

# Chapter 1.1

## A Taxonomy of Educational Games

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### **ABSTRACT**

Digital games are a relatively new tool for educators, who often misunderstand their value for education. This is partly since they perceive many very different types of games in the same way. The authors propose a taxonomy of digital games in education based on the features that are relevant to instructional design and educational research. The taxonomy outlines four genres into which games fall, depending on the cognitive functions and skills they engage. The theoretical basis for the taxonomy the authors develop draws from R. M. Gagne's Five Categories of Learning Outcomes, Bloom's Taxonomy of Educational Objectives, and D. H. Jonassen's Typology of Problem Solv-

ing. The links between these theories and the educational games taxonomy will allow educators and researchers to understand games in the light of their educational affordances. Instructional design based on these theories can more effectively integrate games into the classroom.

### **INTRODUCTION**

The adoption of digital games in the classroom has met with mixed responses. Educators who are familiar with digital games are often eager to introduce them into instruction, since the power of games to motivate students to engage in an activity is well known (Gee, 2005; Martens, Gulikers, & Bastiaens, 2004). Researchers have also described videogames as a foundation for designed

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educational experiences (Squire, 2006), ideological contexts for interaction (Young, Schrader, & Zheng, 2006), third spaces in which highly complex, social networks develop (Steinkuehler, 2006) and venues in which authentic mentoring and literacy practices abound (Schrader, Lawless, & McCreery, 2009; Schrader & McCreery, 2007; Schrader & Lawless, in press). However, some stakeholders in the education of young people do not share this enthusiasm, and feel digital games in the classroom might be, among other things, a distraction from learning, a waste of time, a tool for teachers to control behavior, or even an immoral influence (Baek, 2008; Kutner, 2008). This apprehension may be somewhat alleviated if digital games themselves are more easily understood, their various applications were more apparent, and their educational affordances were more obvious.

One step in making computer games more understood by educators is to explicate their value for education. If educators and other adults who are unfamiliar with games were able to learn about them in relation to their educational affordances, it might make using games in the classroom easier for educators, more effective for enhancing learning, and even more motivating for students. We propose a taxonomy of computer games that describes the genres into which educational games fit, together with the aspects of these types that apply to their use in educational settings. By organizing and categorizing educational computer games, we hope to aid educators in their research about both computer games as a domain of knowledge and individual games with which they may come into contact. Additionally, since the technology and, indeed, the names of computer games is constantly changing it is futile to describe individual games and their educational applications. More effective is this development of a taxonomy of game types so that specific games may be recognized more readily for their content, structure, and educational affordances.

It is our hope that our taxonomy will assist educators who wish to use educational games, regardless of their knowledge or understanding of them, to make salient instructional design decisions based on sound educational objectives. We further hope our taxonomy will scaffold research on educational games to promote their use in the classroom. This line of research may well evaluate the specific educational affordances of the game genres outlined in our taxonomy. Such findings may lead to the refinement or extension of this taxonomy, hopefully to the betterment of educational games research.

## **BACKGROUND**

### **Educational vs. Commercial Games**

Although many commercial games have educational affordances, the motive of the companies developing them is largely profit. This leads to the entertainment and marketability value of games taking precedence over the educational value. If the profitability of a game is of primary importance, we must question whether it has even come close to meeting its *potential* educational value. Four common features of commercial games can add to their entertainment value and marketability, but are either not desirable in an educational game or must be minimized: chance, critical competition, inappropriate material, and advertising. By “chance,” we mean any aspect of a game in which chance has a major effect on a player’s success. This is particularly important when the success of the students’ learning experience hinges on their success in the game. Although it is true games of chance are, for many, highly engaging and highly entertaining, we know them to be highly addictive (Clarke, Lawrence, Astley-Jones, & Gray, 2009). Second is the level of competition between players. Although competition can engage players, students may become frustrated when another

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