Gamification, or the application of game-like elements to non-game scenarios, has been shown to increase learners' skill and knowledge mastery, motivation, interest, and enjoyment. Applying gamification to cybersecurity incident response would allow learners to develop the technical and decision-making skills required to effectively detect and respond to cyber incidents in a more accessible and appealing format. This project looks at improving cybersecurity education through gamification. The solution we’ve developed utilizes Roguelike games to provide a randomized scenario in which students can practice incident response in real-world like conditions.

Gamification, or the application of game-like elements to non-game scenarios, and serious games, or games with a focus on learning, have proven to be an effective tool in teaching. Gamification has been shown to have a positive effect on student engagement, motivation, interest, enjoyment, conceptual understanding, skill development, and speed of mastery. According to the constructivist learning theory, learning occurs more effectively when students are actively involved in the knowledge construction process compared to passively receiving information [4]. Gamification is one method of providing hands on experience and active engagement to students, thereby helping to improve their knowledge construction. The field of cybersecurity has proven to be especially conducive to gamification, and research has found that applying game-like elements to cybersecurity trainings have increased participants skills, involvement, interest, and enjoyment. It allows students to develop their skills and knowledge through experiences that emulate real world scenarios, increasing the applicability of their knowledge. The higher cybersecurity proficiency developed through gamification can directly translate to an improved ability to detect and respond to cybersecurity incidents and improve critical decision-making skills. This project examined applying gamification to incident response to better help cybersecurity students and professionals develop the technical and decision-making skills required to effectively respond to cybersecurity incidents.