

# Enhancing Self-Directed Learning with Artificial Intelligence: A Cybersecurity Classroom Study

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## Abstract

Generative artificial intelligence (AI) tools were met with a mix of enthusiasm, skepticism, and fear. AI adoption soared as people discovered compelling use cases--developers wrote code, realtors generated narratives for their websites, students wrote essays, and much more. Calls for caution attempted to temper AI enthusiasm. Experts highlighted inaccuracies in some of the generated information. Artists, writers, programmers, and other professionals who create for a living questioned their job security. Educators feared that these tools enabled cheating. Nevertheless, the tools persist, and enthusiasm for AI tools shows no sign of abating. This study assumes that people will continue to adopt AI tools, and using AI tools to aid in daily tasks will be the norm. The current study focuses on how AI tools can be leveraged to improve student learning outcomes. In a capstone cybersecurity course, the instructor encouraged students to use ChatGPT 3.5 on a self-directed learning assignment to select topics, find learning resources, and carry out their learning plans. Some students did not use ChatGPT. Those who used ChatGPT found it to be a helpful learning aid. All students plan to use ChatGPT for self-directed learning after graduating. No student violated academic integrity policies. The results demonstrate that AI tools can enhance the learning processes. Educators must teach the appropriate use of AI tools and encourage critical evaluation of AI-generated content.

**Keywords:** artificial intelligence, self-directed learning, cybersecurity, pedagogy

An updated and full version of the abstract may be found at <https://isedj.org>