

# Chapter 1

## Beyond Fun: Pintrich, Motivation to Learn, and Games for Learning

**Mario M Martinez-Garza**  
Vanderbilt University, USA

**Douglas B Clark**  
Vanderbilt University, USA

**Stephen S Killingsworth**  
Vanderbilt University, USA

**Deanne M. Adams**  
University of Notre Dame, USA

### ABSTRACT

*A central goal of education involves helping students develop deep understandings of complex models at the heart of core learning goals. Interestingly, an analogous goal of commercial recreational digital games involves helping players develop deep understandings of the models at the heart of those games. Given that games can motivate players to engage voluntarily over extended periods of time in developing understandings of complex game models, one may ask whether and how one might foster similar engagement with educational concepts and models. Much fanfare has accompanied claims about games' potential for engagement and motivation, but many of those claims have focused on a shallow idea of "fun". This chapter takes a deeper view of motivation and learning by employing Pintrich's synthesis of research on motivation to learn as a lens for examining (a) how popular game design conventions currently scaffold motivation to learn and (b) how game design conventions might be augmented to more effectively scaffold motivation to learn in the future.*

### INTRODUCTION

"Kids like games, and they are motivated to play them." This statement, while simple and perhaps self-evident, forms the cornerstone of many arguments advocating digital games as learning tools. Motivation to engage and play, the argument further reads, can be parlayed into positive edu-

cational outcomes through skillful design of the game's various elements. Essentially, if students are provided an opportunity to play a game, they will eagerly play it. As a result, if the game is about mathematics (or whatever other subject), the students will learn mathematics because they are motivated to play the game. This line of reasoning acknowledges that digital games are

DOI: 10.4018/978-1-4666-9629-7.ch001

an important part of the lives of young learners. Many school age children invest substantial time in recreational digital games, and in return, these games provide:

1. A collective culture and vocabulary,
2. A set of signifiers of skill, achievement, and hierarchy, and
3. A sense of community, shared enterprise, and self-image (Kafai, Heeter, Denner, & Sun, 2008; Squire, 2003; Thai, Lowenstein, Ching & Rejesky, 2009).

That said, digital games present an interesting puzzle from an educational perspective. Successful recreational games can be challenging and involve complex models and systems at their core. Games must therefore effectively motivate and scaffold the player in learning to master these models in order to be playable. Remarkably, successful recreational games must motivate players to engage voluntarily in this learning process and to pay for the opportunity.

What makes people, especially young people, want to learn, master, and persist at difficult games that require substantial understanding of complex models and systems? It must be that well-designed games successfully motivate players not only to *play*, but also to *learn*. Thus, we may find the answer by investigating certain traits of well-designed games. After all, if all recreational games are not equally motivating to all players, then it stands to reason that games that are more motivating to large numbers of players must share certain traits, and that these traits may be stable and reproducible. And while these traits have evolved independently of research efforts in psychology and education, these traits may provide significant affordances for supporting learning and motivation to learn in the context of games for learning.

## GOAL AND STRUCTURE OF THIS CHAPTER

The principal goal of this chapter is to expand and refine the theory of games for learning by situating the unique affordances and features of digital games within Pintrich's widely cited framework on motivation to learn (Pintrich, 2003). Pintrich reviewed and synthesized the literature on motivation to learn in terms of five motivational generalizations that are robustly supported by research and then proposed sample design principles for supporting motivation to learn in classrooms based on these five foundational factors. Our intention is to demonstrate that many design features common across games (what we call *design conventions*) are not simply genre rules that structure play. Rather, these design conventions reify well-founded and agreed upon practices that motivate learning reflected in Pintrich's synthesized framework. From this point of view, when researchers and instructional designers build these design conventions into educational games, they not only make learning environments more game-like: they also introduce elements that strongly affect students' motivation to learn the underlying content.

A more distal goal of this chapter is to address two underlying assumptions that researchers, teachers, and policy makers may have regarding motivation and games for learning:

**Assumption 1:** Digital games are inherently motivating, and so learners are more likely to engage with a learning environment that is game-like, due solely to its ludic appeal. This assumption drives, at least partly, the well-meaning yet unsubtle infusion of game elements into a digital learning environment in an effort to make it more motivating. Bruckman (1999) famously described these combinations as "chocolate-covered

30 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/beyond-fun/139796](http://www.igi-global.com/chapter/beyond-fun/139796)

## Related Content

---

### Drawing Circles in the Sand: Integrating Content into Serious Games

Matt Seeney and Helen Routledge (2009). *Games-Based Learning Advancements for Multi-Sensory Human Computer Interfaces: Techniques and Effective Practices* (pp. 84-97).

[www.irma-international.org/chapter/drawing-circles-sand/18790](http://www.irma-international.org/chapter/drawing-circles-sand/18790)

### Designing Games-Based Embedded Authentic Learning Experiences

Penny de Byl (2009). *Handbook of Research on Effective Electronic Gaming in Education* (pp. 1068-1087).

[www.irma-international.org/chapter/designing-games-based-embedded-authentic/20137](http://www.irma-international.org/chapter/designing-games-based-embedded-authentic/20137)

### Software Requirements Definition Processes in Gamification Development for Immersive Environments

Paulo Veloso Gomes, João Donga and Vítor J. Sá (2023). *Research Anthology on Game Design, Development, Usage, and Social Impact* (pp. 187-197).

[www.irma-international.org/chapter/software-requirements-definition-processes-in-gamification-development-for-immersive-environments/315487](http://www.irma-international.org/chapter/software-requirements-definition-processes-in-gamification-development-for-immersive-environments/315487)

### On Insufficient Documentation of a Virtual World's Economic Development: A Retrospective of Second Life From 2003-2008

Sandra Boric (2021). *International Journal of Gaming and Computer-Mediated Simulations* (pp. 1-15).

[www.irma-international.org/article/on-insufficient-documentation-of-a-virtual-worlds-economic-development/290825](http://www.irma-international.org/article/on-insufficient-documentation-of-a-virtual-worlds-economic-development/290825)

### The Habit of Watching Television and Using Computer in Primary School Children

Aynur Örnekan and Hicabi Arslan (2019). *Handbook of Research on Children's Consumption of Digital Media* (pp. 209-222).

[www.irma-international.org/chapter/the-habit-of-watching-television-and-using-computer-in-primary-school-children/207869](http://www.irma-international.org/chapter/the-habit-of-watching-television-and-using-computer-in-primary-school-children/207869)