3

DIGITAL ENTERTAINMENT

INTRODUCTION

This chapter considers the impact of different types of digital entertainment on today's society. The entertainment timeline spans from the culture of the ancient Greeks through the centuries to the virtual gaming worlds of today, with each development necessarily impacting on the fabric of society. To put this in perspective, a recent study has shown that children spend so many hours watching television, playing video games and listening to music that their 'media use' could qualify as a full-time job (foxnews.webmd.com/content/article/101/106496.htm). The typical American child spends more than 38 hours per week as a 'media consumer' in media-rich homes comprising multiple televisions, CD and DVD players, radios, MP3 players, games consoles and PCs. Indeed, US children are less likely these days to live in a home with a single television than they are to live in one with five or more TVs. Children, however, are not the only consumers of digital entertainment technology: perhaps somewhat surprisingly,

the average age of computer and video game players is 33, the average age of frequent game purchasers is 40 and over 25% are over the age of 50 (www.theesa.com/archives/files/Essential%20Facts%202006.pdf). **Additionally, the older adult population, those over 65, are making increasing use of virtual arcades** (www.usatoday.com/tech/news/2004-05-12-gamer-demographics_x.htm) **and, by the time they reach 75, they will have spent the equivalent of 12 years of their life watching television** (news.scotsman.com/index.cfm?id=265852007).

Today's society embraces and uses many digital and online entertainment products in a multitrillion-pound industry. The global software games industry alone was estimated to be £11 billion ($17 billion) in 2001, with the United States (£4.6 billion), Europe (£4.3 billion) and Japan (£2.5 billion) being the key players. By 2005, this figure had risen to £21.2 billion ($32.6 billion) worldwide with expectations that revenues will increase further to £42.8 billion ($65.9 billion) by 2011 (biz.gamedaily.com/industry/feature/?id=11879). In the United Kingdom, 65.1 million games were sold in 2006 with a cumulative value of £1.36 billion, an increase of over 1% on 2005's record figures (www.elspa.com/?i=5894). As well as increases in retail sales of games, new distribution channels such as mobile and online games are increasing and by 2008 will account for 20% of the total Western world market (www.elspa.com/?i=3429). The film, Internet, mobile device and interactive television markets are also all fuelling the increased growth of the entertainment industry and its global penetration. Additionally, many of today's more general software and digital technology advancements can be attributed to the commercial forces of the entertainment industry and its globalization thereby further increasing the impact of this area of technology.

In today's consumer society, the electronic entertainment business plays a major role in national and global economies. The industry impacts directly on the key stakeholders of its core value chain and those associated directly or indirectly with it. All creative and software industries, such as video or computer games, film, television, music, computer software and books, may be said to share a similar structure based around the creation, publication

and distribution of copyrighted material. Each of these products in their own right asserts powerful influences over the consumer and on those developing, publishing, distributing and retailing them as well as, in some cases, console and peripheral manufacturers and middleware and services companies. The video games industry in particular has exhibited rapid growth – video game titles are now bringing in more revenue than films released in the cinema (www.economist.com/displaystory.cfm?story_id=3387239). This has a knock-on effect on the rest of the entertainment industry; for example, music associated with games is getting more 'air play' to listeners than new music artists are achieving on the radio or MTV. As a result, some artists are releasing their songs on video games prior to full CD release, with tracks available to purchase through download sites such as iTunes (www.fantasymusicleague.com/artist.php?id=12218). Fierce competition is also arising between music stars and professional athletes to be featured on the cover of the video game boxes.

In this chapter, we examine some of the latest applications and trends in the entertainment industry and relate them to some of the social implications facing the information society. In particular, we concentrate on the effect of the industry on the consumer and whether increased uptake of the products of this industry is to the benefit or detriment of the consumer.

THE EFFECTS OF DIGITAL ENTERTAINMENT TECHNOLOGY

Digital Entertainment – Friend or Foe?

This section is primarily concerned with the ways in which people act and interact as a result of using digital entertainment. Depending on the study undertaken, computer entertainment has been shown to have advantageous or deleterious effects to the social welfare or health of the user population. Some of these issues are discussed in more detail in the following sections, particularly in relation to television viewing and games usage as these tend to be the most influencing and controversial of the entertainment types and consequently tend to be the focus of the majority of the studies undertaken. It should be mentioned however that there are some recognized problems in identifying trends and impacts of digital entertainment on the population. These are due in some measure to the lack of long-term, large-sample studies, which may account for some of the variances appearing in the statistics which often appear to directly contradict each other. For example, it is easy to see the short-term effects of games usage, but much harder to monitor the longer-term effects that may be caused by repeated game playing. There may also be problems of cultural specificity and of the choice of games selected for the trials. Consequently, this area presents ideal opportunities for further discussion. There are many ways in which we might have described the social implications of entertainment, however the approach taken is to outline a number of key themes and discuss associated social and ethical issues.

The Toy Town Divide

Video and computer games are an expensive commodity, as are many other entertainment devices and toy products that have been transferred from a purely physical medium into their electronic counterparts. The cost of electronic toys carries a premium and, perhaps more importantly, like other electronic items, electronic

toys tend to have a relatively short consumer life which creates tensions and pressures for the 'user' to have the latest updated version with more processing power (www.dailymail.co.uk/pages/live/articles/news/news.html?in_article_id=483183). This in turn creates pressures on parents to buy these relatively expensive toys and, if they cannot be afforded, may well contribute to family unrest and a potential 'playground digital divide' with possible social exclusion from peer groups.

There may be further consequences related to the consumer demand from young adults and children for digital items and products which may encourage software piracy, unauthorized downloading of music files, and so on. There is also considerable evidence indicating that the visual impact of digital toys, mobile phones and electronic music devices such as iPods has increased the potential for theft and mugging (www.direct.gov.uk/en/YoungPeople/CrimeAndJustice/TypesOfCrime/DG_10027666; www.timesonline.co.uk/tol/news/uk/article717351.ece). These matters are further complicated by the close relationship between the technology employed and the visual fashion statements made by the equipment. For example, although owners of iPods have been warned that the machine's conspicuous white headphones have become a beacon to thieves and despite being given advice that wearing differently coloured headphones may make them a less attractive target for muggers, users have continued to wear the white headphones as a fashion and lifestyle statement. It appears that many users place a higher value on the 'coolness factor' of being seen wearing an iPod than they do on their personal safety (www.theregister.co.uk/2004/03/30/ipod_this_seasons_musthave).

It may be argued that the introduction and growth of digital entertainment and technologies has not created any new social issues in terms of those who can or cannot afford luxuries related to entertainment. However, there are clearly issues regarding the explosion in digital and visual communication such that there is an expectation that every household should have a range of broadcast and digital technologies available for use by the family. The online and virtual nature of this environment in itself creates the potential for a range of social divisions within a single household. Today's generation has been exposed to commercial pressures and freedom of information hitherto unheard of. It may be argued that games and

games technology have provided a pleasurable pathway for the consumer to engage and participate in global environments which as yet have untested long-term social implications.

Boys and Girls Come out to Play: Stereotyping

Over the last 5 years there has been a substantial increase in the amount of computer gaming and the development of virtual environments across the world to support this craze. One of the major issues of debate in this arena is the question – who is the typical computer gamer?

Computer gaming has traditionally been regarded as a predominantly male activity. However, recent statistics indicate that this may no longer the case. A recent report by the Entertainment Software Association in the United States cites that women over 18 constitute 30% of the gaming market, outnumbering the teenage boys who are traditionally seen as the typical demographic. Statistics also show that 38% of computer and video game players are women, rising to 42% when considering online players. Of gamers who play for more than 10 hours a week, 30% are female. These trends are echoed in the United Kingdom where a study by the Entertainment and Leisure Software Publishers Association (ELSPA) revealed that while women do not play as many games as men, they continue to buy and play them as they get older, while male interest in this area declines over time.

Two interesting questions we should consider are: is there gender stereotyping within the gaming community and do females prefer the same types of games as males? Evidence has shown that women prefer different game elements to men. Although there are a number of games aimed exclusively at young females in the 6–11 age group, such as Princess Fashion Boutique which held the number one position in the children's PC game chart from May 2004 until July 2006, and a pink Sony PS2 was launched in December 2006, research has shown that adult women who participate in computer and video gaming do not want stereotypical games related to traditional gender-related issues such as cooking, sewing and

(news.bbc.co.uk/1/hi/technology/5407490.stm). Research has shown that women tend to prefer games that are goal driven with an underlying narrative to indicate that they are doing something worthwhile ('Chicks and Joysticks', ELSPA white paper: www.elspa.com/assets/files/c/chicksandjoysticksanexplorationofwomenandgaming_176.pdf). For example, within a particular gaming scenario the primary aim of women players may be to 'save the scientist' with 'killing the enemy' being a necessary part of this. Conversely, in the same scenario, evidence indicates that males would tend to be more focused on 'killing the enemy' with the goal of 'saving the scientist' being of secondary importance. These differences and approaches may well be linked to the fact that women are not encouraged to express aggression in public and are less likely to feel comfortable with games involving combat or war. Women also like to take time to analyze facts and form a perfect solution while males want to complete the task quickly and move onto the next stage.

Two of the most popular games favoured by both men and women are The Sims and Sim City, both developed by Maxis Studios. The popularity of Sim City lies in the fact that both men and women like to build new structures; however, women tend to focus more on developing and enjoying the social context that surrounds the new environment. Other games that have been found to have appeal to women are Dancing Stage Megamix (PlayStation 2), because of the active nature of the game, and EverQuest: New Dawn, a fantasy and adventure game, which manages to combine its thriving social community with a continually updated game scenario.

As mentioned earlier, women in particular are attracted to the social element of gaming – both in terms of content and the participatory nature of interactive online environments. Another feature demonstrated by women in the gaming environment is their particular interest in competing as a team member and participating in competitive tournaments. Evidence shows that massively multiplayer online role-playing games MMORPGs are proving to be particularly popular with women as they can develop characters, solve puzzles and engage in social interaction. Within the organizational structure of these online gaming communities women

are now playing an ever-increasing role in positions of authority. Evidence also indicates that a substantial number of mothers at home with young children have been entering the online entertainment and gaming environment. Although they may simply be accessing these games for their entertainment value, evidence also suggests that it is a way of alleviating their feeling of isolation from the outside world and a mechanism for sharing parenting experiences with others in similar circumstances.

It may well be that the future development of games and gaming technology will be predicated on cross-gender appeal. Other factors that need to be taken into consideration are the marketing of games so that they appeal to women and the fact that the technical game development arena is still very much dominated by men. This situation may well change over time as more women are attracted, through their increased participation in playing games, to follow a career in the technical aspects of games technology (`www.igda.org/women/archives/2006/05/ucla_hosts_even.html`).

Research results indicate that the key factors which would encourage increased participation of women in computer games are: interaction with a world beyond that which they can normally enter; better female characters and more of them; more realistic portrayals of women as game avatars; more gender-neutral content and a reduction in sexist game content; and acknowledgement that female gamers exist in terms of marketing and advertising. It is interesting to consider that women's magazines rarely if ever incorporate reviews of games as part of their editorial, while such reviews seem to be an almost compulsory part of magazines aimed at men.

Another area of gaming that is growing in popularity is the 'mobile' games market, which ranges from simple mobile phone games to those of the Nintendo DS and PlayStation Portable. The growth in the use of mobile phones is therefore playing a major role in introducing gaming to women who might not have bothered to explore it previously. Games publishers will need to consider the changing demographics of their client base as they can no longer rely on the traditional market of 19–30-year-old males and young children.

HEALTH-RELATED ISSUES

Curse of the Couch-Potato Children

As the population becomes more involved in the use of computer games, there is the possibility for this activity to become their main focus and hobby. If this is the case then growing numbers of individuals will displace active physical pursuits such as sport and recreation in order to find space and time to continue their gaming activities. The lack of opportunity for cardiovascular development and large muscle movement may well be a contributing factor leading to growing obesity and ill health in the general population. More particularly, this may have a serious effect on very young children and young adults who are being increasingly exposed to this expanding marketplace.

Lifestyle changes in the form of more sedentary jobs, changes in public attitude to sport at school and a general increase in office jobs over manual labour have contributed to the major concerns regarding the health of the population. These trends, combined with changes in diet have led to a serious rise in the level of obesity not only in adults but more alarmingly in young children. It may well be argued that the exponential growth in the use of information technology and its translation into digital media products and the electronic gaming world adds a further dimension to these health issues. Increasing numbers of the population are now playing games, communicating online, watching interactive television, participating in activities such as online shopping and gambling and generally spending more and more time in relatively static positions.

Recent research highlights this alarming trend in the levels of obesity. In 1980, 8% of women and 6% of men were classed as obese; by 2002, these figures had risen to 23.5% of women and 21% of men (`www.iotf.org/oonet/uk.htm`). The 2002 statistics also show that, in addition to obesity, a further 46% of men and 33% of women are overweight (some 24 million people in the United Kingdom alone). In the United States, the figures are even worse with a third of the adult population being classed as obese (`win.niddk.nih.gov/statistics/`). In terms of child obesity,

this currently affects one in ten 6-year-olds and one in five 15-year-olds with almost a third of 10-year-olds worrying about their weight.

Research (www.food.gov.uk/multimedia/pdfs/foodpromotiontochildren1.pdf) indicates that while children are watching television, their eating habits are being influenced by their exposure to an advertising regime which generally promotes an unhealthy eating lifestyle. In recent studies, scientists at Liverpool University have confirmed that television food commercials have a direct effect on what children eat. Their research indicated that commercials, particularly those for high-fat snacks, encouraged children to raid the fridge and select snacks high in sugar and fat. The research also found that obese and overweight children were those particularly vulnerable to being influenced by these commercials.

Obesity is reported to reduce the lifespan of an individual by nine years (www.nwph.net/nwpho/Publications/nwh_v2_4.pdf) and increase risks of cancer, diabetes, heart attacks and strokes. For example, weight-related diabetes, a disease more common in overweight, middle-aged men and women, is now being found in children as young as 13 (www.timesonline.co.uk/tol/life_and_style/health/healthy_eating/article491478.ece). The obesity epidemic in children is further exacerbated by almost 20% of them not participating in any organized sporting activity at school and a similar percentage not exercising in their own time. In addition to the health issues the cost to the state is continually rising.

To help address the issues of obesity and unhealthy lifestyles, governments are now advocating the banning of advertisements which promote junk food to children (news.bbc.co.uk/1/hi/health/6154600.stm). Government officials are also in talks with the broadcast media to encourage them to promote healthy pursuits and healthy lifestyles through popular entertainment and children's programmes. One example of this, aimed at children aged four to seven, is the programme LazyTown and its superhero Sportacus who battles Robbie Rotten, a junk-food-eating villain (www.timesonline.co.uk/tol/newspapers/sunday_times/britain/article1290332.ece). Recently, the launch of the Nintendo Wii games console, with its innovative controllers and range of sports-related games, also encourages players to become part of the action by swinging a golf club or throwing a ball rather than relying solely on button presses to drive the game (wii.nintendo.co.uk/9.html).

Such developments are important because, if the sedentary lifestyle of children persists, experts are predicting that we will soon create a generation of children who will die before their parents.

Physical Problems

Adults and children who spend prolonged periods of time playing computer games or watching television increase their risk of suffering from deep-vein thrombosis (DVT). This life-threatening condition has also previously been associated with restricted movement and lack of leg room among air travellers, and predominantly affects the elderly, the overweight and those taking certain medication. Recent research (news.bbc.co.uk/1/hi/health/3441237.stm) has shown an increasing number of occurrences of DVT in younger persons. Although DVT can occur in people who have apparently normal healthy lifestyles there is cause for concern that computer gaming and excessive time spent watching television may well be contributing to the increasing occurrences of DVT, particularly in young people (www.tcd.ie/tsmj/2004/Nintendoisation.pdf).

It has also been suggested that children who watch excessive amounts of television may develop sleep problems as they grow older. In a recent study, scientists monitored 759 people at the ages of 14, 16 and 22. Although none of the 14-year-olds exhibited problems sleeping, it was found that those who had watched three hours of television a day were more likely to experience problems falling asleep or waking during the night when they reached 16 or 22. One possible explanation for this is that watching television leaves them in a state of heightened alertness and physiological stimulation thereby preventing them from falling asleep with ease. The bright light of the television may also disturb their sleep–wake cycle. Children who watch television late into the night may also not be receiving the full recommended amount of sleep per night, increasing the risk of problems with their metabolic and immune systems as well as causing fatigue and depression (pediatrics.aappublications.org/cgi/content/full/104/3/e27).

Endless playing of computer games has been blamed for a range of other health-related problems. For example, increasing numbers of children are suffering

from 'nintendonitis' – a repetitive strain injury (RSI) brought about by excessive gaming. One of the first recorded cases of computer-related RSI seen in a child occurred in 1999; the young gamer was treated in a local hospital after having played computer games continuously throughout the Christmas holidays! This condition, also know as tendiopathy, has become increasingly common in recent years amongst children who use high-tech gadgets such as PlayStations or mobile phones (news.bbc.co.uk/1/hi/health/5063364.stm).

It is widely accepted that headaches can be caused by playing computer games for long periods of time in badly lit rooms with poor posture and being too close to the computer screen. Rather more controversially, video games incorporating flashing lights, special figure patterns, scene changes and screen flicker have at times been blamed for triggering epileptic seizures, with children between the ages of seven and 19 being most susceptible and up to 150 individuals being affected each year (Graf et al. 1994). Conversely, a number of other studies have reported that, although some people may discover they have epilepsy through playing computer games, there is no evidence to support the view that computer gaming is the cause of the epilepsy, however it may well be that it is the trigger for an episode (www.epilepsy.org.au/photosensitivity.asp).

Although rare, there have been a number of cases where computer games may have contributed to the death of a player. For example, the playing of computer games was attributed as the cause of death for a South Korean man who died after playing computer games continuously for 50 hours without stopping for food or sleep (www.netaddiction.com/seminars/main_index.htm). In another reported incident, a mother from Louisiana unsuccessfully sued the games manufacturer, Nintendo, after her son died during a marathon games-playing session where he hit his head on a table after suffering a seizure while playing with the console (www.metro.co.uk/news/article.html?in_article_id=39315).

Digital Equipment – Part of the Modern Family

A survey in 2003 by the National Opinion Poll for the Early Learning Centre found that a third of under-threes had a television in their bedroom and that four out

of every five children aged under six watched up to 6 hours of television per day. Indeed by the age of six, the average child has already watched television for more than one full year of their lives. Children aged 11 to 15 spend 55% of their waking lives watching television and using computers. This amounts to 53 hours a week, 7.5 hours a day, and represents a 40% increase in a decade (Sigman 2007).

The Government's education watchdog has issued a warning that using television as a virtual 'baby-sitter' is helping create a generation of children whose speech and behaviour is at an all-time low. There are reports that some young children are having difficulty integrating and relating to the basic activities required to start their formal education at nursery and primary school. Some of these young children exhibit behaviour indicating highly undeveloped social skills such as the inability to fasten buttons, use a knife and fork or eat and drink at a table. Research indicates that some children who have long periods of exposure to television may develop speech and communication difficulties (`media.guardian.co.uk/site/story/0,14173,1265792,00.html`). For example, some children entering nursery struggle to develop their vocabulary, have difficulty speaking clearly and have difficulty understanding instructions.

Young children are in some cases being mesmerized by the television screen and its constantly changing images. However, there are conflicting views with regard to the effects this has on the development of the child. Some experts believe that children's television viewed by very young children can damage their language development, while others believe that in similar circumstances exposure to these programmes can only be of benefit in the language learning experience. Specialist speech therapy advice suggests that adults should limit the amount of time children spend watching television and that the remainder of the time should be replaced by adults spending more time talking and reading to children, helping them to develop their verbal and communication skills.

Evidence suggests that as a society we are becoming addicted to electronic equipment such as television and computers and that this addiction is being passed on to our children. One of the perceived dangers of this is that we are now seeing a generation of children who in many instances are forming closer relationships with their computers than they are with other humans. This is evidenced by a recent

survey in which almost one in five youngsters said that the time they spent at the keyboard made them happier than when they were with family and friends. This trend clearly threatens the continuance of the traditional family unit. Evidence also indicates that some children tend to treat their computers more like a family member than a piece of electronic equipment. Many youngsters call their PC a 'trusted friend', are 'extremely fond' of it, talk to it, pine for it when they have to switch it off and are jealous if they find their PC being used by someone else. Some even come to believe that the machine has a personality of its own. A separate survey conducted with 2500 people found that 37% of children and 34% of adults surveyed thought that by 2020 computers would be as important as family and friends (`technology.guardian.co.uk/online/news/0,12597,1154989,00.html`). Evidence reported in The Media Equation reflects that, subconsciously, adults tend to attribute human characteristics to computers, although they are reluctant to admit this even to themselves.

The effects of prolonged exposure to television and television programmes requires more long-term studies to understand the effects this social experience has on young children. Modern lifestyles now include working parents with young children coping and living in environments which are media rich and available 24 hours per day. It may be argued that young children left to their own devices will develop a range of social and technical skills related to their own personal requirements to interact with television. Conversely, the same rich media used properly within the household may form an integral part of the education process, encouraging study skills and widening the horizon of *the young individual (see Chapter 15). The National Literacy Trust provides a* good series of links to studies related to the impact of television on children (`www.literacytrust.org.uk/talktoyourbaby/TVnews.html`).

Does Television Cause Adverse Social Behaviour?

There is a belief by many researchers that children's attitudes to relationships and events are strongly influenced by their exposure to television programmes. Research

indicates that violent behaviour occurs in a large number of television programmes and to such an extent that, by the time they reach 18, children in the United States will have had the opportunity to observe more than 16 000 simulated murders and over 200 000 acts of violence (judiciary.senate.gov/oldsite/mediavio.htm). Another study undertaken in the United States reviewed 10 000 hours of broadcast programming between 1995 and 1997 and found that 61% of the programmes contained violent scenes, many of which portrayed this violence in a glamorous context.

Since 1960 there have been over 3500 research studies undertaken to examine the relationship between media violence and its association with actual violent behaviour. In all but 18 of these studies, relationships have been identified between children's behaviour when exposed to violence on television and the likelihood of them displaying aggressive behaviour immediately after viewing the programme. A smaller number of studies have also shown that these changes in behaviour may have long-term effects. Effects of media violence have been variously described as causing above average aggressive behaviour, desensitization to violence, anxiety, depression, sleep loss and nightmares. There is also a possibility that when children are viewing 'unbelievable' violence in superhero films they develop implausible notions about the body's ability to withstand injury (www.telegraph.co.uk/news/main.jhtml?xml=/news/2005/09/16/nhang16.xml).

An example of how children's attitudes are influenced by viewing television programmes is highlighted in the BBC television programme Child of Our Time. The children in this study were shown elements of a television programme where an actor is seen to cuddle a life-sized doll. After watching this, the children were led into the room and were observed to mimic the actor by caressing and stroking the doll. Later, the children were shown another scene where the same actor was striking the doll with a large wooden hammer; this time, when the children were led back into the room they were observed to furiously attack the doll and one normally shy and timid child was observed to completely lose control (www.open2.net/childofourtime/2006/morality1.html).

More recently, the focus of these studies has switched to examining the effects of indirect aggression (gossiping, etc.) within television programmes. An analysis of

over 250 hours of soap operas and situation comedies showed that indirect aggression was present in 92% of the programmes and that 60% of this indirect aggression was committed by popular female characters with whom the audience could identify. A second study, involving 11–14-year-olds, demonstrated that watching television soap operas, situation comedies and dramas encouraged them to exhibit antisocial behaviour such as gossiping, spreading rumours, splitting up other people's relationships and verbal bullying (Coyne and Archer 2005). UK soap operas, such as Emmerdale, Eastenders and Coronation Street, were found to have an average of 14 indirect aggression incidents per hour. It has also been observed that many television programmes focus considerable amounts of viewing time on scenes related to drinking alcohol and frequenting public bars and clubs. These scenes are considered strong influencing factors such that young adults believe that this is a social norm and expected behaviour. The Big Brother-style of programmes with contestants and environments designed to provoke reaction have also been the subject of recent controversy (`news.independent.co.uk/media/article2193628.ece`). Another major point of contention is that young children can be seriously affected by the confrontational and sexual content of daytime television where they can observe stressful life scenarios showing adults arguing and behaving irrationally.

Television is a powerful medium and it may be argued that children are particularly vulnerable to the messages it portrays. While it may be accepted that stylized violence can be entertaining and often humorous in comedy and animation, in its more serious representations, for example, in children's drama, direct and indirect violence should always be editorially justified. It is vital that editors consider the consequences of violent programmes and the possible effects this may have on the viewing audience, particularly young children.

Creating Monsters – Do Computer Games Make People Violent?

One of the most emotive and hotly debated issues with regard to entertainment is whether or not the violence in some computer games has an impact on

children. There is an argument that computer games are even more influential than television, due to their participatory and interactive nature as opposed to the more generally passive viewing experience of television programmes (news.bbc.co.uk/1/hi/health/720707.stm). A number of studies have investigated these issues but the findings are mixed and some of them are reported here to promote discussion. We have tended in this section to use the terms 'computer games' and 'video games' interchangeably except where explicitly stated.

It is reported that one of the reasons for including violence as a major theme in computer games is that there is considerable commercial demand from existing and potential users of the game; essentially, the consumer demands the violence and is willing to pay for it. Although violence has always been associated with computer games, the technological advancements of recent years have led to it becoming increasingly realistic (news.bbc.co.uk/1/hi/technology/6376479.stm). 'Blocky' white aliens being killed by 'blocky' white bullets have been replaced by pixel-perfect, real-world weapons which appear to kill real-world adversaries. For example, the defining characteristic of the Soldier of Fortune games is the extreme attention to detail of the weapons and the effects they have on the human body, to the extent that much of the game is centred around killing and the mutilation of bodies, rather than completing the game objectives. As the computer gaming experience becomes more immersive and the characters become more realistic in their movements, they become more influential in the minds of the gamers. A consequence of these developments is that some game users have great difficulty in distinguishing between the virtual world in which they have been immersed and reality.

Further technological developments will create even closer relationships between reality and the gaming environment. Currently, the interaction with most game environments is still through keyboard, mouse and joystick. The latest games are starting to incorporate immersive virtual reality environments, where the game user actually feels as if they are an integral part of the game world. With the removal of the traditional input devices, the game user now interacts with the environment through increasingly realistic controls which are modelled on reality (news.bbc.co.uk/1/hi/technology/6418779.stm).

In order to make modern games attractive to the marketplace, the realism concept is also modified: timelines are compressed in such a way that the less attractive and mundane aspects of life are hidden from the user. For example, users who are inserted into the cockpit of a high-speed jet would not want to spend hundreds of hours training before they could fly their first mission. In order to create sensationalism and excitement for the user, weapons of destruction are often digitally enhanced and lead to more mayhem than is possible with their real life counterparts. An example of this enhancement and distortion can be observed in the game Max Payne 2 (`www.rockstargames.com/maxpayne2`), a violent, film noir love story between a cop and a femme fatale murder suspect. The game's production involved a motion-picture stunt crew, professional talent for voice acting and graphic novels, motion capture and authentic digital source material from New York City. The game combines photorealistic city settings and realistic scenarios with cinematic styling features which enables the player to slow down their environment and avoid (in slow motion, similar to The Matrix) the bullets fired at them, an action that is obviously not possible in real life. Another unrealistic feature in many games, particularly at the easy levels of a game, is the ability of players to withstand repeated attacks and injuries which scarcely register on the characters' health meter within the game – again providing a distorted view of the consequences of human injury.

There is evidence from some studies that young children exhibit increased levels of aggressive behaviour as a consequence of playing computer games, at least in the short term. In tests, it has been observed that higher blood pressure and heart rates have been recorded during game play. However, other studies disagree with these findings with some even suggesting that violent computer games act as an outlet for aggression and could possibly have a calming effect on the player. References to some of these studies are found at the end of this chapter.

With regard to suitability of game content, the UK Video Standards Council reports that less than 1% of games are classified as suitable only for over-18s, while 90% are suitable for children under 15. Games which give particular cause for concern are those that promote areas such as gun culture and violence to particular

members of society (e.g. 'ethnic cleansing' and racist games) and those that are based around real events such as the Columbine shootings and the 9/11 atrocity.

In general, it is thought that violence in computer and video games is not a problem for the vast majority of the population. However it may represent a cause for concern in the very young and in those who are psychologically unbalanced and who cannot distinguish video game violence from the real thing. To evidence this claim, studies have found that the older a player is the safer they are with regard to playing games. This is because they have a higher level of cognitive maturation and a more rounded and well-formed view of life and, hence, are less affected by the virtual scenarios presented in the game.

Grand Theft Auto: Murder Training?

Few computer games have caused as much controversy as the Grand Theft Auto (GTA) series. A combination of role-playing and action, the goal of GTA is to become a wealthy and respected criminal, through involvement in profitable criminal activity including, but not limited to, stealing cars. The various incarnations of the game to date have included elements of drug dealing, murder and prostitution as well as the eponymous stealing of cars. These games are among the few which dare to buck the trend and feature real anti-heroes as the main viewpoint characters in the game.

Although the games are pretty unrealistic and despite the availability of movies which glorify violence and criminal activity far more than GTA, few entertainment products have caused as much furore, including a number of lawsuits over the effect of playing the game on those who have gone on to perform similar criminal acts. Two recent (though not unique) cases involve teenage boys who have claimed that they were inspired in random armed violence by one or more of the games.

In 2003 in Tennessee, William Buckner (aged 16) and his step-brother Joshua (aged 13) took guns from their home and fired at passing vehicles on a nearby highway. They killed one man and injured his wife and later claimed

to have been 'inspired' to enact scenes from GTA. A Miami attorney, Jack Thomson, has brought a lawsuit against the perpetrators, their parents, the Wal-Mart store who sold the game, and the Scottish production company who created the game (see `news.bbc.co.uk/1/hi/scotland/3680481.stm` for more information).

Also in 2003, Devin Moore of Alabama was charged with the murder of three law enforcement officials. He allegedly killed them when stopped on suspicion of driving a stolen car. He is alleged to have been an 'obsessive player' of GTA. Families of the victims are bringing a case against the retailers (Wal-Mart and Gamestop) which sold Moore GTA III and GTA: Vice City, the publisher (Take Two) and the manufacturer (Sony) of the console on which Moore played the games (see `www.theregister.co.uk/2005/02/17/taketwo_gta_lawsuit`).

The inclusion of the console manufacturer might seem the oddest aspect of this, but it must be remembered that games console manufacturers receive a significant portion of the sales income on all games for their consoles, and therefore are equally liable with the publisher and retailer. Similar civil court cases have been brought before for games including earlier versions of GTA. So far, none have been upheld.

Do Computer Games Fuel Addiction and Gambling?

Gambling is generally acknowledged as being addictive. Similarly, we all know how addictive it is to play computer games and how we play for increasingly longer periods of time in order to increase our scores, reach the next level, and so on. For most of us this amounts to little more than a recreational pastime. However for some individuals this becomes a more serious issue and can become an addiction. It has been noted that some children can exhibit addictive behaviour towards playing computer games and that this may manifest itself as compulsive behaviour,

lack of interest in other activities, association mainly with other addicts and the experiencing of physical and mental symptoms, such as shaking, when attempting to stop the behaviour. Occasionally, addiction may also lead to truancy or crime to fuel the addiction.

The world's first summer camp for children addicted to playing games or surfing the Internet opened in Germany in August 2003, intending to show children that other activities can be just as rewarding as sitting in front of a computer screen. The new term associated with this problem is internet addiction disorder (IAD), although it is not yet recognized formally as a chronic psychological problem. The scheme, run by German social services and health departments, limited the children to 30 minutes of computer access each day and filled the remainder of the day with a range of outdoor events and activities. The addicts who, prior to the camp, had been accessing the Internet or playing games for more than 9 hours per day were also provided with daily counselling sessions and further advice regarding health, diet and lifestyle. Other camps have since been opened (www.cbsnews.com/stories/2006/07/03/health/webmd/main1773956.shtml).

EverQuest and Lineage

In Western society, the EverQuest MMORPG now regularly attracts as many players as the audience for major television programmes. In Korea and Japan, Lineage (and Lineage II) often attract more. Such games have even been cited in divorce cases as the cause of a breakdown in a relationship when one partner becomes obsessive about playing the game. Is there something inherently 'addictive' about such games, or are they simply the latest craze, soon to be replaced? Earlier crazes, such as skateboarding or the Rubik's cube, have affected primarily teenagers. MMORPGs are somewhat different to previous crazes, however, in that they provide an alternative virtual social setting. Both the complexity of the game worlds and the interactivity with other players provide an alternative 'life of the mind' which can be very appealing to those who do not feel fulfilled by their 'real life'. In a

small number of cases such games even become the primary employment of players, selling the results of their endeavours for real-world financial gain (www.wired.com/news/culture/0,70153-0.html).

Is the popularity of these games, and the extreme nature of the involvement of a small number of players, something which should concern society? There are many ways in which self-destructive behaviours can manifest themselves. Some are very old (alcohol abuse) and others are new (obsessive online gaming). In themselves, and pursued in moderation, these activities are generally not seen as problematic. It is when they are abused that problems occur. There are two schools of thought about this. One is that people are vulnerable to different forms of obsession and that the more varied forms of behaviour available in the modern world 'push these buttons' on a wider variety of people. The other is that people who obsess over something are suffering from general life problems and that there are simply more and different expressions of this in the modern world. On balance, it seems that there is little evidence that such games are harmful overall although, as with everything in life, they can be abused, so family and friends of those in trouble should be aware of the signs of trouble. The issues raised here are covered further in (Swickert et al. 2002).

Children, however, are not the only ones to become addicted to computers. Many adults are falling into the gambling trap through the numerous gambling sites on the Web and, more recently, on interactive digital television. With the advent of digital gambling, it is no longer necessary for individuals to enter high-street betting shops. They can gamble from the comfort of their home without even getting up from the couch. Digital television services now offer live betting on major sporting events via the interactive television facilities and with dedicated betting commentary and updated betting odds.

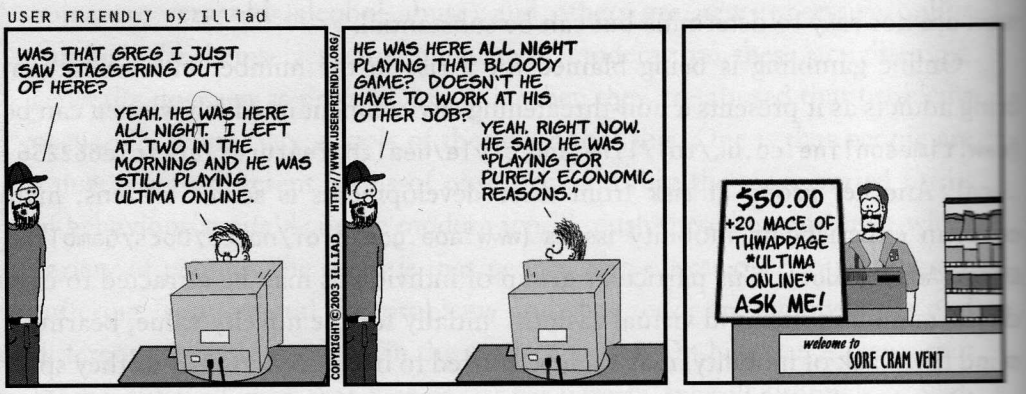
Online gambling, interactive television gambling and, most recently, mobile phone gambling, gives access to gambling 24 hours per day and 365 days per year. This massive exposure will inevitably encourage more individuals to access the

product and provide opportunities for those already engaged to become excessive users (www.thisismoney.co.uk/credit-and-loans/debt-news/article.html?in_article_id=409959). There is evidence to suggest that the perception of the value of money decreases when paying with virtual cash (credit card). There is also a lack of human contact to question and advise gamblers on the implications of their actions. For example, gamblers may not fully understand the financial implications of complex areas such as spread betting where the amounts of money to be lost or won are not easy to determine but can be substantial.

Online gambling is being blamed for a rise in the number of women gambling addicts as it presents a non-threatening environment in which women can bet (www.timesonline.co.uk/tol/life_and_style/health/features/article662256.ece). Another group at risk from these developments is senior citizens, many of them experiencing mobility issues (www.aoa.gov/prof/notes/Docs/Gambling_Older_Adults.doc). This particular group of individuals may be attracted to enter digital gambling sites and virtual casinos, initially for the novelty value, bearing in mind their lack of mobility, may then be enticed to bet more seriously as they spend more of their available time on the sites. A further risk that can be experienced by senior citizens is that, if they become online compulsive gamblers and lose, they have little chance of rebuilding their lives and replacing their assets. Already statistics indicate that senior citizens account for 2.6% of compulsive gamblers therefore there is clearly potential for this marketplace to grow. Research also indicates that 90% of people who walk into a casino walk out losers – and there is nothing to suggest otherwise for an online casino. It is not difficult to imagine that if this marketplace grows then many software developers and suppliers of online gambling products will modify their interfaces to allow individuals in this age range quick and easy access to the software. Indeed this is already the case in conventional casinos, where pull handles have been replaced by easy to use and highly visible buttons. Responsible developers of online gambling and gaming web sites should follow the model already adopted and used by established casinos and gambling organizations of having a social responsibility partner (e.g. Gamecare) on their site. However, it must always be remembered that making money is not easy – but losing money is!

POWER TO THE PLAYER – BENEFITS OF COMPUTER GAMES

As well as the numerous concerns raised about playing computer and video games, there is also evidence to show that there is a wide range of positive aspects that can result from the application and playing of computer games.



Harnessing the Power of the Brain

One of the most successful applications of computer games has been their use with biofeedback to treat children who are hyperactive or have attention deficit disorder (ADD). Originally developed by NASA scientists, computer games have been used to help these children train their brains to concentrate and focus their attention. Essentially, the brainwaves of the children playing the games are monitored and linked to the controls of the games so that when they produce the correct brainwave patterns, the performance of the joystick or game pad being used to play the game becomes more responsive. Importantly, it has been found that the lengthening of the attention span and calming effect of playing the game persist for a significant period after the game has finished. Similar techniques are now being used to help highly-stressed individuals to remain calm in stressful situations. NASA are also considering using these techniques as a method of training jet pilots to cope with

the stress of combat while remaining in control of their highly complex aircraft (news.bbc.co.uk/1/hi/sci/tech/894673.stm).

Building upon this, work is under way to develop computer game products to help children combat ADD and provide a non-chemical alternative to the drug treatments currently prescribed (www.smartbraingames.com/view_products.asp). These games require the child to wear a modified cycling helmet which measures changes in electrical activity in sections of the brain and reports them back via a PC. The company has produced a series of video games based on table tennis, cycling and racing activities, each of which responds to the data generated by the brain and rewards high attention states and discourages the more distracted states; for example, if the child disengages with the task then the cyclist slows down but it wins the race if the child remains focused on the task.

Similar neuro-feedback techniques are also being developed by a US company, to help business professionals, golfers and other athletes achieve peak performance. The Peak Achievement Trainer is a software and hardware device that analyzes brain activity (www.peakachievement.com). In one study, they analyzed the brain patterns of dozens of golfers as they putted and it was found that there was a direct correlation between certain brainwave patterns and successful putting. It was found that golfers were most effective when they 'found the zone' achieved by getting their mind 'out of the game' and letting muscle memory do the work unimpeded. This is thought to be successful as it blocks out the anxiety in the shots.

Another game, the Journey to Wild Divine, recently released in the United States, is using heart-beat regulation as a means of controlling a game situation and, in doing so, promoting relaxation and calmness (www.wilddivine.com/Affiliate2). The game uses a mix of mysticism, high-tech graphics and biofeedback. This game has no violent scenes, but instead promotes a sense of calm with snow-capped mountains, domed temples and lush gardens. With no mouse, keyboard or joystick, interaction is via impulses from three fingers of the left hand encased in purple plastic clips attached to the computer. The player controls the actions of the game by changing their heart-beat rate. Levels of relaxation can be tracked by how well tasks such as keeping balls in the air are performed. Developers claim that the game helps individuals find inner peace by teaching them meditative skills

that can then be used in everyday life. Such games are not predicted to replace violent computer games, however they may reach a new target audience or be used at different times by the same gamers.

Evidence has also shown that computer and video games can be used very successfully in reducing nausea in paediatric cancer patients receiving chemotherapy and in reducing their perceived levels of pain. A handheld video game has also been successfully used to help treat compulsive self-harming behaviour in young children (Gershon et al. 2003).

Education and Learning

There is evidence that children who have been avid game players for at least five years are often intelligent, motivated and high-achieving individuals who tend to be generally successful educationally, go on to college and obtain better than average jobs (`www.guardian.co.uk/uk_news/story/0,3604,462243,00.html`). Some studies have shown that students can significantly improve their arithmetic ability and motivation for the subject through game-play scenarios, while others have shown that there can be increased reading comprehension scores through game-playing training programs as an alternative to, or in conjunction with, more conventional teacher-based methods (`education.guardian.co.uk/schools/story/0,5500,1336802,00.html`). Other benefits include individuals developing high levels of hand–eye coordination, good reaction times, better social interaction, better pattern and rule generation and hypothesis testing and generalization, better spatial visualization and a developed sense of achievement.

Another recent study has shown that a simple computer program, Phonomena, can teach children to distinguish between sounds, dramatically boosting their listening skills by up to 2.4 years in just a matter of weeks (`www.newscientist.com/article.ns?id=mg17924101.000`). According to the UK Medical Research Council's Institute of Hearing Research, up to a fifth of all children have some problems hearing the difference between some sounds. A program such as this may afford

them some significant progress. Independent tests to further establish the validity of these claims are currently being carried out.

While Phonomena has been specially designed to hone the listening skills of children, even normal computer games have been shown to improve visual skills (www.physorg.com/news93192187.html). Another advantage of using computer games is that they can be tailored to each child's individual need. Games have been used extensively in motor and cognitive rehabilitation after strokes and in helping students with learning difficulties to interact with everyday scenarios and assist with the development of their social skills. Games are also being used in virtual-reality therapy situations to cure phobias and trauma and to develop life skills (seriousgamessource.com/features/feature_053006_ptsd.php). Further discussion regarding such games is contained in Chapters 9 and 15.

Various forms of visual and audio entertainment have been shown to enhance study skills. For example, music when combined with exercise has been shown to stimulate the brain. Studies show that men and women perform slightly better on verbal fluency after exercise alone but significantly better if exercise is combined with listening to music. In a separate study, it has been shown that a short period of time spent relaxing watching daytime television can raise IQ by as much as five points with a further two points if a cup of coffee is consumed at the same time.

Another example of using games and visual media for educational purposes is in order to teach numeracy and literacy skills. One such multimedia product is the DVD of the film Spellbound, which enacts the story of a spelling competition. Not only does the film generate an interest in academic achievement, it also incorporates a range of special features designed to encourage and improve spelling, for example by including spelling games. This approach may help promote spelling in an age when text messaging seems intent on changing the traditional literary values. Further information on the impact of computer games on children's aggressive behaviour and learning abilities can be found at www.unitec.ac.nz/?1A61532B-FED5-4C57-85C3-60163A08462F, on the risks to children of using electronic games at www.ime.usp.br/~vwsetzer/video-g-risks.html

and on the benefits of computer games at www.bris.ac.uk/Depts/Info-Office/news/archive/mcfarlane.htm.

The Silver Gamers

Various studies with elderly adults have also shown a range of advantageous effects after playing video games for a period of time. These benefits may variously be evident as faster reaction times, improved self-esteem, improved perceptual motor skills, better concentration and focus of attention, improved coordination, better driving habits and fewer accidents in the home. One study has even found that games may be used to soothe the pain of arthritis.

Indeed, experts predict that computer games could eventually challenge bingo and bowling as the preferred pastimes of Britain's pensioners. The advantage of computer gaming is that elderly individuals do not necessarily need to leave their homes in order to pursue their pastime. To combat the potential isolating effect of pursuing their hobbies at home, online gaming may well present an alternative which will allow them to develop virtual communities.

In a recent study of 350 elderly people, 67% said they owned a computer, of which 50% said they played games. When 40 volunteers, aged 59–84 were given games consoles, including Nintendo's Gamecube, Sony's PlayStation 2 and Sega's Dreamcast, to gauge their interest almost all of them became engrossed in the activity. Given these figures, older people obviously represent a huge untapped marketplace for games companies (news.bbc.co.uk/1/hi/technology/3287891.stm).

Game Development Grows up – the Hidden Agenda

Games are intrinsically designed to be fun, however they may also be used in a more subtle manner to promote other agendas. This section briefly introduces a number of interesting applications where games technology is being used in this way.

One application area has been in army recruitment. In July 2002 a 'shoot-em-up' game was created and launched by the US army as a recruitment tool (www.

wired.com/news/technology/0,72156-0.html). The game was designed to show the nearly limitless career paths a soldier can follow in the army. The game was developed at the Naval Postgraduate School in conjunction with private game companies and was based on the Unreal game engine. This joint approach resulted in the scenarios looking realistic while still being able to be identified with commercial products such as Half-Life and Counter Strike, which was seen as critical to its success. This multimillion dollar investment in designing and maintaining the game for online play represented less than 0.5% of the army's recruitment budget and will be deemed cost effective if only an additional 300–400 enlist as a result of it. Feedback from some recruits indicated that the game portrayed only the action side of the job, with the more mundane yet frequent tasks being ignored. This has prompted the army to improve the game by including a more balanced and authentic feel to the scenarios. Further developments include adopting a more proactive approach to using the game, where online game users attaining high scores may be invited along to a recruitment and selection panel.

Games technology has been used in a range of training simulators including those developed for the military, racing industry and commercial airlines. An example of this has been developed by a major UK rail operator, Thames Trains, which introduced a new £1 million aircraft-style training simulator for train journeys. Using this simulator, staff can be trained and tested with the most unexpected challenges and environments. The system models all aspects of the journey including signals, curvature of the track, noise levels and weather conditions.

One of the most recent applications of educational computer games is a game developed especially to curb speeding by motorists. This game shows the speeding driver exactly how they may die if they continue to speed. People who are caught speeding on German autobahns are to be forced to watch on a laptop what might happen to them if they were involved in an accident. The projected accidents range from a minor shunt to a multiple car pile-up, with vehicles bursting into flames or ending up a mass of twisted metal. The pictures are accompanied by surround-sound and sometimes words flashing on the screen, 'Sorry, sir, you're dead'. Drivers can also push buttons to see what would happen when they apply the brakes at high speed. Police believe that forcing speeders to witness their own

virtual accidental deaths will make them think twice before driving so fast again. The program works like a computer game, taking information from speed cameras along the route already travelled and using this to predict what would happen next. This program was introduced in Germany in March 2004. Initial trials have shown that although drivers were angry when they were stopped for speeding, they were found to calm down quickly when shown the game and the possible terminal effects of their actions. Further developments of this initiative include more research and its introduction to young adults in school.

Another more controversial application of computer games is the proposed introduction of PlayStation-style roadside tests (an 'impairment meter') to determine the level of alcohol impairment of a driver. If validated, this system could replace the traditional breathalyzer. In this system, drivers will have to complete tasks on a handheld computer to prove that their reaction times and concentration are up acceptable levels. The tests will determine if the driver is over-tired as well as identifying those who are incapable of driving through the use of alcohol. Drivers will be required to track an object moving across the screen with a pen-like device; periodically an object will pop up in the corner requiring the driver to press a button as they carry on following the line. The second test involves drivers responding to a number of signs flashing up on the screen. This new system is currently being evaluated by the UK's Police Scientific Development Branch in St Albans, Hertfordshire. Recent tests on 170 volunteers at two music festivals have been extremely encouraging.

Games technology is fuelling its own new economies. For example, one of the latest commercial developments in the gaming environment has been the growth of professional players, who build up stockpiles of in-game money, artefacts, even characters, and then sell them online (usually using auction systems such as eBay) to others in the gaming community with less talent or perhaps less time to play (`www.newscientist.com/article.ns?id=dn6601`). This trading in virtual objects draws a parallel with other trading operations such as stocks and shares or other virtual trading commodities. An industry is growing where participants in online games are paying for someone else's expertise to assist them to be successful in games such as Ultima Online. Taking this a stage further, there

is now an economic and advertising crossover starting to emerge – a market offering virtual Nike trainers and Levi jeans with which to clothe your virtual avatars for a real-life price (uk.gamespot.com/pc/rpg/there/news_6077346.html). Some of the companies responsible for these games are attempting to stop sales of virtual artefacts in the real world, even to the point of taking legal action in an attempt to prevent online auction sites allowing them as legitimate trading objects. Sony have embraced this concept however, setting up the first auction site entirely devoted to auctioning the objects and in-game 'money' of online-gaming characters (www.newscientist.com/article.ns?id=mg18624973.600). They claim that their new system is being developed primarily to combat fraud by linking the objects on offer to the record of their existence on the gaming servers.

DISCUSSION POINTS

Should Computer Games Be Regulated? Rated? Censored?

In the United Kingdom and much (though not all) of the EU, computer games are subject to ratings similar to those applied to movies (whether at the cinema or home video). These ratings are legally enforceable and prosecution is possible, although relatively rare. In the United States, while there is a scheme (run by the Entertainment Software Ratings Board, ESRB) to classify games as 'suitable for adults only' or 'suitable for teenagers and adults only', it is entirely voluntary. In fact, efforts by some states (Washington, for example) to legally restrict such sales have been overturned by the US federal courts as infringement of free speech.

There are many arguments for and against legally enforceable or 'advisory' ratings on video games. Some of these arguments are common to ratings on all types of material (videos, books and magazines) and some are specific to computer games. We present here some of these arguments to stimulate discussion:

- Video games are unrealistic and so should not be subject to restrictions.