

**Department of Homeland Security
Federal Emergency Management Agency
U.S. Fire Administration
Board of Visitors for the National Fire Academy
Sept. 18-19, 2014
Building H, Room 300**

Attendees:

The following Board of Visitors (BOV) for the National Fire Academy (NFA) members were present for the meeting:

Mr. Adam Thiel (Chairman)
Deputy Secretary of Public Safety and
Homeland Security
Commonwealth of Virginia
1111 East Broad St., 3rd Floor
Richmond, VA 23219

Dr. Manuel Fonseca
Assistant Chief
Nashville Fire Department
63 Hermitage Ave.
Nashville, TN 37210

Mr. Robert Cumberland
Director for Maryland
Cumberland Valley Volunteer Firemen's
Association
222 Shipley Ave.
Westminister, MD 21157

Chief Kwame Cooper
Assistant Chief
Los Angeles City Fire Department
3010 Wilshire Blvd., Suite 453
Los Angeles, CA 90010

Mr. Randy Novak (Vice Chairman)
Bureau Chief
Iowa Fire Service Training
3100 Fire Service Road
Ames, IA 50011-3100

Battalion Chief Jack Reall
President, Columbus Firefighters Union
International Association of Fire Fighters 67
379 West Broad St.
Columbus, OH 43215

Chief Steven Westermann
Central Jackson County Fire Protection
District
805 NE Jefferson
Blue Springs, MO 64014

The following board member was not present:

Mr. Chris Neal
Senior Executive Advisor
Oklahoma Council on Firefighter Training
13801 South Western
Edmond, OK 73025

Federal Emergency Management Agency (FEMA)/U.S. Fire Administration (USFA)/NFA staff in attendance:

Mr. Ken Farmer, Chief, Education, Training and Partnerships Section, NFA
Mr. Al Fluman, Director, NETC Management, Operations and Support Services (MOSS)
Ms. Alex Furr, Director, National Fire Programs, USFA
Chief Glenn Gaines, Deputy Fire Administrator, USFA
Dr. Kirby Kiefer, Deputy Superintendent, Administration and Delivery Branch, NFA
Mr. Mike McCabe, Education Program Specialist, NFA
Ms. Ruth MacPhail, Secretary, NFA
Chief Ernest Mitchell, Fire Administrator, USFA
Mr. Rob Neale, Deputy Superintendent, Curriculum and Instruction Branch, NFA
Ms. Cindy Wivell, Training Technician, NFA

September 17

Convene BOV Meeting/Welcome

Mr. Adam Thiel, Chairman, BOV

Chief Ernest Mitchell, Fire Administrator, USFA

Chief Glenn Gaines, Deputy Fire Administrator, USFA

Dr. Kirby Kiefer, Deputy Superintendent, NFA

Mr. Thiel convened the meeting of the BOV for the NFA. Dr. Kirby Kiefer was the designated federal official. Mr. Chris Neal was unable to attend the meeting or participate via teleconference.

Chief Mitchell spoke to the group and thanked the board members for their continued work and support of the NFA. He looks forward to continuing his work with the board. Chief Mitchell stated that Dr. Denis Onieal could not be present at the meeting due to a family situation. He asked that everyone sends thoughts and well wishes to him in his absence.

Chief Gaines stated that there are nine classes currently in session, as well as a few Emergency Management Institute classes this week. USFA continues to be a vibrant, forward-leaning organization. He asked that any concerns be expressed so that changes can be made if necessary.

Dr. Kiefer stated that there is time scheduled on the agenda for classroom visits. There are currently two pilot classes running. Dr. Kiefer also mentioned Dr. Onieal and asked everyone to keep him and his family in their thoughts and prayers. Dr. Kiefer asked Mr. Jack Reall if he would be interested in giving the graduation address, as this will be his last meeting on the board.

Selection of Board Officers for FY2015

Mr. Randy Novak entertained motions for the chairman position. Mr. Bob Cumberland motioned for Mr. Thiel to remain chairman. All were in favor.

Mr. Thiel entertained motions for the vice chairman position. Mr. Cumberland motioned for Mr. Novak to remain vice chairman. All were in favor.

Mr. Thiel praised the board for receiving recognition by the Department of Homeland Security (DHS) Committee Management Officer. Ms. Cindy Wivell read and displayed the certificate to the board.

NFA Update

Dr. Kirby Kiefer, Deputy Superintendent, NFA

Mr. Rob Neale, Deputy Superintendent, NFA

Mr. Neale and Dr. Kiefer reported to the group using a handout on NFA updates.

- **Managing Officer Program:** There is extremely high interest in this program from students and contract instructors. More than 25 presentations explaining the program have been made. The application process starts Oct. 15. Classes have been scheduled for three sets in May and three sets in August. Students have expressed their concern about the ability to obtain the “Shaping the Future” and Leadership I, II and III courses. They have been encouraged to reach out to their state training program to obtain these courses. The “Shaping the Future” course has also been updated and a pilot has been run. When the new material is available, it will be posted to state and local websites for download.
- **Staff changes:** There are substantial changes in the Curriculum and Instruction Branch staff. There continues to be administrative challenges in filling these positions. It is unlikely that a lot of new course development will take place until these positions can be filled. Mr. Ken Farmer will be taking Mr. Ed Kaplan’s position and covering the Training Resources and Data Exchange (TRADE), Fire and Emergency Services Higher Education (FESHE), and NFA Online areas.
- **Course status report:** Course development information has been migrated to the FEMA Enterprise Shared Workspace. Staff can obtain the latest course development and revision progress. A course status report template for real-time course updates is in development and currently being beta tested.
- **Distance learning influences:** A white paper was developed to submit to the President’s Office of Management and Budget in regards to the analysis of using a training facility versus online training. The white paper was submitted, and there has been no response as of yet.
- **Field Operations Guide (FOG):** A digital form of the FOG was created that could be accessed by all desktop computers, tablets and smartphone versions. The distribution of the “app” is currently on hold pending a memorandum agreement with Firefighting Resources of California Organized for Potential Emergencies. The NFA is currently working on developing a similar electronic manual for fire and arson investigation with the Bureau of Alcohol, Tobacco, Firearms and Explosives.

- Executive Fire Officer Symposium: The symposium was held Sept. 4-6, 2014, with the topic based on influence of the Affordable Care Act on fire and Emergency Medical Services. There were approximately 200 participants.
- Back-to-back deliveries/One-stipend initiative: The cost to bring students to the NFA for six-day courses is the same as a 10-day course. Common interest classes were paired up so students can be here for two weeks and take two classes instead of just one. This is the same model as that is to be used for the Managing Officer Program. Two rounds of classes using the new curriculum have been scheduled for May and August. These courses are identified in the handout given by Dr. Kiefer.
- NFA Online: This supports more than 42 individual courses and 28 Coffee Break Trainings. To date, there are over 30,000 student course completions. NFA Online continues to develop and support courses with the National Wildfire Coordinating Group.
- Bring Your Own Device (BYOD): Approximately 30 percent of NFA resident courses have been converted to BYOD format. The goal is to have 80 percent converted by the end of FY2015. The savings from reduced printing costs is around \$250 per class and \$30,000 per year. NFA has developed a prototype classroom in J101 where there are tables designed to accommodate electrical outlets for personal computers, LAN computer stands, and new chairs.
- Wi-Fi: This has been installed and is up and running. There have been some small issues. We are behind the FEMA firewall, so there are some issues with personal downloads from sites blocked by FEMA IT Security. Signal strength issues are being handled by Ms. Valerie Benson and Mr. Al Fluman. Chief Reall stated that Wi-Fi is such a huge success for this campus. He feared that if Wi-Fi was not installed, there would be many major issues with attracting people to the campus.
- A 2-day, blended learning fire arson curriculum class was piloted where a portion of the class was done online prior to the beginning of the class.

USFA Data, Research and Response Support Initiatives

Ms. Alex Furr, Director, National Fire Programs, USFA

Ms. Alex Furr reported to the group on the headlines from the National Fire Programs Division.

- Statistical reports.
 - Provisional Firefighter Fatalities (2013).
 - Residential Building Electrical Fires.
 - School Building Fires.
- Statistical reports pending release.
 - USFA Fire Estimate Summary Series (2003-2012).
 - Residential Building Fires.

- Civilian Fire Fatalities in Residential Buildings.
 - One- and Two-Family Residential Building Fires.
 - Multifamily Residential Building Fires.
 - Civilian Fire Injuries in Residential Buildings.
 - State Fire Death Rates and Relative Risk.
 - Trends in Child Fire Death Rates.
 - Trends in Overall Fire Death Rate.
 - Trends in Older Adult Fire Death Rates.
 - 2013 Firefighter Fatality Study (99 on-duty and seven hometown heroes).
- Smart Smoke Alarm Prototype Testing: passed preliminary fire tests (for single station and multi-station smoke detectors) and performed well with nuisance tests. Only alarmed for dangerous conditions.
 - Voice Radio Communications Guide for the Fire Service: updating 2008 edition to keep up with the rapid changes in communications technology. Incorporating additional technology, such as video and data, into public safety communications, while ensuring mission-critical voice capabilities.
 - PARADE webinar with International Association of Fire Chiefs: to be held Sept. 25 at 2 p.m. Discussing hot topics from USFA research and technology, including National Safety Culture Change Initiative, Study of Cancer Among Firefighters, emergency vehicle safety, smoke alarms, and Protective Equipment Thermal Protection Studies. Register for webinar at <http://iafc.org/Education/Events.cfm?itemnumber=7937>.
 - Fire is Everyone's Fight™: is a national initiative uniting the USFA and its partners and supporters in encouraging everyone to take steps to protect themselves and those they love from home fires. FIEF currently has 763 supporters, including 445 fire departments and 318 organizations, of which 36 are state fire marshal's offices. There are 248 supporters who have signed up for the online community of practice through which they will receive and send messages, access resources, etc. Of the eight organizations represented by the BOV members, only two (Nashville Fire Department and Central Jackson County Fire Protection District) are signed on as FIEF supporters/ participants. Signing up is easy. Just go to <http://www.usfa.fema.gov/prevention/outreach/fief/>
 - Train-the-Trainer for All-Hazards Incident Management Team Facilitators: scheduled for Sept. 29 through Oct. 2. The class had 225 applicants from 42 states. There are 60 participants for the class, with at least one from each of the 42 states and one tribal nation. Representatives attending include fire service, emergency management, local government and law enforcement. There were eight states with no applicants: Alabama, Maine, Massachusetts, Mississippi, New Mexico, North Dakota, South Carolina and Vermont.
 - Urban Search and Rescue (US&R) Task Force Assessment for Types 2 and 3: obtaining information on nonfederal specialized rescue resources that might be available to support a national catastrophic event. Assessment sent to all 50 states. Great level of support from

11 states identifying 28 Type 2 and Type 3 US&R teams at the state level. Will continue in preliminary phase of this assessment.

The board members suggested several items that could be used for further statistical reports, including the economic impact of fire, firefighter suicide and post-traumatic stress, and the decline in volunteer service.

BOV Professional Development Subcommittee

Mr. Adam Thiel, Subcommittee Chairman

Mr. Ken Famer, Chief, Education, Training and Partnerships Section, NFA

Mr. Mike McCabe, Education Program Specialist, NFA

Mr. McCabe addressed the group about the Professional Development Symposium held in June. There were 198 attendees with no stipends for travel. There were 52 learning opportunities presented at the symposium and eight presentations that were telecast. The TRADE representation was below what was hoped. Mr. McCabe stated that they are trying to find ways to get TRADE more involved. Dr. Onieal had previously suggested that the TRADE and FESHE folks provide their own workshops, presenters and topics of interest at the next symposium. There is also a need to be more responsive to the states. Mr. Thiel stated that there is a good opportunity to incorporate Lamppost and the TRADEing Post back into the symposium along with the off-site vendors, such as the publishers, that were very beneficial in the past years. The target is to have the 2015 symposium preliminary agenda by January. The next symposium is scheduled for June 9-13, 2015.

Mr. Thiel discussed ensuring that all of the relevant stakeholders are involved in the professional development organization. This involves many organizations, as well as other inputs and suggestions. Mr. McCabe stated that there is a virtual work space set up to cut down on the amount of meetings that need to be held. This work space also helps with information sharing.

Mr. McCabe stated that the USFA Professional Development Initiative Steering Committee held its first formal teleconference on Aug. 7, 2014. There have been several work groups established. The committee adopted the membership criteria that were drafted and agreed upon at the symposium. The next committee meeting is scheduled for Oct. 14.

Mr. McCabe reported that the FESHE recognition program has 77 colleges and universities recognized as teaching the core curriculum. Last semester, there were over 1,000 applications received from students.

Ethics Training

Mr. David Whitman, Deputy Associate Chief Counsel, Office of Chief Counsel, FEMA

Ms. Lauren Jacobs, Office of Chief Counsel, FEMA

Annual ethics training was conducted by Mr. David Whitman. Assisting him was Ms. Lauren Jacobs, another ethics attorney from FEMA's Office of Chief Counsel.

**Deferred Maintenance and Capital Improvements/on the NETC Campus
FY2015 Budget Request/Budget Planning
Mr. Al Fluman, Director, NETC MOSS**

Mr. Fluman briefed the board on the budget, deferred maintenance, and capital improvements using a PowerPoint handout.

Mr. Fluman stated that the grounds crew is currently preparing for the National Fallen Fire Fighters Memorial. By next week, he is hoping to have the grounds fully prepared, which will be a few weeks ahead of schedule. Mr. Fluman also stated that the roof project on Building N is almost completed. The scaffolding is being removed this week, and the areas that need to be completed on the front of the building will be done using lifts to avoid more scaffolding.

Included in the handouts given to the board is an operation capacity enhancement chart. This is a review of bed capacity from January 2013 to August 2014. It lists the number of beds occupied and the percentage of capacity. The long-term goal is 357 beds filled daily or 85 percent capacity.

2014 facility improvements/updates:

- Temporary kitchen is gone and all dining hall renovations are complete. Some updates over the past few weeks on the service line. Received suggestions on adjustments that could be made.
- Installation of surge protection on generator transfer switches in Buildings P, M, L, F, D, C-West, C-East, B and S.
- Paving completed in areas around Buildings G, H, J and K.

2014/2015 funded projects:

- Installation of new main water line expected to start in fall of 2014. Current line is fed from Seton Avenue through Daughters of Charity property. The new line will come down Main Avenue. The holdup on starting the project has been the sidewalk on Seton Avenue and who is responsible if damaged.
- Building A elevator upgrade and Americans with Disabilities Act (ADA) suite renovation.
- Building B restroom renovation and roof repair.
- Building D ADA suite renovation.
- Classroom lighting fixtures.
- Building K step repair.

- Building R office space renovation.
- Campus exterior lighting upgrades.
- Occupancy sensors in staff offices.
- Building O roof repair.
- Building C-West heating, ventilating, and air conditioning (HVAC) upgrade. This project should begin in January and hoping to only have to take out 33 rooms at one time.

Mr. Fluman stated that other areas of interest in the next several years could possibly be sewer system and telephone system updates.

Chief Gaines and Mr. Fluman accepted the DHS Sustainable Practice Award, which NETC received for FY2013 sustainable practices. Due to the renovations and improvements that have been made, the campus is looking at saving over \$700,000 next year.

The FY2015 base budget has been set at \$41,407,000. Mr. Fluman stated that the capital improvements and facility deferred maintenance is a robust list containing over \$20 million. He stated that the large projects for FY2015 include Building S HVAC replacement, critical log cabin repairs, storm drain repairs, and Phase 1 of the radio system replacement. The FEMA Mission and Support Bureau may help in the funding of the new radio system.

Mr. Fluman also mentioned that there is a plan set up for expansion of campus if necessary. An additional 23 acres of land from the Daughters of Charity would be purchased if there was a need for expansion in the future. There are plans in place and drawn up if the need should ever arise.

Mr. Thiel adjourned the meeting and requested that an agenda change be noted. The scheduled report writing session will be moved to 9 a.m., and the classroom visits will be moved to 1 p.m.

September 19

Mr. Thiel reconvened the meeting at 8:30 a.m. The Board members collectively drafted the annual report for FY2014 and recessed at 11:15 a.m., agreeing to reconvene at 1:00 p.m. Upon a motion by Mr. Randy Novak and a second by Chief Kwame Cooper, the Board approved the final draft report.

Mr. Novak moved to adjourn the meeting, Chief Manuel Fonseca seconded. The Board members agreed to adjourn at 2:00 p.m. The individual Board members proceeded to visit classes in the afternoon and attend graduation at 4:00 p.m. where Chief Reall would address the students.

**Board of Visitors for the National Fire Academy
Meeting Agenda
September 18-19, 2014
H-300**

September 18:

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|--------------------------|---|
| <p>8:30 a.m.</p> | <p>Convene BOV Meeting/Welcome Mr. Adam Thiel, Chair, Board of Visitors Chief Ernest Mitchell, Fire Administrator, U.S. Fire Administration Chief Glenn Gaines, Deputy Fire Administrator, U.S. Fire Administration Dr. Denis Onieal, Superintendent, National Fire Academy</p> <p>Selection of Board Officers for FY2015 Chairperson / Vice Chairperson</p> <p>BOV NFA Recognition by Department of Homeland Security Committee Management Officer</p> |
| <p>9:00 a.m.</p> | <p>National Fire Academy Activities Dr. Denis Onieal, Superintendent Dr. Kirby Kiefer, Deputy Superintendent Mr. Robert Neale, Deputy Superintendent</p> <ul style="list-style-type: none"> • Managing Officer Program Progress • Executive Fire Officer Program Symposium • Back-to-Back Deliveries/One Stipend Initiative • Fiscal Year 2015 Curriculum Development • Curriculum Enterprise Shared Workspace • National Fire Academy Online • Mediated Deliveries • Bring Your Own Device • Fire and Emergency Services Higher Education Recognition Program <p>Public Comments / Deliberations/Voting on Recommendations</p> |
| <p>11:00 a.m.</p> | <p>USFA Data, Research and Response Support Initiatives Ms. Alex Furr, Director, National Fire Programs</p> <p>Public Comments / Deliberation/Voting on Recommendations</p> |
| <p>11:30 a.m.</p> | <p>Recess</p> |
| <p>1:00 p.m.</p> | <p>BOV Professional Development Subcommittee Chief Adam Thiel, Subcommittee Chair Mr. Ken Farmer, Chief, Education, Training, and Partnerships Section Mr. Mike McCabe, Education, Training, and Partnerships Section</p> <ul style="list-style-type: none"> • Professional Development Symposium • Work Group Guidelines <p>Public Comments / Deliberations/Voting on Recommendations</p> |

September 18 (continued):

| | |
|------------------|---|
| 1:30 p.m. | Ethics Training Mr. Tony San Martin, Office of Chief Counsel Public Comments / Deliberations/Voting on Recommendations |
| 3:00 p.m. | Deferred Maintenance and Capital Improvements on the NETC Campus FY 2015 Budget Request/Budget Planning Mr. Albert Fluman , Chief of MOSS <ul style="list-style-type: none">• Campus Tour of Capital Improvements Public Comments / Deliberations/Voting on Recommendations |
| 5:00 p.m. | Recess |

September 19:

| | |
|---------------------------------|--|
| 8:30 a.m. | Reconvene |
| 9:00 a.m. | Visit Classrooms |
| 11:30 a.m. | Recess |
| 1:00 p.m.- 5:00 p.m. | Reconvene / Report Writing Session Public Comments / Deliberations/Voting on Recommendations |

BOARD OF VISITORS

For Period Ending: August 30, 2014

- *Managing Officer Program.* Interest in the Managing Officer program remains high among students and contract instructors. Staff has made more than 25 presentations explaining the program and has fielded many telephone calls and emails from interested persons.

The four resident courses are in revision/development:

- *Applications of Community Risk Reduction* (R0385)
- *Contemporary Training Concepts for Fire and EMS* (R0386)
- *Transitional Safety Leadership* (R0384)
- *Analytical Tools for Decision-Making* (R0387)

Many students have expressed concern about their ability to obtain the *Leadership I, II, III* and *Shaping the Future* courses through their state fire service training programs. All have been encouraged to reach out to their state fire service training programs to obtain the courses. Likewise, the state fire service training program directors have been briefed they should expect an increase in requests for the courses.

- *Staff Changes.* There have been substantial changes in the Curriculum and Instruction Branch staff since the last report:
 - Program Support Jean Harkins transferred to the Department of Labor, Bureau of Labor Statistics. Terri Little has filled the vacancy created by Ms. Harkin's departure.
 - Leadership and Fire Risk Reduction Section Chief Ken Farmer has been transferred to fill the section chief vacancy created by Ed Kaplan's retirement from Education and Training Partnerships.
 - Arson Training Specialist Mike Donahue transferred to the Department of Transportation, Pipeline and Hazardous Materials Safety Administration.
 - Program Support Debra Gartrell-Kemp assumed full-time duties and transferred to Education and Training Partnerships.
 - Management Science Training Specialist Burt Clark retired
 - Response Section Chief Loney Nunemaker has been named Deputy Director, Division of Human Resource Development, Office of Regulatory Affairs for the Food and Drug Administration.

We continue to have substantial administrative challenges filling vacancies.

- *Course Status Report.* Course development information has been migrated to the FEMA "Enterprise Shared Workspace" where staff can obtain the latest progress information on course development and revisions. A new "Course Status Report" template is in development

BRIEFING REPORT

U. S. Fire Administration – National Fire Academy
Curriculum and Instruction Branch

September 12, 2014

that will provide an up-to-the minute report of project status. The template is in beta testing at this time.

- *Student Intern.* In FY 2014, we have had a single intern from Lansing Community College (Michigan) who entered the program hoping to learn more about emergency medical services, and left – after attending the Fire Arson Origin and Cause Investigation course – with a passionate interest in fire protection engineering. We continue to recruit students for internships at any time of the year.

- *Distance Learning Influences.* The President’s Office of Management and Budget examiner for USFA/NFA and the Department of Homeland Security tasked NFA to:

submit a white paper to explain the analysis for maintaining an in-person training facility vs. moving all training online. [It] should explain the mission impacts (e.g., training is expensive but not training is more expensive – how do we explain this?). Is there the possibility that USFA can end any training that is available or duplicative at the state and local level (whether we reduce the budget by the amount ‘saved’ or alternately, have additional course offerings for things only we teach or teach best).

A copy of the NFA response “Challenges for Today’s National Fire Academy: Evolving Adult Education and Training Delivery Methods” is attached to this report.

- *Off Network Educational Development Server.* The educational development server that will be used to develop and pilot electronic tools for course support is installed and awaiting connection to the World Wide Web. We are awaiting installation of fully functional campus-wide wireless internet access in conjunction with a new internet service provider for NETC. This has been an eight-year process.
- *Distance Learning Initiatives.* NFA has expanded its distance learning initiatives. During FY 2014, NFA released 120 separate Coffee Break Training items to offering 55,652 registrants 6.67 million non-credit subscription learning opportunities.

BRIEFING REPORT

U. S. Fire Administration – National Fire Academy
Curriculum and Instruction Branch

September 12, 2014

| Training Series | Number Posted |
|--------------------------------------|---------------|
| Command and Control | 11 |
| Community Risk Reduction | 17 |
| Emergency Medical Services | 6 |
| Executive Development | 1 |
| Fire Prevention and Public Education | 12 |
| Fire Protection | 54 |
| Fire Investigation | 9 |
| Hazardous Materials | 1 |
| NFIRS* | 1 |
| Responder Health and Safety | 1 |
| Training Programs | 5 |
| Hot Coffee | 1 |
| Total | 120 |

*NFIRS Series has been replaced by a weekly series published by the National Fire Data Center and will no longer be published under the Coffee Break Training template.

NFA also piloted three online asynchronous mediated courses:

- *Challenges of the Future I: Community, Political Landscape and Workforce* (C0562)
- *Challenges of the Future II: Technology* (C0563)
- *Challenges of the Future III: Emergency Medical Services* (C0564)

The following online asynchronous mediated courses are developed, awaiting learning management system access to pilot:

- *Fire Protection Case Studies I: Case Study Framework* (C0592)
- *Fire Protection Case Studies II: Cooperative Research and Results* (C0593)
- *Fire Protection Case Studies III: Remediation Strategies* (C0594)
- *Code Administration Fundamentals I: Duties and Responsibilities* (C0567)
- *Code Administration Fundamentals II: Authorities, Liabilities and Controls* (C0568)
- *Code Administration Fundamentals III: Improving Code Enforcement* (C0569)

The following online self-study courses have been released or are in pilot review:

- *Hazardous Materials Code Enforcement*

BRIEFING REPORT

U. S. Fire Administration – National Fire Academy
Curriculum and Instruction Branch

September 12, 2014

- *Fire Investigation Unit Management (Q0213)*
- *Introduction to Fire Behavior, Tests and Models*

The following blended learning courses have been released or are in pilot review:

- *Initial Fire Investigation for First Responders (F/W 0379)* with a 6-8 hour online pre-requisite component and a two- day classroom delivery.

The following two-day courses have been released or are in pilot review:

- *Wildland Urban Interface: Evacuation Planning and Procedures*
 - *Wildland Urban Interface: Communication and Collaboration*
 - *Wildland Urban Interface: Funding Your Fire Adapted Community*
-
- *Field Operations Guide Electronic Performance Support System (EPSS)*. NFA has created digital form of the pocket Field Operations Guide (FOG) as a subset to the Incident Command System. Staff created functioning digital versions of the FOG that can be accessed by all desktop computers, tablet and smartphone versions. The distribution of the “app” currently is on hold pending a memorandum of agreement with FIREScope.
- NFA currently is working in partnership with the Bureau of Alcohol, Tobacco, Firearms and Explosives to develop an EPSS for fire and arson investigations.
- *Burn Range Improvements*. NFA has begun long-term improvement plan for paving, rearranging the space, a new classroom for electrical, and general upgrade of existing buildings. We will use end of year money and phase the project over several years.
-
- *Executive Fire Officer Symposium*. The 26th Annual Executive Fire Officer Symposium (September 4-6) employed a thematic approach to the influence of the Patient Protection and Affordable Care Act on the fire and emergency medical services. Approximately 200 persons attend the Symposium.
-
- *State Weekend Programs (SWP)*. SWP continue to be success with 21 states scheduled for FY 2014-2015 with more 1,300 students estimated to attend.

BRIEFING REPORT

*U. S. Fire Administration – National Fire Academy
Curriculum and Instruction Branch*

September 12, 2014

Fiscal Year 2015 Plans

- *FY 2015 Curriculum Development Guidance.* Curriculum guidance for Fiscal Year 2015 is “repurpose,” “repackage,” and “redeliver.” Training Specialists and Instructional Systems Specialists have been asked to look at new ways to deliver existing content including a combination of face-to-face instruction, paper-based and electronic self-study, blended learning¹, asynchronous and synchronous mediated learning, social media (Web 2.0) and mobile learning to achieve their instructional objectives. The goals of this effort are to reach larger segments of our constituencies, to conserve ever-shrinking course development resources by allowing us to put resources into areas that need the most attention.

Attachment (1)

¹ A “blended learning” course involves pre- or post-classroom work in an online environment.

U.S. Fire Administration

National Fire Academy

*Challenges for Today's National Fire Academy: Evolving
Adult Education and Training Delivery Methods*



February 6, 2014

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**U.S. FIRE ADMINISTRATION
NATIONAL FIRE ACADEMY**

*Challenges for Today’s National Fire Academy:
Evolving Adult Education and Training Delivery Methods
February 6, 2014*

WHITE PAPER

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Executive Summary

The U.S. Fire Administration National Fire Academy (NFA) was tasked as part of a Fiscal Year (FY) 2013 Federal Emergency Management Agency (FEMA) Decision Document to submit a White Paper explaining the analysis for maintaining an in-person training facility compared to moving all training online, including the impact on mission, training efficiencies, and comparison to other Federal training entities.

NFA plays a significant role in connecting Department of Homeland Security training and education doctrine – such as the National Incident Management System, the National Infrastructure Protection Plan and the National Response Framework – to State and local first responders.

While there is a cost to both on and off-campus training, it's important to recognize that every emergency, every disaster starts locally. To the extent that a community has well-trained, well-lead cadre of first responders, that emergency stays local. If it is poorly handled, or if it is so large that the local forces are overwhelmed, it may trigger a State and Federal response. It is in the interest of both DHS and FEMA to try to keep local emergencies local; there were 23,000,000 local emergencies reported in FY 2013 but only 75 Presidential-declared disasters.

In the case where the local forces are overwhelmed, it is important that the local forces integrate with outside help – State and Federal – using the NIMS and the ICS. That's what the NFA trains local first responders to do.

NFA has a four-decade history of delivering post-secondary executive leadership and advanced technical training to America's first responders. Students who attend NFA courses are self-motivated to enroll for their own professional growth and benefit; there is no Federal or State requirement for them to attend.

Resident courses are those most closely related to the Department of Homeland Security / FEMA mission: community risk reduction; National Incident Management System (NIMS) and large regional response to emergencies; and include executive leadership / management skills necessary to implement these community based efforts. The NFA takes considerable effort to ensure that only those courses that require higher level, specialized skills are delivered on campus.

The emergence of distance learning (e.g., electronic self-study, blended learning, asynchronous and synchronous mediated learning, social media (Web 2.0) and mobile learning) provides a seemingly expedient and cost-saving option to traditional classroom coursework. However, despite these lures, there remain healthy and skeptical questions among academic professionals regarding the feasibility and efficacy of post-secondary distance learning. There is unending tension between those who think that distance learning is a cost-effective solution and those who argue academic performance. While many traditional colleges and universities have assumed a

distance learning presence, there is no evidence of any of these schools converting to an entirely online or distance delivery method. In fact, several of the leading online institutions that started as entirely online schools (University of Phoenix and Kaplan University) have gone the “other way”; adding physical facilities to their online presence.

In one form or another, NFA always has employed a complementary distance learning approach to its course deliveries: either through sharing its curriculum with State and metropolitan fire service training organizations to leverage their resources, or through partnerships with colleges and universities to deliver independent study courses.

NFA embraces the opportunity to experiment with and deliver more online learning, but has faced continuous and significant outside impediments, the greatest of which is the ability to provide educational materials to a non-Federal audience outside the strictures of Federal government information technology (IT) security rules and regulations. Due to the fact NFA’s student population consists primarily of State and local first responders, their access is prohibited to any materials hosted on Federal IT systems behind a virtual firewall.

Given the diversity of the NFA student population and challenges of reaching many potential students, NFA’s current strategy of moving incrementally toward distance learning while keeping grounded in classroom instruction provides a well-researched, academically sound, student-focused foundation to deliver education and training to advance the professional development of the fire and emergency services.

1. Introduction

The U.S. Fire Administration National Fire Academy (NFA) has a four-decade history of delivering post-secondary executive leadership and advanced technical training to America's first responders. Students who attend NFA courses are self-motivated to enroll for their own professional growth and benefit; there is no Federal or State requirement for them to attend.

NFA plays a significant role in connecting Department of Homeland Security training and education doctrine – such as the National Incident Management System, the National Infrastructure Protection Plan and the National Response Framework – to State and local first responders.

While there is a cost to both on and off-campus training, it's important to recognize that every emergency, every disaster starts locally. To the extent that a community has well-trained, well-lead cadre of first responders, that emergency stays local. If it is poorly handled, or if it is so large that the local forces are overwhelmed, it may trigger a State and Federal response. It is in the interest of both DHS and FEMA to try to keep local emergencies local; there were 23,000,000 local emergencies reported in FY 2013 but only 75 Presidential-declared disasters.

In the case where the local forces are overwhelmed, it is important that the local forces integrate with outside help – State and Federal – using the NIMS and the ICS. That's what the NFA trains local first responders to do.

NFA's Congressional mandate is “to advance the professional development of fire service personnel and of other persons engaged in fire prevention and control activities” (Federal Fire Prevention and Control Act of 1974). Over its history, the NFA always has delivered courses that differ from State or local courses because they target specific and unique national audiences, focus on emerging trends and issues, or are too expensive for State and local jurisdictions to duplicate.

In FY 2013, only 7.73% (n= 6,370) of NFA students attended classes in residence at Emmitsburg; 45.7 % (n= 37,664) attended classes delivered at the State, local or college level and another 46.58% (n= 38,389) took training through NFAOnline. Only 5.17% (n=4,268) took a one or two-week course that involved a stipend.

Recently, the NFA has observed a demographic and technological evolution in how students absorb course content. The data suggest adult learners are using a combination classroom instruction, paper-based and electronic self-study, blended learning, asynchronous and synchronous mediated learning, social media (Web 2.0) and mobile learning to achieve their learning objectives.

The nature of the NFA student population differs slightly from a traditional community college or baccalaureate student body. It is a “targeted” population of adult emergency first responders and their management staff: students have some current nexus to fire service, emergency medical services, disaster preparedness and response or other agencies involved in all hazards threat

response and mitigation. Generally, students either are full-time employees of these agencies or are highly committed volunteers who want to increase their professional skills.

There are substantial challenges associated with a small Federal agency trying to deliver online training to a non-Federal audience. Among NFA's recent experiences and observations:

- a distressingly long seven-year wait for Department of Homeland Security (DHS) and FEMA information technology (IT) security offices to approve the purchase and installation of the technology needed to evaluate and deliver high-impact educational software products and services.
- funding availability for only one full-time person to convert existing materials to online delivery modes.
- prohibitive costs of time and effort to train additional employees on new software products and hardware.
- unforeseen vendor upgrades in software products that are expensive and exceed the NFA's ability to pay.
- initial start-up costs associated with acquiring and managing a new Learning Management System (LMS) if the existing vendor increases costs or another vendor must be obtained. In two or three years, just about every LMS requires a major upgrade which then imposes the administrative processes of purchase, IT approvals, integration with the previous system and a host of technology problems.
- system maintenance costs in two ways – the purchase of interim software upgrades and the cost of online help desks. The NFAOnline help-desk operates 12 hours a day, 7 days a week.
- student user licensing costs. Every time a student signs up to take an online course, the NFA must pay a licensing fee for that student (almost \$8.00) whether that student completes the course or not. NFA purchases 75,000 licenses per year. In the self-study online learning, the completion rate is fairly high. In the instructor-mediated courses, the completion rate is very low – one recent course it was 30%. That is much higher than some colleges and universities are reporting (some as low as 4% completion). In addition, when students drop out, the student to instructor cost ratio increases significantly.
- course development costs. Specialized development and instructor skills and processes are required to develop an attractive, successful online course. It's not so simple as converting a classroom course into electrons – the literature is filled with research that proves this hypothesis false. Furthermore, all materials posted online must comply with Section 508 of the Rehabilitation Act of 1973, adding to the development costs. Without additional resources, the ability to develop courses is limited.

Each of these issues is explored in this White Paper: *Challenges for Today's National Fire Academy: Evolving Adult Education and Training Delivery Methods*.

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3. NFA Training and Education Experience

The National Fire Academy (NFA) began using distance learning technologies more than a decade ago to support and increase the quality of its training and educational programs. With this, the NFA has seen a marked increase in its academic efficiency with students accessing and using self-study and pre-course materials so they are more prepared for the on-campus educational and networking experience in the residential classroom setting.

A. NFA Online and Distance Learning Completion Experience

Since its inception in June 2007, NFA Online has recorded 196,636 discrete completions of its self-study courses. In Fiscal Year 2013, 81,507 students enrolled in one or more courses, with 38,389 (47.09%) completing those courses. The completion rate is ambiguous; however, because upon enrollment students have one year to complete a NFA Online self-student course.

In 2011, NFA began the development and delivery of “mediated” classes where students interact asynchronously over 12 weeks with an instructor through the use of message boards, email and written assignments. So far, NFA has delivered three of these courses and the completion rates over 12-15 weeks were 56%, 58.1% and 29.4%¹.

When tasked by the Office and Management and Budget to benchmark NFA Online completion rates to the Emergency Management Institute (EMI) and the Defense Acquisition University (DAU) it turned out to be nearly impossible for two primary reasons:

- As identified for FEMA and in several DAU comments, much of their training is mandatory: Federal employees are obligated by agency policies to obtain one or more training certifications and maintain those certifications as long as they are employed. By contrast, NFA students are under no mandate to take NFA Online courses, they elect them solely to improve their own professional performance.
- In many cases, those who are taking the training from EMI or DAU are Federal employees (internal users) for whom the courses are customized. CBP courses are specifically designed for and delivered to its employees. NFA Online courses are “outward facing” to reach as many of the estimated 1.1 million fire and emergency medical services first responders who exist in the United States. Courses have to be engaging and fulfilling to maintain student interest. These diverse users often take courses voluntarily on their own time, not in accordance with specified due dates or timeframes. Many will start and stop as their time permits.

As NFA develops and delivers more asynchronous mediated courses, it will continue to monitor completion rates and implement policies that address course completions and withdrawals. NFA uses rigorous end-of-course evaluation tools to identify and resolve content and delivery issues

¹ C0249 *Advanced Principles of Fire and Emergency Services Survival* (June, 2012), and C0262 *Fire Protection Structures and Systems* (June, 2013) and C0248 *Code Administration Fundamentals* (December, 2013).

and has expanded its distance learning evaluation survey to capture mediated instruction/instructor feedback.

NFA is committed to expanding its online presence through a combination of classroom instruction, paper-based and electronic self-study, blended learning, asynchronous and synchronous mediated learning, social media (Web 2.0) and mobile learning to achieve student learning objectives and meet the needs of this diverse audience.

In recent years, NFA has expanded incrementally into different learning modes to take advantage of technology and new delivery methods while not creating a “seismic shift” in its traditions. Its electronic learning management system, NFA Online, hosts 62 self-study courses that reach an estimated 45,000 students each year. NFA also is experimenting with asynchronous mediated learning where adult learners participate in college-level education through combined electronic discussion boards, email and NFA Online courses. By the end of 2015, with the current level of resources, NFA expects to add 21 self-study, blended or mediated courses, many of which are being developed in-house by staff. NFA’s traditional classroom courses now are offered in two-, six-, or 10-day delivery formats to meet student demand: annually, there are approximately 60 courses/300 deliveries on campus in this classroom-based mode, and another 45 courses/500 deliveries conducted by NFA in off-campus venues through this classroom-based mode.

The NFA has responded to changing student demographics and educational programs by continuing to increase its emphasis on distance learning. It is important to remember that not all course content or learning experience is suitable to distance applications. Content that is new, highly technical, or relies upon facilitated discussion is delivered most successfully in classroom environments. Thorough analysis of students’ needs and learning styles is essential to the successful transfer from one learning method to another. According to Silberman and Auerbach (2006), “in order for people to learn something well, they must *hear* it, *see* it, *question* it, *discuss* it with their peers, and *do* it” (p.2) [Emphasis in original].

NFA currently delivers distance training in four teaching modes:

- Self-study, standalone content. These courses are posted on the publicly accessible NFA learning management system (NFA Online) and are available at all times to students. There are 62 self-study web-based courses at the time of this report, and 15 more proposed for development. NFA Online currently is licensed for 75,000 discrete users.
- Self-study, non-credit subscription training. Several times each week, NFA distributes by a world-wide listserv a short training vignette called Coffee Break Training. These single page items cover a broad range of topics and expose students to important learning opportunities in a 10-minute timeframe.
- Blended content. These courses mix NFA Online elements with classroom learning in a residential or off-campus setting. These course modules are intended to better prepare students for the classroom setting by completing specific prerequisite materials. There currently are three courses developed specifically for this training mode, and five in development. Some of the prerequisite content also may be suitable for self-study standalone learning. NFA currently does not have the ability to verify that students have completed

the online prerequisites except through burdensome manual tracking. The technology to track prerequisite completions exists, but it too expensive for NFA.

- Mediated content (asynchronous). These courses are best described as traditional classroom content that has been moved to a virtual world. Student assignments and instructor interactions are submitted via email or electronic bulletin board. These courses are “asynchronous” in that the instructor and students do not have to be online simultaneously to interact. There currently are four courses developed specifically for this training mode, and three more are in development.

NFA continues to explore other distance learning technologies (e.g. video, podcasts, webinars, Massive Open Online Courses [MOOCs], simulations, gaming, and synchronous events) as they are determined suitable for the content and technology. Additionally, research shows that the requisite instructor skills for mediated delivery can be dramatically different from classroom settings, so NFA is evaluating how to recruit qualified instructors and help existing instructors make the transition.

Self-study, standalone content is popular because the consumer dictates the time and conditions under which he or she takes the course. Students can stop or start the course at their leisure; current NFA Online policy allows students to complete the course within one year of registering for it. Current self-study courses have limited video graphics or simulations due to development costs and download limits (bandwidth) on the users’ end. Bandwidth becomes less of a problem as internet service providers enhance their capabilities.

In blended solutions, some students use the materials as pre-course learning so they are fully prepared for the on-campus educational and networking experience when they arrive. NFA Online self-study curriculum enables students to obtain seven to 11 more hours of content, and assures all students have a common prerequisite understanding of the course goals and expected outcomes before they arrive at the NETC for the resident classroom learning and exercises. For example, modules that introduce survey research methods and preparing research proposals have been converted to online self-study classes; the time freed by the conversion enables us to delve deeper into the study of leadership theory and practice and applied research.

The NFA Online budget of \$561,000 receives an additional \$75,000 from the National Wildfire Coordinating Group for their classes which is hosted on the learning management system, NFA Online. The GSA contract provides for Tier II and III student support, course material customization and Tier I support to 600 users who participate in our “360° Leadership Analysis” for Executive Fire Officer Program participants. The individual course delivery cost per student varies between \$7.72 and \$13 per student this is because a student may re-use a license multiple times without additional expense to the government.

B. NFA Resident Course Experience

For the period 2013 to 2015, the NFA will be reviewing and evaluating existing course materials to transition them to alternate delivery methods including NFA Online. Beyond that, NFA will continue to convert existing materials to alternate delivery methods based on management priorities and guidance, resources, staffing and overcoming IT impediments. NFA also anticipates there may be new and emerging issues or events that will demand a training response for its students

Existing classroom course materials (along with newly developed courses) are being converted to on-line delivery formats. Individual course developments range in cost from \$30,000 to \$175,000 depending on the level of graphics, simulation and student interaction. In some cases, existing staff is converting current course material to an electronic format, thereby achieving some economies by not contracting the service to third-party vendors. In other cases, the developments will be done through contracts. In all cases, information and materials that were once available only through classroom courses will be available to first responders nationwide at times convenient to their learning. Response to the new on-line courses should increase enrollments by 10%.

Mediated learning offers the greatest opportunity for low-cost transfer of existing course materials to distance learning. However, until a robust and reliable instructor cadre is developed, the return on investment is low: a typical single mediated online delivery enrolls 30-35 students but suffers a dropout rate of about 40 to 70%. As students withdraw from mediated courses, the instructor cost per student hour increases.

For comparison, the average annual completion rate for NFA on-campus courses from FY 2010-2013 was 99.41%. Students who attend courses at NETC are highly motivated to complete the work since they are in a cohort-type environment where they interact with one another and often rely on teamwork for the completion of assigned group projects. Courses offered at NETC differ from those offered through the State fire training systems or local agencies. The courses at NETC are specifically intended to address new and emerging National issues with the intent of influencing leaders and decision-makers who can alter public policy to reduce risk and improve performance. For the most part, State and local training courses emphasize rudimentary manipulative skills such as firefighting, emergency medical care, and technical rescue. NFA and the State and metropolitan fire training systems, most of which are represented by a nonprofit association known as the North American Fire Training Directors, are in regular communication to assure that their courses are complementary and there is no duplication of content or delivery.

Since 1998, the NFA has collected Kirkpatrick Level 3 evaluation data from students and their supervisors three to six months after course completion (“long-term” evaluation). Donald Kirkpatrick's *Four Level Evaluation Model* is perhaps the best known evaluation methodology for judging learning processes. Table 1 describes the evaluation levels in Kirkpatrick's model.

Table 1. Kirkpatrick’s Four Level Evaluation Model

| Level | Descriptor | Learning Outcome |
|--------------|-------------------|--|
| 1 | Reaction | <ul style="list-style-type: none"> • How well did the learners like the learning process? |
| 2 | Learning | <ul style="list-style-type: none"> • What did they learn? • To what extent did the learners gain knowledge and skills) |
| 3 | Behavior | <ul style="list-style-type: none"> • What changes in job performance resulted from the learning process? • Has the student obtained the capability to perform the newly learned skills while on the job? |
| 4 | Results | <ul style="list-style-type: none"> • What are the tangible results of the learning process in terms of reduced cost, improved quality, increased production, efficiency, etc.? |

Source: <http://www.nwlink.com/~donclark/hrd/isd/kirkpatrick.html>

Table 2 summarizes the most current data that suggests both groups are highly satisfied with employee outcomes from current NFA training content and methods.

Table 2. National Fire Academy Student/Supervisor Kirkpatrick Level 3 Evaluation Reports
Year-to-Date Fiscal Year 2013

| Data Element | Score (%) |
|--|------------------|
| Percent of supervisors report the course has improved their subordinate’s/student’s job performance. | 92 |
| Percent of supervisors report the information from the course is likely to improve their department’s performance. | 90.6 |
| Percent of students report that what they learned in the course will help them do their job better. | 94.6 |

Source: National Fire Academy Evaluation Center (August 8, 2013)

The NFA classes, including on-line classes, are reviewed by the American Council on Education (an external, third party higher education accrediting body) on a rotating basis. Our objective is to achieve appropriate credit recommendation for each course without any conditions. In most cases, we achieve this objective. Our goal is a 100% condition-free review. The American Council on Education’s review of the National Fire Academy provides assurance that the academy has voluntarily submitted to a process of outside, objective evaluation and has successfully achieved compliance with a set of standards established by peers within the professional community that demonstrate adherence to measurement, quality, effectiveness and integrity.

The NFA's GPRA performance measure is the percent of supervisors of students trained who believe their staff are better prepared as a result of NFA training. Our long-term evaluation system measures the impact of a student's participation in the program. FY 2013 data report indicates that 96.2 % of supervisors believe that their staff members are better prepared as a result of the NFA training.

B. Technological Impediments

NFA embraces the opportunity to experiment with and deliver more online learning, but has faced continuous and significant outside impediments, the greatest of which is the ability to provide educational materials to a non-Federal audience outside the strictures of Federal government IT security rules and regulations. Due to the fact NFA's student population consists primarily of State and local first responders, their access is prohibited to any materials hosted on Federal IT systems behind a virtual firewall.

The NFA learning management system (LMS) NFA Online is the sole authorized portal that allows 75,000 concurrent users for self-study courses. The LMS is externally hosted via a secured site (https). The LMS vendor provides shared space on Federal servers approved by Office of Personnel Management (OPM). This Software as a Service (SAAS) solution supports recommendations from both OPM and DHS policy. System downtime is also remarkably less as use of mirrored cloud computing disseminates content from locations close to the user. This allows users from anywhere in the US to take NFA's training online.

Currently the system is "owned" by the OPM and as such, they are responsible for maintaining the Certification and Accreditation (C&A), Authority to Operate, Information System Security Officer (ISSO) and other security requirements for NFA Online. NFA elected to use OPM for this very reason; however, it appears that vendor service options may be changing and NFA may need to move away from OPM in order to maintain our system. This could create a lapse in our C&A which could lead to a gap in the service NFA provides. The approximate time needed to complete the C&A review/documentation process and/or stand-up a new system internally within DHS/FEMA ranges from 6 to 12 months. NFA has neither the funds nor the staff to fulfill these tasks. Furthermore, the uncertainty of NFA's business relationship with OPM imposes the question of NFA's ability to obtain and afford another vendor while maintaining uninterrupted service to its students. The consequence may be to lessen NFA Online service.

Emerging and prototype educational software and products that may not be best suited for NFA Online delivery² must go through a lengthy IT security review before they can be released or placed on DHS/FEMA/NFA-networked computers. They must be fully tested and vetted to obtain Federal Technical Reference Manual (TRM) approval prior to installation. The time needed to authorize the new products affects NFA abilities to develop courseware in a timely fashion. For example, in 2006 NFA asked for TRM approval to pilot test a commercial off-the-shelf (COTS) fire modeling product called Pyrosim[®] for use in one of NFA's fire investigation courses. It took more than six months for the Federal IT security professionals to authorize its installation on a Federal network. Once the product was installed and tested, it turned out not to

² For example, software products that employ peer-to-peer gaming or simulations.

be suited for the class which delayed course development six months while an alternative was located.

To avoid the TRM limitations, NFA sought and was granted authority to purchase an educational testing and experimenting server that has internet access but is independent from Federal networks. It has taken **more than seven years** to get IT security and procurement approval to install the equipment which still is not in place. This delay limits NFA's ability to develop, test and host online educational products.

All systems that collect Personally Identifiable Information (PII) must have an approved Systems of Record Notice (SORN) in place prior to collecting data. Since NFA's LMS is used in conjunction with resident campus deliveries the LMS falls under the NETC Admissions system SORN. Changes in data collection or dissemination of information must be done in cooperation with the NETC Admissions system.

NFA staff provide Tier II and Tier III support to online students when they require technical assistance. In order to help diagnose their issue, NFA needs to be able to replicate what the users are experiencing. Security settings are controlled by group policy at DHS/FEMA. This prevents NFA from being able to replicate the issues or even advise the students on how to adjust their own settings/options for the LMS to work properly on their end. NFA creates workarounds and provides solutions on a case-by-case basis. This is time consuming and administratively burdensome as one student's computer is never the same as another since they are coming to NFA from anywhere in the US.

In accordance with Section 508 of The Rehabilitation Act, Federal agencies must make all electronic and information technology accessible to people with disabilities. As NFA begins to post more curriculum content to the web, it continues to struggle with the ability to fully comply with the law. In particular, the NFA does not have direct access to specialized software or services used to synchronously close-caption multimedia used in its courses and/or a direct means to accomplish this work. In addition, vendor created content requires certification testing and quite often additional modifications to ensure 508 compliance before it can be released to the public. Additional funding and staff resources are needed to support this effort.

The current learning management system provides users with online enrollment, content delivery, testing and access to certificates/transcripts. It works well for the independent self-study learning modality. To provide online students the opportunities they currently receive on campus, such as networking, peer-to-peer interactions, and instructor interactions, additional collaboration features and group tools are needed to support mediated instruction and to further enhance the learning experience on the LMS. NFA would like to build upon the strong foundation of distance learning already in place to assist users with training gaps and reach a broader audience through the use of technology. Procurement and implementation of added features/adjunct system will require a procurement vehicle, additional funding and staff support.

The NFAOnline distance learning program is supported by a cross-functional work team. There are only two dedicated full-time equivalent (FTE) positions that support the program. Additional FTEs are needed to support this work effort and rapidly growing workload as NFA extends into the online arena.

NFA should be credited with providing creative workarounds to IT impediments. It recently delivered two mediated online courses using no-cost Gmail and an almost-free discussion board called ProBoard. Staff employees paid from their own pockets the fees needed to keep the discussion board free of advertising during the course.

In order to expand and improve the electronic learning environment, NFA will have to:

- overcome imposed IT security influences that prevent students from obtaining access to a full range of educational services and tools.
- increase the number of FTEs needed to perform course conversion, graphic arts, and programming in lieu of contracting these services to other vendors.
- obtain a LMS under NFA's own control with the personnel and financial resources to set up and manage it.
- be resourced to provide adequate user support and problem-solving.

D. National Training Needs

There is a perpetual and increasing demand for training in the fire and emergency services. The fire service is a short-term career; usually 20-25 years for career (full-time employees) departments. Service in the volunteer fire service is even shorter; estimates from the North American Fire Training Directors are that there is an annual turnover in excess of 20% per year. People move, they lose interest, there are increased time and training demands which they find difficult to meet. The volunteer fire service comprises 80% of America's fire service (n = 1.1 million).

NFA reserves on-campus training predominantly for those courses that address unique or emerging national issues, are focused on advanced leadership skills, executive and technical training, or, by the nature of their content are too expensive for State and local jurisdictions to replicate.

The overwhelming preponderance of NFA training already occurs off-campus and on-line. In FY 2013, only 7.73% (n= 6,370) of NFA students attended classes in residence at Emmitsburg; 45.7 % (n= 37,664) attended classes delivered at the State, local or college level and another 46.58% (n= 38,389) took training through NFAOnline.

Only 5.17% (n=4,268) took a one or two-week course which involved a stipend.

Resident courses are those most closely related to the DHS / FEMA mission: community risk reduction; National Incident Management System (NIMS) and large regional response to emergencies; and executive leadership / management skills necessary to implement these community based efforts. The NFA takes considerable effort to ensure that only those courses that require higher level, specialized skills are delivered on campus.

The fire threat and loss to America is staggering. Between the years 2000-2009 (excluding the events of 9/11/2001) almost 36,000 Americans and 1,000 firefighters were killed in fires. The

last year for which economic data are available, 2009, fire caused an economic loss of \$331 billion, or 2.3 percent of U.S. Gross Domestic Product (GDP). Fire is more deadly, and more costly, than all other natural or man-made disasters combined. It is a well-documented drain on our economy.

There also are “indirect” costs associated with fires - the costs of temporary housing, missed work, lost tax revenues, insurance premium increases, medical and funeral expenses, lost business income and lost business opportunities. Indirect loss would also include dollar equivalents for environmental damage or damage to cultural heritage, but there is no good data source available on these types of indirect damage. The 2013 wildland fires in the western US provide sufficient evidence of the environmental and health threats to the atmosphere and public drinking water sources.

Additionally, data show that America will face a tremendous challenge over the next 35 years. The “baby-boom” generation began turning 65 in 2011; there are 78 million, about 25% of the US population. The end of the boomer group will reach their life expectancy (85) in the year 2049. USFA has decades of data to show that senior citizens are:

- the high risk group for accidents,
- the high risk group for fires, and,
- the high demand group for emergency medical services.

Fire departments provide the preponderance of emergency response services to these events. The country is facing huge risks and increasing demands. NFA’s education and training programs address these emerging challenges.

To mitigate these losses, threats and demands, NFA students have been reporting their training outcomes for the past 13 years, especially as they address proactive approaches to risk reduction. Students report:

- 78.8% are cultivating and/or supporting staff doing community risk education
- 79.8% are developing organizational support for community risk reduction
- 89.9% are refining risk assessment.

E. Importance of NFA Training to DHS/FEMA Missions

While there is a cost to both on and off-campus training, it’s important to recognize that every emergency, every disaster starts locally. To the extent that a community has well-trained, well-lead cadre of first responders, that emergency stays local. If it is poorly handled, or if it is so large that the local forces are overwhelmed, it may trigger a State and Federal response. It is in the interest of both DHS and FEMA to try to keep local emergencies local; there were 23,000,000 local emergencies reported in FY 2013 but only 75 Presidential-declared disasters.

In the case where the local forces are overwhelmed, it is important that the local forces integrate with outside help – State and Federal – using the NIMS and the ICS. That’s what the NFA trains local first responders to do.

NFA and its partner agencies are service providers: together they deliver high quality, economic training to those men and women who elect to improve their professionalism. Performance improvement is at the core of emergency services: anyone who calls an ambulance for a medical emergency expects the responders to be well trained. Citizens and taxpayers expect the highest level of performance and professionalism from emergency services in response, personnel management, fiscal responsibility and professional ethics.

In 1973, Congress’s reported the diffuse nature of the American fire service with varying degrees of training effectiveness across the country at State and local levels made the establishment of a National Fire Academy imperative. Their report *America Burning* captured the importance of training in words that remain true today:

Fire department managers have difficult tasks thrust upon them. Every second counts in the battle against a fire, and they must make quick but well-informed decisions affecting, at the same time, the outcome of a fire and the safety of the firefighters under their command. They must see to it that their firefighters are adequately trained---not only to fight fires, but to handle frightened fire victims and administer first aid.

Since firefighters have other duties, especially in fire prevention education and inspections, their officers must ensure that the duties are carried out effectively. Fire department managers must also deal with the public—making sure that the department meets public expectations, and seeking, in turn, public support of the department. What makes these responsibilities particularly difficult is that, in thousands of smaller departments, they are bound up in a single individual, the fire chief, often a man [sic] elected from among the volunteer membership (National Commission on Fire Prevention and Control, 1973, p.41).

The consequences of not training the Nation’s responders and leaders are legion. While training may have a cost, the lack of training is even more expensive. As of December 2013, 101 firefighters had died in the line of duty that year³. While there is no scientific proof that the deaths were caused by lack of training, initial reports seem to suggest that some of them were. Above all else, the National Fire Academy was created to prevent those tragedies (U.S. Fire Administration, 2013).

Numerous books, research reports and consumer articles emphasize the implied and real consequences of failing to properly prepare leaders and responders for the challenges they face. According to French:

³ Source: <http://apps.usfa.fema.gov/firefighter-fatalities/fatalityData/search?deathYear=2013>

Training is the venue in which behavioral changes take place and where the desired behavioral outcomes are taught. This is also the time when training personnel model new techniques, skills, and practices. Behavioral change can happen through quality training programs. Training personnel must clearly understand what is expected of them. They must also know what the skills (new behaviors) are so they can perform them effectively to meet those expectations. Training becomes vital because it is the way to communicate the expectations and teach new behaviors (French, 2013).

Perhaps most significant is the study reported in 2006 for the International Association of Fire Fighters:

A total of 644 cases from the years 2000-2005 were analyzed revealing the dominant contributing factors to LODD [Line of Duty Deaths]. Cluster analysis was performed revealing contributing factors frequently occurring together. Four main clusters were identified with these contributing factors. Cluster 1 included incident command, training, communications, standard operating procedures, and pre-incident planning.

Approximately half of all firefighter LODD that occurred between these years are attributable to a cluster of three factors that are under the direct control of the individual firefighter and chief officers. The information revealed in this study imposes a considerable burden on decision makers and fire service leaders as well as firefighters themselves. It offers substantial guidance for shaping local fire department policy decisions and operational priorities (Moore-Merrell, Zhou, Fisher and Moore, 2006).

One study by Charles Renaud of the September 11, 2001 World Trade Center attacks reported that the lack of interoperable communications and cross-discipline coordination were missing from the New York City response. According to Renaud (2012) “First responders must be educated through participation in reality-based scenario training that will help them practice sense-making techniques, add to their library of mental slides, and foster relationships with each other across disciplines and jurisdictions so that, if the unthinkable does occur yet again, those men and women will be as ready as possible to insert themselves into chaos and wrestle it back to normalcy.” This is the type of complex training offered by NFA to the State or local level.

Finally, even nominal exposure to training can improve responder performance as identified in Hall’s study of incident commanders (ICs), “the problem is ineffective and/or incorrect decision making by fire ground ICs has resulted in firefighter deaths and injuries at emergency incidents and live-fire training activities. The results of the statistical analysis validated the research study hypothesis by establishing a correlation between the computer-based simulation training program and a positive effect (increase) in the efficiency/accuracy of decision making of fire ground ICs in the simulated environment” (Hall, 2010).

In one month alone, January 2014, there were four incidents that easily could have escalated to large disasters - the wildland urban interface fire in Glendora, California, a 400,000 gallon crude oil rail tanker fire near Casselton, North Dakota, a gasoline tanker truck fire on the New York Thruway, the mitigation of an organic hydrogen peroxide leak in Columbus, Ohio, and a sodium

hydrosulfide spill on Interstate 75 in Lexington, Kentucky. Those emergencies didn't affect FEMA/DHS budgets because the incidents were managed by competent local personnel. Events like these happen every month. Ending resident classes at the NFA would result in an immediate degradation of incident management capabilities, community risk reduction, hazardous materials response and arson detection and prosecution.

F. Curriculum Development Guidance

As new courses are developed and existing courses modernized, the NFA Curriculum Management Committee has adopted the following *de facto* policy: if the nature of the course content demands a geographically-diverse classroom population to enhance student interaction, or there is a unique feature of the NETC to which students need physical access⁴, courses will be built around a traditional classroom format for delivery in Emmitsburg. These on-campus courses generally include blended elements such as pre-course online exercises or post-course online evaluations. All other courses are to be developed or revised for the maximum flexibility of classroom or other learning methods and to assure they do not duplicate State and local development efforts.

NFA may be unique in the Federal government because its specific mission is training persons who are not Federal employees. In current jargon, NFA is an “outward-facing” training and education entity, rather than “inward-facing.” Unlike similar DHS training organizations, such as the Transportation Security Administration, Federal Law Enforcement Training Center, Center for Domestic Preparedness and the Customs and Border Patrol academy, NFA’s primary mission is to train State and local first responders and their leaders, not Federal employees. While these other entities offer some training to State and local representatives, their principal student population is Federal employees. NFA’s co-located entity, the Emergency Management Institute, also trains State and local first responders, and an estimated 40.7% (n= 2,975) of its students are Federal employees.

However, NFA students do not present an entirely homogenous population. According to the National Center for Education Statistics, 38% of 18 million students enrolled in the nation’s colleges and universities are aged 25-years or older (as cited in Ross-Gordon, 2011). By comparison, NFA student ages range from 18 years old and upward; it is routine to have students in their 20s through 60s in the same classroom. This diversity creates a training challenge as many of the students have been educated throughout their lives by different teaching methods. Many students are intimately familiar and at ease with modern technology while others are reluctant to adopt it. As one example, beginning in fiscal year 2013, NFA committed to transferring its traditional paper-based student manuals to electronic readers. As of August 7, 2013, up to 85% of students who have been afforded the opportunity to “go digital” (depending

⁴ This includes the highly regarded NETC Learning Resource Center, the ICS and Scenario Management laboratory, the live-fire arson demonstration facilities and a joint computer training center where students can work simultaneously on digital products. Opportunities exist for shared scenario-driven training experiences with students at the Emergency Management Institute.

upon course) report they prefer to use the electronic manuals, leaving merely 15% who prefer paper-based products. (J. Glass, National Fire Academy personal communication, August 7, 2013).

Training offered at the State and local level typically emphasizes manipulative skills needed to respond to emergencies. Fire fighter, officer and emergency medical services skills to respond to a mitigate routine or growing incidents are taught effectively by State and local fire service training organizations – there is no need or desire for NFA to duplicate those efforts. In fact, it would not be economical for NFA to try to reach all of those first responders with “entry level” training; State and local entities already have the infrastructure to do so effectively and efficiently. NFA partners with those agencies to assure that training resources are expended wisely and not more than needed.

Furthermore, the NFA target student population differs from State and local organizations. It is skewed in favor of agency leaders and policy makers, which is reflective of the typical demographic of America’s fire and emergency services. Table 3 represents a five-year summary of NFA application data for six- and 10-day on campus courses based on students’ self-identified primary employment responsibility. This data is important to NFA staff as they plan and develop course materials and delivery methods as it represents the imperative training audience and potential “market demand”.

Table 3. Applicants’ Self-Identified Primary Employment Responsibility

| | 2008 | 2009 | 2010 | 2011 | 2012 | Total | % of Five-Year Total |
|--|------|------|------|------|------|--------|-------------------------|
| <i>General Category: Leadership, Administration, Executive</i> | | | | | | | |
| Management | 1301 | 1411 | 1290 | 1156 | 1080 | 6238 | 27.3 |
| Program Development | 19 | 21 | 20 | 6 | 24 | 90 | 0.04 |
| <i>General Category: Incident Management and Response</i> | | | | | | | |
| Fire Suppression | 910 | 1096 | 1009 | 988 | 1025 | 5028 | 22.0 |
| Investigation | 457 | 505 | 491 | 443 | 482 | 2378 | 10.4 |
| EMS | 147 | 139 | 133 | 121 | 174 | 714 | 3.1 |
| Disaster Response | 43 | 46 | 31 | 31 | 27 | 178 | 0.08 |
| <i>General Category: Fire Prevention and Risk Reduction</i> | | | | | | | |
| Fire Prevention | 562 | 606 | 537 | 465 | 485 | 2655 | 11.6 |
| Training/Education | 487 | 523 | 441 | 435 | 390 | 2276 | 9.9 |
| Hazard Mitigation | 69 | 78 | 51 | 48 | 72 | 318 | 1.4 |
| Emergency Preparedness | 43 | 48 | 29 | 30 | 35 | 185 | 0.08 |
| Scientific/Engineering | 11 | 13 | 12 | 17 | 11 | 64 | 0.02 |
| <i>General Category: Other</i> | | | | | | | |
| No Response | 572 | 517 | 369 | 428 | 331 | 2217 | 9.7 |
| Public Works | 6 | 4 | 5 | 4 | 7 | 26 | 0.01 |
| Other† | 65 | 89 | 95 | 76 | 67 | 392 | 1.7 |
| Total (n) | 4703 | 5102 | 4516 | 4249 | 4217 | 22,787 | 100%* |

Note: EMS means emergency medical services.

*May not equal 100% due to rounding.

†Not defined.

Source: NETC Admissions Office (August 13, 2013)

According to a joint U.S. Fire Administration/National Fire Protection Association study, there are an estimated 1.1 million fire fighters in the US that comprise the potential NFA student audience (U.S. Fire Administration, 2006). By some estimates only 1.36 % of all fire fighters are employed in fire prevention services (Department of Labor, 2012), but this is an important U.S. Fire Administration target audience to help fulfill its Congressional mandate to “educate the public and overcome public indifference as to fire, fire prevention, and individual preparedness” and reduce community risk against all hazards (Federal Fire Prevention and Control Act of 1974 as amended (FFPCA) (15 U.S.C. §2206(f) et seq.). NFA consistently tries to balance popular customer demand with providing leadership through strategically important courses intended to prevent, prepare for and respond to the nation’s all hazards threats while aligning with DHS and FEMA missions. Courses with titles such as “Command and Control of Incident Operations”

appeal to a larger potential audience than an equally important course entitled “Leading Community Risk Reduction.”

In summary, NFA course developments and delivery:

- focus on national training needs pertinent to emerging issues and trends while not duplicating State and local training efforts.
- align with the DHS and FEMA missions to reduce risk and, when needed, respond in a competent manner with the goal of controlling the event at the State or local level.
- emphasize the diverse nature of the target population that is in constant flux.

4. Costs/Benefits

Cost is central to any discussion on adult education: the expenses related to course development, delivery and maintenance. In 2006 Boettcher reported:

Based on much anecdotal evidence plus real experience over the last 10-15 years of building computer-based material, we can say with some level of certainty that it can take an average of about 18 hours - of faculty time - to create an hour of instruction that is on the Web. This means that the instruction is pretty much able to be delivered independent of an expert faculty member.

The cost consequences are problematic. If we multiply 18 hours times the current 45 hours of class time, that could mean that it would take an investment of 810 hours to move a course to the Web. If we assume some time for startup with learning technology and instruction in teaching and learning in this new environment (and also arranging for any copyright and other issues), we can rapidly approach the 1,000-hour mark for moving a course to the Web—given our current models (Boettcher, 2006).

A. Resident Course Development and Delivery

In recent years, development costs for classroom courses have increased only slightly. Based on recent NFA data, development costs for a typical two-day course are about \$58,000 and six-day courses are about \$125,000. Ten-day courses, formerly the staple of the NFA resident curricula, have fallen out of favor and are not being developed anymore. Some existing successful and popular 10-day classes are kept and subject to five-year updating at an average cost slightly more than \$100,000 depending upon the level of revision. Depending upon demand, classroom resident courses in each of the NFA 11 discrete curricula are offered from one to 14 times per year, thereby reducing their development cost to use ratio each delivery.

Once courses are developed, they are continuously reviewed for currency, quality and application to important learning objectives. During development and review, courses are double-checked to assure they are not duplicative of those offered at State and local levels so

resources are used wisely. While undergoing regular assessment to assure a high quality learning experience, the courses also are subjected to significant review and modernization every five years.

Classes delivered at the NETC are offered 47 to 48 weeks per calendar year, depending upon the influence of National holidays on the calendar and facility maintenance needs. Off-campus courses – where most NFA training occurs -- are scheduled by the host agency (generally a State fire service training agency or local fire department) at their convenience. NFA Online self-study courses are available at all times.

For NFA on-campus courses, students are eligible to obtain one travel stipend per fiscal year. The travel stipends were authorized by Public Law 93-498 that created the U.S. Fire Administration and National Fire Academy (Federal Fire Prevention and Control Act of 1974). The purpose of the stipend is to support student attendance at on-campus courses, it is a cost-sharing arrangement with the students' sponsoring agencies. Course materials and lodging are provided to the students at no cost while they are in residence at the NETC, students or their agencies are responsible for meals and incidental expenses, employee salaries and the costs of backfilling staffing vacancies at the students' home department. Unlike students who FEMA's Center for Domestic Preparedness, NFA students or their agencies spend money to attend NFA classes.

NFA classrooms are filled with adult learners who bring a wealth of knowledge and experience to share with others. The classroom environment provides an opportunity for these students to network with one another, sharing both successful and unsuccessful experiences from their home agencies. The classroom instructors facilitate this discussion to achieve maximum experiential learning, often by guiding discussion to assure it aligns with the course learning objectives. This shared experience creates an informal *community of practice* where individuals are connected by the desire to improve themselves and their communities through NFA training and education. According to Monaghan and Columbaro (2009), acquiring knowledge through a community of practice provides students a means to simultaneously promote self-directed and collaborative learning thereby fostering "the ability of students to learn about real-life contexts while encouraging them to transfer learning to a professional environment" (p. 421).

The residential nature of the NETC campus affords students an opportunity to "network" during class and in out-of-class social settings. According to FY 2013 data provided by the NFA Evaluation Center, "networking" ranked third as the "most beneficial aspect" of the training experience. Table 4 summarizes responses from several questions asked in the NFA Kirkpatrick Level 1 end-of-course student evaluations.

Anecdotally, students report that one of the key reasons they attend the NFA on-campus deliveries is the ability to network with other students from around the country. Students often report they "learn as much outside the classroom" from their peers as inside the formal classroom setting. Instructors build in expectations that students will learn from their peers both inside and outside the classroom. NFA's adult learning model promotes and relies on lively interaction among students facilitated by experienced and competent instructors.

Table 4. “Networking” as Responses in End-of-Course Evaluations

| | Responses | Total Respondents | % of Respondents |
|--|------------------|--------------------------|-------------------------|
| <i>What are the most beneficial aspects of the training class?</i> | | | |
| General positive comments | 1230 | 3748 | 32.8 |
| Course contents | 775 | 3748 | 20.7 |
| Networking | 562 | 3748 | 15.0 |

Source: NFA Evaluation Center, August 19, 2013

B. Online Course Development and Delivery

While the idea that converting classroom training with its attendant costs to online self- or mediated-learning options are cost effective, the data suggest the conversion is not a panacea. Fishman, et. al. concluded that “overall, it is important to keep in mind that principled, carefully designed, and thoughtfully delivered PD will always have significant costs associated with it, no matter what the delivery medium” (Fishman, Konstantopolous, et. al., 2013, p. 438).

Simply put:

the idea that online PD [professional development] is more cost-effective than classroom is widely held among policy makers and school leaders, though in reality this is highly dependent on context. . . our observations in designing and delivering PD in both modalities is that many costs are similar, especially in the start-up design and development phase. Overall, it is important to keep in mind that principled, carefully designed, and thoughtfully delivered PD will always have significant costs associated with it, no matter what the delivery medium (Fishman, Konstantopolous, Kubitskey, Vath, Park, Johnson and Edelson, 2013, p. 426).

One study, reported at the University of California (Berkeley), found that “The cost of converting classroom courses into MOOCs ranges from \$50,000 to \$100,000 per course, depending on the class” (Lau, 2013). As a result, the study’s author said “Berkeley’s view on MOOCs generally is that they are a way to enhance rather than replace what we’re doing. “We have no plans to make MOOCs a replacement for the teaching we do at Berkeley” (Lau, 2013).

The University of Minnesota (UM) Digital Campus determined that the answers to development time and cost vary significantly based on a number of factors involving course design and staffing/budget models:

- Who does the majority of the work: faculty or professional staff
- Level of instructional design applied to the course
- Amount of "media richness"

- Number of people who work on the course
- Type of staff who work on the course
- Role of the instructor/faculty member
- Whether development costs are subsidized by an academic technology unit or paid for directly on a fee-for-service basis
- Whether materials are already developed for a classroom course

According to the UM estimates, the number of hours required for course design and development ranged from 70 to 600 hours with an average of about 250 hours. Unless faculty/instructors have a dedicated leave period, most faculty/instructors need a 6-9 month period to design/develop an online course from an existing classroom-based offering. “If an academic unit has a subsidized academic technology service group that develops online courses, the only cost to faculty is usually their time. If a unit does not have this type of academic technology group, the fee-for-service cost to develop a course typically ranges from \$16,000 to \$45,000” (University of Minnesota Digital College, 2013).

NFA currently has a team with two full-time-equivalents and six other part-time staff who are responsible for academic technology support moving existing content to NFA Online. NFA does not have the resources, informational technology infrastructure, full-time-equivalent staff, programs, or hardware in place to be able to tackle and maintain such a tasking. In order to accomplish something of this scale, NFA we would need to move from a team to an actual program office (section) that would be fully staffed.

C. Academic Integrity

One of the significant challenges facing entities that deliver online training is the question of academic integrity: is the person who is registered for the course really the one taking it? While tracking online cheaters and protecting academic integrity have costs not measured in dollars, there also is the very real social cost of student performance. A commonly heard question is “would you want an emergency medical technician who cheated on her exams to provide life-saving care to your mother?”

According to Abdul-alim (2012), “Experts say it’s difficult to determine the size and scope of the kind of cheating that involves individuals taking courses for others in exchange for money. At the same time, one scholar notes that there has been a “dramatic increase” in sites that offer services for hire that include contracting out discussion board assignments and papers, among other things”. One study conducted by Online College.org reported 32.7% of students admitted to cheating in an online course compared to the 32.1% of students that admitted to cheating in a traditional college course (Anson, 2012).

Even the preponderance and growth of MOOCs have raised concerns:

But while the possibility of using these free or inexpensive classes to help get a college degree is great news for cash-strapped students, MOOCs present a challenge for higher-education providers. “We need to be sure that the student who took the course is indeed who they say they are — that they did all the work,” said edX president Anant Agarwal. “That’s a real problem for MOOCs” (Webley, 2012).

The technical challenges to overcome online cheating also are costly and rarely available: webcam proctors, retinal scanning, remote proctoring, anti-plagiarism software, and facial scanning recognition (Webley, 2012). Any of these options would require rigorous and time-consuming review by IT security entities.

5. Background and Trends

At its founding, the NFA was built upon a brick-and-mortar model: self-selecting adult learners from Federal, State and local jurisdictions (and occasional foreign students) attend a variety of classes at the school's facility at the NETC in Emmitsburg, Maryland where they interact with one another (networking) and professional instructional staff. NFA continues to develop and deliver classroom on-campus curricula for those courses that address unique or emerging national issues, are focused on advanced leadership, executive and technical training, or, by the nature of their content are too expensive for State and local jurisdictions to replicate.

In one form or another, NFA always has employed a complementary distance learning approach to its course deliveries; either through sharing its curriculum with State and metropolitan⁵ fire service training organizations to leverage their resources, or through partnerships with colleges and universities to deliver independent study courses. Through these partnerships, the NFA trains approximately 6,300 students per year in traditional classroom settings at NETC and another 43,000 at sites throughout the US and by NFA Online. As part of this relationship, NFA separates its classroom content delivery methods into "NFA-sponsored" courses that are Federally funded, and "State-sponsored" courses where the State training partners bear the costs of delivering NFA curriculum. State-sponsored courses train about 32,000 students annually. Student demand for on-campus courses remains steady while demand for online training increases.

NFA plays a significant role in connecting Department of Homeland Security training and education doctrine – such as the National Incident Management System, the National Infrastructure Protection Plan and the National Response Framework – to State and local first responders.

In recent years, NFA has expanded incrementally into different learning modes to take advantage of technology and new delivery methods while not creating a "seismic shift" in its traditions. Its electronic learning management system, NFA Online, hosts 62 self-study classes that reach an estimated 45,000 students each year. NFA also is experimenting with asynchronous mediated learning where adult students participate in college-level education through combined electronic discussion boards, email and NFA Online courses. By the end of 2015, it is expected at least another 21 self-study, blended or mediated courses will be added, many of which are being developed at no cost by staff because of their eagerness to explore the technology and commitment to serve their students. Traditional classroom courses now are offered in two-, six- or 10-day formats to meet student schedules: there are approximately 60 course titles delivered on campus in this mode, and another 45 delivered by NFA in off-campus venues.

Maintaining the quality, effectiveness and integrity of the NFA training programs is accomplished through resident course delivery of practical and simulation-based exercises where program managers (training specialists) can monitor the students and content. This method

⁵Defined as serving a population of 250,000 or more, having 400 or more career personnel on staff, or being the largest municipal fire department within a State.

provides a safe training environment while providing realistic immersive experience for the students: students may make errors without suffering life-threatening consequences. This training can measure the student's knowledge for point of possible perception, point of actual perception, reaction time, reaction decision and point of no avoidance for each particular set of conflicts. This enhanced training capability augments existing first responder skills, allowing the student to face the consequences of his/her decision and allowing for immediate instructor feedback, thus producing a better trained and better prepared responder. The stimulus that instructors observe by responding to student classroom behaviors leads to greater exploration of the content. Furthermore, classroom instruction allows instructors and trainers to provide immediate feedback and support for physical or functional needs students.

A. Adult Education Trends

Academicians continue to research and debate the value and efficacy of distance learning, and, not surprisingly, there is a broad range of opinion based on their findings. Werth and Werth (2011) point out that a “generational shift is occurring in training environments worldwide” (p. 12). The labels commonly applied to emerging adult populations (Baby Boomer, Generation X, and Millennials [also referred to as Generation Y, Nexters, the Net Generation, and Gamers]) “present a problem for those who depend on traditional training methods to prepare them for work in a variety of professions” (p. 12). This emerging trend – as these adult learners move into the fire and emergency services professions – will require NFA to keep current with their learning needs.

The emergence of distance learning (e.g., electronic self-study, blended learning, asynchronous and synchronous mediated learning, social media (Web 2.0) and mobile learning) provides a seemingly expedient and cost-saving option to traditional classroom coursework. However, despite these lures, there remain healthy and skeptical questions among academic professionals regarding the feasibility and efficacy of post-secondary distance learning. While many traditional colleges and universities have assumed a distance learning presence, there is no evidence of any of these schools converting to an entirely online or distance delivery method. *Research suggests students, employers and schools still prefer some sort of diverse educational background to enable students to function effectively in the modern professional world.* For example, a 2013 study from the non-profit Public Agenda found:

1. Most employers would prefer a job applicant with a traditional degree from an average school over one with an online degree from a top university.
2. Most community college students agree online classes require more discipline from students, but they are split on whether they teach students the same or less than in-person classes.
3. Many community college students who take online classes wish they could take fewer than they currently do (Public Agenda, 2013).

Distance learning remains in a state on constant flux. According to a December 31, 2013 report on the NPR (National Public Radio) website:

One year ago, many were pointing to the growth of massive open online courses, or MOOCs, as the most important trend in higher education. Many saw the rapid expansion of MOOCs as a higher education revolution that would help address two long-vexing problems: access for underserved students and cost.

But if 2012 was the "Year of the MOOC," as *The New York Times* famously called it, 2013 might be dubbed the year that online education fell back to earth. Faculty at several institutions rebelled against the rapid expansion of online learning — and the nation's largest MOOC providers are responding (Westervelt, 2013).

Westervelt (2013) reported that San Jose State University partnered with the online provider Udacity, and by “all accounts the San Jose experiment was a bust. Completion rates and grades were worse than for those who took traditional campus-style classes. And the students who did best weren't the underserved students San Jose most wanted to reach” (Westervelt, 2013).

A University of Pennsylvania one-year study cited in Westervelt’s article reported about half of the students who registered for a class ever viewed a lecture, and completion rates averaged just 4% across all courses (Perna, Ruby, Boruch, Wang, et. al. 2013). The researchers concluded that many students apply to participate in MOOCs, but there are few active users, engagement falls off dramatically within the first two weeks, and few students persist to the end of the course.

Adult education and training remain under constant and rigorous scholarly analysis. Depending upon how one frames a web-based search phrase⁶, Google Scholar alone returns more than 30,000 “hits” of books, academic reports, journal articles and other research. Educational scientists debate the variety of methods available to deliver content to assure learning transfer occurs from the source to the student. A short-term survey of recent literature shows that there is no single instructional method that serves all adult audiences and a healthy scholarly debate over the benefits of each learning method. Search results respond to how the search question is framed.

Research reports delimited to not older than 2008 quantitatively appear to study mostly distance learning methods, but that may be a result only of the field’s relative newness compared to long-standing teaching (traditional) methods. A brief survey of articles from 1999 to 2009 contained more content on the transition from classroom to distance education. As one example, Pérez-Prado and Thirunarayanan (2002) concluded, ‘courses that require students to develop empathy or other affective orientations may not be suitable candidates for web-based distance education’ (p. 200). With academic success possibly hinging on the discipline or course material, this is certainly an area of distance learning in need of further research” (in Levy, 2009).

Ross-Gordon (2011) found that the body of research suggests that while adult learners desire flexibility (like that offered through the variety of NFA delivery modes), they desire structured

⁶ The delimited search phrase “best adult teaching method” from 2008-2014 alone returned 30,800 Google Scholar hits on January 6, 2014.

instruction. Each of the delivered modes NFA employs (from classroom to self-study) are structured on sound and well-tested instructional design principles.

According to one teaching method meta-analysis of 58 separate adult education studies:

Results showed that all six adult learning method characteristics [instructor introduction and illustration, learner application, evaluation, reflection, and self-assessment] were associated with positive learner outcomes, but that methods and practices that actively involved learners in acquiring, using, evaluating, and reflecting on new knowledge or practice had the most positive consequences on learner outcomes. (Trivette, Dunst, Hamby and O’Herin, 2009, p.1)

Another Federal institution, the National Defense University (NDU), recently spent two years evaluating its curriculum and delivery methods. Based on its mission of developing national and international executive strategic leaders, the NDU elected to keep traditional classroom courses because of the needs of strategic learners to meet and share ideas in a real-time collaborative environment (National Defense University, 2012).

Most of NFA classroom courses use “performance-based” instruction. In this manner NFA is able to address training to solve job performance problems and not just a lack of requisite skills or knowledge. That immersion training cannot be accomplished online. The experience NFA provides allows the learner to be immersed in the job by doing the job (e.g. participate in command and control or EMS scenario-based exercises, excavate the evidence from a live-fire scene, or process post-fire forensic evidence).

Much of NFA’s instruction is based on *scaffolding*:

a metaphor to describe the type of assistance offered by a teacher or peer to support learning. In the process of scaffolding, the teacher helps the student master a task or concept that the student is initially unable to grasp independently. The teacher offers assistance with only those skills that are beyond the student’s capability. Of great importance is allowing the student to complete as much of the task as possible, unassisted. The teacher only attempts to help the student with tasks that are just beyond his current capability. Student errors are expected, but, with teacher feedback and prompting, the student is able to achieve the task or goal (Lipscomb, Swanson and West, 2004).

Bejerano (2008) posited that one of the problems with distance learning is the lack of sufficient student support:

In classroom classes, students have their classmates, learning centers on campus, professors’ office hours, tutors, and teaching assistants to support and help them with their various learning needs. These resources guide them, clarify and reinforce the material, and allow them to succeed in their education. Teachers understand the value of these resources and forms of support. As online courses become more popular, teachers are trying to find new ways to incorporate these resources and forms of support into their class. The problem is that student drop-

out is increasingly high in online courses and these resources and forms of support need to be more effective in combating student attrition (p.1).

According to Lee and Choi's (2011) 10-year survey of online dropout rates in post-secondary education, the evidence suggests that "online courses have a significant higher student dropout rate than conventional courses" (p. 594). Lee & Choi identified 69 separate factors that influenced students' ability to complete online classes for which they had enrolled. Jones (2006) reported that "of students who begin online courses, 50% do not finish due to lack of support and problems inherent in online learning" (in Nielsen, 2008). A headline in *The Chronicle of Education* online magazine asked "Preventing Online Dropouts: Does Anything Work?" was answered curtly: "Nothing works." (Parry, 2010).

Holyoke and Larson (2009), in a comparative study of learning preferences among these three described generations, reported that "teachers and trainers of adult learners need to be aware of generational characteristics when developing lesson plans and training materials. Combining generational understanding with current adult learner theory provides a unique teaching as well as learning experience" (p.20).

Even this new generation of learners prefers a variety of learning methods. Bracy, Beavill and Roach (2010) report students requested that instructors:

Vary the type of technology used. Even with their passion for IT, Millennial students prefer *moderate* use of technology in the classroom; in fact, the actual use of technology is not as important as the activity the technology allows students to do (Oblinger & Oblinger, 2005). When technology is used in class, it should vary; use different tools such as PowerPoint presentations, social networks, podcasts, streaming videos, blogs, virtual games, video clips, etc. Kvaavik and Caruso (2005) refer to this as "Edutainment."

Educators should balance the use of technology in classes with other activities such as lectures, guest speakers, group assignments, interactive and hands-on activities, and class discussions. This will not only satisfy the Millennials' preference for moderate use of technology in the classroom but also their desire for team collaboration, and it will keep them from boring so easily by switching up the delivery day to day [emphasis in original].

It is important to note that NFA already is moving in that direction at a pace that meets its diverse constituents' expectations and needs. As fire and emergency services' demographics change, NFA will continue to evolve its training and education methods based on sound needs assessment and analysis principles.

While some may argue that simply converting existing content to distance learning formats will achieve efficiencies, it is by no means the answer to all learner needs. In a study for the U.S. Department of Education, Means, Toyama, Murphy, Bakia and Jones (2010) reported their:

Meta-analysis found that, on average, students in online learning conditions performed modestly better than those receiving classroom instruction. The difference between student outcomes for online and classroom classes . . . was

larger in those studies contrasting conditions that blended elements of online and classroom instruction with conditions taught entirely classroom (p. ix).

In 2000, Ginsburg, Sabatini and Wagner cleverly reported “with all the talk about the *information superhighway*, many people feel the need for *driving lessons* so as not to get left by roadside” (p. 78). NFA is compelled to aid its student success by giving these lessons in the method most likely to achieve satisfactory outcomes. Trivette, Dunst, Hamby & O’Herin’s 2009 meta-analysis concluded that blended approach to learning, what they call a “middle ground,” enables students to develop deeper understanding of the focus of learning.

Richardson, Jenkins and Crickenberger (n.d.) reported for adult vocational learners:

The selection of delivery methods for a program delivery system *should be based on the needs and preferences of the targeted audience and the specific educational purpose [italics added]*. For example, if the objective is to make the general population aware of some innovation, the delivery system might employ several mass media—such as radio, television, newspapers, and magazines—or other methods that can be expected to reach large numbers of people. *On the other hand, if the objective is to provide information to targeted clientele who are prepared to test an innovation, the delivery system should emphasize experiential learning methods [italics added]*.

For a more technically focused student audience, the American National Standards Institute (ANSI) has recognized the changing educational environment due to travel restrictions, competing budgets and new learning methods but alternative delivery modes are not the sole solution to their training challenges. Consequently, ANSI:

Will continue to provide its traditional classroom training – which have been enhanced by new alternative delivery methods that save significant time and expense for the classroom participants.

Internet-based educational programs complement and enhance the traditional, classroom education and training programs that ANSI has been providing since the mid-1990’s. While many methods of delivering training by electronic means (“distance learning”) have not yet firmly establish themselves, synchronous (live) and asynchronous (self-paced) training have gained a solid foothold. These technologies, which enable organizations to provide training via the Internet, are becoming more appealing because the costs to develop and implement e-learning and web-based programs are coming down while travel costs and related security concerns are increasing. (Suett, n.d.).

Finch and Jacobs, in *Online Education: Best Practices to Promote Learning* (2012), found that:

Students’ attitudes and perceptions of online versus traditional classroom approaches weighs [sic] heavily in the consideration of delivery approaches. Students’ competency and comfort with technology is essential in the choice of communication medium. Not all students will have the same affinity for one style

as opposed to the other. Different approaches are desirable from the standpoint of offering students (and instructors) the venue best suited for their own learning (or teaching) style.

Finally, Ross-Gordon (2005) found that adult students perform best when they are provided a variety of learning opportunities that are suited to their particular needs. Students:

Exhibit varied learning styles and preferences influenced in part by their past encounters with higher education as well as by their social and cultural backgrounds, and are best seen as a monolithic group. This is especially true when considering subpopulations of adult learners who have not been consistently included in the large body of literature on adult students, including students of color (Ross-Gordon, 2011, p.3)

Classroom-based education, professional instruction and practical application provide students with the skills and knowledge to meet the demanding challenges of a first responder career. They learn not only the responsibilities of an experienced first responder, but through interaction with students from many other agencies. They also become acquainted with the missions and duties of their colleagues. This interaction provides the foundation for a more cooperative Federal, State and local response effort while building local strength, capacity and redundancy. Donovan (2009) reported in a study of U.S. law enforcement officers that “although most participants in the study say they prefer traditional instruction, the majority feel that OE [online education] is an appropriate delivery method for professional development and that the use of OE for delivery of professional development provides increased training opportunities”(p. 227). A later study of another law enforcement student population found that students preferred classroom instruction (Oliva and Compton, 2010).

Figure 1, adapted from *Online Learning vs. Classroom Learning* by Neil Koemuller (2013), summarizes differences between and among the delivery modes.

Figure 1. Advantages and Disadvantages of Learning Modes

| | |
|---|--|
| <p style="text-align: center;">Online Learning Advantages</p> <ul style="list-style-type: none"> • Convenient, available anywhere 24/7 • Green (no travel) • Enhanced computer skills for students • Freedom of choice for time and attendance | <p style="text-align: center;">Online Learning Disadvantages</p> <ul style="list-style-type: none"> • Students need self-discipline • Unexpected academic rigor, time management and motivation • Limited interaction with instructors and students • Increased potential for miscommunication given lack of context and nonverbal cues • Limited learning potential and lack of personalization • Limited ability to adjust information type or quantity • Development costs* • Instructor costs for mediated delivery • Academic integrity weakens |
| <p style="text-align: center;">Classroom Learning Advantages</p> <ul style="list-style-type: none"> • Multi-sensory appeal • Human interaction and nonverbal communication • Direct instructor access • Immediate interaction and feedback • Shared firsthand peer experiences • Improved personal and professional relationships; shared learning relationship with instructor • Personalization of learning • Accountability to peers and instructor • Development costs* • Academic integrity can be maintained | <p style="text-align: center;">Classroom Learning Disadvantages</p> <ul style="list-style-type: none"> • Structured format that follows guided lesson plans • Regular schedule that limits flexibility • Attendance generally mandatory • Travel and logistics costs • Distractive students who contradict co-learning • Instructor and delivery costs** |

Source: Compiled from *Online Learning vs. Classroom Learning* by Neil Koemuller (2013), *4 Benefits of Classroom Classroom-based Workshops* by Jason B. Stevens (2011) and *8 Benefits of Classroom Classroom Workshops* by Byron Gray (2011).

*Current (2013) NFA development costs for online training average \$3,808 per hour of instruction vs. \$2,803 per hour of instruction for classroom content (\$150,000/72).

** Current (2013) delivery costs for on-campus NFA-sponsored six- or 10-day classes average \$17,400 for a class of 25 students.

6. Conclusion

It is clear from the literature review that scholarly research supports a mixed methods approach to delivering training and education based on adult student needs. No conclusive research was identified that substantially favors one training or education method over another. There is no evidence any nationally recognized brick-and-mortar institution has converted to entirely online training. In fact, several of the leading online institutions that started as entirely online schools (University of Phoenix and Kaplan University) have gone the “other way”; adding physical facilities to their online presence.

The data suggest adult learners are using a combination classroom instruction, paper-based and electronic self-study, blended learning, asynchronous and synchronous mediated learning, social media (Web 2.0) and mobile learning to achieve their learning objectives. While distance education is an effective training venue that is here to stay, there remains a need for classroom instruction for sharing and understanding complex, technical and expressive thought.

NFA long-term evaluation data show a very high return of performance improvement on course content and delivery methods. Given the diversity of the NFA student population and challenges of reaching many potential students, NFA’s current strategy of moving incrementally toward distance learning while keeping grounded in classroom instruction provides a well-researched, academically sound, student-focused foundation to deliver education and training to advance the professional development of the fire and emergency services.

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Summary: ..independent achievement, attitude, and retention outcomes were analyzed. Overall results indicated effect sizes of essentially zero on all three measures and wide variability. This suggests that many applications of DE outperform their classroom counterparts and that many perform more poorly. Dividing achievement outcomes into synchronous and asynchronous forms of DE produced a somewhat different impression. In general, mean achievement effect sizes for synchronous applications favored classroom instruction, while effect sizes for asynchronous applications favored DE. However, significant heterogeneity remained in each subset.

Brooks, C. F., & Bippus, A. M. (2012). Underscoring the Social Nature of Classrooms by Examining the Amount of Virtual Talk across Online and Blended College Courses. *European Journal of Open, Distance and E-Learning*.

Extract: Indeed, scholars have emphasized the importance of student-student talk in online learning contexts (e.g., Ertmer et al., 2007), and previous studies have compared the online communicative experiences of students in different classroom formats (e.g., Rovai & Jordan, 2004; Sullivan & Pratt, 1996; Vess, 2005). With this manuscript, we argue that students' experiences across course formats are influenced by social dynamics and relational performances that influence classroom experiences in powerful ways. For teachers, the issues raised by our research simply reinforce a core tenant of the instructional practice: the need to address each group of students as distinct entities. Certainly, what works for one group of students may not work for another, and this conclusion will not come as "news" for some readers.

Burian, P. E., Muhammad, B., Burian, P. S., & Maffei III, F. R. (2012). The Manifest Destiny Of Education: Past, Present And Beyond The Boundaries Of Tradition. *Contemporary Issues in Education Research (CIER)*, 5(4), 301-314.

Summary: Provides overview of traditional, online delivery methods and how the two are becoming more blended over time. Makes case for use of the Professional Learning Model (PLM) (Leasure, 2004) or the Applied Experiential Learning Model (AELM) (Corney, 2007) for online courses. These methods promote learner collaboration in the context of group- or team-focused projects and presentations. See also figure on page 310 which lays out how authors see education transforming over the next 10 years.

Dukes, L. L., Waring, S. M., & Koorland, M. A. (2006). The blended course delivery method: The not-so-distant education. *Journal of Computing in Teacher Education*, 22(4), 153.

Extract: Current evidence indicates that the blended course delivery method can reduce costs, improve student academic performance, and improve instructor success in meeting course learning objectives when compared to classroom instruction.

Fabry, D. L. (2009). Designing online and on-ground courses to ensure comparability and consistency in meeting learning outcomes. *Quarterly Review of Distance Education*, 10(3), 253-261.

Summary: recognizes need to adapt courses for both online and on-ground environments and offers design principles and processes to ensure equivalent outcomes.

Finch, D., & Jacobs, K. (2012, September). Online Education: Best Practices to Promote Learning. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Vol. 56, No. 1, pp. 546-550). SAGE Publications.

Extract: Synchronous interactions are during real time and include IM, chat rooms, and video or audio conferencing. Asynchronous interactions between students and instructors include email, discussion boards, wikis, blogs, and text messaging, while content related interactions include text-based learning modules, CD-ROMS, DVDS, pre-recorded video recordings and podcasts. While there does not appear to be a difference in learning outcomes between synchronous and asynchronous modes (Bernard et al., 2009; Saeed, Yang & Sinnappan, 2009), students prefer synchronous web conferencing over asynchronous text based lectures (Saeed, Yang and Sinnappan, 2009; Skylar, 2009). These findings suggest that student preferences should be considered in the selection of the type of communication utilized in an online education environment. In addition, Bernard et al., (2009) suggests that it may be beneficial to incorporate a mix of synchronous and asynchronous communication opportunities into the course's structure.

Lee, R. A., & Dashew, B. (2011). Designed learner interactions in blended course delivery. *Journal of Asynchronous Learning Networks*, 15(1), 68-76.

Abstract: The same interactions that are present in classroom classes can also be found in hybrid environments. The transition from traditional to a hybrid model presents an opportunity to engage faculty in a redesign process that promotes infusing content with pedagogical best practices and presents improved opportunity for student learning. Though this article has focused these redesign efforts on three discrete areas of designed learner interaction (learner-content, learner-instructor, and learner-learner), one of the most powerful affordances of a hybrid course is the opportunity for interactions that bridge these three areas.

Lim, D. H., Morris, M. L., & Kupritz, V. W. (2006, February). Online vs. blended learning: Differences in instructional outcomes and learner satisfaction. In *Academy of HumanResource Development International Conference (AHRD)* (Columbus, OH, Feb 22-26, 2006) (pp. 809-816).

Extract: First, the learners in online delivery group reported more workload than those in blended delivery group while they claimed less learning support than the learners in blended delivery group during their learning. This Second, the blended delivery format seems to provide clearer instructions to learners rather than using the online delivery format alone. In this study, the online learners experienced more challenges and obstacles in achieving similar learning levels than the learners in blended delivery group. They also provided relatively more claims for their lack of understanding as their reasons for low learning than the blended delivery learner group. This finding suggests that blended delivery methods may provide clearer and learner centered instructions than online only delivery method.

McGee, P., & Reis, A. (2012). Blended Course Design: A Synthesis of Best Practices. *Journal of Asynchronous Learning Networks*, 16(4), 7-22.

Extract: Blended courses are most successful when challenging and engaging online learning activities complement classroom activities... While many instructional strategies are suggested for classroom and online environments, there is a consistent belief that both varied interactivity and prompt feedback are key to student engagement in blended courses.

Robinson, R. P., & Doverspike, D. (2006). Factors predicting the choice of an online versus a traditional course. *Teaching of Psychology*, 33(1), 64-68.

Extract: some students may have a negative attitude toward online learning because it is less social than the typical classroom. As such, course designers can develop online classes to be maximally interactive with other students by incorporating technology such as chat rooms, bulletin boards, and even live Webcasts of course material. In addition, learners may have anxiety or self-efficacy issues toward the Internet and computer use, and course designers could include tutorial programs to help ease these barriers to online learning.

Webster, Cynthia M., and Jacqueline Kenney. "Embedding research activities to enhance student learning." *International Journal of Educational Management* 25.4 (2011): 361-377.

Extract: The design draws on Boud and Prosser's work to foster participation in a learner-centered, discipline-based approach. Activities rely on technology supports and mixed delivery modes to combine diverse theoretical perspectives and research methodologies. Fulltext available as attachment.

Wherry, M., & Windes, D. L. (2010). Square pegs, round holes: Distance students and campus priorities in the academic community. *Continuing Higher Education Review*, 74, 110-117.

Extract: within the traditional campus schedule, online tools can facilitate the management of ever-larger course sections. The opportunity to expand capacity despite the limits on existing resources is attractive, as is any shared revenue that may be returned by continuing education.

Zacharis, N. Z. (2011). The effect of learning style on preference for web-based courses and learning outcomes. *British Journal of Educational Technology*, 42(5), 790-800.

Extract: The non-linear access of the different types of online digital resources allows students to take control over the learning process, engage in social interaction and dialogue, develop multiple modes of representation, and become more self-aware (Oliver & McLoughlin, 1999). However, the freedom and flexibility provided by the online environment have as a side effect that many students are pursuing online learning opportunities only for the sake of convenience without any real consideration of the appropriateness of this delivery mode for their individual learning styles. 'Those students who may not have developed appropriate strategies for self-regulation may find that online education courses do not meet their needs and those students may subsequently drop the course; as a consequence, online courses have been associated with much higher rates of attrition than traditional classroom courses' (Summers, Waigandt & Whittaker, 2005). The current literature does not rule out the possibility that there may be only certain types of students who can successfully learn via the online format (Aragon, Johnson & Shaik, 2002; Boyd, 2004; Meyer, 2003). In general, there is evidence that students with a more independent learning style, greater self-regulating behaviour and the belief they can learn equally well through this modality are more successful in the online environment (Meyer, 2003).

National Emergency Training Center (NETC) Campus Facilities and Support

Al Fluman, Director, NETC
Management, Operations, & Support
Services Division

Operation Capacity Enhancement – Past Data

(NETC Housing Utilization – Sunday through Thursday)

| Month | Average Total (Beds Occupied) | % of 422/420 (Capacity) |
|---------------------|-------------------------------|-------------------------|
| January, 2013 | 284.1 | 67% |
| February, 2013 | 289.0 | 68% |
| March, 2013 | 287.0 | 68% |
| April, 2013 | 252.2 | 60% |
| May, 2013 | 241.3 | 57% |
| June, 2013 | 266.9 | 63% |
| July, 2013 | 327.1 | 77% |
| August, 2013 | 349.7 | 83% |
| September, 2013 | 337.5 | 80% |
| Oct., 2013 Shutdown | No Data | No Data |
| November, 2013 | 242.9 | 58% |
| December, 2013 | 293.1 | 69% |
| January, 2014 | 310.2 | 74% |
| February, 2014 | 338.6 | 80% |
| March, 2014 | 324.6 | 77% |
| April, 2014 | 263.3 | 62% |
| May, 2014 | 327.8 | 77% |
| June, 2014 | 321.6 | 77% |
| July, 2014 | 337.7 | 80% |
| August, 2014 | 377.1 | 90% |
| Totals | 303.7 | 72% |
| Goal | 357.0 | 85% |

Operation Capacity Enhancement – Quick Facts (NETC Housing Utilization – Sunday through Thursday)

- Data Past 19 Months: 303 beds filled daily or 72% capacity
- FY14 Capacity Data to Date: 314 beds filled daily or 75% capacity (last 10 months)
- Operation Capacity Enhancement Data (Started May, 2014): 341 beds filled daily or 81% capacity (last 4 months)
- **GOAL: 357 beds filled daily or 85% capacity**

Facility Management Branch Update

2014 Facility Improvements

- Temporary Kitchen /Dining Hall (TENT is GONE but not forgotten)
- Building K / Dining Hall renovation completed
 - Service line adjustments (on-going)
- Replacement of kitchen grease trap
- Installation of surge protection on generator automatic transfer switches in Buildings P, M, L, F, D, C-West, C-East, B and S

Facility Management Branch Update

2014 Facility Improvements (continued)

- Paving completions (areas around Buildings G, H, J and K)
- Upgrade of building potable water supply mains and installation of individual building water meters
- N roof replacement (80% completed)

Facility Management Branch Update

2014/15 Facility Confirmed Projects (as of 9/14)

- Installation of a new campus water supply main (could start in fall of 2014)
- Building A Elevator Upgrade
- Building A Americans with Disabilities Act (ADA) Suite Renovation
- Building B Roof Inspection and Repair
- Building B Rest Room Renovation

Facility Management Branch Update

(continued)

2014/15 Facility Confirmed Projects (as of 9/14)

- Building D ADA Suite Renovation
- Repair K Building Steps
- Replace Classroom Lighting Fixtures
- Building N Elevator Upgrade
- Building R Office Space Renovation
- Campus Exterior Lighting Upgrade

Facility Management Branch Update

(continued)

2014/15 Facility Confirmed Projects (as of 9/14)

- Install Occupancy Sensors in Staff Offices
- Building O Roof Replacement
- Vend Miser Installation
- Building C-West Heating, Ventilating, and Air Conditioning (HVAC) Upgrade

DHS Sustainable Practice Award

NETC High Performance & Sustainable Buildings Award (2014)

- NETC implemented innovated strategies and technologies to improve the efficiency of our aging building infrastructure to include:
 - Meeting High Performance Sustainable Buildings requirements in 9 buildings.
 - Implemented 12 energy and water conservation measures
 - Recycled 22% of solid waste and 84% of construction/demolition debris (keeping material out of landfills)
 - Recognized as a model by the Maryland State Historic Preservation Office for conducting building improvements on historic properties
- These efforts have already demonstrated affordable readiness – reducing 10,697 MMBTUs (million British thermal units) of energy and 1,253 kilogallons of water in FY2012 compared to FY2013, saving the agency \$224,061. The savings next year are anticipated to be over \$700,000

FY2015 Budget Information

- Base budget in FY2015 remains basically the same (\$41,407,000)
- Expect to operate under a CR (Continuing Resolution)
- Facility deferred maintenance and capital improvement plan is robust (FEMA Mission Support Bureau works with USFA on priorities)
- Large FY2015 projects include:
 - Phase 1 Radio System Replacement
 - Critical Log Cabin Repairs
 - S Building HVAC Replacement
 - Campus Storm Drain Repairs

Discussion

Any Questions?