

Interactive story authoring: A viable form of creative expression for the classroom

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Abstract

The unprecedented growth in numbers of children playing computer games has stimulated discussion and research regarding what, if any, educational value these games have for teaching and learning. The research on this topic has primarily focused on children as players of computer games rather than builders/constructors of computer games. Recently, several game companies, such as BioWare Corp. and Bethesda Softworks, have released game story creation tools to the public, along with their games. However, a major obstacle to using these commercial tools is the level of programming experience required to create interactive game stories. In this paper, we demonstrate that a commercial game story construction tool, BioWare Corp.'s Aurora Toolset, can be augmented by our new tool, ScriptEase, to enable students in two grade ten English classes to successfully construct interactive game stories. We present evidence that describes the relationship between interactive story authoring and traditional story authoring, along with a series of factors that can potentially affect success at these activities: gender, creativity, intellectual ability, previous experiences with programming, time playing computer games, and time spent online. Results indicate that students can successfully construct sophisticated interactive stories with very little training. The results also show no gender differences in the quality of these interactive stories, regardless of programming experience or the amount of time per week playing computer games or participating in general online activities, although a subset of female students did show a slightly higher level of performance on interactive story authoring. In the educational context of this study, we show that ScriptEase provides an easy-to-use tool for interactive story authoring in a constructionist learning environment.

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1. Introduction

Computer and video games are rapidly becoming omnipresent in our culture, especially in the lives of many children and adolescents (Rhyne, 2002). The research debate continues as to the educational value of these types of games (Mitchell & Savill-Smith, 2004). On the one hand, a recent study reported that video games are a good workout for the brain and that video game players actually perform faster on certain language tasks than their non-game playing counterparts (Bialystok, 2006). Gee (2003) suggests that computer/video games are a powerful educational medium that promote a new form of literacy. He argues that computer game playing encourages the development of problem-solving behavior, motivation and social networks, and that it also enhances and supports learning. On the other hand, Mori (2002) provides evidence that prolonged periods of playing computer games can lead to decreased brain activity and may result in emotional and behavioral problems. A number of researchers have reported that computer game play is directly related to increased levels of aggression or even violent behavior (Anderson & Bushman, 2001). The issues surrounding the educational value of computer games are further complicated when gender is considered, since girls often exhibit less positive attitudes toward using technology (Young, 2000). Studies also indicate that girls are more interested in games of skill than games of kill (AAUW, 2000; Yelland & Lloyd, 2001). Furthermore, it has been shown that boys spend significantly more time playing computer games than girls (Bryce & Rutter, 2003; Griffiths & Hunt, 1995).

There is little doubt that debate concerning use of computer games in the educational context will continue as the number of hours children and adolescents spend playing games increases. What underlies almost all the research in this area is that users are studied as “players of games” and not as “builders or designers” of games (Mitchell & Savill-Smith, 2004; Robertson & Good, 2005). In this study, we examine the role of high school students as authors (designers and builders) of interactive computer game stories. In this context, we offer a new computer game construction medium for creative authoring that allows a student to build interactive stories where the “reader” is an active participant in the story. We refer to this process as interactive story authoring. A major component of support for this new medium is the development of a high-level software tool called ScriptEase (<http://www.cs.ualberta.ca/~script/>) that alleviates the need for explicit computer programming during the game story authoring process.

A classroom transition from observing ubiquitous artifacts for learning purposes to creating artifacts as a form of creative expression has occurred to various degrees for many media. For example, visual arts such as drawing and painting have made an easy transition in the classroom from observing (viewing) to creating. Sculpture, though less prevalent as a creative medium in the classroom, is not rare. In fact, today’s classroom probably has more activities for creating visual arts than viewing them. A similar phenomenon has occurred in the audio arts for both orchestral and choral music. However, for audio arts, the current norm falls between observation and creation. Students tend to participate in activities that interpret the creative works of others by playing and singing music, rather than listening or writing music. Unfortunately, more complex media that combine visual and audio components, such as plays and movies, are much more popular as observational media than as creative media in today’s classrooms. When a play is performed rather than read, proper classroom instruction may transform the performance activity from an observational activity to an interpretive activity, but little play-writing or movie-making is done in the classroom. The situation with interactive stories and computer games is similar. Although they may be used in some classrooms as observational or interpretive activities, they are rarely used as a medium for creative expression. The reason for this is simple: the technology required for authoring has been too hard to use.

The research described in this paper makes five contributions that enable computer game authoring to become a viable mechanism for interactive story authoring in the classroom. First, it identifies the technology required for students to create interactive stories in the classroom, along with the current major barrier to viability – manual scripting (computer programming). Second, it presents a solution to this problem – generative patterns that create program scripts automatically. This solution is embedded in our easy-to-use ScriptEase tool. These first two contributions appear in Section 4. Third, it presents the results of a case study showing that grade ten high school English students can use ScriptEase to overcome the scripting problem and create interactive stories. Fourth, it provides some evidence that a segment of students who do poorly relative to their peers on traditional writing exercises can exhibit relative improvement in interactive story authoring. Fifth, it

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