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Cyber Experiential Learning with Industry Participants & Real Projects

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AMCIS: Cyber Experiential Learning with Industry Participants & Real Projects

TREO Talk Paper

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Abstract

The Cyber Security Workforce & Skills Shortage. In September of 2022, the United States' Federal Cyber Workforce Management and Coordinating Working Group released a report titled "State of the Federal Cyber Workforce" announcing the cyber workforce challenge the United States government is facing, which is shared by many other organizations in multiple sectors. The report shares that there are over 700,000 cyber job openings in the United States, which is expected to grow by 13% by 2030. Of the 700,000, about 40,000 are cyber job openings in the public sector. Moreover, it was determined that more than 30% of the current federal cyber workforce is over the age of 55 and less than 6% are under the age of 30. The report highlighted the need to better recruit cyber talent to the field.

Defining Experiential Learning (EXL). EXL has been implemented in educational programs for some time now and is defined as learning by doing; usually conducted in labs or through simulation environments. However, since the Spring 2021 semester, our program has utilized EXL as a method to have high-performing students participate in real-world projects sponsored by real companies and clients – which we refer to as industry participants. There have been two types of projects within our EXL program – business process improvement and cyber security.

The $100,000 Cyber Experiential Learning Grant Award. In June 2022, the Commonwealth Cyber Initiative (CCI) awarded the researchers with a $100,000 grant to be part of the cyber workforce development and upskilling effort. CCI is an organization set up by the state of Virginia to fund cyber research and workforce development efforts to enhance the state's and country's cyber security workforce. The researchers' proposal focused on connecting higher education students (cyber interns) interested in the field of cyber security to participate in an EXL environment, where they worked on real cyber security related projects with real organizations. This particular cyber EXL effort is being run from February 6, 2023 until April 28, 2023 as a 12-week cohort consisting of 11 undergraduate and graduate cyber interns from two different higher educational institutions. The students were interviewed and selected by one of our three industry participants. Two of the participants are defense contractors, and the third is a federally funded research and development center (FFRDC). Each cyber project were created by the industry participants due to a need within their organization.

Preparing for the Next Grant. The next cyber EXL grant is expected to be released by CCI in April of 2023, and is expected to be executed in the Summer of 2024. Learning from our 2022 efforts, the next effort (should we be awarded the grant) will improve in two specific areas. First, we will hold the EXL effort during the summer for 10-weeks to align better with other summer internship programs, which will also allow students to be fulltime (40hrs/week) employees. Second, the EXL grant will pay the cyber interns $10 - $15 per hour, requiring the industry participants to supplement the cyber interns' pay with an additional $12 per hour (the minimum wage for the State of Virginia in the United States). This will ensure that our cyber interns are paid competitively compared to their other cyber security intern peers ($22 - $27 per hour).

Sharing the Importance of the Work. At the end of their EXL effort, the three groups will provide a presentation on their project activities and lessons learned; as well as an individual 1-page report which the researchers will use to further inform practitioners and academia about EXL in cyber security. The researchers want to share their EXL efforts and lessons learned with the academic community because it is important to see how academia can work with industry to help address the cyber workforce shortage while getting students the hands-on skills they need to be effective upon graduation and starting their fulltime jobs.