prepare for a written exam and how that relates to final exam scores. I would also suggest that the exam score ranges be narrowed so that a better relationship between technique and exam score could be built.

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APPENDIX 1 – SURVEY QUESTIONS

1. How many times have you gone through the promotional testing process at Norwich Township? _____

2. In general which study methods have you used to prepare for the written test in the past:

(Check all that apply)

- Read each book once
- Read each book multiple times
- Taped and listen to materials
- Use workbooks
- Use online study guides
- Used online sample test
- Developed flash cards
- Had others quiz you on materials
- Participated in study groups
- Other _____

3. In general which method do you feel best prepared you for past test?

- Read each book once
- Read each book multiple times
- Taped and listen to materials
- Use workbooks
- Use online study guides
- Used online sample test
- Developed flash cards
- Had others quiz you on materials
- Participated in study groups
- A combination of more than one

4. In general where did you do the majority of your studying for past test?

- Home
- Office area
- Bunk room
- Bay area
- Library
- Other _____

5. Did you take the last Lieutenants promotional test?

- YES
- NO (If no skip to question #16)

6. How did you prepare for this written test?

(Check all that apply)

- Read each book once
- Read each book multiple times
- Taped and listen to materials
- Use workbooks
- Use online study guides
- Used online sample test
- Developed flash cards
- Had others quiz you on materials
- Participated in study groups
- Other _____

7. Where did you do the majority of your studying for this written test?

- Home
- Office area
- Bunk room
- Bay area
- Library
- Other _____

8. On average, how many study sessions did you do per week? _____

9. On average, how much time did you spend per study session? _____

10. In the two weeks prior to the written test did you change the number of study session?

- Increased
 - Decreased
 - About the same
- Number of sessions per week? _____

11. In the two weeks prior to the written test did you change the amount of time you spent studying?

- Increased
 - Decreased
 - About the same
- Amount of time per session? _____

12. Was the study book list:

- Too many
- Just right
- Too few

13. Which book did you find easiest to study?

- Effective Supervisory Practices, ICMA
- Fire Officer Principles and Practice, Jones & Bartlett
- Fundamentals of Fire Fighting Skills, Jones & Bartlett

14. Which book did you find hardest to study?

- Effective Supervisory Practices, ICMA
- Fire Officer Principles and Practice, Jones & Bartlett
- Fire Officer Principles and Practice, Jones & Bartlett

15. Was this the first time you had taken a written promotional test at Norwich

Township?

- Yes
- No

16. On the last promotional test you took what was your test score?

- Over 80%
- 70-80%
- 62-70%
- Under 62%

17. How do you prepare for the oral exam?

(Check all that apply)

- Studied the systems manual
- Studied department SOG's
- Studied Procedure manual
- Reviewed materials from past test
- Discussed with other members/ officers

Other: _____

18. How many years have you been a full time member of this department? _____