ADOLESCENT VIDEO GAME PLAYING: ISSUES FOR THE CLASSROOM

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In the popular press, most of the reported effects of video games appear to centre upon the alleged negative consequences such as increased aggression, medical consequences of excessive play, and addiction. Although in extreme cases, video game playing can be addictive, there are many benefits that children and adolescents can get from playing video games. These can be educational, social, and/or therapeutic. This paper examines various issues about the use of video games in the classroom. This includes reasons as to why video games may be useful in educational contexts, the factors that a teacher should evaluate when choosing an educational video game to be used in a classroom situation, and some practical advice and guidance for teachers about video game playing (particularly in the context of reducing excessive video game play). It is concluded that video games have great educational potential in addition to their entertainment value and may possess advantages not present in other learning strategies.

Most of the reported effects of video games - particularly in the popular press - appear to centre upon the alleged negative consequences such as increased aggression, medical consequences of excessive play, and addiction. There is indeed some evidence that in extreme cases, video game playing among adolescents can be addictive (e.g., Griffiths, 2000; 2008a; 2000b), but this appears to be quite rare. On the positive side, there are many benefits that children and adolescents can get from playing video games. These can be educational (e.g., Griffiths, 2002; de Freitas & Griffiths, 2008), social (e.g., Cole & Griffiths, 2007; Hussain & Griffiths, 2008; 2009) and/or therapeutic (e.g., Griffiths, 2005a; 2005b).

Research dating right back to the early 1980s has consistently shown that playing computer games (irrespective of genre) produces increases in reaction times, improved hand-eye co-ordination and raises players' self-esteem (Griffiths, 2002). Furthermore, curiosity, fun and the nature of the challenge also appear to add to a game's educational potential (Malone, 1981). In this paper, various issues about the use of video games in the classroom are discussed. This includes reasons as to why video games may be useful in educational contexts, the factors that a teacher should evaluate when choosing an educational video game to be used in a classroom situation, and some practical advice and guidance for teachers about video game playing (particularly in the context of reducing excessive video game play).

Video games in educational contexts

As evidenced elsewhere, video games can clearly consume the attention of children and adolescents and can be very engrossing (Griffiths, 2008a). However, there is also lots of evidence that the 'engrossing' quality of video games has the capacity to engage children and adolescents in their learning. This has led to the rise of the so-called 'edu-tainment' media. Just by watching children it becomes very clear to any parent or teacher that young people appear to prefer this type of approach to learning. In recent years, this has led to lots of purely educational games being introduced into the commercial market – particularly the 'casual gaming' market that utilises the mobility of the handheld console devices such as Nintendo's DSi (a mobile video game console with an interactive dual screen).

Some evidence suggests that important skills may be built or reinforced by playing video games. For example, spatial visualization ability skills (i.e., mentally, rotating and manipulating two- and three-dimensional objects) improve with video game playing (Subrahmanyam & Greenfield, 1994). Griffiths (2002) has outlined many ways in which video games may be useful educationally. For instance, video games:

- Can be fun and stimulating for children. Consequently, it is easier to achieve and maintain a young person's undivided attention for long periods of time (Donchin, 1995). Because of the fun and excitement, video game playing may also provide a more innovative way of learning than traditional methods.
- Have the capacity to attract participation by children across many demographic boundaries (e.g., age, gender, ethnicity, educational status)
- Can assist children in setting goals, ensuring goal rehearsal, providing feedback, reinforcement, and maintaining records of behavioural change.
- Can be used when examining individual child characteristics such as self-esteem, self-concept, goal-setting and individual differences.
- Can provide elements of interactivity that may stimulate learning.
- Allow children to experience novelty, curiosity and challenge that may stimulate learning.
- Equip children with state-of-the art technology. This may help overcome technophobia. Over time this may also help eliminate gender imbalance in IT use (as males tend to be more avid IT users).
- May help in the development of

transferable IT skills.
- Can act as safe simulations that allow children to engage in extraordinary activities without real consequences (driving a car, flying a helicopter, performing an operation, etc.).

It would therefore appear that video games (in the right context) can be a facilitative educational aid.

Factors in choosing games for classroom learning

It is important to develop the positive potential of video games while remaining aware of possible unintended negative effects. Most teachers would probably support the use of video games if they were sure they helped their pupils learn about particular school subjects on the national curriculum. However, there are several factors that a teacher should evaluate when choosing an educational video game to be used in a classroom situation (Funk, Germann, & Buchman, 1997; Griffiths, 2002).

- *Educational objective.* The objective of the game should be clear. Professional helpers and developers should have a known goal in mind for the players of the game. The outcomes they are seeking should be clear to the teacher and to the player.
- *Type of game.* There are many types of activity content: games, puzzles, mazes, play, fantasy/adventure, simulations, and simulation games. Some games require physical skill and strategy, while others are games of chance. Some video games are board or adventure games, while others involve simulation involving real events or fantasy. No evidence supports a greater educational effect in either situation.
- *Required level and nature of involvement.* The evaluator should assess whether the video game player is passive or active. In some games, the computer plays the game while the child watches the results. In computer-moderated games, the computer provides the environment for the game to occur and presents decisions or questions to the player at key points during the game. The computer then reveals the consequences of the decisions made by the player.
- *Information and rules.* Some games allow the child to have a range of knowledge and information about past experiences with the game. Others provide minimal amounts of information to the child. Part of the strategy may involve the child's response to this lack of information. Rules and player participation in setting rules may vary among games.
- *The role of luck.* Some games are driven by chance. It is assumed that the greater the influence of chance in the working of the game, the less educational in nature.
- *Difficulty.* Some games allow the player to choose the difficulty level. Others adjust difficulty level based on the progression of the player. This approach allows the game to become progressively more interesting as it becomes more challenging.
- *Competition.* Many games build in competition. Some children are attracted by competition. Teachers may wish to examine whether the competition is presented in such a way that all can win and that one does not win at the expense of all others.
- *Duration.* Some games have very short duration, while others may go on at length.
- *Participant age and characteristics.* Computerized games have been developed for a range of ages. It assumes that the participant can understand the rules of the game and has the skill level to accomplish the motor aspects of playing the game.
- *Number of players.* Some video games are solitary in nature. Others pit players against each other or the computer. Solitary games may meet the needs of those who find group work difficult.
- *Teacher's role.* In some video games, the teacher merely observes. In others, the teacher may be an important part of the game format.
- *Setting.* Fully prepare staff to integrate games into the curriculum. Without proper acceptance, the games may be used primarily as a game or toy rather than as an educational tool.

Practical advice and guidance for teachers about video game playing

So what should concerned teachers do when it comes to children playing video games? Griffiths (2003; 2009) advocates that teachers should begin by finding out what video games children are actually playing. If they have objections to the content of the games they should facilitate discussion with children about this, and if appropriate, have a few rules. A few aims with children should be:

- To help them choose suitable educational games which are still fun.
- To talk with them about the content of the games so that they understand the difference between make-believe and reality.
- To guard against obsessive playing.
- To follow recommendations on the possible risks outlined by video game manufacturers (e.g., sit at least two feet from the screen, play in a well-lit room, never have the screen at maximum brightness, and never play video games when feeling tired).
- To ensure that they have plenty of other activities to pursue in their free time besides the playing of video games.

Griffiths (2003; 2009) reports that teachers need to remember that in the right context video games can be educational. The question most frequently asked by teachers (and parents) is 'How much video game playing is too much?' To help answer this question, Griffiths (2003) devised a brief diagnostic checklist to assess if a child's video game playing is getting out of hand. Does the child:

(i) Play video games almost every day?
(ii) Often play video games for long periods (over 3 to 4 hours at a time)?
(iii) Play video games for excitement or 'buzz'?
(iv) Get restless, irritable, and moody if they can't play video games?
(v) Sacrifice social and sporting activities to play video games?

(vi) Play video games instead of doing their homework?
(vii) Try to cut down their video game playing but can't?

If the answer is 'yes' to more than four of these questions, then the child may be playing too much.

Conclusions

Video game technology brings new challenges to the education arena. Video games represent one technique that may be available to the classroom teacher. Care should be taken that enthusiastic use of this technique does not displace other more effective techniques. Video games may possess advantages not present in other learning strategies. For example, the ability to choose different solutions to a difficult problem and then to see the effect of those decisions on a fictional game allows children to experiment with problem solving in a relative safe environment.

Video games have great educational potential in addition to their entertainment value. There has been considerable success when games are specifically designed to address a specific problem or to teach a certain skill. However, the transferability of skills outside the game-playing situation remains an important factor. What is also clear from the empirical literature is that the negative consequences of playing almost always involve people who were excessive users of video games. There is little evidence of serious acute adverse effects on health from moderate play.

The future of educational gaming may well be online via multiplayer games. At present, multiplayer online games are being piloted in a range of learning and training areas (see de Freitas & Griffiths [2008] for an overview). New research projects and collaborative examples from learner communities indicate that experimental take-up of online gaming is being explored in wider learning and training contexts. The implications of these new forms upon formal education are difficult to assess at this stage. The widespread use of games to support learning indicate that games can be used to support exploratory learning, to support peer interactions and in support of higher cognition, but clearly have challenges for standard pedagogic practices and for how institutions are organised. However, it must be noted that games are only part of the learning mix and teachers need to know the pedagogical relevance. This includes motivation, engagement, interactivity, providing rewards and reinforcement for skill improvement.

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