

# Chapter 29

## Serious Games, Meditation, Brain–Computer Interfacing, and Virtual Reality (VR): Empowering Players to Discover Their Minds

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### ABSTRACT

*Brain-computer interfacing (BCI), the ability to interact with software and technology with our thoughts and feelings, presents an exciting new frontier for serious games and learning. This chapter outlines an approach to incorporating real-time brain-monitoring in educational games. Both outlining and suggesting how technically this can be achieved using affordable and accessible “off the shelf” consumer technology and the popular game engine Unity. By designing such experiences considering pedagogy and serious game theory, we can attempt to classify this new form of user interaction and its value for educational purposes. Specifically, this chapter looks to engage players with ideas of meditation by monitoring their “meditation” using BCI technology and visualizing it in engaging game worlds and experiences. As a valuable tool for addressing mental illness and personal wellbeing, meditation is worth exploring as a learning outcome within serious games.*

### INTRODUCTION

Today technology marches forward at an ever accelerating pace. Computers that once took up whole floors of buildings now fit snugly in our pockets, the internet connects people around the globe almost instantaneously to one another and to a nearly endless wealth of information. What impact does this acceleration have on us? Without a doubt it has massive and positive implications for mankind, but so too does it create new issues. This concept of human progress as a double edged sword is not new. Perhaps

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one of the most powerful speeches ever given on the subject was that of John F. Kennedy at Rice University (1962); his famous speech about putting a man on the moon. With regards to mankind's progress he noted that: 'This is a breathtaking pace, and such a pace cannot help but create new ills as it dispels old, new ignorance, new problems, new dangers'. These words still hold profound truth today. In an ever more connected world what happens to our idea of privacy? In an age of instantaneous gratification, endless media, data and content what happens to the length of our attention? What impact will the endlessness of the digital world have on us and our mental health? In a time with such advanced medicine to fortify our bodies and cure our physical ails, perhaps our mental well-being has been overlooked. The human mind as an unexplored vista is as enticing and mysterious as space to Kennedy, and the world, in the 1960s. This chapter aims to examine the technological tools and innovations that can let us explore and quantify this nebulous space, this space within each of us: the human mind. Since the beginning of time the human mind and understanding it has been one of man's greatest mysteries and challenges. It was often thought that what we now consider the mind; the element of a person that allows the gifts of thought, feelings and consciousness, was one and the same with the soul. In Aristotle's work *De Anima* he describes the mind as 'the part of the soul by which it knows and understands', in fact Aristotle believed it was human nature to long for knowledge and understanding (Shields, 2016), Thousands of years later our longing to understand the mind has led to many great discoveries; we can now peer into its workings, understanding the brain and mind through the lenses of neurology and psychology. However being able to read the mind is just the beginning, what if we could use that read data to inform computers and technology? That is the premise of Brain-Computer Interfacing (BCI); the science of communicating with machines using brain activity and thought. This chapter hopes to separate the science from the fiction that surrounds this exciting technology. Furthermore it aims to look past the novelty of BCI, to examine its potential in 'serious' or educational games and experiences. Providing an exploration of the unique feedback that can be provided by monitoring the brain, in an attempt to engage users with concepts of meditation and regulation of the mind. Because, even though science has worked hard to separate the mind from the soul, to understand our minds is still to understand ourselves. 'Serious Games do not simply teach their rules, narrative, fictions, metaphors or goals, but they teach the players something about the world, themselves and their own values, beliefs and behaviours' (Mitgutsch, 2011).

## **Serious Games**

'When we think of games, we think of fun. When we think of learning we think of work. Games show us this is wrong' (Gee, 2005). Serious games are games that have scope beyond recreation. They can be for training, teaching and propagating information, in fact games create uniquely customizable environments that excel in all of these areas. So the study of 'serious games', a seeming oxymoron in itself, spans multiple disciplines. From user psychology and pedagogy, the study of learning, to game art, design and narrative (Lim et al., 2014). The virtual world of games offer more than just flexibility with respects to learning, it offers a rich and fun way to present information to new audiences. Games naturally are designed to be fun, but they are also designed to be learned, a good game guides the player, teaching them seamlessly as the game progresses. It is these qualities that serious games draw on to create effective new ways to teach. Mitgutsch (2011) describes serious games using the famous song from 'Mary Poppins' (1964): 'A Spoonful of Sugar'. Which, according to the song, 'helps the medicine go down'. Mitgutsch goes on to describe serious games as: "'esigning a spoonful of sugar and filling it with serious content'.

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