

## Chapter 4.17

# Gaming and Simulation: Training, and the Military

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### ABSTRACT

The purpose of this chapter is to provide a brief summary of the military's use of gaming and simulation to accomplish training. Historically, the military has been a forerunner in the exploration of training techniques that incorporate aspects of games and simulations. Training tools emerge in various gaming formats such as simulations, edutainment, commercial-off-the-shelf games (COTS), and serious games. To develop training in the form of games or simulations, elements of instructional design must be considered to include learning objectives, game play, and feedback. Emerging technologies provide possible solutions to training challenges such as achieving affective

learning domain objectives and the portability of training. The military, as an early adapter of games and simulation, continues to forge the way by integrating gaming and simulation, instructional design, and emerging technologies to achieve the ever growing demands of training.

### INTRODUCTION

Gaming and the military have a long tradition together, beginning with the use of toy figures within sandbox representations, progressing to complex board games requiring complex analytical skills, and evolving into current use of sophisticated computer models, gaming engines, and high definition 3-D graphics to create virtual worlds of combat. The military has historically

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used technology to “maximize the efficiency and effectiveness of all their activities, training and education.” (Fletcher, 2009, p. 72). Current training tools include a wide range of application of technologies. Simulators, sophisticated machines relying on computational models to mimic the actual experience of soldiers, assist to train in various tasks such as driving a truck, steering a ship, flying an airplane, or shooting a weapon. Games are created to encourage thought and practice in decision making from simple tasks to more complex work of war planning. When simulation is combined with elements of gaming, opportunities emerge to encourage effective training with the unique audience of learners found in the military.

The military considers each member a life-long learner. This core principle presents many challenges to the development of training and becomes accentuated in the development of games and simulations. Specifically is the challenge of reaching today’s military audience of Soldiers, Sailors, Marines, and Airmen; mostly made up of young adult males. (Watkins & Sherk, 2008). They are members of what is known at the Net Gen, the generation cohort who came of age with the evolution of the internet and exponential growth of technology’s role in society. For this military audience, “Learning is participatory; knowing depends on practice and participation. Digital resources enable experiential learning—something in tune with Net Gen preferences. Rather than being told, Net Geners would rather construct their own learning, assembling information, tools, and frameworks from a variety of sources.” (Oblinger & Oblinger, 2005). The military has responded with various methodologies to include games and simulations, serious games, commercial-off-the-shelf (COTS) computer games, and Massive Multiplayer Online Games (MMOG). This chapter discusses the success and challenges of these methodologies, identifies critical aspects of instructional design when developing games for military training, and suggests emerging technologies be examined as new methodologies in the military training field.

## History of Gaming in the Military

Roberts (1976) noted that gaming as training was “often used to train military officers” (p. 3). Games found in the military took many forms and emerged as effective methods for training. Chessboards acted as terrain maps and chessmen as soldiers. Sand tables with miniature models to represent armies gave leaders the ability to visualize battles and play out possible scenarios. The Prussians instituted the practice of wargaming around 1824, with the American military adapting wargaming for training later that century. William McCarty Little admired the value of wargaming and ensured that it became a significant part of the curriculum at the newly established U.S. Naval War College in Rhode Island. (Gray, 1995).

Eventually, terrain maps and wooden blocks replaced chessboards and chessmen as civilization progressed. By World War II, wargaming marked an immense turning point for training and development. War games were something used by all super powers (Roberts). The simulation that occurred during the game process was treated as a training technique and evolved into paper based exercises that integrated mathematical algorithms to model elements of warfare such as movement and attrition (Smith, n.d.).

During the 1950’s the Rand Corporation used ideas that emerged during the evolution of simulation training and war gaming to create a board game. Building upon their research and the ideas of Clark Roberts, the project resulted in:

*“the formalization of the playing board with a gridded overlay to manage movement and engagements; the use of a Combat Results Table to formalize the results of the battle; the incorporation of terrain types that influence combat activities; a turn-based play mechanism; and the use of dice to add random outcomes to the battle” (Smith, n.d.).*

With the onset of the computer age, the abilities of wargaming as training grew exponentially.

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