Measuring The Impact Of Fire Service Based Public Education

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Abstract

Ashland Fire Department is a small career fire department offering fire suppression, emergency medical services, and fire prevention. The effectiveness of these services is frequently measured for effectiveness. Community education programs have been offered for over twenty years with no quantifiable or discernible means of assessing whether the needs of the participants are being met. Historically, these offerings have been relied on as a means of public outreach and have been assumed to be a reliable asset.

This project utilized historical and evaluative research methods to determine a) what methods other fire departments use to measure community education, b) what means have been developed and documented for this purpose in the private sector, c) what role the instructors of the Ashland Fire department played in the success or failure of the programs, d) whether the needs of the individual were being met in the classes, and e) whether the classes helped form a positive or negative impression of the fire department.

The procedure used included a review of previous research conclusions, trade journals and educational texts, and a survey of class participants in the various disciplines. Information obtained on adult education theory as well as learning retention was used to develop a questionnaire that was mailed to random participants in various class types.

Literature review revealed some deficiencies in the overall structure of the educational offerings. Findings of the survey revealed that very few class participants had significant complaints about the training received. Most felt that the knowledge and presentation by the particular instructor were the strengths of the program. Recommendations include expanding the program and capitalizing on the positive aspects of the program and instructors.
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Introduction

Public education is one of the more common non-essential services offered by many fire departments. It is common knowledge in the fire service that few training agencies actually assess whether the training class has actually met expectations. This leads to a problem: Is the training being offered meeting the educational needs of those attending the classes?

Public school systems employ standardized testing as a means of assessing the progress of the students, and as a way to target problem areas in the curriculum.

The American Heart Association and the State of Ohio require that participant surveys be conducted at the conclusion of class, but they mostly deal with the classroom, instructor’s punctuality and other trivial items. Many training classes offered by the Ashland Fire Department have remained unchanged since their inception; a first aid or fire extinguisher class lesson plan has changed very little since designed, whether it was one or twenty years ago. For a program to be effective, it must meet the ever-changing needs of the community it is intended to benefit.

It is reasonable to assume that Ashland Fire Department’s public education programs should be evaluated to see if there is actually any real benefit provided to the community. There are several factors that can influence the student’s perception of the class: material, length of training and the instructor.

Research shall be conducted to determine:

- What methods other fire departments use to measure community education
- What means have been developed and documented for this purpose in the private sector
What role the instructors of the Ashland Fire department played in the success or failure of the programs

Whether the needs of the individual were being met in the classes

Whether the classes helped form a positive or negative impression of the fire department.

The information acquired from this survey will allow Ashland Fire Department to address needed changes as indicated by participants in the survey.

Background and Significance

The fire service has evolved since its inception over 200 years ago. Fire prevention, emergency medical services, expanded scope and public education have altered the once simple job of the firefighter. Changing roles and increasing budgets have increased staffing in the fire service. Widely accepted recommendations from organizations such as the National Fire Protection Association, International Association of Fire Fighters, and International Association of Fire Chiefs have essentially necessitated higher staffing levels for safety and efficiency. Coincidentally, while staffing has increased, most departments have seen a steady decrease in working structure fires. The resulting effect is that fire fighters are more available for “public relations” activities, such as first response engine companies and public education details.

Many fire fighters do not relish, and do not thrive in the role of instructor. Often they are assigned such duties, and their performance reflects any negative attitude they may have. This
raises questions of whether the educational offerings instructed by these individuals have the same impact and significance to the class participants as those classes led by a talented, prepared and enthusiastic instructor.

Unless an individual is willing to enthusiastically participate in public education programs, he will fail to accomplish the organization’s desired goal: the successful dissemination of appropriate knowledge. If there is a flaw in many systems, it is that fire fighters pursue instructor status for extra pay, not for the actual education process itself.

The Ohio Department of Public Safety requires that a post-class evaluation be performed for all classes used for Ohio EMS or fire education purposes. This evaluation is used to assess the preparation and knowledge of the instructor, as well as the classroom facility itself. The relevance of such classes is left up to the instructor. Public education programs, however, have no such standards to abide by. In most cases, the curriculum of classes offered to persons outside the fire service is unregulated. The only standard adhered to by most agencies is that of currently accepted practices; how the information is presented can vary from one person to the next within the same agency. Few agencies surveyed actually had a formal curriculum for any classes, let alone a syllabus of information to be covered in the training session.

The need for evaluation of public education programs can be broken down into several evaluation criteria:

1. Are we increasing our department’s liability by presenting incorrect or incomplete information?
2. What could we provide or eliminate to better serve the public needs?
3. Are our instructors training the students adequately that the information being presented is retained for a reasonable period of time?
The fire service sets a poor example for tracking this data. No data was available from the International Association of Fire Fighters, International Association of Fire Chiefs, The Ludwig Group and several others consulted for the questions presented above. It appears that either no one is collecting this data or no one cares to share this data. The data can be construed a confirmation of an excellent program or an indictment of a poor system.

The potential ramifications of ineffective public education programs have not gone unnoticed. The National Fire Academy has recently instituted a course entitled “Presenting Effective Public Education programs.” The six-day course is geared toward public educators with less than two years experience, and works the assumption that educators at that level do not develop their own programs, but rather adapt existing programs to their needs (NFA website, 2002). The class is limited, however, to those with less than two years experience. Any unfilled openings can be filled by more experienced educators.

Civilian and governmental agencies routinely assess education programs for effectiveness. There seems to be recognition in the public sector that justification of success ensures continuance of programs, while operating in the gray fringes of success can appear to the casual observer as failure. The Centers for Disease Control have placed “A Framework For Assessing the Effectiveness of Disease and Injury Prevention” on their website. The document clearly spells out the need for assessment by stating “information for the effectiveness of prevention is needed by many people. Public health professionals and policy makers at the state, national and local levels make judgments about public health priorities, select prevention strategies, and allocate resources.” While

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no governmental or public health policies appear to be based on how effective a fire extinguisher class is, the effectiveness of a class can directly impact scene operations, prevention activities, and credibility.

The CDC article further states, “Information on efficacy, effectiveness and costs provides a basis for optimal utilization of techniques.” Traditionally in times of economic slowdown or recession, local government agencies can help to ensure passage of tax levies by taking away non-essential services in the safety forces. If documentation exists to show that increased public education activity has played a role in run volume reduction, the non-essential operations take on a more important role in helping to maintain staffing levels. Staffing public education programs with the most competent on-duty fire fighters provides public outreach, as well as the perception that fire fighters are “doing something.”

Effectiveness needs to be based on local criteria; each agency needs to assess its goals for its public education program. Each class should have a standard set of goals and objectives unique to the subject matter. Those goals and objectives should bear in mind any long-term goals, as well as the short term. The assessment process should be developed independently for each class, as the long-term goals for first aid training cannot be the same as those for fire extinguisher training.

The assessment process should focus on things that the training agency has control of, such as classroom, instructors and content of training session. There is little to no value in surveying about the weather on the day of training if the class if the class were held exclusively inside, while the same question is valid if the training session was outdoors. Assessments completed immediately after a training session may not reflect
accurate information. Ashland Fire Department has utilized a post-class survey for six years. A random instructor was selected, and an average rating was tallied. The instructor could receive anywhere from one (very good) to four (poor) points. The average rating for this instructor was 1.08. Included in this rating were several ratings of “one” for good handouts in classes that utilized no handouts! For this reason, ratings acquired at the close of training, while students are leaving, could be assumed inaccurate.

Literature review

The American Heart Association conducted a study regarding the efficiency of CPR training conducted using its curriculum. The results, published in Guidelines 2000 for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care analyzed class format as well as instructor performance, post course performance and retention of learned material. The study also took into account other factors, such as willingness and ability to perform learned skills, as well as need or opportunity to use the skills.

The AHA study first evaluated teaching style. Instructors were trained to deliver information, teach skills and evaluate the knowledge and skills of those they teach. The assumption is that “this type of training relies on a traditional course format of lecture, skills demonstrations, skills practice, and evaluation using detailed skills performance checklists.” The study further concluded that this type of course is “instructor centered” because the instructor is essentially free to organize the course as he/she sees fit. This includes allowing the instructor to decide how much time to devote to lectures, demonstrations, practice and testing; how the
information is communicated; and how to evaluate the knowledge and performance of the students.

The AHA cited numerous studies that “evaluated this type of program for instructor performance, post course skills performance, and retention three months, six months and one year after training.” A majority of the studies documented “poor post course performance and poor retention” of information presented in the class. This type of failure has been attributed to such factors as insufficient practice time, complexity of information covered, amount of information covered, and other factors across the educational spectrum. One study showed that instructors spent too much time on the lecture, and not enough time on practice. Instructors also failed to follow the approved curriculum, provide feedback, and correct the skills of the participants. In some cases the quality and accuracy of skills evaluation by instructors was questioned.

Use of recording manikins has shown to be the best and most objective method of evaluation, but this type of evaluation was viewed as too “strict.” Instructors tended to have an unrealistic expectation of skill level during evaluation, which led to excessive criticism and negative feedback to students. About ten years ago, curriculums were redesigned to incorporate simpler skills checklists and manikins.

Studies have also shown participants are frequently reluctant to perform CPR even after they are trained (American Heart Association, 2000, Introduction, Long term view of CPR training ¶ 3)\(^2\). This may be based on such concerns as anxiety, guilt, fear of imperfect performance, responsibility and infection.

\(^2\) American Heart Association Guidelines 2000 for CPR and ECC (pp. I-6 to I-11)
The Evesham Fire-Rescue Department in Burlington County, New Jersey has documented at least one successful training event (Robertson, 2002, Program Benefits section ¶1). A citizen who participated in their first Citizens’ Fire Academy voluntarily began to inform a large crowd of onlookers at a structure fire what the department was doing to combat the blaze, why the response was fast and other information that was valuable to the onlookers. Evesham Fire-Rescue has also secured local media coverage for the academy, allowing the public to track the progress of the public education offering.

There is more to public education than showing children a nozzle pattern, giving out pamphlets or installing smoke detectors. Philadelphia Fire Department, like many others, uses the “change your clock, change your battery” catch phrase in the spring and fall to remind people to keep smoke detectors in working order (Shouldis, 2002, ¶ 1). Like many communities, they had the cooperation of media in providing public service announcements. Upon responding to a fire on March 3, 2002, they initiated standard search and rescue operations. A fourteen-year old boy and two pet dogs were located in the structure, and all perished. During overhaul operations, a working smoke detector was located in the residence, albeit on the floor below the fire. While the occupants were aware of the need to change batteries, they were apparently unaware of the need for smoke detectors on each floor of a residence. This is an unfortunate example of an event that may have been prevented by program assessment and follow-up.

According to McClincy (Instructional Methods in Emergency Services, Chapter 4) there are clearly defined types of learner specified. He theorizes that adults learn in three distinct domains: cognitive, affective and psychomotor. The cognitive is the “intellectual” part of

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3 Robertson, M (2002, May) Marketing your fire department through public education. Fire Engineering, 155 (5)  
learning, the affective is the emotional part of learning and psychomotor is the “action” part of learning.

McClincy also defines educational philosophies that affect learning. The concepts he spells out in the text are:

- Idealism
- Realism
- Humanism
- Essentialism
- Pragmatism
- Reconstructionism

While these theories apply principally to the instructor, they figure strongly in how effective the instructor is for the topic being taught. McClincy defines the types as follows:

- **Idealist**- Highly personalized, creative and individualized instructors who encourage “the art” of teaching. This type of instructor prefers open discussion formats.
- **Realist**- This type of instructor is the opposite of the idealist, preferring a structured, scientific approach. Realists tend to teach using lectures and a systematic approach to instruction.
- **Humanist**- This philosophy is called the “discipline of the mind.” Students are given little information, and encouraged to be self-motivated to gain an understanding of the subject matter. Little formal structure is utilized in this type of teaching, and students learn through open discussion.
• *Essentialist* - This instructor type is the “educational conservationist.” If the information isn’t important, it isn’t taught. Students get basic information, and little “it’s nice to know” information.

• *Pragmatic* - This is the approach best defined as “learning by doing.” Students are given the opportunity to learn primarily by “experiencing” what they are learning.

• *Reconstructionist* - The teacher is the coordinator of information; presentations are taught based on the needs of the students. Students must be highly motivated and want to learn the information.

McClincy stresses that while all may be effective instructional methods, some students may not flourish learning with the wrong type of instructor for his or her learning style. Instructors who complete Ohio emergency service instructor certification courses are trained in developing lesson plans based around these learner “types.”

While specific studies do not necessarily address fire service based education and training programs, there seems to be ample information available to aid an agency in developing standardized lesson plans that address the majority of students, both adult and child, and aids in the retention of information presented. Furthermore, proficiency in a particular discipline is probably not adequate justification for training personnel to be instructors. It also seems that understanding the target audience of a program may aid in successfully presenting educational material.
Procedures

There are several reasonable methods for acquiring answers to the research questions:

- Personal interview with random participants
- Direct mail survey
- Post-training survey

The most effective method for acquiring the answers to these questions is interview. However, large numbers of students and the high possibility of “less than honest” answers could inhibit the chance for useful and accurate results. Direct mail survey will provide an opportunity for students to be honest and remain anonymous. This will be the method used for this survey.

A random ten percent sampling of Ashland Fire Department public education training participants in each individual discipline. Disciplines include EMT-B refresher, first responder, first aid, CPR and fire extinguishers. The number of overall participants to be surveyed dictates the need for a written survey. Approximately 200 surveys were mailed out to individuals who participated in training classes at Ashland Fire Department within the last three years. Also included is a sampling of participants in EMT-B refresher training.

The survey sent to training participants was as follows:
Ashland Fire Department
Training Survey

1. What type of class did you take from Ashland Fire Department?
   a. Fire Extinguisher
   b. CPR
   c. First Aid
   d. Other

2. How long has it been since you took your class?
   a. Less than 6 months
   b. Six months to a year
   c. One to two years
   d. Over two years

3. Did you have the opportunity to evaluate the instructor?
   a. Yes
   b. No

4. Was the time spent in class appropriate?
   a. Yes, it was just right
   b. No, the class was too long
   c. No, the class was too short
   d. I don’t recall

5. Did you learn what you expected to learn?
   a. Yes
   b. No

6. Have you had this type of training somewhere else before or after the class at Ashland Fire Department?
   a. No
   b. Yes, after the training at Ashland Fire Department
   c. Yes, before the training at Ashland Fire Department

7. Do you feel the training gave you the knowledge to perform the skills you learned?
   a. Yes
   b. No
   c. I don’t know
8. Do you feel that you could actually perform the skills learned in the class?
   a. Yes
   b. No
   c. I don’t know

9. Did the instructor seem knowledgeable?
   a. Yes
   b. No

10. Was the information presented in a logical sequence?
    a. Yes
    b. No

11. Was the information presented in a way that made it easy to understand?
    a. Yes
    b. No

12. Did the instructor allow adequate time for questions?
    a. Yes
    b. No

13. Were videos/slides pertinent to the class?
    a. Yes
    b. No
    c. None were used

14. Was practice/practical skills time adequate?
    a. Yes
    b. No, there wasn’t enough
    c. No, there was too much

15. Was a test administered at the conclusion of the class?
    a. Yes
    b. No

16. How would you rate the testing process?
    a. The test was fair, but difficult
    b. The test was difficult and unfair
    c. The test was very easy
    d. The test was a waste of my time
    e. No test was given
17. How much did the instructor impact your overall impression of the class?
   a. The instructor made the class worthwhile
   b. I don’t remember much about the instructor
   c. The instructor did not do much to improve the class
   d. I was unhappy with the instructor

18. Why did you feel this about the instructor? (Circle all that are appropriate)
   a. The instructor made me feel comfortable
   b. The instructor was very knowledgeable
   c. The instructor provided a comfortable learning environment
   d. The instructor was confusing and hard to understand
   e. The instructor was offensive
   f. The instructor did not provide enough breaks
   g. The instructor did not provide enough practice time
   h. Other

19. Would you take this class from Ashland Fire Department again?
   a. Yes
   b. No
   c. I don’t know

20. How did this class impact your opinion of classes offered by Ashland Fire Department?
    (Circle all that apply)
    a. I feel that Ashland Fire Department provides valuable public classes
    b. I feel that Ashland Fire Department wasted my time in this class
    c. I would like to take other classes there
    d. I’m not sure why they offer classes like this
    e. I enjoyed the experience
    f. I learned what I came to learn
    g. I left the class feeling unfulfilled

Thank you for taking the time to complete this survey. Please return to Ashland Fire Department by January 31, 2003 in the enclosed postage paid envelope. (If you have further questions or comments, you may write in your name and phone number below, and a representative will contact you.)
Results

Participants in the survey were randomly selected from participants in training programs offered to the public in the last two years. Surveys were mailed out with a cover letter explaining the purpose of the survey. Of the surveys mailed, 137 were returned by the deadline on the survey. (For full listing of results see appendix 1.)

Of the 137 surveys returned, 64 percent were from participants of fire extinguisher classes, 12 percent were CPR participants and 24 percent were first aid training participants. Over half (51%) of the respondents had completed their training within the last six months, and the rest were in the six-month to two-year range.

Surprisingly, 91 percent of respondents felt that they had learned what they expected to learn. Class length was acceptable to 46 percent of participants, while 24 percent thought the class was either too long or too short. A large percentage (89%) felt the class gave them the knowledge to perform the skills, and even more (95%) felt they could perform the skills.

The questions regarding the instructor provided a very high percentage of favorable responses; 98% felt the instructor was knowledgeable, 93% felt the sequence was logical, and 97% felt the presentation made the material easy to understand. Furthermore, 94% felt the instructor made the class worthwhile, and no respondents reported being unhappy with the instructor.

Almost all respondents (96%) would take the same class again from Ashland Fire Department, and 89% feel that Ashland Fire Department provides valuable public classes based on their experiences. While 73% of respondents indicated that they would like to take other classes there, 2% report leaving the class feeling unfulfilled.
Discussion

The survey provided some unexpected results. Though the classes and instructors vary greatly, as do the participants, they seem to be satisfying the needs of the public based on the results of the survey. In most instances, over 90% of respondents report being satisfied with the instructor and the class, and very few had negative feedback to offer.

Research conducted by outside agencies suggests that many people fail to retain much of the information presented for longer than six months. About half of the respondents to this survey had taken the training class in question more than six months ago, and all were within the last two years. The respondents claim to remember the class or the information well enough to make a judgment on the quality of the training session, opening the possibility of “candy-coated” answers to make the class seem better than it was.

Recommendations

The results of the survey indicate that the sampling of the public that attends training classes at Ashland Fire Department is satisfied with the training. While is would be foolish to refute the opinions of class attendees, literature suggests that some changes may be incorporated into the programs to improve what is working fairly well.

Recommendations include:

- Maintain current instructor corps. The knowledge and ability of these instructors seems to be the program’s strongest assets.
• Conduct further needs assessments to see if more classes could be offered. Currently only three disciplines are offered to the public. If the instructors are willing to undertake more training, they should be encouraged to do so.

• Develop standard lesson plans. No standard lesson plans exist for fire extinguisher or first aid training— they are tailored to the group. Literature suggests that this may help make classes more consistent and easier to teach. CPR classes follow national guidelines, so each class is similar.

• Advertise the public education program. This is apparently a very valuable asset of Ashland Fire Department, and should be capitalized on.
References


Jennings, D (2000, February) “Selling” safety at the mall. Fire Engineering, 153(2), 139-141


Robertson, M (2002, May) Marketing your fire department through public education. Fire Engineering, 155 (5)


American Heart Association Guidelines 2000 for CPR and ECC (pp. I-6 to I-11)

Appendix A

Survey results

Ashland Fire Department
Training Survey Results

1. What type of class did you take from Ashland Fire Department?
   a. Fire extinguisher  88%
   b. CPR  12%
   c. First aid  24%
   d. Other  0%

2. How long has it been since you took your class?
   a. Less than 6 months  51%
   b. Six months to a year  37%
   c. One to two years  12%
   d. Over two years  0%

3. Did you have the opportunity to evaluate the instructor?
   a. Yes  36%
   b. No  64%

4. Was the time spent in class appropriate?
   a. Yes, it was just right  46%
   b. No, the class was too long  9%
   c. No, the class was too short  15%
   d. I don’t recall  29%

5. Did you learn what you expected to learn?
   a. Yes  91%
   b. No  9%

6. Have you had this type of training somewhere else before or after the class at Ashland Fire Department?
   a. No  72%
   b. Yes, after the training at Ashland Fire Department  0%
   c. Yes, before the training at Ashland Fire Department  28%

7. Do you feel the training gave you the knowledge to perform the skills you learned?
   a. Yes  89%
   b. No  3%
   c. I don’t know  8%
8. Do you feel you could actually perform the skills you learned in the class?
   a. Yes 95%
   b. No 1%
   c. I don’t know 3%

9. Did the instructor seem knowledgeable?
   a. Yes 98%
   b. No 2%

10. Was the information presented in a logical sequence?
    a. Yes 93%
    b. No 7%

11. Was the information presented in a way that made it easy to understand?
    a. Yes 97%
    b. No 3%

12. Did the instructor allow adequate time for questions?
    a. Yes 63%
    b. No 36%

13. Were videos/slides pertinent to the class?
    a. Yes 30%
    b. No 3%
    c. None were used 67%

14. Was practice/practical skills time adequate?
    a. Yes 93%
    b. No, there wasn’t enough 6%
    c. No, there was too much 1%

15. Was a test administered at the conclusion of the class?
    a. Yes 35%
    b. No 65%

16. How would you rate the testing process?
    a. The test was fair but difficult 27%
    b. The test was difficult and unfair 0%
    c. The test was very easy 6%
    d. The test was a waste of my time 3%
    e. No test was given 64%
17. How much did the instructor impact your overall impression of the class?
   a. The instructor made the class worthwhile 94%
   b. I don’t remember much about the instructor 5%
   c. The instructor did not do much to improve the class 1%
   d. I was unhappy with the instructor 0%

18. Why did you feel this about the instructor? (Circle all that are appropriate)
   a. The instructor made me feel comfortable 60%
   b. The instructor was very knowledgeable 96%
   c. The instructor provided a comfortable learning environment 56%
   d. The instructor was confusing and hard to understand 2%
   e. The instructor was offensive 0%
   f. The instructor did not provide enough breaks 9%
   g. The instructor did not provide enough practice time 23%
   h. Other 0%

19. Would you take this class from Ashland Fire Department again?
   a. Yes 96%
   b. No 2%
   c. I don’t know 3%

20. How did this class impact your opinion of classes offered by Ashland Fire Department?
   a. I feel that Ashland Fire Department provides valuable public classes 89%
   b. I feel that Ashland Fire Department wasted my time in this class 0%
   c. I would like to take other classes there 73%
   d. I’m not sure why they offer classes like this 0%
   e. I enjoyed the experience 66%
   f. I learned what I came to learn 88%
   g. I left the class feeling unfulfilled 2%