Chapter 77
The Theory and Process Involved with Educational Augmented Reality Game Design

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ABSTRACT

This chapter explores the issues associated with training teachers to become effective Augmented Reality game designers in their own educational settings. Within the context of defining and defending the use of games as instructional tools, the authors of this chapter describe a project in Queensland, Australia which involved training 26 teachers from the greater Brisbane area on the theory and process of designing narrative-based Augmented Reality games. This process resulted in usable games that the participants could then implement in their own educational setting. This chapter includes a discussion of the issues and challenges that were faced throughout this training process, and the authors propose potential solutions to address those challenges. Additionally, the authors propose future directions for further research into this area.

INTRODUCTION

It is a relatively well-worn maxim in education that the best way to learn something is to teach it. In fact, it is so well worn that it reaches all the way back to Seneca the Younger in ancient Roman society, and the Latin phrase "Docendo Discimus" (by teaching, we learn) has been adopted as the motto of educational institutions around the globe (Classical Academic Press, 2014). Yet, the educational use of games has historically relied, to a great extent, on the use of pre-packaged, self-contained materials. These games are purchased by educators or districts and are implemented in the classroom (with varying degrees

of success), but aside from learning the rules of the games, their use rarely embodies the philosophy of "Docendo Discimus". Educational game design and development have usually been accomplished separately from where those games are implemented. It is the purpose of this chapter to explore ways that design, development and implementation can be accomplished by the same individuals.

This chapter will provide an exploration of an alternative approach to designing and utilizing games in educational settings. Through a discussion of a teacher training program undertaken through The University of Queensland in Brisbane, Australia in conjunction with faculty from Appalachian State University in Boone, North Carolina, this chapter will lay out an argument for an alternate approach to educational game use through training teachers how to build their own specifically designed games. This training was intended to instruct K-12 teachers in and around the greater Brisbane area on how to design and build educational Augmented Reality games.

BACKGROUND

The use of games within educational settings has been debated for quite some time. McClarty et al (2012) performed a review of literature and found "mixed empirical support" for the use of digital games in educational settings while simultaneously concluding "the research supports that digital games can facilitate learning" (p. 23). Of course, this kind of mixed finding can cause confusion about the short- and long-term viability of the use of digital games in education. However, this uncertainty is a separate issue from larger concerns associated with "games" in educational settings. Many schools and school districts are wary of using "games" because they are viewed as frivolous or non-educational. What this means in practice is that before we can effectively incorporate games of any sort into educational settings, we must defend the very idea of gaming as being educationally worthy and appropriate for a classroom setting.

Nature of Games in Education

Part of the difficulty in making an argument for the use of games in education is that there is no clear-cut definition for the term "game." The Merriam-Webster dictionary defines games, among other things, as activities "engaged in for diversion or amusement" (Merriam-Webster, Inc., 2014a), which causes difficulties for many educators who see "diversion or amusement" as a distraction from education. This area does not become any clearer, however, when other definitions are explored. Koster (2005) dismissively quotes definitions by Roger Caillois, ("activity which is…voluntary…uncertain, unproductive, governed by rules, make believe"), Johan Huizinga ("free activity…outside 'ordinary' life…") and Jesper Juul ("a rule-based formal system with a variable and quantifiable outcome, where different outcomes are assigned different values, the player exerts effort in order to influence the outcome, the player feels attached to the outcome, and the consequences of the activity are optional and negotiable") because he fails to see how their definitions make games "fun" (cited in Koster, 2005, p. 12).

Recently, efforts have been made to move beyond the view of games as "unproductive" or "diversions." McGonigal (2011) cites Bernard Suits definition of games as "the voluntary attempt to overcome unnecessary obstacles" (p. 22) which is a much more educationally sound view of games as it speaks directly to the type of engagement that educators wish to engender in their classrooms. For that reason, this definition acted as the starting point for the work we undertook to train the Australian teachers about how to build their own games.

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