Chapter 1
Introduction to Simulation Learning in Emergency and Disaster Management

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ABSTRACT

Simulation and game-based learning is an essential learning application especially as it pertains to a high-stakes field like emergency and disaster management. Introducing real-life learning applications into the classroom allows the learner to make critical decisions at different points throughout a simulation providing practical learning that leads to a cognitive understanding of the material. These simulated practices ensure memory and longer retention of these events or tasks, a requirement to ensure that learning transpires. Likewise, these simulations also place the learner under acute stress, something that replicates the stress felt during real-life disasters. Therefore, it is crucial to have students apply what they have learned in simulations as a demonstration of their learning. These learned skills are essential for students to be marketable and thrive in a career field where decision-making, problem-solving, and critical thinking are vital for their success.

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INTRODUCTION

Within the field of emergency and disaster management, professionals come to work in a variety of high-stakes environments. Whether it's responding to a tornado that has touched down and destroyed a community to the mapping of flood zones, the people that work in the emergency and disaster management field have a demanding and stressful job that can impact the lives of others. While there is much to be said for higher education and on-the-job training, how can professionals in this field be adequately prepared to perform their job functions at the height of a crisis? Within a university setting, students gain much of their knowledge through traditional faculty lecture models. In this lecture-based setting, students are exposed to a wide variety of concepts and are required to read the material assigned in the hopes that they can remember what they have read and listened to in class come exam time. To be sure, in this setting, much information can be learned about the field; however, lecture-based learning fails to allow faculty to adequately convey the challenges that arise when working in the field. When it comes to on-the-job training, there are often risks associated with having someone in the field that lacks critical skill-sets. How can people working within a high-stress field like emergency and disaster management gain a complete education in a class-based environment? We argue that one way to better prepare the future emergency and disaster management workforce is through simulation and game-based learning. Through these learning tools, students can gain valuable hands-on disaster management experience than they would otherwise receive with lecture-based learning alone.

BACKGROUND

The use of simulations and games to foster learning is not a new phenomenon. As an applied learning tool, simulations and games offer unique methods for teaching a variety of concepts. Simulations, game-based learning, and gamification, while used interchangeably, have different meanings. Simulations are a way to present real-life events in an authentic fashion where the learner responds to the event as they would if they were in a live event (Rutherford-Hemming, 2012; Khallifa, 2011). Gamification, an activity used to achieve game-based learning, is the act of taking something already in existence and adapting it with game mechanics to increase participation, loyalty, motivation, and engagement (Zemliansky & Wilcox, 2010). An example of this within a classroom may include incorporating a points-based badging system where students can earn supplemental achievements when carrying out assigned tasks, like answering questions about varying components within the syllabus. As technology has advanced, a combination of game-based applications