

Chapter 1

Mini-Games with Major Impacts

Peter A. Smith
Joint ADL Co-Lab, USA

Alicia Sanchez
Defense Acquisition University, USA

ABSTRACT

The concept of mini-games has long been associated with small uninspired games found in conventional Computer Based Training (CBT). They have traditionally been made up of simple quizzes or matching games that have done little to engage the players in the learning event. This, however, is no longer the case. With advances in mini-game design paradigms, mini-games have become an effective means to engage learners with a specific learning objective both standalone and in the context of a greater training application. This work will explore educational and training mini-game development within Defense Acquisition University (DAU), National Science Foundation (NSF), and others.

INTRODUCTION

Mini-games, those simple little downloadable games that are commonly found in conventional web-based training courses, should no longer be considered as nothing more than a distraction breaking up the content from the inevitable test that will be presented on the next slide. Mini-games have come into their own as a legitimate form of training and education through games.

Mini-Games commonly reside on the opposite side of the gaming spectrum from conventional games. They are usually small games that are easy to learn, hard to master. Think of “Tetris” as a good example of a Mini-Game. Anyone can play “Tetris” but it is hard to be very good at “Tetris.” While conventional games might take days or weeks to play, Mini-Games are often played for under an hour.

Educational Mini-Games follow the same philosophy while containing a single learning goal. A Mini-Game could, for example, teach vector addition. It would not go further to include positive and

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negative acceleration, but provide a concentrated experience for only the one learning objective. The design of mini-games has matured from simple matching games, and quizzes to allow for real interaction with training concepts in a meaningful way.

Using Mini-Games for Procedural and Conceptual Learning Objectives

Mixed results have been generated on the use of games and simulations in the classroom. A study by Randel, Morris, Wetzel & Whitehill (1992) examined 68 studies that used games and simulations in the classroom to enhance learning. Finding indicated that of the 68 studies in which games and simulations were considered, 22 of them enhanced student performance. Twelve of the studies also indicated that students were more interested in games and simulations than traditional classroom instruction. Thirty-eight of the studies had no impact on student performance, however, making the implementation of games and simulations into classrooms a risky notion. Ricci, Salas & Cannon-Bowers (1996) supported these findings by explaining that although games could stimulate more interest than traditional classroom based instruction, they might not provide any additional value to the education.

Over the last several years, the concept of using serious games for teaching and training has gained a considerable amount of popular support in a wide array of fields. Unfortunately, the potential benefits of the use of games in education and training has been relegated to the use of large and often very expensive game systems, designed to target entire learning systems or to serve as capstone and cumulative experiences. There has been little to no attention paid to the use of mini-games in order to target both part task training and smaller learning objectives.

Taking their cues from the casual gaming market, mini-games are essentially small games that distil a complex learning concept into a small

extremely targeted amount of game play. Mini-games have the potential to reinforce a single or small group of learning objectives by providing bite sized, replayable, engaging, and motivating learning experiences.

Often education and training systems as a whole are designed to provide a student with both core knowledge and the application of that knowledge. While learning systems as a whole are usually targeted towards a performance oriented outcome, creating meaningful relationships between the concepts required to achieve those outcomes and practicing the concepts learned within context can both be achieved through the use of single serving game applications.

Mini-Games for Conceptual Information

Mini-Games that are used to provide conceptual information often rely on the retention of information. A good example of this type of game is the common children's game "Memory." In "Memory" the player has a field of cards laid out in front of them face down. They first flip a card over revealing its value and then flip another card hoping to find the match of the previous card. If a match is found they remove the card from the group. If no match is found they try again, until all cards are removed from the group. This game requires the player to utilize memorization to complete the game. The intended result of these games is for the player to memorize the concepts contained on the cards.

Mini-Games for Procedural Information

Procedural focused mini-games are a newly formed incarnation of the mini-game genre. They have become a staple of the Party Game genre of entertainment games and are much more complex than their Conceptual counterparts but still maintain the easy to pick up and play, targeted information delivery, of the mini-game paradigm. These mini-games provide the player with a situ-

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