

Computer/Video Games: The Educational Value

There is a good chance that if you ask a typical school teacher, a university academic or a parent their views on computer/video games, you will in all probability get a negative answer. And yet, when they look for a good nursery school, they will look for whether the 'playway' method is being adopted and even in a secondary school they will look for playfields. Even the regulatory agencies such as the AICTE/UGC mandate the need for several acres of open land for physical activities.

An important cause of this negative view of computer/video games is that, other than the children themselves, very few adults play these games. Since many computer/video games are created in a metaphor of aggression and violence, they are often accused of promoting violence in the children who play these games.

I posed the question to many such skeptics as to whether they would regard chess was a game of violence or a game of strategy. It is cloaked in terms of killing or eliminating several pieces of the game which in Hindi refer to animals such as camels, horses, elephants and of course foot soldiers and in English of Bishops and Knights and Kings and Queens. But we all ignore that fact and recognize that skill and strategy are needed to consistently win in the game of chess. And of course, chess has been one of the popular computer games.

Winning in a computer or video game involves similar elements of skills and strategies especially in the psycho-motor domain, which are often ignored in school syllabi. Thus like chess, rummy or poker, computer games also need skills, strategies and competencies.

Let us begin by looking at what comprises a video/computer game?

The phrases *video game* and *computer game* are often used interchangeably. Typically there is a screen (television, monitor, LCD display) through which the game is viewed. Input devices vary depending on the game and hardware, but usually involve a controller, joystick, keyboard or keypad.

Such games can be played on Televisions, PC's, on dedicated games consoles or on portable media devices including mobile phones. The most popular and well-known mobile game device is the PSP.

The study of *why* people play video games has received relatively little attention. Considering the vast number of players, and monies spent on games, this is a peculiar oversight of the research sector. Computer games provide a medium that engages people for long periods of time, and gamers usually return to the same game many times over. There are obvious lessons here for the developers of digitally-based educational, learning and training materials.

For example, one of the most popular video games is that of Pokemon, in which players collect a menagerie of monsters. Pokemon is played by millions of people, mainly

children, on handheld and television-based consoles. Players enthusiastically learn a large amount of information during play, such as the fighting and defensive attributes of each monster, and the likely outcome of the interaction (through battles) of these attributes. It is here that developers of educational materials may benefit from exploring *why* people play Pokemon to such an extent, *how* people so easily soak up such large amounts of information during play, and how the answers to these questions can be used to improve education and learning for all. If we truly want to create an inclusive system of education, a sarva shiksha abhiyan of sorts, then more than calculating the right Constitutionally valid ratio for reservations, we need to understand these pedagogies. Research on why people play video games identifies three main reasons: fantasy, challenge and curiosity. One may venture to say that all learning is either through reading or listening to stories and by playing of games. The former is formalized as boring theoretical classes conducted in dull class-rooms and the latter into unimaginative laboratory exercises killing all elements of discovery and surprises as the results are prescribed, and often the laboratory work doesn't happen at all.

The laboratories should be supplemented with a suite of PC's and game machines and the full range of games. This is somewhat expensive, but the only truly scalable way to equip the new generation with skills for the second decade of the 21st Century that is fast approaching.

The reasons for playing games appear to be different for boys and girls. Boys focus on winning the game, whereas girls are more concerned with completion. Either way, struggle is a key factor in motivating learners..

Many games now incorporate creative tools, giving the learner control. This can extend to allowing them to enhance the game or create new games. When the game allows such opportunities for players to personalise the medium, it creates a completely new learning experience. One has to just experience the kind of experience that games like 'second life' can create.

Game consoles: the last few years, and now

By the start of 2002, there were three main manufacturers of television-based and handheld gaming consoles although there were many more earlier. Most independent reviews and comparisons of the three consoles do not decide on a clear "winner" , instead concluding that each is suitable for a particular gaming demographic.

Microsoft

Microsoft is new to the games console industry, though software such as its *flight simulator* series has given it experience in the PC games sector. Microsoft invested substantially in Xbox hardware, game development relationships, and PR; consequently, the console launched with a relatively wide range of games, some critically acclaimed.

The Xbox 360, launched a year ago has been quite a success, already sold more than 6 million and by the end of 2006, about 10 million consoles are expected to be sold..

Nintendo

In 2001, Nintendo launched the GameCube in Japan and the US, as a successor to its N64 console . This is the smallest and cheapest of the three contemporary television-based consoles.

Nintendo is also the manufacturer of the Game Boy series of handheld consoles. The third in this series, the Advance, was launched in 2001.

It was appearing that Nintendo would be out of reckoning in this field and the future competition would be only between Sony and Microsoft, but in late 2006 Nintendo announced its new product the Wii, the cheapest of the 3 and in a completely different league resembling a remote more than a joystick. It is operated by waving it around and thus gives a completely new experience.

Sony

The Playstation2 (or PS2) has now sold in excess of 100,000,000 units worldwide giving Sony 70% of the market. The PS2 is the successor to the original Playstation console, which sold about 80,000,000 units. The PS2 can "run" Playstation games and, like the Xbox, can play DVDs and CDs.

The PS3 has just been launched and is the most expensive of the 3 consoles. The PS3 is available in two configurations, costing US\$ 500 and US\$ 600 ,compared with Microsoft Xbox that starts at US\$300 and the Nintendo Wii at US\$250.

The PC

Many people use the PC as a games machine, even if purchased for other tasks. Most people have had at least a brief encounter with simplistic games or simulations, such as Minesweeper and Solitaire; however, many recent PC-based titles are of a quality and complexity to match that of leading console-based titles. Online games (especially combat-oriented simulations), civilization-building games, business tycoon simulations and flight simulators are genres that are particularly strong on the PC.

Courses on gaming

The number of gaming-related courses has increased in recent years. In the UK, a number of institutions offer game-related undergraduate or postgraduate courses. Approaches to teaching gaming-related topics differ; some courses are tailored towards game design and programming, while others offer a more generic computer science qualification containing several games-related modules

There are also a number of pre-university colleges offering multimedia courses containing elements of game design, programming, and music. Outside the UK, there is a growing collection of academic and educational establishments offering gaming-related courses and qualifications.

Tanya Krzywinska is probably the first person to be appointed a Professor of video games at Brunel University in UK. The University offers an M.A. program in digital games: theory and design.

Games and education

Games are increasingly used to support teaching and learning e.g., using text adventures to assist in teaching English as a second language. Conclusions as to the effectiveness of games for educational purposes differ; one particular review of relevant research indicated that mathematics was a subject where the use of games was usually superior to traditional classroom instruction .

One recent study involved a football manager simulation game with Year 7 and 8 pupils to achieve the learning objectives of interrogating databases and data manipulation. The teacher created a scenario in which a team manager (the teacher) needed the scouts (the pupils) to find suitable players according to a range of criteria. Using the database of players in the game, the pupils found the players by using a variety of filtering options.

This database-oriented scenario can easily be extended into a more digital library and teaching-oriented scenario. For example, the scenario could be modified into that of an online database-oriented game. The pupils would then work online in conjunction with pupils from other schools, acquiring database searching, information acquisition, network communication, and information analysis skills in order to complete the game. These are the kind of skills needed in the workplace of the future.

Experiments with the structured use of most of these games displayed a variety of positive benefits:

"Teachers in the study found that use of the games could provide motivation, develop skills and encourage collaboration. The motivating power of games and their ability to encourage cooperation were felt to support the work of schools in developing independent but social individuals."

Future trends in video gaming are very hard to predict. Some of these new games consoles have as much computing power as supercomputers. It has even been suggested that when one is not playing games on the new PSP3 , it can be connected to a global research network providing computing power to solve high-end complex research problems. Even established industry experts fail to agree on particular gaming trends in

anything more than the immediate future. The one certainty is that video games and gaming consoles are here; the key console manufacturers exhibit relative fiscal health; games are diverse, complex, engaging and attractive; and they are being played in rapidly increasing numbers.

That particular revolution is complete: *game over*. The challenge now is that of combining the best and relevant aspects of games, game consoles, and learning, to create engaging and beneficial digital learning pedagogies: *game on*.