C34 Teaching Digital Forensics to Young Women and Underserved Youth

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Learning Overview: After attending this presentation, attendees will better understand: (1) the overarching design principles and research underpinning this innovative educational initiative; (2) practical lessons learned throughout the development and implementation of the Digital Forensic Science Learning Environment (DFSLE) and related activities; and (3) educational and infrastructure challenges and resulting solutions.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by: (1) bringing more women and underserved populations into traditionally underrepresented computer science-related fields; (2) enhancing Science, Technology, Engineering, and Math plus Computing (STEM+C) education at out-of-school settings; (3) increasing the number of qualified candidates for a rapidly growing number of digital forensic science positions; (4) providing a robust instructional framework for teaching science inquiry-based subjects; and (5) promoting responsible online behavior and cyber street smarts.

Attendees will learn about an initiative to address the growing demand for qualified candidates in digital forensics, particularly young women and men from underrepresented populations. This presentation explains the design, development, implementation, and future of the DFSLE, an innovative educational program and supporting virtual learning laboratory created to provide youth with digital forensic knowledge, skills, and career pathways. This program combines online and in-person classroom elements that challenge students to become cyber sleuths solving real-world problems, applying methods and tools in digital forensics, and exploring complex social and technical issues associated with cybercrime. The DFSLE extends the Investigate and Decide Learning Environment (IDLE) framework from learning sciences, teaching technical and problem-solving skills through goal-based investigative scenarios. By immersing students in real-world problem-solving situations, this initiative strives to motivate students to develop scientific reasoning, technical knowledge, practical skills, and pursue related careers while improving their cyber street smarts. This initiative has included students from grades 9-12 in Baltimore, MD, New Orleans, LA, and Seattle, WA. The project connects with aspects of expectancy-value theory and Social Cognitive Career Theory (SCCT) to encourage students to pursue educational or career pathways related to computer science and STEM. In particular, this focuses on the community and relationship-building elements of the mentor network and collaborative peer-learning activities to provide strong social and environmental supports. The practical curriculum has been augmented with teacher training, classroom dashboard, lesson plans, and a pathway resource guide. Classroom activities introduce students to experts in the domain as role models and career mapping. In this manner, this initiative guides students along pathways that can lead to community college and university degree programs and, ultimately, into the workforce.

Sustainability: The Computer Science Study Lab (CSSL) is being promoted in partnership with the National Girls Collaborative. Further work on teaching training and open source training datasets is underway to ensure long-term sustainability of this initiative.

Digital/Multimedia Evidence, Forensic Science Education, Computer-Assisted Training