Chapter XI
A Guide to Integrating COTS Games into Your Classroom

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ABSTRACT

Many of the educational outcomes we seek to promote in public education, such as problem solving and critical thinking, are difficult to achieve given the constraints of the real-world classroom. Commercial Off-the-Shelf (COTS) games make excellent tools for addressing both content-based and higher-order learning outcomes, and many educators are exploring their use in the classroom. But making effective use of commercial games in the classroom requires that we understand how games function in relation to the typical instructional strategies and practices of the classroom. The first part of this chapter will examine the theories that underlie the successful integration of commercial games in the classroom and look at an empirically based model, the NTeQ (iNtegrating Technology through inQuiry), for designing lessons that integrate COTS games. This will lay the groundwork for the second part of the chapter in which these theories and the model are discussed in the context of actually designing COTS game-based learning (GBL).

PART I: THEORETICAL FOUNDATIONS FOR DESIGNING COTS GBL

Introduction

Despite the growing interest in using games as learning tools in public education, very few games are designed for the classroom. Those that are (e.g., the *Leapster*® and *Learning Company*® products) often tend more toward learning tutorials than learning games, and are thus difficult to integrate within the existing curriculum except as additional practice in subject areas. Such software can play a valuable role in learning, and students no doubt enjoy them more than they enjoy reading a textbook, but this does not capture the true power of games to engage (in the cognitive *and*

entertainment sense of the word). There are many reasons for the dearth of truly engaging games for the classroom, of course, including school infrastructure and policies that lock down labs and networks for security reasons, the difficulty of designing games without the resources of a large development company, and the attitudes of the parents and administrators who view games with a healthy dose of skepticism.[1]

But one of the main reasons we do not see more educational games that look and feel like commercial games is that many designers do not understand how games integrate learning and content seamlessly throughout the game. From the outside, it seems as if games have no content because all we see is play. But it quickly becomes apparent to any who sit down to play them that many games are extremely difficult to play, requiring hours of practice to master. And yet it is through interaction with the game rather than texts, videos, or other media that this learning is achieved. Clearly, games themselves serve an instructional role, and they must be effective or the titles would not sell and the players would not spend upwards of 50 to 100 hours playing them without being forced to. Unless we are willing to accept that game developers have somehow stumbled on new learning and instructional theory, it stands to reason that the things we do know about effective instruction and learning are present in these games, if in modified form.

Why should we care? Because it turns out the in the same way that ignoring the theories behind how games teach has led to poor examples of learning games, so too will doing so lead to poor examples of COTS GBL.

The Use of Commercial Games

It should be noted up front that the games I am most interested in here are those that address higher-order intellectual skills like problem solving. While a great many games address problem solving in one fashion or another, adventure games

(e.g., Myst), strategy games (e.g., *Civilization*), simulation games (e.g., *Sim City*), and modern action and first-person shooter games (e.g., *Halo*) tend to be extremely complex and require upwards of 50 to 100 hours to solve. While other games like card games and board games (e.g., Scrabble) have value in educational settings, they are much easier to adapt to learning environments and do not require much in the way of guidance.

Many are looking to commercial off-the-shelf (COTS) games for their potential integration within existing curriculum (Googling "COTS games in the classroom" yields nearly 200,000 hits on this topic).[2] The assumption behind this approach is that COTS games are developed by companies who know how to build effective, engaging, entertaining games; using them relieves teachers of the need to become game developers and programmers in order to use games in the classroom. Games that involve existing curriculum areas like math (e.g., the *Sim* and *Tycoon* titles), or history (e.g., *Civilization*), or science and physics (e.g., *Contraptions*), having already been vetted in the marketplace, will be good games.

These things are true, as far as they go, but we must also understand that it is not just the content that makes GBL a good idea in classrooms; it is what learners are *doing* with that content as they interact with the rest of the game. It turns out that the content is secondary to the critical reasoning, problem solving, and ways of processing information and negotiating, meaning they are integral features of many COTS games. And this is not just true of games; expert teachers know that you cannot teach problem solving as a set of abstract principles (e.g., Anderson, 1995), but must instead embed them within existing domains and professional ways of knowing (e.g., Shaeffer, 2006) and expose learners to many examples over long periods of time (e.g., Gick & Holyoak, 1980; Osgood, 1949; Rogoff & Gardner, 1984).

As much as we might wish it were so, it is not possible to take full advantage of the power of games by simply "adding extra content" to a

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