Chapter 79
Psychological Aspects of Serious Games

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ABSTRACT

Over the past fifteen years there has been increasing interest in serious games as a new medium for learning, skill acquisition, and training. Developing and evaluating engaging and effective serious games presents an interdisciplinary challenge. Psychology is at the interface between hard science and social science and is uniquely placed to play an integrative role in advancing our understanding of the characteristics and impacts of serious games. As the diversity of the chapters in this book illustrates, psychologists have wide-ranging interests in serious games. The purpose of the current chapter is to introduce key concepts, constructs, theories, and research in psychology to examine areas where these are relevant to serious games and provide a context for subsequent chapters in the book.

INTRODUCTION

The term "game" covers a very wide range of activities but, as Wittgenstein (1953) observed, games are difficult to define in term of a set of necessary and sufficient characteristics. Nevertheless several authors have tried to provide definitions of games, from Caillois (1961) in his influential book, Man, Play and Games, to Grendler (1996), Dempsey, Haynes, Lucassen, and Casey (2002) and Juul (2003). Most definitions identify key characteristics of games as voluntary, typically enjoyable physical or mental leisure activities which tend to be set apart from real life in some way and are essentially unproductive. In addition most definitions specify that games have goals and ways of achieving these goals by means of making allowable moves within specific constraints. Games can be played singly, in pairs or in teams.

Although computer and video games were developed initially as an entertainment medium primarily for fun and leisure, it gradually became clear that players were acquiring useful knowledge and skills while playing games. There has long been interest in the knowledge and skills acquired by players while they play traditional entertainment games such as Mastermind, Battleship and Chinese Checkers (Bottino, Ferlino, Ott, & Tavella, 2007). However reviews examining the educational potential of digital entertainment

games (Kirriemuir & McFarlane, 2004; Mitchell & Savill-Smith, 2004) pointed out that it was difficult to integrate digital entertainment games into curricula as they frequently do not address the desired curricular learning objectives. It became clear that, if digital games were to be used for learning, they would have to be designed more carefully to match the desired learning outcomes.

Given the characteristics of games as fun, voluntary and essentially unproductive activities, combining the term "games" with the term "serious" made for even more definitional difficulties, since for many people these two terms are mutually contradictory. Serious games (SG) are clearly similar to games-based learning (GBL) in that both are intentionally designed for the purpose of learning, but as Hainey (2010) points out, GBL is a subset of serious games. Serious games are broader than GBL and include games to change attitudes and behaviour (Bogost, 2007) as well as games which are intentionally designed for the purpose of learning, skill acquisition and training (Boyle, Connolly, & Hainey, 2011). A number of definitions of serious games are proposed by the authors in this book but essentially they propose that (a) serious games include games for learning and behaviour change and (b) serious games have purposes which go beyond entertainment.

BACKGROUND

Serious games is a relatively new area of research, but there has been an explosion of interest in games over the past fifteen years as authors have speculated about their potential as an engaging new method for learning. The diverse nature of publications about serious games has led to criticisms that the area is fragmented and lacking in coherence (Ke, 2009). A number of researchers have aimed to develop organisational frameworks for serious games. With entertainment games, game genre provides a means of categorising games based on common activities required in

these games (Herz, 1997). O'Brien (2011) attempted a similar categorisation for serious games distinguishing linear games, competitive games, strategy games and role playing games and tried to relate these game genres to the different cognitive functions that they support. Sawyer and Smith (2008) developed a taxonomy of serious games, categorising games according to the game discipline/function of the game (games for health, education, business etc.) as well as the sectors in which the games might be used (government and defence, healthcare, advertising, education, industry etc.).

Psychology is an interdisciplinary subject at the interface between hard science and social science and, given this broad ranging scope, is uniquely placed to help in organising our understanding of serious games. Psychologists have developed a wealth of well-established and validated constructs, ways of measuring these, theoretical and practical knowledge about a wide range of human behaviours, cognitions, motives and emotions, as well as a range of quantitative and qualitative methods for studying these. Grounding our understanding of learning, behaviour change and engagement in games on existing research in psychology can help in developing a common language for discussing serious games and help to provide a more integrated and coherent approach to understanding serious games.

Many psychologists have applied their skills as hard scientists to provide physiological, biological, cognitive and computational explanations of mind and behaviour. Other psychologists are more interested in social behaviours and subjective experiences and they deal with the softer side of human nature, explaining human needs, wants, motives and emotions. As the varied topics addressed in this book illustrate, psychologists have broad ranging interests in serious games. There are chapters about cognitive, perceptual, neuropsychological, affective, motivational and social facets of players, as well as players' subjective experiences of games, individual differences

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