

**Adaptation to a changing workforce: How the Kettering Fire Department can meet
the challenges of emergency operations in the future.**

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CERTIFICATION STATEMENT

I hereby certify that the following statements are true:

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ABSTRACT

The focus of this research project was to evaluate how the Kettering Fire Department (KFD) must adapt to a changing workforce in order to meet the demands of emergency field operations. The problem the organization had experienced was a significant turnover of more than three hundred fire personnel from 1995 to 2005. The purpose of this study was to evaluate turnover and training deficiencies for Fire/EMS personnel in order to recommend operational changes for the future. Historical data and evaluative research answered the following questions. How had personnel changes over the past 10 years affected the department's experience level and trained effective strength? Was the training program currently meeting the demands of this workforce? Did the Kettering Fire Department react to the changes within its workforce? The study quantified the extent of the turnover and the erosion of experienced personnel through statistical evaluation of KFD personnel records, employment history, department rosters, resignations and retirement records from 1995 to 2005. Through survey and interview tools, an evaluation of the current training program was assessed. The research was evaluative in nature and analyzed department standards for a variety of operational issues. The results illustrated a high rate of personnel turnover and an overall erosion of experience especially within the volunteer workforce. The study found that the training program was ineffective at compensating for the inexperienced personnel. Finally, this study concluded that there were no adequate systems in place for KFD to react to the personnel changes. The recommendation of this study was for the fire department to institute a comprehensive change in the current training program to include effective adult learning strategies, implement a system to reduce turnover, and create an effective officer development and mentoring program. Through the recommended changes, KFD would

be able to address current and future personnel trends thereby improving the ability to maintain a trained, effective, and stable workforce.

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INTRODUCTION

Statement of the Problem

The focus of this research project was to evaluate how the Kettering Fire Department (KFD) must adapt to a changing workforce in order to meet the demands of emergency field operations. Over the past 10 years, the organization experienced significant changes in active on duty personnel, as well as, a complete change of all administrative officers. Personnel trends within the department reflected an annual turnover rate of twenty to twenty-five percent within the volunteer (paid on call) ranks as compared to three to five percent within the career ranks. As a result, the organization had experienced an annual influx of approximately twenty-five new volunteers with little to no previous training. These individuals took the place of significantly more trained and experienced personnel. *The problem this study investigated was the impact of turnover of more than three hundred Fire/EMS personnel from 1995 to 2005.* This study quantified the extent of the problem through statistical evaluation of personnel records.

Purpose of the Study

The purpose of this study was to evaluate turnover and training deficiencies for Fire/EMS personnel in order to recommend operational changes for the future. This study illustrated the impact of personnel turnover on the experience level and trained effective strength of the workforce. It was the purpose of the study to identify ways to minimize the impact of personnel turnover on the organization. Through a process of evaluation of current data this study addressed the need to improve training methodologies, reduce the impact of personnel turnover, and reduce the time required to become an effectively trained and competent member.

Research Questions

Historical data and evaluative research answered the following questions:

1. *How have personnel changes over the past 10 years affected the department's experience level and trained effective strength?*
2. *Is the training program currently meeting the demands of the workforce?*
3. *How is the department reacting to the changes within its workforce?*

BACKGROUND AND SIGNIFICANCE

The City of Kettering, located in Montgomery County, Ohio was proclaimed a city on June 24, 1955. The area, that is now present day Kettering has a long and proud history of innovation and creativity. One of the first settlers to this area was John Patterson, who built his home in 1798. In 1841, Van Buren Township was officially established and remained for more than 100 years. Volunteer fire companies within the township were founded in 1919 and continue in numerous capacities today. In November of 1952, Van Buren Township was incorporated into the Village of Kettering. With a population of 38,118 the village of Kettering became a city. (Kettering Budget Report, 2005)

Today, the City population is 57,502 based on the 2000 census. The City covers an area of 18.5 square miles. The Kettering Fire Department is responsible for providing a variety of emergency services to the community. Community services include fire prevention / inspection, arson investigation, community safety / injury prevention education, as well as emergency response for hazardous materials, technical rescue, EMS with advanced life support, and fire suppression. KFD utilizes a combination fire department model of fifty-three career personnel, four civilian dispatchers, and 120 volunteer (paid-on-call) members. The combined workforce maintains and staffs seven engines, three quints, six ALS/BLS units, one heavy rescue, and several staff vehicles. In 2004, the department responded to 6,485 alarms from the city's seven fire stations. The average response time was five minutes and seventeen seconds. (Kettering Fire Activity Report, 2004)

The Kettering Fire Department has a duty to maintain a state of readiness in order to fulfill the mission statement.

“It is the mission of the Kettering Fire Department to provide for the safety and well-being of the community of Kettering by minimizing the risk of injury and by responding to the needs of its citizens arising from sudden medical emergencies, fire or exposure to dangerous conditions.” (Kettering Budget Report, 2005)

In order to accomplish the mission it is paramount that the department effectively train and retain an experienced and well - prepared workforce. During the past ten years the department has experienced a large percentage of personnel turnovers. The problem this study investigated was the impact of turnover of more than three hundred Fire/EMS personnel from 1995 to 2005. The influx of new line and administrative personnel has had a significant impact upon the department’s day-to-day operations. As many of the experienced firefighters and officers retire or take other jobs, they are replaced with significantly younger firefighters and officers with much less fire ground experience.

The concept this research project intended to explore was the “Trained Effective Strength” of our members. (Zickler, 2005) This concept was applied to the Kettering Fire Department by looking at how members become competent and trained personnel. A member must first start out as a probationary firefighter with no experience or ability to make good risk / benefit decisions. The member must learn the essentials of fire fighting, emergency medicine, technical rescue, and hazardous materials while in recruit training. In theory, mentoring by experienced officers and other members should then take place. Gradually, the fire fighter’s

knowledge, skills and abilities to safely function on the street would be enhanced. Within a three-year period, it was expected that the members of KFD should obtain the necessary skills to be effectively trained to function on the street.

Although the total number of personnel remained relatively constant, the overall level of experience or “trained effective strength” of the department significantly decreased over the past ten years. This lower “trained effective strength” trend was reflected in decreased field performance. In addition, volunteer officers were promoted with substantially less experience than ten years ago. “Effective mentoring in the Kettering Fire Department is fading rapidly and presents a high risk trend to firefighter safety and citizen safety.”(Kettering Fire Annual Report, 2005) An alarming trend of a younger and less experienced workforce within the Kettering Fire Department currently exists.

The purpose of this study was to evaluate turnover and training deficiencies for Fire/EMS personnel in order to recommend operational changes for the future. The intent of this research project was first to quantify the extent of the problem through evaluation of personnel trends. Secondly, this research project examined the current system of training and mentoring. And finally, this research would recommend how the organization could minimize the impact of personnel turnover. It was the goal of this research project to assist the Kettering Fire Department to effectively overcome deficiencies in the workforce through a variety of means, including but not limited, to highly efficient training methodologies and mentoring programs.

The potential impact this study could have on the Kettering Fire Department is to recommend a change in the process of personnel recruitment, training, mentoring, and retention.

The fire service is dependent on the workforce to deliver competent, safe, and efficient emergency services. The citizens should expect a timely response from well-trained and

experienced personnel to respond to all emergencies within the City of Kettering. This project shall help to identify areas of concern and make recommendations for improvement. A thorough evaluation of the workforce of the Kettering Fire Department shall give the administration and city staff an evaluation tool to assist with future planning and needs assessment.

LITERATURE REVIEW

According to a U.S. Fire Administration report (2003), from 1987-2001 there has been a thirty-one percent reduction of structure fires in the United States. Firefighters today have significantly less fireground experience than their predecessors had a generation ago. This problem is compounded by the fact that as more experienced firefighters and officers retire, younger officers with comparably less fire experience replace them. The study expressed concern over the inability of today's firefighters to recognize potentially fatal conditions on the fireground due to a lack of experience. Without the ability to recognize hazardous conditions such as building collapse and flashovers, firefighters will continue to be injured and killed in these situations.

Another trend the U.S.F.A. study addressed is the lack of mechanical aptitude and abilities among many young personnel entering the fire service today. In the past, many firefighters possessed trade skills related to heavy equipment and construction operations prior to entering the fire service. In an effort to accommodate a more diverse workforce, many new recruits come into this profession with little or no mechanical skills and no knowledge of building construction. When effectively training new recruits, the lack of basic knowledge and skills prior to entering recruit school, presents yet another challenge that fire departments must overcome.

Behavioral scientist, Gary Klein (1986) developed and published a research project that described emergency decision-making as a complex, experience-based human process. In his book, Sources of Power: How People Make Decisions, Klein describes this process as the "recognition primed decision model." Under the construct of Naturalistic Decision-Making,

Klein stated, “We utilize previous experiences to make rapid and effective decisions.” Klein’s research estimated that fireground commanders made eighty percent of their decisions in less than one minute. Often fireground commanders did not fully understand what they must accomplish at the time they made difficult choices. In order for emergency personnel to rapidly make good decision under high-pressure situations, they must draw upon the power of intuition, mental simulation, metaphor, and story telling. The power of intuition enables emergency workers to rapidly size-up the situation. Mental simulation allows emergency workers to imagine how a course of action might be carried out. Drawing upon our experience by suggesting parallels between the current situation and something we may have encountered in the past allows the use of the power of metaphor. Lastly, the power of story telling allows us to learn from others as well as from ourselves. Gary Klein’s research strongly advocates the use of simulations and story telling to expand the experience base of emergency response teams and individual members alike. (Klein, 1998)

Robert Zickler (2005) cited a study by the Naval Air Warfare Center in Florida, which concluded that:

1. Expert decision-makers rely on well-organized knowledge structure (well-practiced scenarios/command experiences) in decision-making.
2. Expert decision-makers build complex association (through training simulations) between situational cue patterns and appropriate strategies.
3. Teamwork skills are separate and distinct from task work skill and hence require dedicated training.
4. Expert teams have the ability to adjust their strategy in accordance with task demands (stress).

5. Expert team members employ implicit coordination strategies (i.e. without the need to communicate with other team members) by drawing on common or mutual knowledge bases (common training experiences).
6. Taken together these findings highlighted the need to develop and provide training activities that allowed team members to assess rapidly (size-up) and respond to the event as an individual and as a team member in order for appropriate (effective) competencies to develop.

The importance of experience and effective training is evidenced in this literature review. The Kettering Fire Department must prepare new members for challenges in the future. The literature suggested that through proper training and the use of experience based scenarios, new members could become prepared for emergencies in the field within a reasonable time frame.

Another means to approach the diminishing experience levels of the personnel was to explore how to reduce the overall turnover rate. With the U.S. Department of Labor predicting potential labor shortages through the year 2012, it was important to look at how to retain the current personnel. Retention of current employees would allow the Kettering Fire Department to concentrate on improving experience levels rather than creating new firefighters. In order to reduce turnover, an organization must consider why people leave. In his book, The 7 Hidden Reasons Employees Leave, Leigh Branham's research indicates as high as eighty-eight percent of personnel change jobs because of negative factors in the workplace. Through analysis of nearly twenty thousand

interviews conducted by the Sarotoga Institute, Branham uncovered the following reasons for employee turnover:

1. Job or workplace was not as expected.
2. Mismatch between job and person.
3. Too little coaching and feedback.
4. Too few growth and advancement opportunities.
5. Feeling devalued and unrecognized.
6. Stress from overwork and work-life imbalance.
7. Loss of trust and confidence in senior leadership.

Although the significant percentage of the Kettering Fire Department was made up of volunteers (paid on call personnel), it was reasonable to associate the reasons employees leave with this group as well. The discrepancy between the wants and perceptions of employees and how the organization satisfies those wants was closely related to the turnover rate. (Jiang, 2002, p. 249)

It is essential for fire departments to “separate recruitment and retention as two distinct areas of responsibility.” (Roseville, 2002, p. 20) The Roseville Fire Department study identified the importance of member retention as a priority for chief officers. This study recommended the development of a formalized recruitment program to improve efficiency and effectiveness. Furthermore, it stated the need to “evaluate and estimate attrition rates from retirements and resignations and ensure recruitment of adequate new members to maintain appropriate staffing levels.” (p.20) The overall goal for personnel turnover in this system was to maintain an annual firefighter turnover rate of less than fifteen percent. In an attempt to improve retention rates, the study recommended establishing an exit interviewing process for all employees who retire or terminate their employment with the organization.

The International Customer Service Association studied retention trends for customer service companies. The data gathered was directly applicable to fire department personnel who must provide customer service on a daily basis. In most cases, personnel left because they were “dissatisfied or disappointed with their position, their immediate supervisor or top management.” (Hallock, 2001, p. 6) In one example, Vince Pepper, executive director of Anthem Blue Cross and Blue Shield of Colorado stated “We assembled a task force of people from our customer service, human resources, training, and compensation departments to figure out exactly why we were experiencing this excessively high attrition, and what we could do about it.” (p. 10) Anthem overhauled numerous processes within the organization from candidate screening and workplace conditions to employee training and mentoring. Through their progressive efforts, the company reduced employee turnover by three quarters within a short period of time.

The fire service must approach the workforce from a business perspective and evaluate the Return on Investment (ROI) aspect of training new recruits only to have them take jobs elsewhere. The construction industry which like the fire service is dependant on manpower to operate in potentially hazardous environments, conducted a “Return-on-Investment Analysis of Education and Training” (Tucker, 1999) to enhance the industry’s ability to meet crucial workforce needs today and in the future. The intent of this study was to identify how to attract, train, and maintain a skilled workforce. In order for the Kettering Fire Department to thrive in an environment of decreasing budgets, the organization must analyze how best to utilize and train the workforce for future success.

PROCEDURES

The method selected to research this project was evaluative research. The first research question was designed to investigate and quantify how personnel changes had affected the department's experience level and trained effective strength. The data collected and evaluated for research question one were taken from personnel records. The records that were accessed and reviewed included information regarding all current members of the Kettering Fire Department. The records included documents such as personnel rosters, employment history, training records, and certifications. In addition, this research evaluated resignations of one hundred and forty three members within the past five years and attempted to establish a pattern or trend associated with the turnover. The research evaluated specific topics such as years of experience, training levels, and age of the workforce. In order to make future predictions; the data was analyzed for specific trends such as an overall decrease in experience levels.

The second research question asked whether the training program was currently meeting the demands of the experienced workforce. To evaluate this question a survey was developed and administered to the seven members of the training committee. (Appendix 3) The training survey asked instructors to specifically rate the effectiveness of a variety of training and mentoring programs for the 2005 training cycle. In addition, a questionnaire/interview was conducted with the department training director to evaluate the current program. (Appendix 1-2)

The third research question asked how the Kettering Fire Department was currently reacting to the changes in its workforce. In order to address this issue, research was conducted

into what the department currently requires of its members. This research was also evaluative in nature and analyzed the department standards for a variety of operational issues. In order to make recommendations for improvement it was necessary to first establish the current baseline. This evaluation compared and contrasted current systems within the Kettering Fire Department to that of those found within the Literature Review.

Definition of Terms

Volunteer Personnel (also referred to as Paid On-Call). Individuals who are on call from home Monday through Friday 1700 – 0700 and weekends. They are compensated for emergency responses, training, and in-service time. They receive additional incentives such as life insurance, retirement plan, financial assistance for related college courses, and an expense allowance. They are required to have the following minimum level of training: State of Ohio Firefighter Level One and CPR training.

Career Personnel. Individuals who are schedule to work either Monday through Friday 0700 – 1700 or a shift schedule of 24 hours on and 48 hours off schedule. These individuals must work either a 40-hour or 56 hour workweek. They are compensated per hour and receive full benefits, life insurance, retirement plan, tuition reimbursement for higher education courses, and an expense allowance. These individuals are required to have the following minimum level of training: State of Ohio Firefighter Level Two, Certified Paramedic, Fire Safety Inspector, and Hazardous Materials Technician.

Limitations of the Study

All of the data gathered for this research project came from within the Kettering Fire Departments internal records. Although all of the one hundred and eighty-three training records for 2005 were accessed and thoroughly evaluated, there was no set training format used in 2005 to provide consistent training across the department. Individual stations and companies trained on a variety of topics in-house without the benefit of state certified instructors. Furthermore, there was no documentation to determine skill sets or basic competencies check offs for fire training. As a result, no single standard could be applied to all members based on the training reports. Instead an assessment tool needed to be developed to evaluate the department's training program. The assessment tool developed was a survey, which was administered to certified fire and EMS instructors within the department's training committee. Another observation that should be noted is that all seven instructors who completed the survey were career members of the department at the time the survey was conducted.

An additional limitation was discovered during investigation of personnel turnover. Personnel records for the 1995 through 2005 gave no consistent data from which to track why volunteer members left the department. In addition each volunteer station conducts their own informal interview process, which made it impossible in this study to compare personnel expectations at time of hire versus reasons for exiting the organization. Furthermore, there was no database of past members or their current addresses from which to survey the broad issues that may have contributed to employee turnover in the past 10 years. A survey of this information would have been helpful to identify specific causes of turnover within the department.

All data found in the results section pertinent to experience levels is based on years of service with Kettering Fire Department only. It is important to note that many of the career personnel hired in the past ten years were lateral transfers from other fire departments with significant years of experience. In contrast, the vast majority of volunteer members hired in the past ten years had no previous fire experience. This study did not take into consideration previous outside years of service when assessing the data.

RESULTS

Research Question One: *How had personnel changes over the past 10 years affected the department's experience level and trained effective strength?*

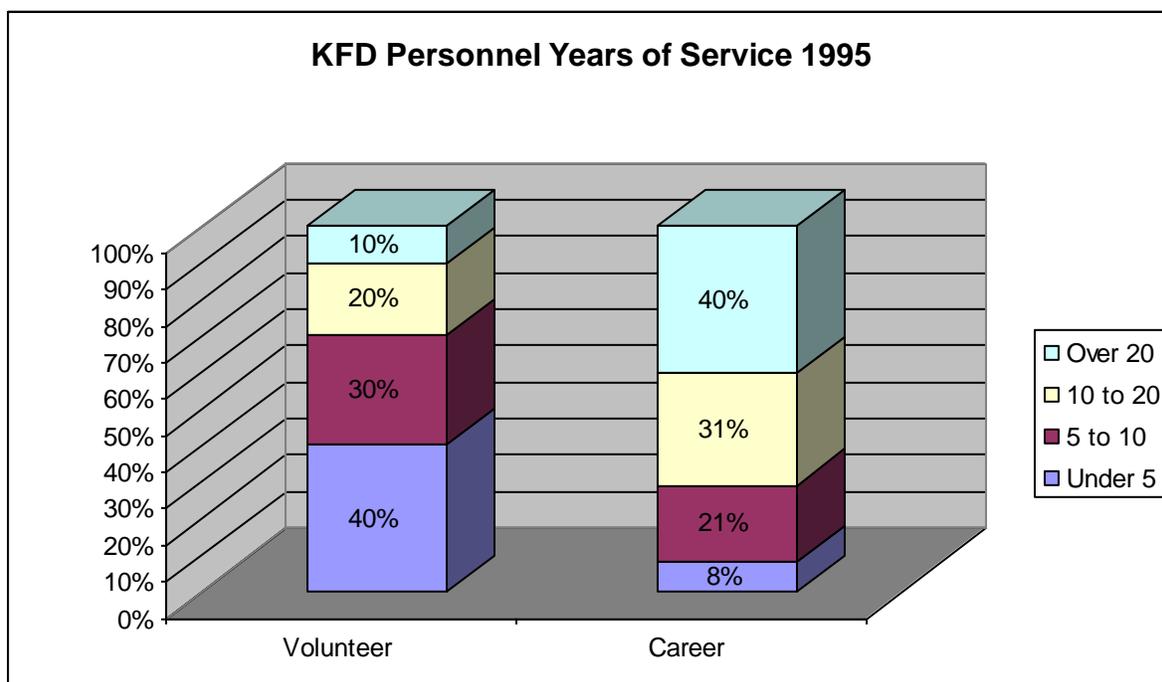


Figure 1.

Complete roster of KFD Volunteer and Career personnel - years of service in 1995.

In order to evaluate personnel trends for turnover and experience level, information was gathered pertaining to years of service for 1995 and 2005. The data was collected from personnel records. It is important to note that sixty percent of the volunteer personnel in 1995 had greater than five years of service as compared to ninety-two percent of career personnel. Figure 1 represented a relatively balanced spectrum of years of service and experience levels throughout the organization. Effective mentoring was possible due to the number of more experienced members in the department actively engaged in training and mentoring. At that time

the organization assigned career instructors with years of experience to each volunteer station to instructor and enhanced company level training.

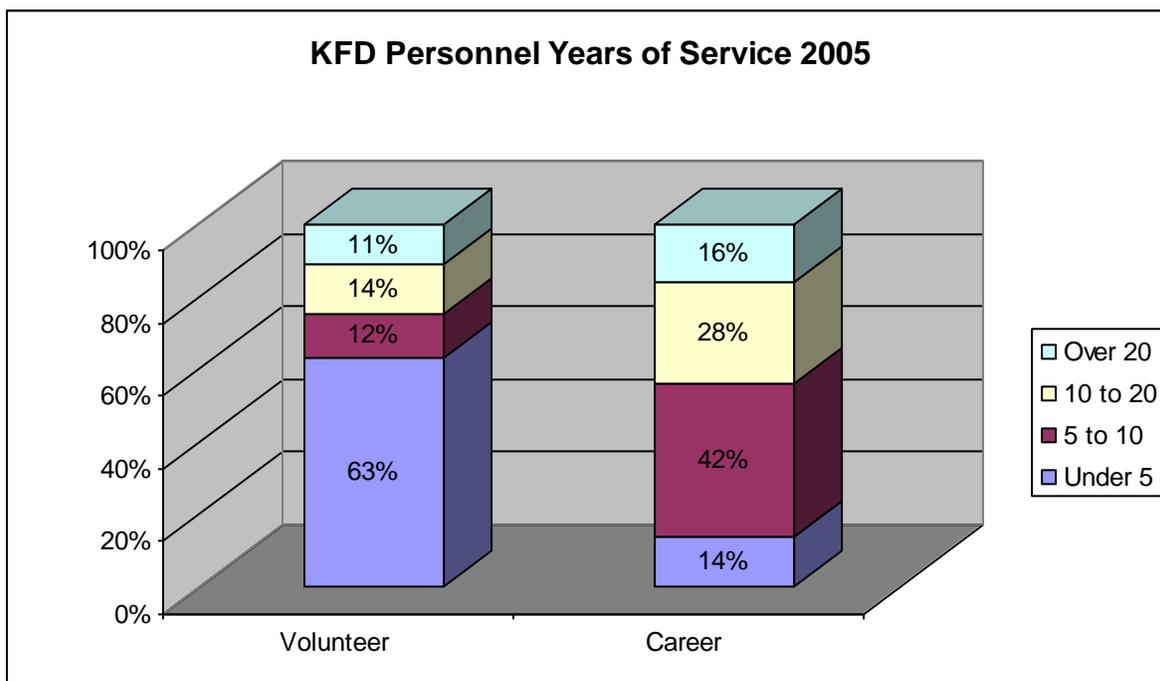


Figure 2.

KFD volunteer and career personnel years of service in 2005.

During the ten years between 1995 and 2005 a significant shift in experience levels and personnel turnover occurred, especially within the volunteer ranks. In 2005, only thirty-seven percent of volunteer personnel had five or more years of experience, as compared with sixty percent in 1995. It is important to note that on the career side of this equation, a number of personnel hired in 1978 began to retire, causing a shift in the career ranks and command staff. Although statistically less significant in the career ranks (only a six percent increase of members with less than five years) this shift greatly decreased mentoring and instruction from more experienced members. It is clear that personnel changes over the past ten years have drastically reduced the Kettering Fire Department's experience level and trained effective strength. The

dramatic decrease in experienced personnel has had a huge impact on the day-to-day operations of the organization.

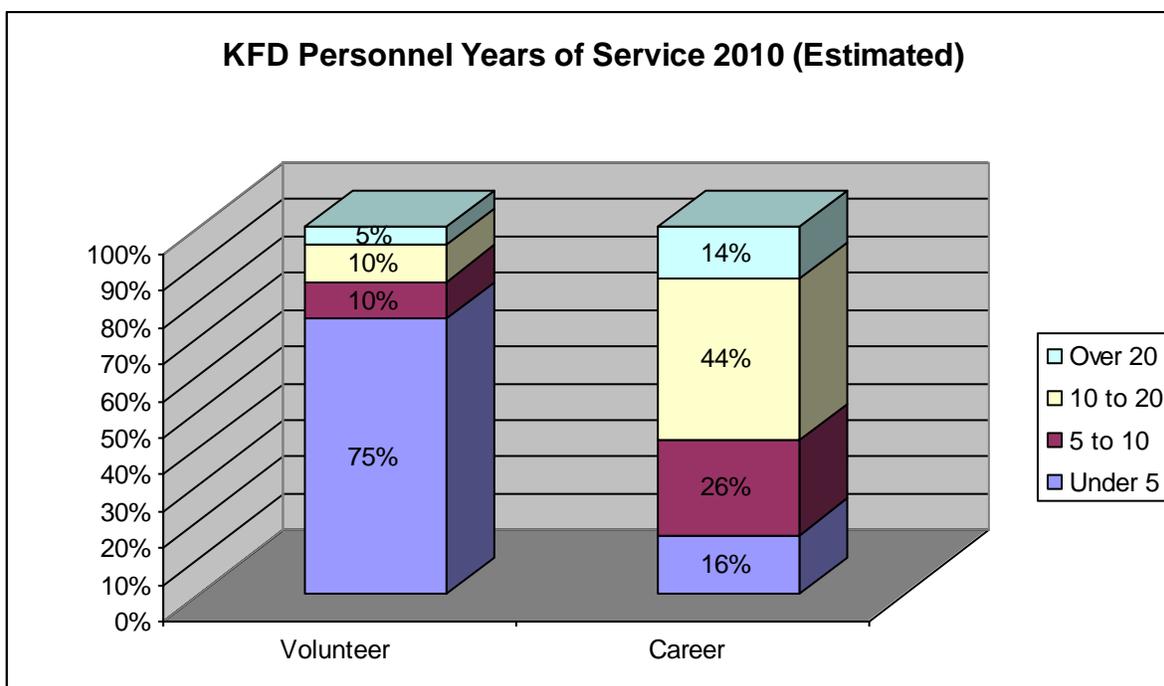


Figure 3.

KFD volunteer and career personnel years of service estimated for 2010.

Based on current personnel trends and turnover rates, Figure 3 illustrates an alarming percentage of personnel in the volunteer side of the organization with very few years of service and experience from which to draw upon during emergency field operations. Less than twenty five percent of the volunteers will have five or greater years of service/experience. Although some additional turnover can be expected within the career side, this part of the organization appears to remain stable. The career chart illustrates a balance between new and more experienced members.

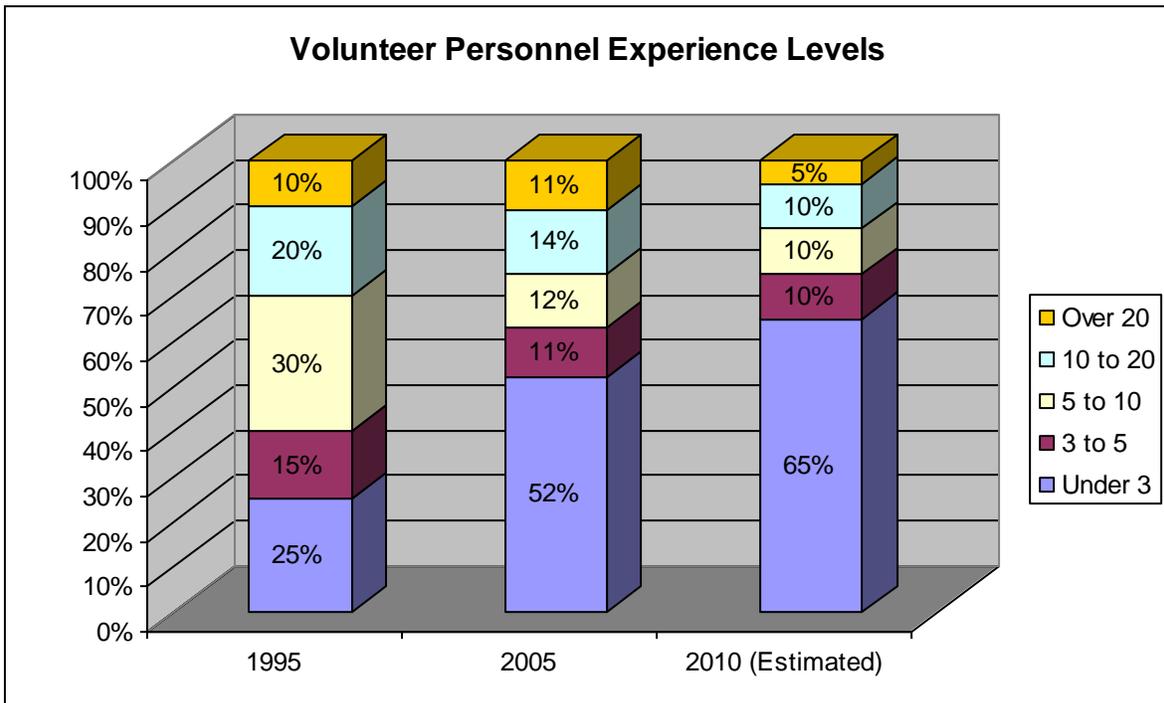


Figure 4.
KFD volunteer personnel years of service for 1995, 2005, and 2010 estimated.

Figure 4 clearly illustrates the rapid decline of experience within the volunteer organization. Kettering Fire Department considers members with over three years of service and field experience to be at a level of “Trained Effective Strength.” In 2005, fifty-two percent of all volunteer membership had less than three years experience in the Fire Service.

Research Question Two: *Is the training program currently meeting the demands of the workforce?*

The results of this study clearly indicate that the training model was not meeting the demands of the workforce. In order to evaluate the training program a questionnaire/interview (Appendix 1-2) was created to discuss the training program for 2005 with the new training director who was appointed in January of 2006. The following are just a few highlights from this interview:

- The Kettering Fire Department did not provide adequate training for all personnel in 2005.
- The fire department did not implement a training program requiring a basic skills set for all of the disciplines within this growing profession.
- Basic EMS skills set for our BLS providers were inadequate to meet the increasing demands of field operation.
- There was no Training Director for 2005
- The fire department did not have any type of formal officer development program in place.
- There was no formal mentoring program for career or volunteer members.
- Additional problems, which included: budget cutbacks, turnover in volunteer personnel, socio-economic issues with personnel and availability to attend training, and the ever increasing role of the fire department to provide additional emergency services.
- The high rate of turnover did not allow for the development of effective mentors to train or provide competent leadership to new members. This in turn increases risk profiles for emergency scene operations for all personnel.

The secondary evaluation tool used to research the effectiveness of KFD's Training Program was a survey (Appendix 3) designed and administered to the training committee which is made up of 7 State Certified Fire / EMS Instructors. The results of this survey can be found in Appendix 4-5. The overall assessment of this survey was that Kettering's Training Program failed to meet the needs of the members of this fire department and provided a minimally effective program. Furthermore, the survey found that there is a strong perception that operational deficiencies exist within the department and were not addressed by the training program. An evaluation of personnel training records concluded that personnel who were not certified as instructors conducted a large portion of fire trainings in 2005.

Research Question Three: *How is the department reacting to the changes within its workforce?*

In order to address this issue, research was conducted into what the department required of KFD members. This research was also evaluative in nature and analyzed the department standards for a variety of operational issues. The Kettering Fire Department did not consistently apply any mandatory standards for operational personnel. No minimum training requirements were enforced during 2005. No formal mentoring programs or officer development programs were in place in 2005. Furthermore, there was no system to monitor personnel turnover to determine cause or frequency. The Kettering Fire Department utilized a process of aggressive volunteer recruitment as the primary mechanism to adapt to changes in the workforce.

DISCUSSION

The focus of this research project was to evaluate how the Kettering Fire Department (KFD) must adapt to a changing workforce in order to meet the demands of emergency field operations. The problem this study investigated was the impact of turnover of more than three hundred Fire/EMS personnel from 1995 to 2005. During this time period, the department had experience a turnover of 26 career and 276 volunteer personnel. Recent trends within the department indicate a continuing trend toward high turnover rates. The purpose of this study was to evaluate the turnover and training deficiencies for Fire/EMS personnel in order to recommend operational changes for the future.

The results of this study clearly illustrated that personnel changes over the past 10 years significantly affected the department's experience level and trained effective strength. The results highlighted a high rate of volunteer personnel turnover. The data supports the premise that an erosion of experience within this emergency response organization has taken place.

The training study demonstrated that the Kettering Fire Department had not reacted to the changes within its workforce. This study quantified the extent of the problem through evaluation of personnel records and training reports. It demonstrated that the current training and mentoring programs were ineffective through surveys and an interview process with the training division.

Furthermore, the study found that the training program in 2005 was ineffective at compensating for the inexperienced personnel during emergency field operations. Based on data from the training surveys and interview, operational deficiencies currently exist. Finally, this study concluded that there were no adequate systems in place for Kettering Fire Department to

address current personnel changes. There was no cyclical system in place to evaluate turnover potential at time of interview or at time of exit in order to evaluate or reduce the turnover rate.

The overall organizational implications of this study indicate a need for the Kettering Fire Department to implement systems to address and correct current personnel trends. This study will provide a platform to initiate discussions within the organization to address the personnel and training issues. The overall goal is that this data will be used to help the City of Kettering as well as the Fire Department to strengthen the overall operations by improving the personnel retention and training / experience levels. Through progressive intervention in the personnel and training arenas, the Kettering Fire Department will be able to stabilize and educate an emergency workforce of personnel, trained to mitigate complex and hazardous emergencies with the benefit of mentors, experience, and direction. This prepared workforce could substantially reduce the risk potential to themselves, as well as the community at large. The City of Kettering has a long history of functioning as a combination department, with potential changes in the immediate future; it will be possible to provide an adequate workforce that can fulfill its mission to serve the community.

RECOMMENDATIONS

The recommendation of this study is for the Fire Department to institute a comprehensive change in the current training program as well as changes in recruitment and retention strategies. The training program must first address and correct operational deficiencies to ensure adequately trained personnel are available to respond to the needs of the community. It must be a priority of the Kettering Fire Department to dedicate personnel and resources “to develop and implement a comprehensive training program that includes basic skill sets for entry level firefighters, annual job performance requirements, officer development programs, and significant upgrades in training center facilities.” (Appendix 2) This process must include a variety of adult learning strategies to enhance knowledge and retention.

Significant facility upgrades are necessary to provide live fire and rescue training opportunities, as well as a computer simulation lab, to enhance scenario-based learning. Through an upgraded training program and practical hands-on training, it will be possible to enhance current personnel skill and experience levels, as well as, reduce the time necessary for new members to meet a level of trained effective strength. With the proper training changes in place, it will be possible to enhance KFD personnel through the power of intuition, mental simulation, metaphor, and story telling. (Klein, 1998)

In addition, the Kettering Fire Department must strive to reduce personnel turnover to create a more stable and experienced workforce. In order to accomplish this reduction in turnover, the department must first study the problem to identify the causes. (Branham, 2005) Secondly, the department must implement corrective measures to address why personnel turnover is happening. (Hallock, 2001) Finally, KFD, in conjunction with the city’s Human

Resources Department, must implement a cyclical tool to measure workforce changes on an ongoing basis.

In order for the Kettering Fire Department to provide a well-trained, experienced workforce, it is paramount that it addresses the issues found in this study and works to improve the systems of training, recruitment, and retention. Programs such as officer development and mentoring should be created and supported by the organization. Additional surveys and studies to look into employee morale would seem warranted due to the high turnover rate. Through the recommended changes, KFD would be able to address current and future personnel trends, thereby improving the ability to maintain a trained, effective, and stable workforce.

REFERENCES

- Branham, L., (2005). *The 7 reasons employees leave: How to recognize the subtle signs and act before it's too late*. Saratoga Institute, American Management Association.
- Centers for Disease Control. (2005). *Fatal Injuries Among Volunteer Workers --- United States, 1993-2002*. Atlanta, Georgia: U.S. Department of Health and Human Services.
- City of Kettering. (1995-2005). *Budget reports*. Kettering, Ohio: City of Kettering Finance Department.
- Hallock, N., (2001). *Customer Service Industry Incentives, Bonuses and Employee Retention*. International Customer Service Association. Chicago, IL, 5-10.
- International Association of Fire Chiefs [IAFC]. (2002). *Crew Resource Management: A positive change in the fire service*. Fairfax, VA. Author.
- Jiang, J.J., Klein, G., (2002) A Discrepancy Model of Information System Personnel Turnover. *Journal of Management Information Systems*. 19(2), 249-272.
- Kettering Fire Department. (2005). *Annual report*. Kettering, Ohio: City of Kettering Fire Department.
- Kettering Fire Department (2004). *Activity report*. Kettering, Ohio: City of Kettering Fire Department.
- Klein, G.A. (1998). *Sources of power: How people make decisions*. Cambridge, MA: MIT Press.
- Klein, G.A., Calderwood, R., & Clinton-Cirocco, A. (1986). Rapid Decisionmaking on the Fireground. *Human Factors and Ergonomics Society 30th Annual Meeting*. Dayton, OH, 1, 576-580.
- Mills, S. (2005). Learn to maintain fireground awareness. *Fire Engineering*, 158(7), 83-84.
- Norris, J.M. (1996). Rapid decision making on the fireground. *Fire Engineering*, 149(3), 89.

- Roseville Fire Department. (2002). *Strategic Plan*. Roseville, Minnesota: City of Roseville Fire Department.
- Ross, J.A. (2005). Dealing with the real reasons people leave. *Harvard Management Update*, 10(8), 3-5.
- Ross, K.G., Klein, G.A., Thunholm, P., Schmitt, J.F., & Baxter, H.C. (2004) The Recognition-Primed Decision Model. *Military Review*, 84(4), 6-10.
- Tucker, R.L., Glover, R.W., Long, D.W., Haas, C.T., & Alemen, C. (1999). Return-on-Investment (ROI) Analysis in the Construction Industry. *Center for Construction Industry Studies*, 6. Austin, TX.
- United States Fire Administration [USFA]. (2003). *TR-100: Trends and hazards in firefighter training*. Emmitsburg, Maryland: USFA.
- Zickler, R.L. (2005). *Safer grant*. Kettering Fire Department Interoffice Communication. Kettering, Ohio: City of Kettering Fire Department.

APPENDIX 1 – KETTERING FIRE DEPARTMENT TRAINING DIRECTOR**QUESTIONNAIRE/ INTERVIEW**

1. How many years have you been involved with the fire service?
2. What are your current responsibilities as the Training Director?
3. Did the fire department have a dedicated training officer in 2005?
4. Did the fire department have mandatory training requirements for basic skills or number of hours of training for 2005?
5. Did the fire department have a standardized program in place for all personnel in 2005?
6. In 2005, do you believe that Kettering Fire Department provided adequate Fire Training for all personnel? If no, please state why this occurred.
7. In 2005, do you believe that Kettering Fire Department provided adequate EMS Training for all personnel? If no, please list reasons why the department failed to provide adequate EMS training.
8. What do you believe is the primary problem with KFD's current training model?
9. How can the training division address the current problems?
10. In what way does the high rate of volunteer turnover affect the organizations ability to provide adequate emergency services?
11. Does the lack of experience within the organization cause operational deficiencies on emergency scenes?
12. How can the training division improve the operational deficiencies caused by the lack of experience?
13. Do you believe it is possible for training to compensate for lack of field experience?

14. Should this fire department look to mentoring and/or field training officers as tools to improve personnel performance?
15. What role should computer simulations play in the future of training fire and EMS personnel?
16. Does the fire department currently have any type of formal officer development program?
17. What responsibility does the training division have to prepare personnel for promotions?
18. What responsibility does the training division have to ensure fire officers are adequately trained?
19. How important is it to have experienced fire officers in the field?
20. What training methodologies do you see in the future to improve training for fire department personnel?

**APPENDIX 2 – KETTERING FIRE DEPARTMENT TRAINING DIRECTOR
QUESTIONNAIRE/ INTERVIEW -ANSWERED**

1. How many years have you been involved with the fire service? **19 years.**
2. What are your current responsibilities as the Training Director? **To raise the current experience levels of all personnel, especially the volunteers due to their high turnover rate. To increase experience through interactive and scenario based training.**
3. Did the fire department have a dedicated training officer in 2005? **No.**
4. Did the fire department have mandatory training requirements for basic skills or number of hours of training for 2005? **No.**
5. Did the fire department have a standardized program in place for all personnel in 2005? **No.**
6. In 2005, do you believe that Kettering Fire Department provided adequate Fire Training for all personnel? **No.** If no, please state why this occurred. **The fire department did not implement a training program requiring a base skills set for all of the disciplines within our growing profession.**
7. In 2005, do you believe that Kettering Fire Department provided adequate EMS Training for all personnel? **No.** If no, please list reasons why the department failed to provide adequate EMS training. **Although KFD met the basic minimum hours for EMS, basic skills set for our BLS providers were inadequate to meet the increasing demands of field operations.**
8. What do you believe are the primary problems with KFD's current training model? **The current problems with the training model has a variety of causes including:**

- no training director for 2005, budget cutbacks, turnover in volunteer personnel, socio economic issues with personnel and availability to attend training, and the ever increasing role of the fire department to provide additional emergency services.**
9. How can the training division address the current problems? **By dedicating a training staff to develop and implement a comprehensive training program that includes basic skills sets for entry level firefighters, annual Job Performance Requirements, officer development programs, and significant upgrades in training center facilities. Through this process KFD will be able to accelerate learning and experience based thinking, thereby enabling members to improve decision-making skills for emergency operations.**
10. In what way does the high rate of volunteer turnover affect the organizations ability to provide adequate emergency services? **The high rate of turnover does not allow for the development of effective mentors to train or provide competent leadership to new members. This in turn increases risk profiles for emergency scene operations for all personnel.**
11. Does the lack of experience within the organization cause operational deficiencies on emergency scenes? **Yes, operational deficiencies are unavoidable providing the current trends continue.**
12. How can the training division improve the operational deficiencies caused by the lack of experience? **By incorporating comprehensive training center upgrades to provide a variety of training methodologies. This would include: a state of the art computer lab to promote interactive fire ground decision making**

- simulations, as well as live fire training props used reinforce techniques learned through computer scenarios. This will assist the department in improving members experience base through practical skills training and simulations there by improving the field performance.**
13. Do you believe it is possible for training to compensate for lack of field experience?
Yes
14. Should this fire department look to mentoring and/or field training officers as tools to improve personnel performance? **Yes**
15. What role should computer simulations play in the future of training fire and EMS personnel? **Computer simulations should play a supplemental role to complement practical skills training by providing scenarios that can not be readily duplicated on the drill ground or a traditional classroom setting.**
16. Does the fire department currently have any type of formal officer development program? **No.**
17. What responsibility does the training division have to prepare personnel for promotions? **The department should provide a comprehensive training program to prepare motivated candidates for advancement at all levels of leadership.**
18. What responsibility does the training division have to ensure fire officers are adequately trained? **Training must be commensurate with the duties requires of a fire officer.**
19. How important is it to have experienced fire officers in the field? **Without experience, decision-making is measurably slowed and potentially flawed.**

Experienced fire officers have advanced decision-making skills which provides for better risk management analysis on emergency scenes.

- 20. What training methodologies do you see in the future to improve training for fire department personnel? Implementation of basic skills sets at all levels of the department to ensure competency. The training division will utilize a variety of methods to accomplish competency of personnel through: instructor enhancement training, computer based simulations and self-study, knowledge, skills, and ability testing, and live fire training and technical rescue training props. It shall be the goal of the training division to augment the lack of field experience with a variety of methods to enhance personnel performance on emergency scenes.**

APPENDIX 3 – KETTERING FIRE DEPARTMENT TRAINING SURVEY

Kettering Fire Department Training Survey for 2005

Please rate the following questions regarding the training program for 2005

Please circle your responses to each of the following questions using the scale below.

Highly Effective = 5, Moderately Effective=4, Effective=3, Minimally Effective=2, Totally Ineffective=1

- | | |
|--|-----------|
| 1. How effective was the fire training program in preparing all personnel for emergency fire operations? | 5 4 3 2 1 |
| 2. How effective was the EMS training in preparing all personnel for emergency medical operations? | 5 4 3 2 1 |
| 3. Was the training program effective at providing the minimum state requirements for EMS? | 5 4 3 2 1 |
| 4. How would you rate the effectiveness of instruction from outside instructors for EMS? | 5 4 3 2 1 |
| 5. How would you rate the effectiveness of instruction from KFD instructors for EMS? | 5 4 3 2 1 |
| 6. How would you rate the effectiveness of instruction from KFD instructors for Fire? | 5 4 3 2 1 |
| 7. How effective was the fire department in completing annual basic skills check offs for Fire? | 5 4 3 2 1 |
| 8. How effective was the fire department in completing annual basic skills check offs for EMS? | 5 4 3 2 1 |
| 9. How effective was the fire department at mentoring new members? | 5 4 3 2 1 |
| 10. How effective was the training program at correcting operational deficiencies of KFD personnel? | 5 4 3 2 1 |
| 11. How effective was the fire department at providing officer development training? | 5 4 3 2 1 |
| 12. How effective was the fire department at providing simulation/scenario based training? | 5 4 3 2 1 |
| 13. How effective were the fire training facilities and props at improving basic skills and experience? | 5 4 3 2 1 |

For any questions rated below 3, please specify how or why KFD's training program was not effective.

Please indicate what changes may be needed in the training program in order to improve the experience and competency levels of KFD personnel.

APPENDIX 4 – KETTERING FIRE DEPARTMENT TRAINING SURVEY DATA

Kettering Fire Department Training Survey for 2005

The following questions were rated in order to evaluate the training program for 2005. The seven member instructor committee formed in 2006 was the target group for the survey

Highly Effective = 5, Moderately Effective=4, Effective=3, Minimally Effective=2, Totally Ineffective=1

1. How effective was the fire training program in preparing all personnel for emergency fire operations? **Average Score 1.7**

Comments: Very few trainings on fire / Fire training was based off of twenty year old evolutions that is not specific to our equipment, apparatus, or personnel of today / No minimum requirements / no skill based check-offs

2. How effective was the EMS training in preparing all personnel for emergency medical operations? **Average Score 2.5**

3. Was the training program effective at providing the minimum state requirements for EMS? **Average Score 3.1**

Comments: Very close to only meeting minimum (EMS) requirements

4. How would you rate the effectiveness of instruction from outside instructors for EMS? **Average Score 2.0**

Comments: Mediocre at best / Residents providing programs with content beyond the comprehension of the students / Outside EMS Instructors, other than EEP, (were) totally ineffective / ER Residents were OK but not EMS minded

5. How would you rate the effectiveness of instruction from KFD instructors for EMS? **Average Score 3.4**

6. How would you rate the effectiveness of instruction from KFD instructors for Fire? **Average Score 3.4**

Comments: Extremely poor –Inexperienced, inadequately trained instructors providing the bulk of instruction for volunteers

7. How effective was the fire department in completing annual basic skills check offs for Fire? **Average Score 1.2**

Comments: There are none! / Annual checkoffs were not done in 2005

8. How effective was the fire department in completing annual basic skills check offs for EMS? **Average Score 2.8**

9. How effective was the fire department at mentoring new members? **Average Score 1.4**

Comments: Experience level of personnel is not sufficient to produce competent mentoring within some segments of the Fire Department / No new (career) members to mentor (in 2005)

10. How effective was the training program at correcting operational deficiencies of KFD personnel? **Average Score 1.7**

Comments: Poor – Basic skill sets were not adequately addressed (in 2005) / KFD is reactive not proactive (at correcting operational deficiencies)

11. How effective was the fire department at providing officer development training? **Average Score 1.5**

Comments: There is no program (for officer development)

12. How effective was the fire department at providing simulation/scenario based training? **Average Score 2.1**

Comments: Poor –There is none / Few Basic simulations or scenarios based trainings

13. How effective were the fire training facilities and props at improving basic skills and experience? **Average Score 2.1**

Comments: Training facilities are in poor condition / They could provide for a base level of proficiency if used in conjunction with a comprehensive performance based program, that is implemented by a competent core of instructors

For any questions rated below 3, please specify how or why KFD's training program was not effective.

- *Correcting deficiencies for volunteer members is not existant and overlooked*
- *Fire training other than SCBA (Self Contained Breathing Apparatus) was ineffective*

Please indicate what changes may be needed in the training program in order to improve the experience and competency levels of KFD personnel.

- *Implement an all inclusive, comprehensive performance based training program*
- *Pay attention to (operational) deficiencies and use quality instructors with specific expertise in subject (matter), especially for Fire (training)*

The overall score for this training survey was a 2.4 rendering the current training program for Kettering Fire Department only minimally effective for 2005.

APPENDIX 5 – KETTERING FIRE DEPARTMENT INDIVIDUAL TRAINING

SURVEY DATA FOR 2005

Question Number	Number responding Highly Effective	Number responding Moderately Effective	Number responding Effective	Number responding Minimally Effective	Number responding Totally Ineffective
1	0	0	1	3	3
2	0	1	2	4	0
3	0	2	4	1	0
4	0	1	0	4	2
5	0	4	2	1	0
6	1	3	1	2	0
7	0	0	1	0	6
8	0	2	3	1	1
9	0	0	0	3	4
10	0	0	1	3	3
11	0	4	0	1	5
12	0	0	3	2	2
13	0	0	2	4	1
Total	1	17	20	29	27
Total %	1%	18%	22%	32%	29%