Value of a Ludic Simulation in Training First Responders to Manage Blast Incidents

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ABSTRACT

The ludic, or gamelike, potential of simulations used in training is explored in this project, in which a prototype game was developed that had the mandate to train first responders to manage explosive blast incidents using an entertaining and engaging learning experience. One hypothesis and one question were postulated. The hypothesis was that the ludic component would make the game engaging, and therefore enhance learning, and the question was, “how will this type of game work within a curriculum instead of as traditional standalone training?” To test the hypothesis, surrogate end-users (N=42) participated in a formative evaluation study of the prototype, in which their feedback was solicited about all aspects of the game, including ease of use, coverage of subject matter, perceived usefulness, accuracy, realism, and immersion (i.e., extent to which they were engaged). To answer the question, the study team observed the students and instructors during the formative evaluation and collected impressions and feedback about the learning dynamic during testing. Results of the study supported the hypothesis, and led to some important realizations about the educational contexts that may work best for this type of training, i.e., that this type of game works well as a lab component of a course. After the game was modified based on the evaluation results, the game was used in live training, and subsequently reported to meet the needs of end users while achieving an appropriate blend of instructional and game design.

Keywords: Curriculum, Engaging, Formative Evaluation, Game Design, HumanSim Blast Game, Instructional Design, Lab, Ludic Simulation

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INTRODUCTION

The seemingly oxymoronic term, “serious games,” has been defined to mean games that use entertainment to further training objectives (Zyda, 2005) and, unlike “regular” games, do not have amusement as their goal (Smith, 2009). Although the term has been used throughout history in various contexts, one of the first examples relevant to ludic simulation is America’s Army, released in 2002, which by now has at least 26 versions and is used by the US Army in recruitment and training. The Serious Games Association (www.seriousgamesassociation.com), an industry trade organization, categorizes current serious game markets as follows: education (formal, vocational, on-site, remote, for children and adults), corporate games (for training, sales, and marketing), games for good (i.e., for social benefit, for training or to raise awareness), games for health (to improve skills for healthcare providers and inform patients), and military and government simulations (interactive training).

Proliferation of terrorist bomb attacks around the globe mandates that first responders get specific training to quickly assess and manage explosive blast incidents. To fund development of such training, the US Army, a pioneer in the use of gaming and simulation for training, issued a call in 2008 for a “Sim-Game Based Training System for Scene and Patient Management Following Blast Injury from Explosives including Improvised Explosive Device (IED).” Through its Phase I and II work on this project, SimQuest Inc., a simulation-based training company in Annapolis, MD, developed the HumanSim Blast™ game in partnership with Virtual Heroes, a division of Applied Research Associates, Inc. (ARA), which will be released under ARA’s HumanSim brand.

HumanSim Blast™, which fits within the games for health category, is a first-person blast response game that allows users to practice responding to a terrorist bombing outside a busy train station. It was developed to achieve standard learning objectives related to explosive blast response while at the same time being entertaining and engaging for players. During Phase II, a formative evaluation was conducted in which feedback was solicited from participants representative of the target audience for the game. The purpose was to not to evaluate participants’ performance, but to gather students’ and instructors’ impressions about their experience. Not only did the responses provide direction for future refinements, they provided anecdotal evidence of the value of the ludic component to learning and led to some conclusions about where this type of training may fit well within an educational context.

BACKGROUND

Common errors made by responders to explosive blast incidents include entering the scene too early or getting too close before the scene is cleared, gaining access without securing egress (blocked exits), failing to triage (treating/transporting in order of encounter), increasing risk to casualties by moving them to unsafe triage/treatment areas, and improperly assessing and/or treating casualties. Managing victims of an explosive blast event requires switching to a mode of operations that may differ substantially from standard management guidelines, and that switch must be automatic and smooth. Additional considerations specific to blast events include the possible risk of secondary attacks, different patterns of injury, and the fact that visual triage alone is insufficient.

Current training for blast response is primarily delivered via lecture and PowerPoint presentation, sometimes with practice sessions on human patient simulators (manikins). Although this is clearly insufficient to convey a sense of the reality of a mass-casualty incident, staging large-scale exercises is costly, time- and resource-intensive, and logistically challenging. Further, objective criteria of success and failure are rarely defined or imposed.

In the HumanSim Blast™ game (Figure 1), users are assessed on their ability to assess the scene and identify risks prior to declaring the scene safe, as well as to quickly and accurately assess victims’ injuries and triage them for treatment/transport priority. The game was designed
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