

**DECENTRALIZED TRAINING
BY USING
ADVANCED DISTRIBUTIVE LEARNING CENTERS**

STRATEGIC MANAGEMENT

BY: Karl R. Ober, District Chief
Orange County Fire/Rescue Department
Orlando, Florida

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ABSTRACT

The decentralization of training has been a topic of Fire Departments and businesses in recent years due to many contributing factors. The problem for Orange County Fire Rescue Department (OCFRD) was that the area protected posed significant challenges for an effective and efficient centralized training program. The training program failed to address the large employee base and the jurisdictional size of OCFRD with its fire and emergency services requirements.

The purpose of this research project was to develop a plan for delivering training in a more decentralized fashion. Historical and action research methods were used to answer the following questions:

- 1. What technology is available to support decentralized training for OCFRD?**
- 2. What were the guidelines used by OCFRD?**
- 3. Are other similarly sized fire/emergency service organizations offering decentralized training using modern technology?**

The procedures used to complete this research included a review of fire service and business literature, and OCFRD documents and records. Also, interviews were conducted with subject matter experts involved in the implementation of like kind changes in other Fire Departments.

The results of the research showed that utilizing personal computers within each fire station helped delivery of training needs without the negatives associated with centralized delivery. Also, the new technology used in this delivery is very expensive and not without the possibility of unforeseen technological glitches.

Recommendations included further allocation of funds to support new technology and present programs, teaching staff trainers on software utilization and delivery, continual advancement of Intranet development, and learning what is already being done by others to prevent the same type of mistakes. Also, what is available to meet the needs of the department to stay on top of the rapid changes involved in using computer hardware and software.

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INTRODUCTION

Since the inception in 1981, The Orange County Fire Rescue Department (OCFRD) has grown into the fourth largest metropolitan fire department in the state of Florida. The Department provides world class service by monitoring and implementing technological and service delivery changes to enhance its operation and benefit to the population it serves.

The Operations Division responds to emergency calls in an area approximately 813 square miles. The population is estimated to be 555,363 in 1999 (Annual Report, 1999a).

Within the boundaries of Orange County, growth both economic and population in the 1990's has placed a demand increase in services rendered to an average increase of 8% per year, which is predicted to continue (Comprehensive Policy Plan, 1999a).

To prepare for the 21st Century and continual forecasted growth and congestion, OCFRD Training Bureau is acutely aware of an inservice training problem.

The problem is that the area protected by the Orange County Fire Rescue Department poses significant challenges for an effective and efficient centralized training program. The former training program failed to address the large employee base and the jurisdictional size of OCFRD with its fire/emergency services requirements.

The purpose of this research project is to develop a plan for delivering training in a more decentralized fashion.

- 1. What technology is available to support decentralized training for OCFRD?**
- 2. What guidelines were used by OCFRD?**
- 3. Are other similarly sized fire/emergency service organizations offering decentralized training using modern technology?**

BACKGROUND AND SIGNIFICANCE

In 1995 the Orange County Fire Rescue Department found itself in a budget deficient. With a shortfall of almost nine million dollars people lost jobs and departments were cut to the minimum. The training bureau was hard hit and only the basics were left for necessary mandatory needs. On January 14, 1996 Chief Mike Iacona was appointed as Fire Chief of OCFRD. One of the tasks at hand for the Chief was to find out what was lacking in the department. On April 1, 1998 a survey was conducted among OCFRD employees to find out where the strengths lay and where the weaknesses were. Hands down, training was the area most pointed to for needing necessary funding and development. The purpose of the Training and Education Section is to develop, implement, coordinate, facilitate, deliver, monitor, and evaluate in service training and education for OCFRD personnel (Comprehensive Policy Plan, 1999b). In February Chief Iacona met with Joseph Donovan, former Superintendent of the National Fire Academy from January 1982 to August 1986. Chief Iacona appointed Chief Donovan to take the Training bureau on and revitalize the crippled program. With thirty-three stations in an area of almost a thousand square miles, Chief Donovan knew that delivery would be a problem. As it is, it takes almost three and a half months for OCFRD to complete just one training project in the Operations Field. Lt. Kidd from station 41 came up with the concept of computerized learning stations within each fire station. It was noted that fire units could not drive into a central location for training as this took from fifteen to sixty minutes drive time. The units would be out of their coverage area causing second due or next closer units to cover two areas at once. Creating a nightmare to manage for the District Chiefs and Communications for calls of service. With the projection of thirty-five stations in spring of 2001 and forty stations by 2003 OCFRD needed something fast to compete with growth. Call volume was increasing meaning that downtime for

other activities were continually being cut. Time to train was at a premium. The cost of contracting the training out was a fiscal restraint also. To meet the challenges Chief Donovan had several bullet points. They were to think smarter, use limited resources wisely, use technology, and collaboration among Fire Departments and non-fire service entities. Many agencies had invested millions of dollars addressing these same issues. OCFRD tapped on the knowledge and skills available from FEMA's National Fire Academy and Emergency Management Institute. The University of Central Florida was in Orange County and had an Institute for Simulation Training and Team Performance Laboratory. Also available with vast technological knowledge were the Department of Defense's Simulation Training and Instrumentation Command, Naval Air Warfare Center, Defense Office of Material Support, and the Weapons of Mass Destruction Civilian Support Teams. Lastly, the Department of Justice had the Office of State and Local Domestic Preparedness Support, Center for Domestic Preparedness at Fort McClellan, Alabama, and the Bectel-Nevada Training Facility at Las Vegas, Nevada. With these team members collaborating with OCFRD, the Training Bureau could begin a state of the art delivery system to accommodate all the changes that were to take place with the growth and projected developmental increase.

This research was conducted as a required component of the Strategic Management of Change (SMOC) class in the National Fire Academy's Executive Fire Officer Program (EFOP). The issues studied were related to the Change Management Model, as the basis of analyzing, planning, implementation, and evaluation of what was needed to secure a working delivery of training modules. As useful as this Model is to serve OCFRD it was intended that the information formulated would be useful to other municipal fire departments having the same training challenges that were encountered by OCFRD.

LITERATURE REVIEW

The reason for this research was that OCFRD was not meeting the training needs of its employees in an effective and efficient manner. Due to a severe budget deficit in 1995 OCFRD had to cut major expenditures and lay off over one hundred personnel. The training bureau was almost disbanded and only a skeletal crew remained. In April of 1998 an internal customer service survey (See Appendix A) was sent out by the Chief of the Department to have each employee evaluate the positive and negatives of OCFRD. The main input from that survey showed that the Training Bureau was the lowest score in Administration at 2.9. The results information was obtained from a memo numbered 98-128 dated September 30, 1998. Training not only had to change the content of but also the delivery of the current training. The literature review involved a search of fire service magazines, large corporation's procedures, Internet sites, in house documents, and advertisements in regards to hardware and software available to address the problem of the research project.

Multimedia

One of the first things necessary to begin a change is to know what direction to take. It was shown by the survey given the employees that training was substandard. Delivery of that training was difficult due to distance involved between the stations and the training bureau at headquarters. Also, OCFRD was no longer part of fire consortium and would have to pay to use the fire tower and site at Mid-Florida Tech. The Chief of Training showed the list of negatives involved in a centralized training program. The sheer numbers of employees were rapidly approaching a thousand. Work was on a twenty-four hour shift, seven days a week. Many employees had vacation leave, sick time, and time trades that would put them out of training for a given day. Travel time for units ranged from a mere fifteen to over sixty minutes. The cost of

overtime needed to be added in to accommodate the instructors. The call volume of nearly 75,000 calls a year hampered the available time to train (Annual Report, 1999b). Contracting training was very expensive and when the companies came to training that placed them out of service (Donovan, 2000). With all those negatives involved in training delivery, a source of multimedia training was chosen.

A stand-alone personal computer (PC) in an office is enhanced by linking it to a local area-network (LAN) in which cables interconnect all of the PCs together. LANs can be connected together from area to area creating a wide-area network (WAN). Those WANs can be linked all over the country if need be, or the world for that matter. The Internet is an example of a WAN. Linked properly, this process puts any computer an individual may have in contact with the information and knowledge on any computer in the world (Department of Education, 2000a).

For centuries the technology for transferring knowledge has changed little. One person teaching another, better know as chalk and talk approach. Learning and learning quickly is becoming a significant strategy for companies wishing to stay in the forefront of today's challenges (Bassi, Cheney, Van Buren, 1997a). The top ten trends in the November 1996 issue of Training and Development identified these trends (Bassi et al., 1997b):

1. Skill requirements will increase to accommodate rapid technology changes
2. Workforce will be more educated and diverse
3. More downsizing and restructuring
4. Training departments will change dramatically and downsize
5. Technology will revolutionize training delivery and bring it closer to peoples work sites
6. Training departments will find new ways to deliver services
7. More focus on performance improvement

8. Integrated high-performance work systems
9. Companies will become learning organizations
10. Human performance will be key

The Information Technology Association of America estimates that Human Resource and Development and Training Departments are already heavy users of Intranets (Human Resource Magazine, 1997). Businesses that deliver training via Internet or Intranets doubled their activity between 1996 and the first quarter of 1997 (Business Wire, 1997).

To just step into multimedia without the knowledge of what is needed would be foolish for a business. Just as any product looked at it has strengths and weaknesses that must be looked at prior to consideration. Educational methodology plays an important role in how the training is delivered. Ask what kinds of formats have failed or excelled? The need to know where you have been and where you want to go is very important (Naum, 1989a). A good training program no matter how it is delivered should include teaching technical skills and improvement and modification of individual attitudes and directions (Naum, 1989b). Costs can stop the project before it can begin. Some considerations are (Department of Education, 2000b):

1. The cost of installation (including networks needed)
2. Cost of daily operation, servicing and upkeep, and stockpiling spare parts
3. Continuous and persistent security
4. The life span of equipment purchased
5. Training staff at all levels how to operate software
6. Designing programs, testing, and distributing, like software

The commitment needed to convert one class to multimedia is nearly 200 hours (Sammons, 1994). Also, everything about the programs are protected by copyrights

(Hotstetter, 1994). The employees using the multimedia can also have strengths and weaknesses. Some strengths are that the individual is isolated and has to learn independently. Multimedia is excellent for drills and repetitive tasks. Obtaining information through huge databases at the employee's disposal. Images, sound, video, enhance the normal programs immensely. Just as there are strengths, there are also weaknesses. Some learners are incapable of learning with a computer. Computer screens are not for everyone and the use of bad software may cause a learning failure. Computers can get viruses and the employees on the computer systems may load illegal software (Department of Education, 2000c).

Decentralizing the Training Bureau can have economic benefits as well. Multimedia spreads the trainers out into the field. Each PC will act as a teacher. If you can show the same results without the cost of centralized training the organization will be enhanced. A possible negative of decentralizing is with new recruits. It is believed that centralized training is necessary to teach new personnel the organizations desired culture. Attitudes and beliefs are critical and are best taught in a common orientation (Blankenhagen, 1998a). In an era of budget cuts and downsizing, the evidence that multimedia learning can reduce delivery time, costs, and train more people more often is of great interest (Bassi et al., 1997c). If the major push in using multimedia for training is savings, make sure to show that with centralized training each employee who travels to the training site is away from work, which are salaries and lost productivity. Very few managers are willing to lose worker productivity when they do not have to (Blankenhagen, 1998b). Also, fire companies away from their first due are leaving coverage to chance. More often than not something will happen when away to training.

Title after title heralds multimedia as the educational resource of the twenty-first century. Books on the other hand are of limited utility since the content is dated before it reaches the

buyer's (McFarland, 1996). Multimedia is the combining of two or more communications mediums. It is the use of words, sounds, and still or moving pictures to convey thoughts. Anything that words can do, words with sound and pictures can do better (Kalmbach, 1994). A test at the University of Alberta used a group with just text. Another group received the same class with text and animation. The scores of the group receiving animation along with the text scored 35% higher than the text only class. It was concluded that substantial gains can be directly related to the animation and the students enjoyed the class better with animation than the text only presentation (Szabo, Poohkay, 2000).

Examples of Multimedia Use

The Army has spent millions in developing efficient and cost effective training. After the post-Vietnam downsizing of the Army and the strict budget cuts of the 1970s something had to be done to decentralize the training and place the responsibility of the programs directly on the units (Army, 1998a). The Army divides the United States into seven regions for training purposes. The Army uses the information highway for a variety of individuals training course (Stricom, 2000a). Training would rely on the use of technological advances in computers for the simulation of force-on-force maneuvers. Simulators and simulations allow units to participate in simulated battles without leaving their home base. A major part of the Army's 21st century plans involve the utilization of the best combinations of live, virtual, and constructive simulations and simulators (Army, 1998b). This distributed training reduces the amount of time at the schools and eliminates repetitiveness. While distance learning (DL) is in its infancy, the Army may lean to more decentralized training on personal computers in the soldiers home and on laptop computers in the field (Stricom, 2000b).

British Columbia uses decentralized training for paramedics by computers. The paramedic training covers fifteen regional centers housing 190 ambulance stations. Starting in 1997 the computers provide consistent training to new recruits and practicing paramedics while still close to home. Savings include the elimination of additional instructors and paramedic travel expenses. Operationally, costs of this type of training will offset the total development by year seven (Williams, 1998).

A Police Department in Canada, with an 1100 member force, converted their training program to computer based training (CBT). Thirty-two areas of training with video and computer assisted training lessons were installed. The training program provides decentralized, in-service, individual training. The training is available twenty-two hours a day, seven days a week. The data provided by the Statistics Section came to three conclusions. The CBT system saved \$70,000 per year over five years. Scores on promotional exams were higher and failures were less. Plus, on the job tasks performance levels increased within a short period after the modules on the CBT were sent out to the field for use (Szabo, 2000).

Training for the space shuttle at Kennedy Space Center included 5,200 employees at 310 locations. Centralized training was ineffective and costly. Problems included long travel times, no shows, cancellations, and schedule demands. The Space Center went to CBT and intranet-based training. All units of computers were installed into work areas to reduce travel time. This decentralized training reduced cost and improved training (Benison, 1999).

The very hard to interpret material safety data sheets (MSDS) are another item that has been put on the Internet. With over 96,000 MSDS in a standard format, after six months of use, evaluation has indicated an increase in awareness and knowledge of the safety and health issues

involved in the chemicals detailed on the sheets. Users have reported more satisfaction with the Internet training than by using the hard-copy MSDS (Krohn, 1999).

To teach safety and better productivity, Burlington Northern and Santa Fe railroad uses CBT programs to teach new hires and update present employees. With 250,000 employees in the United States and Canada, the rail system is moving away from traditional training by instructor to CBT. Courses provide consistent teaching ensuring all employees receive the same information. Decentralizing with CBT programs help the rail system cover the same information in 111 cities. Retention of material and reduced training time are just two of the advantages of the distance learning. Before CBT existed, trainees would go to the field for on the job training. Only when problems occurred did the trainees get an on hands perspective. The railroad can do things with simulators on emergency procedures and troubleshooting techniques that could never be done in real life situations (Luczak, 2000).

Even in the construction trade a new approach of using laptop computers for training is evolving. The programs are designed to interest the workers through a video game format and an espionage story line. The program can collect information from the users, respond to users input, and provide information to the user. Respondent data showed that computer-based training was very acceptable and was recommended by the workers using it (Kerr, M., Brosseau, L., Greer, C., Dvorak, L., 1999).

Literature Review Summary

The summary of the observations used in this review all point to decentralized training utilizing some form of computer based training. Many benefits occurred with CBT programs and decentralized training. Not only tangible ones but also knowledge based enhancements. Faster learning, speed of delivery, sameness of instruction, and friendliness of course delivery

are but a few positives. If paying attention to trends were a precursor to what is going to happen in the training world, computers were almost remarkably accounted for the change. Interviews within the Tri-County area reflects just how new this type of training is and the sparse sharing of knowledge on the subject of the applied research project.

PROCEDURES

The research for the purpose stated was first conducted with a literature search conducted at the Learning Resource Center (LRC) at the National Emergency Training Center in June of 1999. Additionally, data from various sites visited on the Internet involving businesses using and testing decentralized training through computer workstations was also compiled for notation.

Personal interviews and telephone questionnaires were conducted during the six-month period of the applied research project. The historical prospective was arrived by researching memos, training bulletins, and committee meeting minutes. The Training Chief as well as the Training staff were used for input towards the finalization of this report.

The literature review concentrated on two areas. First, the area of the type of multimedia used in training and the justifications and pitfalls to avoid. Second, examples of companies committed to furthering their businesses in multimedia use and their comments. The readers of this applied research project will be able to identify the names of well-known companies not for endorsement by the reviewer but for the recognition of.

Tri-county interviews and questionnaires show that the use of multimedia in the Fire Service to date is relatively new and not as advanced in concepts as commercial businesses or Military Services. Budget priorities have stalled some advancement in computer usage for training.

The Chief of OCFRD conducted an internal customer service survey in April of 1998 for all personnel. The survey showed that training was a target area for rebuilding after the downsizing that happened in 1995. From such surveys and committees formed by communications and training, the results were used to go forward in decentralizing and computer usage.

Definitions of Terms

ADLC. Advanced Distributive Learning Centers.

CBT. Computer Based Training.

CD-ROM. Compact disc read-only memory.

DL. Distance learning.

ED. Executive Development, the first class taken in part of the series of classes for the Executive Fire Officer Program at the National Fire Academy.

EFOF. Executive Fire Officer Program, a series of four classes taken at the Nation Fire Academy to prepare the fire executive for the 21st century.

EMS. Emergency Medical Services

EMT. Emergency Medical Technician

FEMA. Federal Emergency Management Agency

LAN. Local area network

MSDS. Material Safety Data Sheet

OCFRD. Orange County Fire Rescue Department

PC. Personal Computer

SMOC. Strategic Management of Change, the second class taken in part of the series of classes to prepare the fire executive for the 21st century.

WAN. Wide area network

Limitations

The limitations involved very little input from neighboring departments due to the edge of technology involved. Shared knowledge was not an activity that was participated in. The Fire Service reluctance or monetary restraints held the data used for comparison to a minimum. Big businesses that have spent millions of dollars in research and development were used to try and guide OCFRD in the proper way of conducting the use of advanced distributive learning centers (ADLC).

Research Methodology

The methodology employed was both historical and action research. As this was a long term project not all functions were available within the six month time frame. The historical prospective details the coming about of why computers were used to decentralize training and how the monies were obtained for such equipment. The action research was the actual buying of and deployment of learning stations and software and first testing of the systems in a real training mode.

RESULTS

Answers to Research Questions

This applied research project addressed three specific research questions. The results of that research are presented in order.

Research Question 1. What technology is available to support decentralized training for OCFRD?

The invention of the personal computer has led to many abilities of businesses to decentralize and use the PC for learning as well as conducting business. With the Internet

growing in usage, many accessories are available to the user. Huge databases and resources are at the user's fingertips. Computer based training can save money as demonstrated by the Canadian Police Department which saved \$70,000 over five years (Szabo, 2000). Laptops are portable and users recommend computer-based training (Kerr, M., Brosseau, L., Greer, C., and Dvorak, L., 1999). Many Departments rely heavily on Intranet training (Business Wire, 1997). Learning, and learning quickly is important if the training is going to stay fresh and up to date (Bassi, Cheney, Van Buren, 1997a). Using a PC connected to a network seems to be the logical answer to distribute information and knowledge (Department of Education, 2000a). With multimedia usage, is excellent for drills and repetitive tasks which is essential in the Fire Service (Department of Education, 2000c). If OCFRD goes to PC stations for training it would spread the trainers out into the field so to speak. Each PC will act as a teacher (Blankenhagen, 1998a).

Research Question 2. What guidelines were used by OCFRD?

Some research has showed what to do prior to spending money. Six such recommendations to look at are (Department of Education, 2000b):

1. The cost of installation (including networks needed). OCFRD received a capital improvement project budget approval for the installation of the Advanced Distributive Learning Centers.
2. Cost of daily operation, servicing and upkeep, and stockpiling spare parts
3. Continuous and persistent security. OCFRD elected to go with an Intranet and LAN system to stop hackers and people from seeing confidential material such as after action reviews and critiques.
4. The life span of equipment purchased. What we intended to use, PowerPoint Presentations, MacroMedia Software, streaming videos, all depended on the

transmission lines to the stations and have proven to be a major stumbling block as far as advancing as fast as hoped for.

5. Training staff at all levels. OCFRD does not have dedicated teachers who are experienced in publishing with authorware. The training staff can script, take the pictures, even the videos, but we have no one who is dedicated to assemble and publish what is needed. To possibly hire someone from the outside, a non-certified firefighter type, to do nothing but pump out programs. This would be more cost effective than trying to convert a certified firefighter into a field they know very little about and would need extensive training and continual courses to stay abreast of the changes in the computer field.
6. Designing programs, testing, and distributing, like software. As stated above, you must have personnel who can make it happen. Not only a programmer, but also technicians and installers who can go out to the fire stations and work on systems when out of service or install new software.

OCFRD used a computer committee of each bureau to steer the development of the advanced distributive learning centers.

Research Question 3. Are other similarly sized fire/emergency service organizations offering decentralized training using modern technology?

As the literature review shows, many businesses are using CBT for consistent training (Williams, 1998). As shown in the phone interviews with other County subject matter experts, see Appendix C, decentralized training is in its infancy. With growth and call loads increasing (Comprehensive Policy Plan, 1999a) other Fire Departments are looking for ways to decentralize

training also. Whether through satellite dishes, tower microwave sites, or some form of ADLC each County in the Tri-County area is trying to develop better methods of training delivery.

As reflected in the literature review, the other Counties in the Tri-County area were surveyed to see what they have done for similar problems that were displayed in this research project and what is in the future as far as the topic of the research. A blank interview page along with the detailed interviews is in exhibit C. To summarize the interviews for this section, specific questions were asked of each subject matter expert. To be able to compare different types of answers for future use and guidance, unbiased nonjudgmental questions were to be addressed and then evaluated for content. At no time was the interviewee told what Orange County was doing prior to the answer given by them.

Osceola County was asked twelve questions and the subject matter expert for that county was Kevin Yelvington. His area of expertise is the District Chief of Planning and Resource Management. He consented to a phone interview on December 6, 2000. Chief Yelvington's Fire Department is very long in design and travel is a concern. Each station has a computer but reporting done by them is on the Internet for fire reports and a Palm Pad in the rescues for EMS incident reporting. Training on the computer is very limited. Company Officers are in charge of individual station training and the computers are used to enter data for training hours done by the personnel. The computers are not linked together by a LAN but use the Internet for interconnection. No compact disc read-only memory (CD-ROM) training is currently done and training is done at a central location. No training personnel are trained on software to create programs. Chief Yelvington sees the future as possibly using radio towers for microwave distribution of training classes. Presently there are eight towers being used for the radio system and this type of delivery is being investigated. Budget restraints are a big concern due to rapid

growth and the need for more of the basic services and more fire stations. It was noted during the interview that Palm Pads are used for EMS incident reporting. The rescue crews do not have to return to the station and use the desktop computer for incidents. While enroute to the hospital the crew of the rescue can enter data. Upon delivery of patient at the hospital the crew can print the report and leave a copy there. This saves travel time and input of data. Going back to the Fire Station to do the report is not always practical for busier stations they may go on call after call. Back loads of reports are avoided this way.

Seminole County was the next phone interview. This county is not as big as Osceola but is denser in population and traffic. The interview was held on November 29, 2000. Battalion Chief Carter is the chief of technology and in charge of information systems for the county. Chief Carter has thirteen fire stations in the county as well as six cities, which total twenty-two stations. Each fire station has a computer and some have two. The computers are used for reports in the county and some cities use the PC for reporting also. The computers in the stations are used for training purposes and are linked together by a LAN. Seminole County has a program that lets them track training hours and personnel usage. CD-ROMs are used for training and the county has made their own. Some streaming video has been tried but is not the norm. Testing is conducted after the CD-ROM training class by printing the test from the CD-ROM and filling it out. The test is then turned in for grading and training credit. No training member is knowledgeable in authorware and the staff rotates in and out of training positions. Making it hard to stay on top of the newest delivery methods and continual changes. Futuristically, Chief Carter sees money as a big obstacle. Technology is not cheap and his suggestion is to plan each where and how step out thoroughly.

DISCUSSION

This study showed results related to others in the literature review and how OCFRD followed many of those companies in comparison. Such as the Army and needing to downsize and decentralize after the Vietnam era and placing training responsibilities directly on the units (Army, 1998a). OCFRD historically had already downsized in 1995. Having had a central training bureau, it was decided to decentralize the way training was being delivered, thus providing the action part of this research project. Another factor was the need to be cost effective in that delivery. As the CBT training in Canada with the police department saved over \$70,000 in five years (Szabo, 2000), OCFRD also hopes to save by not hiring outside trainers, producing our own CD-ROMS, and not having apparatus transverse Orange County for training to be conducted. Before anything could be done, just as the Department of Education did for South Africa, OCFRD had to find money somewhere to pay for the cost of installation, daily operation, security, training staff, and all the hardware and software purchases (Department of Education, 2000b). OCFRD communications bureau submitted a capital Improvement Project to the Board of County Commissioners under an impact fee ordinance. Not long ago, this would not been feasible. Impact fees could only be spent in specific areas, and not throughout the county for the good of the whole Fire Department. If a certain district grew, then the impact fee money generated from there could only be spent there. The equipment purchased had to stay in that district for three years. But as of this year, the Impact Fee Ordinance has been changed to accept broader purchasing. The Communications Bureau push for budgeting the ADLCs was the first to be used throughout the county for general use for the Fire Department. \$184,000 purchased the necessary computers, desks, and software. Certain delays occurred with the huge task of delivery of equipment to thirty-three fire stations within the district, plus not all stations

were equipped with adequate sized transmission lines. Too small for the massive delivery of the programs, until more expensive T1 lines are employed training will continue on CD-ROM discs and Intranet classes. The phone surveys respond to this problem also. Money for better transmission lines is a Tri-County problem. Budgeting adequate funds for this type of training is difficult with all the growth happening in the area as reported in the Comprehensive Plan and as reported by the phone interview with Osceola County.

This researcher felt that the results paralleled the general feelings of the results in that computers are going to be progressively more accountable for training needs. The results from OCFRD show the same as those in the literature review in that necessary training could be accomplished within a time frame and delivered in a decentralized fashion. OCFRD met its goal of bi-annually certifying all Emergency Medical Technicians (EMT) by using the ADLCs. Certification standards had to be met and verified and sent in by December 1, 2000. All personnel had to meet the requirements and not everyone needed the same classes or was available to go to classes in a centralized form. By utilizing the learning centers for individual classes, each individual could tailor make his time of class, type of class, and have the convenience of local tutoring. Bubble sheets and tests were sent in to the Training Bureau after each class for credit.

OCFRD delivers training by computers on an Intranet called FireNet. Several types of classes are available. Below are five examples from each category:

1. Company Instruction

- Automatic Sprinklers
- Garden Apartments
- Ladder Company Operations

- Rural Water Supply
 - Attic Fires
2. Self-Paced Study Classes
- Haz-Mat Operations
 - Capnography Highlights
 - Trauma Alert Criteria Adult and Pediatric
 - Glucometer
 - Carbon Monoxide Response
3. After Action Reviews
- Hickerson's Flowers Fire
 - Magic City Diner Fire
 - Rachel's Fire
 - Time Warner Fire
 - Overturned Tanker
4. Fire Loss Management Investigations
- Cypress Creek High School
 - Days Inn Fire
 - Beach Club Apartments
 - Comfort Suites
 - Oriental Grocery

Many other areas are being formulated. Such as the Photo gallery of action shots. EMS Supervisor Academy and EMS section. Each Bureau has a link on FireNet and you may ask questions on the site, and enter in the Discussion Group.

Further implications for OCFRD look bright but will not come without added costs. Better transmission lines are necessary to conduct training faster and smoother. More room on the server is necessary to store bigger programs used by Training. Teaching trainers or hiring a full time programmer to publish the necessary classes for computer dissemination.

RECOMMENDATIONS

Based upon this research, the following recommendations are made:

1. Further monies allocated to support the hardware already commented to the project. Specifically, the transmission lines to each station large enough to support programs already developed and to be developed in the future. Possibly T1 lines or fiberoptics.
2. A stand-alone server for Training programs only to preserve enough room for the future and storage of training developments to come in the future.
3. All trainers to be trained to operate authorware software. Realization that not just one person should be trained in this type of software if in fact the Department is going to utilize it.
4. If personnel are going to use personal computers for training, personal computer training must be deployed prior to the initiation of a new training format.
5. Because PowerPoint Presentations need to be fully loaded from the server to the station PC before it can operate, continue to develop authorware programs that will be received at the station in packets and open with the first page and continue to load. Too many data on the pipelines now to slow down the systems using this type of presentation.

6. Continue to develop the Intranet capabilities for added security, and control.
Less chance of a computer hacker entering the Intranet site versus an Internet site.
7. Possibly make an Intranet site specifically for Training needs. Presently the entire Department uses the site for all bureaus.
8. Training through television monitors in the stations. Currently using two 19” computer monitors. Cheaper to utilize existing hardware already in each station. Possible savings for those departments trying to initiate the same type of decentralized training and having budget constraints by using existing television monitors in the fire stations.

Using the Strategic Management of Change model will help narrow down the problem and the solutions available. Other Fire Departments can learn a lot before spending the first dollar as far as where the pitfalls have been with other businesses both commercially and militarily. Consider an outside consultant familiar with the needs tailored for each specific area of training or different Department and the purchasing of equipment that is user friendly and will not be outdated before inception.

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APPENDIX A

(Date)

TO: All Personnel

FROM: Mike Iacona, Fire Chief

SUBJECT: INTERNAL CUSTOMER SERVICE SURVEY

In our efforts to evaluate the service we provide, Orange County Fire and Rescue (OCFRD) will conduct surveys of our customers on an on-going basis. This survey is intended for our internal customers.

The following survey form is aimed at assessing customer satisfaction with services received from our various departments/sections *during the past quarter*. Your comments will be most helpful if they relate to those departments/sections with which you interacted and from which you requested /received specific services during the quarter under review. You are encouraged to make suggestions on ways in which these departments/sections can better meet your needs. Your name is not required unless you wish to be contacted about a concern or suggestion.

To assist us in making any changes required in a timely manner, we ask you to complete this form and return it to us as soon as possible. Forms should be returned via interoffice mail to:

Internal Customer Survey
Fire and Rescue Division Headquarters
6590 Amory Court, Winter Park FL 32792

Thank you for participating in this survey. If you have any questions, please contact OCFRD Quality Assurance at 836-9812.

MI/pr

ORANGE COUNTY FIRE AND RESCUE DIVISION ADMINISTRATION DEPARTMENT - INTERNAL CUSTOMER SERVICE SURVEY

ADMINISTRATION SECTIONS
the Administration Department:

Please complete this survey form if you received service from any of the following areas within

Finance	Inventory/Recordkeeping, Fiscal Coordination, Accounting
Employee Relations	Human Resources, Payroll , Benefits, Insurance, Clerical
Safety/Risk Mgmt. Clerical	Maintenance/Construction, Program Coordination, SCBA, Mail, Warehouse/Supply, Purchasing/Inv.,
Vehicle Maintenance	Purchasing/Inv.Coordination, Fire Tech, Clerical
Training/PIO	Training, Development, Life Safety Education, Clerical
9-1-1	MSAG Coordination, Clerical
Planning & Research	Planning/Research

Using the performance criteria set out below, please rate the Departments or sections that have actually served you. Take a moment to review the performance criteria and areas of the Department or section being assessed. On a scale between one and five (1-5), with (5) = Strongly Agree, (4) =Agree, (3) =Neutral (2) =Disagree, (1) = Strongly Disagree, please rate each section by the suggested criteria. Shade in the circle with the number that best matches your views. Additional comments and suggestions are welcome.

Courtesy:	I was greeted in a courteous and friendly manner.
Accessibility:	The division/section's personnel were available when needed.
Cooperation:	The division/section's personnel worked with me to meet my needs and resolve problems.
Competence:	I am satisfied that I received competent service backed by thorough knowledge of the job.
Timeliness:	The division/section's personnel demonstrated that my time is valued, by responding promptly and efficiently.
Communication:	The division/section's personnel listened, understood, and responded appropriately to my requests.
Consistency:	The service provided was in keeping with normal, established, acceptable standards.

(5) = Strongly Agree, (4) =Agree, (3) =Neutral (2) =Disagree, (1) = Strongly Disagree, (0) = Not Applicable

Section	Courtesy	Accessibility Communication	Cooperation	Competence Consistency	Timeliness	
Finance	5 4 3 2 1 0	5 4 3 2 1 0 2 1 0	5 4 3 2 1 0 5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3
Employ ee Rel.	5 4 3 2 1 0	5 4 3 2 1 0 4 3 2 1 0	5 4 3 2 1 0 5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0	5
Safety/Risk Mgmt	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0 1 0 5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2
Vehicle Maint.	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0 1 0 5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2
Training	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0 1 0 5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2
Planning & Res.	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0 1 0 5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2
9-1-1	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0 1 0 5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2 1 0	5 4 3 2

Would you say that service received improved, declined or stayed the same in the past year?
Improved _____ Declined _____ Stayed the same _____ N/A _____

Overall, are you satisfied with the level of service received?
Yes _____ No _____ Not Sure _____

Comments/Suggestions

Name (optional) _____ Address or Department/Division

(optional) _____ Tel:(optional) _____

NOTES: INTERNAL SURVEY**CUSTOMER SERVICE PERFORMANCE CRITERIA**

Using the performance criteria set out below, please rate the Departments or sections that have actually served you. Take a moment to review the performance criteria and areas of the Department or section being assessed. On a scale between one and five (1-5), with (5) = Strongly Agree, (4) = Agree, (3) = Neutral (2) = Disagree, (1) = Strongly Disagree, please rate each section by the suggested criteria. Shade in the circle with the number that best matches your views. Additional comments and suggestions are welcome.

Courtesy:	I was greeted in a courteous and friendly manner.
Accessibility:	The division/section's personnel were available when needed.
Cooperation:	The division/section's personnel worked with me to meet my needs and resolve problems.
Competence:	I am satisfied that I received competent service backed by thorough knowledge of the job.
Timeliness:	The division/section's personnel demonstrated that my time is valued, by responding promptly and efficiently.
Communication:	The division/section's personnel listened, understood, and responded appropriately to my requests.
Consistency:	The service provided was in keeping with normal, established, acceptable standards.

ADMINISTRATION SECTIONS:

Finance	Inventory/Recordkeeping, Fiscal Coordination, Accounting
Employee Relations	Human Resources, Payroll, Benefits, Insurance, Clerical
Safety/Risk Mgmt. Clerical	Maintenance/Construction, Program Coordination, SCBA, Mail, Warehouse/Supply, Purchasing/Inv.,
Vehicle Maintenance	Purchasing/Inv. Coordination, Fire Tech, Clerical
Training/PIO	Training, Development, Life Safety Education, Clerical
9-1-1	MSAG Coordination, Clerical
Planning & Research	Planning/Research

Forms should be returned via interoffice mail to:

**Internal Customer Service Survey
Orange County Fire and Rescue Division
6590 Amory Court, Winter Park FL 32792**

APPENDIX B
PHONE INTERVIEW:
QUESTIONS

Decentralized Training by Using Advanced Distributive Learning Centers

1. Name of county you serve and present assignment with that county?
2. How large of an area does the county cover and how many fire stations?
3. Does each station have a computer? More than one?
4. Is this computer used for doing either EMS or fire reports?
5. Is this computer used for training purposes?
6. Does the computer track training hours and personnel?
7. Are the computers linked together by either a LAN or WAN?
8. Does your department use CD-ROMs for training? Do you make your own training CDs?
9. Do you use streaming videos?
10. Can training tests be administered through the computers?
11. Do you have personnel in training who are technically trained for running computer programs such as authorware? Hardware and software maintenance?
12. Futuristically, do you see your department training bureau using more computer-based training? If so, are you looking to decentralize training more to the station locations?

APPENDIX B

PHONE INTERVIEW: OSCEOLA COUNTY

1. Name of county you serve and present assignment with that county? Osceola County, District Chief of Planning and Resource Management.
2. How large of an area does the county cover and how many fire stations? Osceola County is 1490 square miles and has seventeen fire stations.
3. Does each station have a computer? More than one? Every station has one and half have two computers.
4. Is this computer used for doing either EMS or fire reports? Fire reports are done on the station computers and the EMS reports are done on palm pads in the rescues.
5. Is this computer used for training purposes? No, only used to document training that is taught by either the station Lieutenants or training bureau.
6. Does the computer track training hours and personnel? Only data that is self entered.
7. Are the computers linked together by either a LAN or WAN? The computers are on a WAN, a dial up network with the provider Sunpro.
8. Does your department use CD-ROMs for training? Do you make your own training CDs?
No to both answers.
9. Do you use streaming videos? No.
10. Can training tests be administered through the computers? No.
11. Do you have personnel in training who are technically trained for running computer programs such as authorware? Hardware and software maintenance? No one with the Fire Department is trained in developing authorware programs. The county has an Informational Services Bureau that has trained personnel.

12. Futuristically, do you see your department training bureau using more computer-based training? If so, are you looking to decentralize training more to the station locations? An on-line learning center is in the future. Looking at using the existing radio towers with microwave capabilities to transmit classes by digital signal. Possibly use the cable that come from the local television service to transmit Internet classes at a faster pace. The big problem is money which is tied up because of rapid growth and trying to build stations for basic fire protection. Our use of Palm Pads help the paramedics do reports in the vehicles and can print the reports at the hospital. The pen based report recorders were received by a EMS grant and the company making the pads, Westec, used Osceola County as a demonstration site saving the county even more money.

APPENDIX B

PHONE INTERVIEW: SEMINOLE COUNTY

1. Name of county you serve and present assignment with that county? Seminole County.
Present job classification is Battalion Chief of Technologies responsible for Information Systems.
2. How large of an area does the county cover and how many fire stations? Cover 355 square miles with 13 county fire stations and 6 cities with 22 fire stations.
3. Does each station have a computer? More than one? Yes each station has a computer and some have more than one.
4. Is this computer used for doing either EMS or fire reports? The county stations do both on computer and some of the city stations do also.
5. Is this computer used for training purposes? Yes
6. Does the computer track training hours and personnel? We have a program that does tracking of personnel.
7. Are the computers linked together by either a LAN or WAN? Yes
8. Does your department use CD-ROMs for training? Do you make your own training CDs? Yes we use and make our own CD-ROMs.
9. Do you use streaming videos? Training does some videos.
10. Can training tests be administered through the computers? The CD-ROM used for training has a test on it; they are printed, filled out by the personnel, and turned in.
11. Do you have personnel in training who are technically trained for running computer programs such as authorware? Hardware and software maintenance? No one in training

has the ability to use authorware; rotation through the training bureau of every 18-24 months makes it hard to have someone who is consistent with skills in such software.

12. Futuristically, do you see your department training bureau using more computer-based training? If so, are you looking to decentralize training more to the station locations?

Yes, Seminole County is moving more and more towards computers for meeting training needs. Decentralization is occurring and will continue to do so. Some of the newer technologies to be employed are web-based training. Having the Cable Company let the Fire Department use a local channel for video. This type of training, using computer technology, should be very well planned out. Base each move on where and how steps. Technology is not cheap and a lot of the problems encountered can be avoided by good through planning.

APPENDIX C

FINAL PRODUCT

The Advanced Distributive Learning Centers consist of separate units for each station. The processors used are 750 MHz Pentium III chips. Each center comes equipped with a 15-gigabyte hard drive, 256 K ram of memory, 2-19” monitors, a DVD-CD reader, 256 cache, and with integrated Yamaha Audio.



This picture depicts an ADLC at Fire Station 30 in OCFRD. Each of the thirty-three centers is located in different areas of the Fire Stations to accommodate the equipment and promote a sense of tranquility for studying.