

# Chapter 12

## Get Your Head in the Game: Digital Game–Based Learning with Game Maker

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### EXECUTIVE SUMMARY

*This chapter discusses the development and implementation of an introductory programming unit within a seventh grade technology education course. The goal of this unit was to introduce the concepts of programming to middle school students in a way that was accessible and unthreatening. Digital games provide an inherent level of engagement not present in other programming activities, and the digital game environment provides a safe platform for experimentation without concern for safety or equipment. The curriculum described in this chapter provides many practical examples of how digital games can be incorporated into a technology education classroom to engage students in the world of programming.*

### OVERALL DESCRIPTION

Seventh grade students at Canonsburg Middle School, a public middle school located in Canonsburg, Pennsylvania are engaged in digital game-based learning as a method of introducing them to the concepts of programming. Each student is provided with an overview of basic programming terminology and is introduced to

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the functions of Game Maker, an icon-based, drag-and-drop video game creation software package. Students complete an introductory programming activity in which each student programs a similar game. A second activity has each student create a more advanced game of their own design. Rather than digital games being used to deliver content, in this case, the games become the content.

## **LITERATURE REVIEW**

### **Digital Games in the Classroom**

The use of digital games in the classroom should be considered because of the student engagement that can follow and the academic benefits that can be promoted. “Digital games are user-centered; they can promote challenges, co-operation, engagement, and the development of problem-solving strategies” (Gros, 2007, p.23). According to Dede, Ketelhut & Nelson (as cited in Sardone & Devlin-Scherer, 2010), the use of games within the classroom can encourage student participation. Student engagement when using digital games in the classroom is not only influenced by the game play. When they are used for educational purposes within the classroom, some of the engagement may come from the relevance of learning new things within the context of the digital game itself (Van Eck, 2006). Jackson (as cited in Devaney, 2008) states that, “gaming and simulations are highly interactive, allow for instant feedback, immerse students in collaborative environments, and allow for rapid decision making” (para. 2). Additionally, the use of digital games in the classroom can benefit students’ tendencies towards multiple intelligences other than traditional verbal delivery of information. “Many computer applications, especially computer games, have design features that shift the balance of required information-processing, from verbal to visual” (Gros, 2007, p. 29). According to Gee (as cited in Ray & Coulter, 2010), “digital games promote critical thinking, reasoning, and problem-solving skills along with decision-making and strategizing skills” (p. 94).

### **Teachers’ Decisions to Use Digital Games in the Classroom**

Many factors may affect a teacher’s decision to use a particular instructional strategy within their classroom. Factors that may affect the incorporation of digital games in the classroom include the nature of the digital games themselves and their perceived value in an educational setting. When secondary pre-service teachers were asked if increased student motivation would compel them to include digital games in their classrooms after graduation, many responded that, “motivation alone was not sufficient reason to influence them to use digital game-based instruction in their

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