



National Computer Forensics Institute – Student Assessment Pilot Program

August 11, 2021

Fiscal Year 2021 Report to Congress



Homeland
Security

U.S. Secret Service

Message from the Director

August 11, 2021

The following report, “National Computer Forensics Institute – Student Assessment Pilot Program,” has been prepared by the U.S. Secret Service.

This report is submitted in accordance with direction in the Joint Explanatory Statement, which accompanies the Fiscal Year (FY) 2021 Department of Homeland Security (DHS) Appropriations Act (P.L. 116-260).

The National Computer Forensics Institute (NCFI) was authorized formally in the Strengthening State and Local Cyber Crime Fighting Act of 2017 (6 U.S.C. § 383) to train and equip state, local, tribal, and territorial (SLTT) law enforcement officers, prosecutors, and judges.



From NCFI’s inception in FY 2008 through FY 2020, the U.S. Secret Service has trained and equipped more than 13,000 students, including 8,600 state and local law enforcement officers, 3,600 state and local prosecutors, and more than 800 judicial officials. These students represent all 50 states, three U.S. territories, and more than 2,000 agencies nationwide, and strengthen the Secret Service’s network of Cyber Fraud Task Forces.

Pursuant to congressional requirements, this report is submitted to the following Members of Congress:

The Honorable Lucille Roybal-Allard
Chairwoman, House Appropriations Subcommittee on Homeland Security

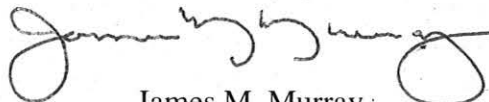
The Honorable Chuck Fleischmann
Ranking Member, House Appropriations Subcommittee on Homeland Security

The Honorable Chris Murphy
Chair, Senate Appropriations Subcommittee on Homeland Security

The Honorable Shelley Moore Capito
Ranking Member, Senate Appropriations Subcommittee on Homeland Security

Inquiries relating to this report may be directed to me at (202) 406-5700.

Sincerely,

A handwritten signature in cursive script, appearing to read "James M. Murray". The signature is written in black ink and is positioned to the left of the printed name.

James M. Murray
Director
U.S. Secret Service

Executive Summary

NCFI is a federally funded training institute dedicated to instructing SLTT officials in digital evidence and cybercrime investigations, as authorized by the Strengthening State and Local Cyber Crime Fighting Act of 2017 (6 U.S.C. § 383). Since opening in 2008, NCFI has trained more than 13,000 SLTT law enforcement officers. Graduates have reported completing forensic exams on more than 350,000 devices.

The FY 2020 DHS Appropriations Act (P.L. 116-93) provided the U.S. Secret Service with an increase “of \$1,500,000 for Research and Development, for a pilot program with a university-based digital investigations center to maximize and evaluate effective instruction for students enrolled at the NCFI, such as pre- and post-assessment of student knowledge of procedures and tool utilization.”¹ The Joint Explanatory Statement accompanying the FY 2021 DHS Appropriations Act (P.L. 116-260) requires this report on the pilot program and plans for future means of preparing for and assessing the training of students at NCFI.

The additional funding in FY 2020 for research and development allowed the Secret Service to establish a pilot program to evaluate the educational and training requirements of NCFI students better. Although still in development, the pilot program seeks to identify new capabilities for an expanded curriculum and to assess students’ baseline knowledge and competencies (pre-/post-testing) in order to measure their growth upon completion of the coursework. The pilot program may explore further options for making NCFI courses more valuable through accreditation with university partners.

As of April 2021, the Secret Service completed efforts to identify new capabilities for an expanded curriculum utilizing the digital and multimedia evidentiary framework from the National Institute of Standards and Technology, as well as from the National Security Agency and the DHS Center of Academic Excellence-designated Knowledge Units. The project now has entered the design phase for the pre-/post-testing application. The full system is expected to be delivered by March 2022.

¹ H. Comm. Print. 38-678 at p. 726 (January 2020). Available at: <https://www.govinfo.gov/content/pkg/CPRT-116HPRT38678/pdf/CPRT-116HPRT38678.pdf>



National Computer Forensics Institute - Student Assessment Pilot Program

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I. Legislative Language

This report has been compiled pursuant to language set forth in the Joint Explanatory Statement accompanying the Fiscal Year (FY) 2021 Department of Homeland Security (DHS) Appropriations Act (P.L. 116-260), which states:

The agreement includes the amount requested. Not later than 180 days after the date of enactment of this Act, USSS is directed to provide a report on the use of the funds for the fiscal year 2020 pilot program to maximize and evaluate effective instruction at NCFI, including how the program is meeting previously unmet needs and any additional efficiencies achieved in preparing for and assessing the training of students.

II. Background

The National Computer Forensics Institute (NCFI) is the Nation's premiere federally funded training institute dedicated to the instruction of state, local, tribal, and territorial (SLTT) law enforcement officers, prosecutors, and judges in cybercrime investigations. NCFI empowers SLTT law enforcement, prosecutors, and judges by providing them with hands-on training in network intrusion response, digital evidence processing, and applicable law for high-tech criminal prosecution and adjudication. Those SLTT partners often join the Secret Service's network of 42 domestic and two international Cyber Fraud Task Forces (CFTF). State and local CFTF members work alongside other federal agencies and private-sector entities to thwart cybercrimes targeting both private citizens and our Nation's financial and critical infrastructure.

NCFI opened in 2008 and has trained more than 13,000 SLTT law enforcement professionals. These graduates have leveraged the skills gained at NCFI to complete forensic exams that have affected the safety and well-being of U.S. citizens directly. Two examples that illustrate the impact of NCFI training include the capability of unlocking a suspect's cell phone that was used in the 2020 terrorist attack at the Naval Air Station in Corpus Christi, Texas, and the exams that were conducted in support of the investigation surrounding the shooting at Marjory Stoneman Douglas High School in Parkland, Florida.

Prior to FY 2020, NCFI lacked an effective means to measure students' learning systematically to ensure placement in the appropriate classes to maximize learning outcomes from the training provided. To address this gap, the FY 2020 DHS Appropriations Act (P.L. 116-93) provided the Secret Service an increase "of \$1,500,000 for R&D [research and development], for a pilot program with a university-based digital investigations center to maximize and evaluate effective instruction for students enrolled at the NCFI, such as pre- and post-assessment of student knowledge of procedures and tool utilization."² The FY 2021 DHS Appropriations Act (P.L. 116-260) requires this report on the pilot program and plans for future means by preparing for and assessing the training of students at NCFI. NCFI partnered with the DHS Science & Technology Directorate (S&T) to identify and use an existing contract vehicle to engage in this research with partner universities. This partnership resulted in the selection of Champlain College, located in Burlington, Vermont.

Champlain College serves as a technical resource for sworn law enforcement and forensic analysts and facilitates various levels of digital forensic field training. Additionally, Champlain College is a designated National Security Agency (NSA)/DHS National Center of Academic Excellence in Cyber Defense and a recipient of various NSA GenCyber and Bureau of Justice Assistance, Department of Justice, Student Computer Forensics, and Digital Evidence Educational Opportunities Program grants.

² H. Comm. Print. 38-678 at p. 726 (January 2020). Available at: <https://www.govinfo.gov/content/pkg/CPRT-116HPRT38678/pdf/CPRT-116HPRT38678.pdf>

Further, graduates of NCFI currently do not have an avenue for applying NCFI coursework toward formal academic certifications. Therefore, the pilot program also is evaluating options for making NCFI courses more valuable through accreditation with university partners.

III. Results

Through the pilot program, NCFI intends to create a web-based testing system that students nominated to enroll in NCFI courses will access in order to assess their current skill set. The results of these examinations will assist in guiding students to appropriate class offerings, enhancing their skills at the highest level of proficiency. Prior to the development of the testing application, curriculum mapping was necessary.

NCFI partnered with Champlain College to undertake a curriculum-mapping project that was completed in March 2021. The project provided NCFI with analysis to assist in developing questions for the pre-assessment program. Specifically:

- Champlain College performed a detailed review of current NCFI class offerings.
- Using established digital and multimedia evidentiary best practices and standards, Champlain College mapped the NCFI curricula to identify the covered knowledge, skills, and abilities (KSA).

Ten courses were mapped against the National Institute of Standards and Technology’s National Initiative for Cybersecurity Education (NICE) Workforce Framework for Cybersecurity, and the findings were identified in Champlain College’s NCFI Curriculum Review Mapping Report, which stated, “[t]he combination of all ten courses addressed every relevant KSA in some capacity.” The following courses were mapped utilizing the NICE framework in the curriculum report:

First Responder Courses:

- BNIT: Basic Network Investigator Training
- DCC: Digital Currency Course
- DEI: Digital Evidence Investigations
- SNI: Social Networking Investigations

Basic Examiner Courses:

- BCERT: Basic Computer Evidence Recovery Training
- MDE: Mobile Device Examiner
- NITRO: Network Intrusion Response Program

Advanced Examiner Courses:

- AFT: Advanced Forensics Training
- AMDE: Advanced Mobile Device Examiner
- MFT: Mac Forensics Training

Now that the mapping and curriculum analysis is complete, the next phase of the project is focused on the design of the testing system. Once the system is in place, the Secret Service

anticipates that there will be an established standard for measuring obtainment of KSAs, potentially allowing for additional recognition for the coursework of NCFI students.

Milestones	Date (Months)	Status	Projected Completion Date
System Requirements Review	1.5	Complete	March 2021
Preliminary Design Review	3	Pending	June 2021
Critical Design Review	6	Pending	September 2021
System Delivery	12	Pending	March 2022

System Requirements Review

- Champlain College completed an initial high-level system design concept and draft design specification that will serve as the baseline for future design activities.
- Upon completion of the system concept, Champlain College will hold a System Requirements Review to document the design and any tradeoffs needed to meet stated requirements.

Preliminary Design Review

- Champlain College creates electronic pre-training assessments against relevant core competency groupings and constructs a preliminary design to determine the feasibility of the concept.
- Champlain College conducted a curriculum analysis and made recommendations to NCFI for what needs to be added to the curriculum.

Critical Design Review

- Champlain College is expected to create a more detailed view of the system and to start constructing the examinations that will be used as part of the post-training assessment.

Delivery of System

- Champlain College is expected to finish building the pre-assessment system as well as the post-training college credit integration.
- Testing for the system will be completed and training materials will be created.
- The system will be delivered with a 2-year warranty to accommodate any glitches identified through the rollout.

IV. Analysis

The pilot program for pre- and post-testing with a university-based digital investigation center will allow NCFI to maximize and evaluate effectiveness of instruction and to assess student knowledge of procedures and tool utilization. It also will work to match students with the appropriate course content to capitalize on their time at NCFI.

Currently, NCFI does not have adequate means to identify the skill level that students possessed prior to their coursework. With a pre-assessment, NCFI will be able to recommend basic courses for some students while allowing advanced work for those who already possess baseline knowledge. The course mapping that already has been completed will allow for question topics to identify more precisely which courses would be most valuable for individuals to attend.

Additionally, the post-assessments will improve NCFI's ability to measure knowledge gained from the courses. If students who attend a specific course are testing consistently at similar levels in the pre- and post-tests, it will indicate that course content will need to be adjusted. The combination of matching students utilizing the pre-test and measuring knowledge gains via the post-test will allow NCFI to tailor the curriculum/course difficulty better to be as effective as possible.

NCFI also is evaluating the possibility of college credit for attendees for completed coursework. This development would not only add value for NCFI attendees, but also encourage the continuous education needed for the investigation of ever-evolving complex crimes. Encouraging the continuous education of NCFI graduates directly strengthens the ability of the Secret Service's network of CTFs to prevent, detect, and investigate various forms of cybercrimes, including potential terrorist attacks against critical infrastructure and financial payment systems.

V. Conclusion

While the pilot program is still in the early stages of its execution, NCFI anticipates that the work done through this partnership with DHS S&T and Champlain College will have significant impacts on NCFI's ability to match students with the necessary classes, and will give students the opportunity to leverage the skills they have gained for a formal certification. Moving forward, NCFI plans to look for further opportunities to engage in R&D activities to assist with ever-expanding requirements for law enforcement to investigate cybercriminal activity effectively.

As NCFI continues to provide cutting-edge training, it enables SLTT law enforcement partners to investigate more complex cyber-enabled crimes. Providing more tailored training will lead to faster response times for capturing time-sensitive information, which is critical to a criminal investigation. NCFI partners have been vital for cases involving endangered minors, violent crime, threats to national security, and breaches of privacy. Law enforcement partners create a force multiplier for the Secret Service and are essential to staffing the CFTFs that serve as the center of its investigative mission.

VI. List of Abbreviations

Abbreviation	Definition
CFTF	Cyber Fraud Task Force
DHS	Department of Homeland Security
FY	Fiscal Year
KSA	Knowledge, Skills, and Abilities
NCFI	National Computer Forensics Institute
NICE	National Initiative for Cybersecurity Education
NSA	National Security Agency
R&D	Research and Development
S&T	Science and Technology Directorate
SLTT	State, Local, Tribal, and Territorial
USSS	U.S. Secret Service