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Girl gamers: the controversy of girl games and the relevance of female-oriented game design for instructional design

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Abstract
Digital games have typically been considered a male leisure activity; however, recent statistics indicate that increasing numbers of females are now playing games. The purpose of this review is to investigate how the influx of girl gamers and the emergence of female-oriented game design can inform instructional design for the construction of interactive learning environments. This review presents an overview of digital games and gender, an outline of girl games and 'pink' software, a discussion of the controversy of girl games, and a review and discussion of the research and implications of female-oriented game design for instructional design. The goal of this review is to examine the influx of girl gamers into a male pastime and to analyse the implications of this for the design of interactive learning environments.

Introduction

During the past three decades, computer and video games have become an increasingly prevalent form of entertainment in the USA. Traditionally, digital games have been considered a male leisure activity (Bryce & Rutter, 2003; Cassell & Jenkins, 1998); however, recent statistics from the Entertainment Software Association (ESA, 2004) indicates that increasing numbers of females are now playing games. Nearly 40% of video and computer gameplayers are female, and over 40% of online gamers are female (ESA, 2004). Yet, until recently, games have been considered a primarily male pastime. This would indicate that, perhaps, game design might not be an effective model for creating engaging learning environments for both male and female learners. However, game design has evolved beyond the elaborate arcade-style shooter games. Inquiry into reasons for the influx of female players into a traditionally male pastime may provide educators with insight into the design of interactive learning environments.

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The purpose of this review is to investigate how the influx of girl gamers and the emergence of female-oriented game design can inform educators about the design of constructivist interactive learning environments. Specifically, this review presents (1) an overview of digital games and gender, (2) an overview of 'girl' games and pink software, (3) a discussion of the controversy of girl games, (4) a review of research about female-oriented design and (5) a discussion of the similarities between female-oriented design and constructivist learning environments.

Theoretical framework

The notion of learning environments is a relatively new concept in the continuum of instructional design (Winn, 2002). While learning has always taken place in an *environment*, greater focus is now being placed on the interconnection between tools, resources, activities and tasks that comprise a learning environment. Concurrent with the emergence of learning environments is the epistemological shift in the paradigms of learning from an objectivist to a constructivist perspective of learning. Central to a constructivist theoretical perspective is the belief that knowledge is constructed, not transmitted, and that learners play an active role in the learning process (Duffy & Cunningham, 1996; Jonassen, 1999). To foster the construction of knowledge, learners should have opportunities for exploration, interaction and manipulation within the learning environment. Because learners have more control in the learning process, the learning environment must provide scaffolding to foster learners (Hannafin, Hall, Land & Hill, 1994; Hannafin, Land & Oliver, 1999; Jonassen, 1999).

The integration of technology and learning is allowing educators to contrive new technology-mediated spaces for teaching and learning. However, new models and methods must be sought for the effective design of digital learning environments that will engage and motivate learners. While the notion of learning environments is emerging, the integration of technology is adding a new level to how educators conceive of learning environments. Tools such as computers and networks require the development of new models and methods to support learner scaffolding for complex, multimodal learning environments. One avenue worth exploring is contemporary computer and video game design. Game designers are well versed in devices and techniques for constructing compelling and engaging environments that allow for immersion and agency, demand the participation of users and also provide scaffolding for problem solving (Dickey, in press). The design of popular games has been a source of study for several educational researchers investigating how various aspects of game design might be appropriated, borrowed and repurposed for the design of educational materials and learning environments (Bowman, 1982; Dickey, 2005, in-press; Malone, 1981; Prensky, 2001; Provenzo, 1991; Rieber, 1996; Squire, 2003). More recent studies by Rieber (1996), Squire (2003) and Dickey (2005, in press) indicate that many of the strategies, tactics and methods employed in digital game design may provide compelling strategies for the design of interactive learning environments. However, until recently, computer/video games have been primarily a male pastime. Game design has evolved beyond the elaborate arcade-style shooter games. Games are increasingly including characteristics that

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attract female players (Taylor, 2003). The recent influx of females into this male pastime may provide even greater insight into the design of learning environments that support gender-inclusive values in the design.

Digital games and gender

Various explanations have been offered as to why digital gameplaying has emerged as a predominately male pastime. Several researchers have noted that gender stereotyping in video games has often been distorted, with females portrayed as victims who need to be rescued through the actions of the games' male heroes (Bryce & Rutter, 2003; Gailey, 1993; Kafai, 1998; Provenzo, 1991; Sherman, 1997). Because gameplay often requires female players to play games from male personae, it could be argued that gameplayers are constructed as male. Another reason may be the content in many games. Schott and Horrell (2000) suggest that game content is often problematic both in terms of the portrayal of females and in terms of the types of activities that depict violence against females. Games such as *Custer's Revenge* and even the popular *Grand Theft Auto* series include content depicting activities that many females find demeaning. In online games such as *Quake* and *Doom*, aggression towards females is sometimes carried beyond the character roles, resulting in female players being harassed by male players both with aggressive gameplay actions and with aggressive dialogue (Morris, 1998). Another explanation for the lack of female gameplayers is that visual female representations in many games tend to be eroticised, reaffirming a sexist aesthetic (Kafai, 1998; Schleiner, 2001). The lack of female presence or representation, aggression towards female characters and players, and the eroticisation of female representation have resulted in a 'space' that is too often designed to construct gameplayers as male subjects with female representations being the object of male gaze (Schleiner, 2001; Yates & Littleton, 1999).

Despite problematic content and sexist or weak depictions of females, Bryce and Rutter (2003) argue that content is only one aspect of why digital games have traditionally been a male pastime and that the reasons are more complex then mere content but also include the relationship of space and gender. According to Bryce and Rutter (2003), males have traditionally had more access and control over leisure spaces such as video arcades and sports venues because of cultural notions of who should occupy particular leisure spaces. Digital games were first introduced to mainstream public in spaces such as arcades, pubs and bars. Female participation in these environments has been traditionally limited. Likely issues of safety and the cultural construction of these spaces impacted female participation in these spaces. As digital games moved into domestic spaces, the spaces and technology used for gameplay have often been under male control (computer and television). This situating of games in male domains and in male control has resulted in games being designed and marketed to engage males (Bryce & Rutter, 2002, 2003).

There are many explanations why digital games have emerged as a predominately male pastime; however, despite the engendering of this pastime, increasingly more females

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are playing games. Likely, one reason for this influx is the emergence of 'girl games' while another may be that more females are playing games designed for a predominately male audience. In their review of gender and computer and video games, Cassell and Jenkins (1998) posit the question, 'Do we encourage girls to beat boys at their own game, or do we construct a girls-only space?' (p. 34). This is an interesting question and one that has relevance not only for game design but also for the design of learning environments.

Girl games and pink software

Part of the influx of girl gamers is likely due to the emergence of games created for girls. One of the first 'games' designed specifically for girls was *Barbie Fashion Designer*. In 1997, Mattel released *Barbie Fashion Designer*, and within the first year, this game sold over 600 000 copies. That year, Sega also released a game for a female audience entitled *Cosmopolitan Virtual Makeover*. It is questionable whether *Barbie Fashion Designer* or *Cosmopolitan Virtual Makeover* should be characterised as games or if they represent another form of interactive entertainment; however, the advent of these applications attracted a marketing interest in creating interactive pink software and games for females. During the same time, several initiatives were started to develop games targeted for girls. The Learning Company released the first of the *American Girl* series of interactive software based on the popular *American Girl* books. Brenda Laurel produced Purple Moon's *Rockett* series, and Her Interactive produced *McKenzie and Co*. In 1998, Her Interactive released the first of the *Nancy Drew* adventure games. Although the *Nancy Drew* games do not rely on gender stereotypes and the game is not explicitly designed for females, the games continue to be popular choices for girls and women.

Although most of the initial girl games failed to realise the market success of *Barbie Fashion Designer*, there is a market for girl games. There are now a variety of Barbie and Disney games for the computer. The *Let's Ride* series focuses on horse riding competitions. Unlike the focus on fashion accessorising in *Barbie Fashion Designer* and *Cosmopolitan Virtual Makeover*, the majority of games designed for girls now include action-based activities and challenges (mazes and puzzles), although fashion accessorising is often also included. There are also a growing number of console and 'handheld' games for girls. It is interesting to note that with few exceptions, most of the games designed for girls are packaged in pink.

The controversy of girl games

The emergence of girl games has likely contributed to the influx of females playing digital games. Games such as the Barbie, Disney and *Let's Ride* series target stereotypical female interests. While educators may certainly take issue with the notion of Barbie and all 'she' imbues, Cassell and Jenkins (1998) caution against quickly dismissing stereotypical female interests. They warn that typically female genres are too easily dismissed as being trivial, when the act of participating in female culture could be considered in itself a resistive act against patriarchal culture. Advocates for girl games argue that

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digital games designed for girls encourage girls to view technology (specifically the computer) as a positive tool and that the fact that girls use computers to play games may foster girls' interests in computers and technology. Researchers have noted the importance of computer games as a segue into more advanced computer use (Greenfield & Cocking, 1996; Loftus & Loftus, 1983). It is through the use of digital games that children often become exposed and develop comfort in interacting with computers, which in turn helps foster a type of computer literacy.

Although there are some compelling arguments for female spaces, there are also major concerns. While advocates argue that girl games foster female use of computers, which in turn may lead to careers in technology, it is questionable how much impact this may have upon career choices. Vail (1997) argues that although games that allow girls to design dresses may incline girls to view computers as friendly, it will not likely result in girls who want to become engineers. Additionally, there is the issue of girl games as opposed to 'regular' games. Postmodern research reveals that inequality inevitably occurs in binary constructs such as that which would naturally occur with male and female games. One side of the binary is privileged over the other. Privileging one construct over another is not necessarily a natural state but rather often occurs as the result of defining one term in relation to its opposite (Knights, 1997). As Cassell and Jenkins (1998) caution, as long as masculinity remains the cultural 'norm', alternative designs will be dismissed or trivialised.

The main problem with developing games targeted specifically for girls and women is the question of whose notion of 'female' is being portrayed in the game. Existing research into gender and what females want in gameplay is too often predicated on the notion that gender is a static construct and can be easily quantified by observation and survey. Technology and design are rarely value neutral, and beliefs and values are perpetuated through design (DeVaney, 1993; Muffoletto, 2001). Stereotypes perpetuated through popular media are tools that transmit values about gender roles (Gooden & Gooden, 2001; Oliver & Green, 2001). In turn, these cultural messages impact children's play, and there is danger in perpetuating cultural values that limit female roles and participation. It is important to question whether the advantages of female spaces will outweigh the potential detriment.

Female-oriented game design

In an effort to move beyond the surface stereotypical roles, images and perspectives of females articulated in the design of girl games and pink software, various researchers have attempted to characterise underlying design elements that appeal to females. Kafai's (1994) landmark study of the gender difference in children's design of video games noted that girls preferred realistic settings and non-gender-specific characters. Kafai also noted the differences in feedback and competition articulated in female and male design. For the most part, the girls in her study created games in which there was little violence or negative feedback for making incorrect choices, whereas in the boys games, violence was often the result of an incorrect choice or selection. The girls created

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games that fostered interaction with the computer, whereas the boys created games with more of combative relationship.

In one of the first studies of girls' preferences in game design, Miller, Chaika and Groppe (1996) conducted focus group discussions with 30 adolescent girls. Their findings revealed that the girls preferred game design that included:

- exploration;
- collaboration;
- challenge;
- vicarious adventures and activities;
- sophisticated graphic and sound design.

Similar studies also note the importance of a rich narrative and engaging characters, social interaction, and multiple activities and opportunities for exploration (de Castell & Bryson, 1998; Rubin, Murray, O'Neil & Ashley, 1997). More recently, the American Association of University Women Educational Foundation Commission on Technology, Gender and Teacher Education (AAUW, 2000) conducted a focus group study and found that young women's preferences of game characteristics include:

- rich narrative;
- roles involving positive action;
- appropriate levels of challenges;
- opportunities to design or create;
- engaging characters;
- communication and collaboration;
- use of strategies and skills (beyond shooting guns).

There are many commonalities between most of the studies concerning female-oriented design, but the most notable is the importance placed on collaboration and community. Most studies also stress the importance of exploration without threat of violence and the importance of positive representation. Taylor (2003) argues that characteristics, which are characteristics of female-oriented design, are now being integrated in contemporary games such as massively multiple online role-playing games. For example, games such as *EverQuest* (*EQ*) include such elements as engaging narratives, self-selection of roles, interactive challenges, collaboration and community and are attracting record numbers of female players (Taylor, 2003). Within the *EQ* environment, there are multitudes of players collaborating in completing tasks, strategising and creating. According to Taylor, the aspect of collaboration, coupled with competition, mastery and status, appeals to female players. Taylor also notes that *EQ* allows players to construct their own characters and roles rather than have them assigned. Players have the option of playing roles which allow them to create artefacts, heal, steal or fight. Finally, Taylor argues that the complex three-dimensional (3D) environment allows females to explore environments in ways that they may not be able to do in a real-world setting.

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Female-oriented design: implications for instructional design

Interestingly, there are many commonalities between elements of female-oriented game design and the types of tools and opportunities in constructivist learning environments. Many games are increasingly constructed as representations of 3D spaces, allowing players to move and interact in simulated realistic or fantasy environments. For the design of learning environments, it is important for learners to have opportunities for exploration and manipulation to foster the construction of knowledge (Cognition and Technology Group at Vanderbilt, 1993; Jonassen, 1999). Many games are also becoming increasingly social environments in which players worldwide socialise and collaboratively strategise. This is also an important element for the design of learning environments. Conversation and discourse fosters collaboration and supports social negotiation in learning (Lave & Wenger, 1991; Vygotsky, 1978). This in turn allows learners to share information, test understandings and reflect on learning (Duffy & Cunningham, 1996; Jonassen, 1999). Additionally, depending upon the genre, many games now include interactive challenges, which require players to synthesise, analyse and evaluate multiple modes of information and use critical thinking skills to form strategies and solve problems. The elements of rich narrative, 3D interactive environments, communication opportunities and interactive challenges are the very elements that, Taylor (2003) and other researchers argue, foster female interest, and many of these same elements correspond with the types of elements that educators attempt to foster in constructivist learning environments. Although much more research needs to be conducted about the design of interactive learning environments, certainly looking at game design and the game design elements that engage both male and female participation may provide an effective model for inclusive learning design.

Conclusion

The purpose of this review was to investigate how the influx of girl gamers and the emergence of female-oriented game design can inform educators about the design of interactive learning environments by examining games and gender, the development of girl games, and to review the literature about female-oriented game design. The goal of this review was to examine the influx of girl gamers into a male pastime and to analyse the implications of this for the design of interactive learning environments. The premise of this investigation is that there is much to be learned about how the design of digital games can inform learning design for all learners (male and female). Although much more research needs to be conducted about the design of interactive learning environments, game design may provide insight along with strategies and methods to aid educators in creating compelling and engaging learning experiences for both male and female learners.

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