1. THE IMPACT OF VISUAL DESIGN QUALITY ON GAME-BASED LEARNING

INTRODUCTION

Computer games have the potential to provide an engaging and pedagogically-sound alternative to traditional teaching (e.g. Connolly et al, 2007; Ebner & Holzinger, 2007; Akkerman et al, 2009). They can support exploration, interaction and provide an immersive experience in which learners can collaborate with others to solve problems and learn from their mistakes. However, a major limitation on their use is the ability for educators to obtain or create games that meet the desired learning outcomes for a particular context and are appropriate for their learners. Commercial-off-the-shelf (COTS) games have the advantage of being professionally produced but are designed primarily for entertainment – so even if an appropriate game can be found there are still the challenges of steep learning curves, time-consuming play, and expense to overcome before they could be deployed in an educational context. Designing games from scratch requires expertise in game design, graphics and programming and, while games produced in this way may meet their educational objectives, the limited time, know-how and budgets available mean that the look-and-feel of the game is less likely to be professionally executed than a commercial game.

An understanding of the importance of this visual design quality, on the acceptability of computer games for educational use and the learning that takes place during play, can help to determine game development priorities and the feasibility of different production options. This chapter explores the ways in which visual design influences or limits the use of games for learning and provides an overview of the ways in which visual design quality can affect the use of different types of games. Factors that may contribute to a player’s perception of visual design quality are also considered in relation to both entertainment and educational games.

There is a general lack of academic research into the visual design of games and how this influences player perceptions, therefore some of the arguments presented in this chapter cite material from other sources such as articles for online game-developer journals and market research material. Drawing on less formal research has a number of advantages. First, much of this material is up-to-date and refers to current tools and techniques used in commercial game development, which is important in such a quickly moving industry. Secondly, many of the articles were written by those actively involved in developing games for the commercial entertainment market and can offer unique insights – which are perhaps missing in more academic work.
The term ‘visual design’ does not have a universally-agreed meaning, but is used in a wide variety of ways, often dependent on the field or area of use. Designers working in the discipline of graphic design often use the term to describe the balance between textual information and visual elements, such as photographs, diagrams and illustrations, where each contributes to the overall ability of the finished work to communicate and inform in an efficient and visually engaging manner. Shedroff (2001) defines visual design as:

“… the field of developing visual materials to create an experience. Visual Design spans the fields of Graphic Design, Illustration, Typography, Layout, Color Theory, Iconography, Signage, Photography, etc. and any medium, including online, broadcast, print, outdoor, etc. Visual Design is concerned with the elements of visual expression and style”.

(Shedroff, 2001)

The all-encompassing nature of Shedroff’s definition, which spans the range of design disciplines, visual elements and presentation media, is suitably open for the purposes of this chapter and allows the authors to draw on relevant literature from a wide range of sources where applicable. An inclusive definition of visual design is used throughout this chapter that encompasses interface design, graphic design, and aesthetic design in relation to computer games.

Interface design is concerned with the way in which the gaming environment is structured and presented to the player and the ways in which the users interact with the game space. It focuses on the player’s experience and includes aspects such as the design of the graphical user interface, interaction methods, information flow and other issues that affect the overall usability of the game. Krieger (2001) suggests that “a tightly crafted game not only has to be fun, engaging, and aesthetically pleasing – but it also has to be supremely flexible and easy to learn”. He also reflects that poor interface design can lead to player frustration, affect whether a game is played or not and ultimately influence future purchases. Desurvire and colleagues (2004) note that, although similar in some respects, the goals of software interface designers may be at odds with design strategies used by game developers.

The term graphic design was coined in the early 20th century and was originally strongly linked to typography and static printed media, although it now includes many other forms of visual information. Graphic designers are routinely employed in all sectors of entertainments industry including film, television, web, multimedia and games development. Graphic design describes the ways in which the visual elements within the game are used to communicate messages, either consciously or sub-consciously. Graphics can be used to communicate in a variety of different ways, including being used purely for decoration, to represent a concept or image, as a mnemonic device, to show the organisation of information (e.g. an organisational diagram), to show relationships between concepts (e.g. a mind map), to depicting transformations and show changes in state (e.g. a diagram depicting the nitrogen cycle), and to provide interpretations of information (Clark and Lyons, 2004).

The term aesthetic design is used to describe look-and-feel, and considers the stylistic choices made by the designer. Schell (2008) highlights the value of aesthetics