EXPERIENTIAL LEARNING FOR NONTRADITIONAL STUDENTS IN AN ONLINE, INTERDISCIPLINARY MASTER'S PROGRAM IN CYBERSECURITY

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ABSTRACT

Many security and resilience studies students are professionals who work full-time. Thus, many prefer online learning. Experiential learning incorporates a wide variety of learning activities. The scholarship of teaching and learning (SOTL) shows us that experiential engagement can enrich learning in face-to-face and online modalities. Experiential activities can also be customized for nontraditional students. This article identifies relevant SOTL literature for online experiential learning. It then discusses an example of how experiential learning can be integrated throughout the online courses of an interdisciplinary master's program targeted to full-time working professionals.

Keywords: experiential learning, online learning, professional students, nontraditional students, constructivism, open education

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EXPERIENTIAL LEARNING IN AN ONLINE MODALITY

Experiential learning incorporates active learning, collaborative activities, problem-solving, and directed or undirected reflection (Furman & Sibthorp, 2013). As Furman and Sibthorp detail, the philosophies underlying experiential learning can be traced back to scholars in the early- to mid-20th century, and developments have encouraged a wide range of experiential practices today. While the internship opportunity is often identified as the prime example of experiential learning in higher education, scholarship of teaching and learning (SOTL) provides a host of other models, such as fieldwork (Gerhart et al., 2021), clinical practice (Snow et al., 2019), simulations and game playing (Serafim da Silva et al., 2019), role-playing (Lowell & Alshammari, 2019), problem-solving and projects involving real-world artifacts (Stephens et al., 2021), and laboratory activities and virtual reality tasks (Mohammadi et al., 2020).

While there is a wealth of SOTL literature on experiential learning, Gasson and Waters (2018) noted little research on how best to incorporate experiential learning in online education. However, there has been an increase in SOTL research into online experiential learning. All the experiential learning examples cited at the end of the previous paragraph come from SOTL research showing the successes of experiential learning within online modalities.

This article presents one example of how experiential learning may be included in online professional master's programs and comprises six parts. The introduction, a background on the University of New Hampshire's M.S. Cybersecurity Policy & Risk Management (CPRM) degree program and its institution, a description of how experiential learning is woven into the

curriculum, an assessment of the program, ideas for the future evolution of experiential learning within the program, and the conclusion. The ideas and analysis offered here may help foster other initiatives incorporating experiential learning into online higher education in security studies and resilience disciplines.

INSTITUTIONAL BACKGROUND

The University of New Hampshire launched the M.S. CPRM degree in fall 2018. The Security Studies Department offers the program at the university's Manchester campus. The institutional accreditor is the New England Commission of Higher Education, and the U.S. Census designation is Region 1: Northeast, Division 1: New England.

The university's enrollment (combined for both Durham and Manchester campuses, as of spring 2022) was 11,575 undergraduates and 2,405 graduates (Office of Institutional Research and Assessment, n.d.). In the fall of 2022, the Security Studies Department recorded 226 undergraduates and 77 graduate students, and 35 of these graduate students were in the M.S. CPRM program. (K. Carlman, personal communication, August 17, 2022).

Neither the university nor the department requires experiential learning. However, experiential learning is strongly encouraged at undergraduate and graduate levels. Each program's faculty make decisions about experiential learning opportunities or requirements.

The Security Studies Department requests that all faculty bring current events into the classroom and support the development of skills needed to address the wicked problems of our security-related professions. The department's bachelor's program requires either an internship or a senior thesis, and the department's three master's programs have culminating experiences that involve real-world problem identification and solving.

EXPERIENTIAL LEARNING IN THE M.S. CPRM CURRICULUM

A primary goal of experiential activities is to bring theory and practice together to foster students' self-reflection and deep learning. Noting that Kolb's work on experiential learning theory has been widely accepted, Snow et al. (2019) emphasized Kolb's requirement of transformative and constructivist engagement and his four-stage experiential learning cycle of "concrete experience, reflective observation, abstract conceptualization, and active experimentation" (p. 81). This section explains how the CPRM program helps students to bring their professional experiences into the classroom and to apply their classroom learning to their respective professional contexts, utilizing Kolb's important concepts combined with a few more pedagogical techniques discussed here.

Student Background

CPRM was designed with an asynchronous online modality that provides flexibility for students who are also working professionals. All courses were newly created in alignment with pedagogy supporting adult professional learners and focused on the interdisciplinary workforce needs of

cyber risk management. This structure brings students from all over the world and from many different industries and sectors to learn together.

In the program's first three years, 95% of matriculated CPRM students were full-time working professionals. They worked in various fields relevant to the discipline (e.g., information technology [IT], compliance, risk management, security, business) across numerous industries such as finance, education, defense industrial base, healthcare, civilian government, military, IT/communications, law enforcement, and recreation. However, many students have yet to concurrently and deliberately apply graduate-level studies to their work experiences; nor have they systematically applied their professional expertise to the classroom.

Experiential Assignments

The CPRM program is based on constructivism and open education; students make sense of the materials together and share their work with each other, not just the faculty. The pedagogy is transparent, so students know why they are learning in this way and can reflect on and discuss the benefits and challenges of experiential learning in an open format.

All CPRM courses have multiple assignments that require students to apply course materials to a student-chosen organization and conduct analysis and extrapolation based on that organization's context. Assignments could result, for example, in a work memo, a new policy document, a funding/initiative presentation to the executive suite, a register, or other artifacts used in information gathering and analysis of risks.

When offering customizable assignments, faculty ensure that confidential or proprietary data is never required. Faculty guide how to generalize the specific organization's information while still applying and analyzing that week's assignment to the student's chosen context (e.g., a large-sized manufacturer in a particular sector, a small-sized non-profit with specific kinds of services, a particular office in a state government). Furthermore, students working within sensitive organizations may choose a different organization for their assignments.

CPRM students are eager to apply new knowledge to their current jobs, and these personalized, real-world assignments enhance student engagement and motivation. This approach also allows students to experiment in the safe space of the classroom before using their ideas to help advance their careers or improve their communities. For adult learners looking to use their degrees for lateral career moves, these assignments provide opportunities to research, problem-solve, and apply their knowledge in the sector/industry where they wish to transition.

The faculty collaborate on pedagogical innovation and scaffolding of knowledge and skills development across courses. Scaffolding is combined with other pedagogical techniques such as spaced practice and interleaving, which can encourage better retention and deeper learning (Carpenter, 2014). Faculty also incorporate metacognitive practices; and anecdotally, numerous CPRM students have recognized a gradual accumulation of reflective knowledge (small but increasingly frequent "aha moments").

With the faculty's collaborative efforts in these pedagogical approaches, students can construct their knowledge within and across courses while developing CPRM expertise directly relevant to

the student's chosen business, public agency, or industry/sector. This integration promotes substantive connection-making across courses and enhances student connections with each other as they learn more about their peers' worlds.

Sharing Knowledge and Learning from Each Other

The program's open-learning structure means that each student's personally contextualized work is shared with the class (e.g., posted to a discussion board in either written or video format), and the professional diversity means that students cannot use industry-specific acronyms or jargon. This structure and approach facilitate exposure to how the same concepts can be applied in different organizations and environments, encourage learning best practices across industries/sectors, and support increased transparency and communications with other communities.

CPRM students constructively develop their applied knowledge and then share it with classmates from interdisciplinary backgrounds. They improve engagement and deeper learning for the class and develop professional approaches to problem-solving that carry over into their careers. These activities help break down silos, a goal imperative to our security and resilience professions because silos are one contributor to the wicked problems in these fields. Experiential learning and interdisciplinary studies are especially good at addressing wicked problems by encouraging transformation and collaboration in the face of complexity and breaking down barriers to effective communication and inter-organizational processes (Davidson et al., 2021).

Capstone

The culminating experience for CPRM involves a capstone for which each student must identify a real-world problem and develop solutions for it; students also must reflect on their capstone experience and their learning evolution during the program. The chosen project may be experiential, research, or creative. While the capstones are individualized topics, classmates who are professional workmates may customize their capstone into a group project. The applied experiential learning opportunities in previous CPRM courses help students build the foundation for identifying and narrowing their chosen capstone problem and creating deliverables to help solve it.

ASSESSMENT

For experiential assignments in CPRM courses, teachers typically focus on *how* the students think, not what they think. Thus, the instructor's assessment addresses the relevance, appropriateness, and comprehensiveness of the applied knowledge (e.g., the logic and legitimacy of the student's application of a theory or standard). Furthermore, teachers provide significant input in deconstructing CPRM-related professional standards to help the students interpret why and how to apply this knowledge to a particular organization.

A committee or a teacher evaluates the capstone. Due to the intensive eight-week timeframe for our online courses, faculty typically do not bring external evaluators (e.g., employers) into the assessment (although industry professionals may serve on a committee).

Assignments may also involve peer assessment or self-assessment. Sometimes, this assessment is spaced after an additional learning activity or module to allow for more reflection between the initial assignment and the assessment.

Five of the six CPRM program learning outcomes require the regular practice that these integrated experiential learning activities provide. Student evaluations and informal assessments of student achievement per the program- and course-level learning outcomes have indicated positive results thus far. However, due to the relative infancy of the CPRM degree, the department still needs to conduct a formal program assessment.

FUTURE EVOLUTION

Future CPRM enrollments may include recruitments from sponsoring companies, which could result in more group capstones. However, such a group of sponsored students would be mixed with other students to continue the advantages of interdisciplinarity within the program's open education approach.

The program also may incorporate content mainly related to remote work situations (e.g., security and risk management challenges of remote work infrastructures) to better prepare our students for the increasing prevalence of such professional contexts.

CONCLUSION

Carefully designed assignments and faculty collaboration can bring the practices of experiential learning to online higher education. Constructing knowledge and applying it to a personally chosen organization—and repeating this exercise in increasing levels of challenge throughout the various courses of the online master's program—provides engagement and motivation to nontraditional students and helps to prepare them to address the complex problems of our professions.

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