

Virtual Kids of the 21st Century: Understanding the Children in Schools Today

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This article reports on a study which interviewed 934 children ranging from 10 to 13 years of age about their ownership, use, and views of computer and video games. Computer games are viewed as an important part of the lives of children and we need to understand their impact and relevance to the children who inhabit our classrooms. The results of the study both confirmed existing data which indicated major gender differences in ownership, use, and preferences and highlighted that students enjoy playing computer and video games and that they also enjoy a range of other activities as well as games. The results have important implications for those who design curriculum and learning opportunities in schools. In home contexts children now use information and communication technologies extensively. If education systems continue to ignore the potential of ICT for learning experiences they are in danger of being regarded as Neolithic by those who experience them and this should be a grave source of concern to those who are responsible for educating the next generation for the information age.

Computer games together with videos, movies, and television have been under considerable scrutiny of late due to a spate of violent acts perpetrated by youths in school contexts. This anxiety is reflected in a concern

about children's safety (Walkerdine, 1999) and the issue of addiction (Durkin, 1995, 1999), which is reported frequently in the media and it is apparent that the debate is not always rational and informed. Computer/video games and other new media are a pervasive influence on the lives of students in schools, yet there is not a great deal of information about their ownership and use by young people.

Green and Bigum (1993) have brought to light the impact and importance of considering popular culture in relation to the students who attend schools. They call on educators to consider the question: Are schools now dealing with students who are quite different from those who attended schools in previous eras? Have schools and education authorities developed curriculum rationales on what are essentially inadequate and obsolete assumptions about the nature of students? (p. 119) In fact, Green and Bigum (1993) identified a major cultural and epistemological shift in terms of technology and pedagogy and new realisations about the nature of the relationship between technologies and pedagogies, schooling and media culture. Similarly, Giroux (1994) has suggested that the work of education scholars, necessitates scrutiny of pedagogies in school and cultural contexts to understand educational processes and improve them as they progress into the information age.

In this way, "Not only does the study of children's popular culture grant insights into childhood consciousness, it also provides new pictures of culture in general" (Steinberg & Kincheloe, 1997 p.6). It is thus apparent that issues about the use of video games and other new media need to be raised and understood by adults since "if schools are unable to offer media education to the young and help them develop critical awareness and capacity to exploit technology rather than be exploited by it...parents are unlikely to undertake this role either." (Sanger, Witson, Davies, & Whitaker, 1997, p. 172-173).

In fact, societies and cultures are changing so much it is evident that "New times have ushered in a new era of childhood" (Steinberg & Kincheloe, 1997, p. 1). The new child may well be Samuel Simpson, the British two-year old whose addiction to Nintendo games came to public attention in 1999. Samuel plays games for 10 hours a day and is inconsolable when taken away from the screen. He eats and has his nappy changed while he is playing games such as *Golden Eye* (which has an MA rating). His parents were reported as saying that his habit "means total peace for us" and that "he just goes mad if you try to take him away" (Davies & Robson, 1999, p. 11). The image of Samuel, seated on a small child's chair while he operates a Nintendo joy pad is one that startles us to a re-assessment of our mental

model of childhood. As educators we need to understand the children in our schools in order to provide optimum learning conditions in a context in which it is apparent that: "Everything is changing except school" (Sanger et al., 1997, p.176)

It is interesting to note that in 1996, Durkin reported that it was thought that by the end of the century, most of children's education would take place by way of the computer, (Condry & Keith, 1983; Lepper, 1985; Lin & Lepper, 1987; Papert, 1980) corresponding to its impact on workplaces and business transactions. This has not been the case and in many instances we cannot help but wonder how education has survived the onslaught and if by hanging on to old curricula we are in danger of losing credibility as professionals in the information age.

It has been asserted that "Video games represent a new frontier for media in our culture" (Provenzo, 1997, p.103) and "...new virtual reality technologies already on the market make it possible to participate physically in what takes place on a television or computer screen." (Provenzo, 1997, p. 104). In this way interactive media becomes an alternative to reality for children who engage with it and has a significant impact on their lives and any discussion of childhood in the information age.

If educators negate responsibilities and decide to ignore the consequences of the impact of popular culture and computer/video games in particular, they are in danger of leaving children exposed to the sole influence of the corporations that stand to make even more money selling their products. This issue has been raised in various forums and result in a dispersion of curricula outside the school that is extremely powerful. As Steinberg and Kincheloe, (1997) have stated; "Often the organizations that create this cultural curriculum are not educational agencies but rather commercial concerns that operate not for the social good but for individual (or corporate) gain" (p. 4). They also argue that corporations now take on the role of educators in society and have created a corporate cultural pedagogy that is extremely powerful in its influence over children. In fact they contend that it "has produced educational forms that are wildly successful when judged on the basis of their capitalist intent" (p. 4). As a result of this it can then be argued that it is our "parental, civic and professional responsibility to study the corporate curriculum and its social and political effects" (p. 5), and examine the ways in which children make sense of it and the ways in which it impacts and influences events and understandings in their lives. Of interest here is a greater understanding of the children who populate our schools who have once been described as "Aliens in the classroom" (Green & Bigum, 1993).

Also there is the notion that games may promote stereotypes that encourage sexism, racism, and other negative societal beliefs. With this in mind it has been noted that, "...elementary schools are important sites where educators can intervene in developing curricula and classroom relations that attempt to eliminate sexist, racist, classist, and other oppressive social practices" (Brady, 1997, p. 224).

The study reported here aimed to elucidate student's understanding of one particular aspect of popular culture, computer and video games. This was accomplished by surveying a significant number of students from 10 to 13 years of age about their ownership, use, and views of this media.

THE STUDY

As previously stated this study sought to investigate the use of, and attitudes toward, computer and video games by (Australian) children in the age range of 10 to 13 years of age. This was done with the use of a questionnaire administered to 934 students, and followed up with interviews of 10 children from one site, who were randomly selected and for whom parental permission to talk with was received. The children were in Years 5 to 7 of compulsory schooling and all attended State Primary Schools in an urban region. The data reported here pertains to the results from a questionnaire that each student completed individually in a class session.

The questionnaire contained items about video, computer, and arcade games that were grouped into the following areas (with some sample items provided):

Ownership, location, and types of machines and games

Do you have a video game/ computer at home?

What games do you have for your system?

Do you hire video games?

Who owns the computer/ computer game console?

Who uses it the most?

Where is the computer/ computer game system located? Who decided that it would be in this location?

Are there any conditions attached to the use of the computer/ game system in your house? If yes who set the conditions?

Theme and genre of the games

What is the story/ aim of the games that you have?

Favourite and least favourite types of games and why?

Which game is your favourite? Why?

Playing styles

How many times do you play video/ computer games each week and for how long? (table provided for completion of this item)

Do you prefer to play computer/ video games/ arcade games alone or with friends?

Do you like to talk about computer games with your friends when you are not playing with them?

RESULTS AND DISCUSSION

Ownership, Location, and Types of Machines and Games

As Figure 1 shows, more boys than girls had a video game system at home. The systems were mainly bought by parents (Figure 2a) who also determined where the system would be located (Figure 2b). Even though it was apparent that more boys than girls reported that they had video game systems at home, when we asked the students, Who owns the system? The majority reported ownership by the family (Figure 3a). However, it is interesting to note that more boys than girls still reported that they owned the system and that more girls than boys responded that their system was owned by the family. The location of the system (Figure 3b) was not only determined by individual ownership, wherein more boys than girls had a system located in their bedroom but also by the collective membership of the family since they were located in communal areas like the family room (to be attached to the television) and the study where it seemed from this sample that there was often a “spare” TV monitor which the game system could be attached to so that it did not disrupt viewing of regular TV (usually located in the family room or lounge). Of interest here is the fact that 165 boys indicated that they were the owner of the system and a significant number of these (128) had them located in their bedroom. In contrast 56 girls claimed ownership of a system and nearly twice as many responded that they had the game machines located in their bedroom. In some cases it was evident that those boys who did not have the game system located in their room were required to share it with siblings, and thus parents had decided that it should be located in the family room. Additionally, some of those boys whose systems were located in the family room or study indicated that it was because the television was there—so the game system followed. The responses from the girls who shared the system with siblings

was interesting since they mainly shared with siblings of the same gender, thus the location in the room was negotiated. The reporting of sibling gender from the boys indicated that irrespective of gender they shared the game system by playing with the games in the family room or study. The results from the question asking, Who uses the video game system the most? Reveals that again more boys than girls used them yet girls reported parents/ family and siblings as using them more than themselves (Figure 3b).

It was apparent that in this sample, the majority of parents did not put any condition on the use of the video game system (Figure 4). This is especially relevant in the context of the comment by Steinberg and Kincheloe (1997) that “since parents are no longer in control of the cultural experiences of their children, they have lost the role that parents once played in shaping their children’s values and worldviews.” (p.16) and from Sanger, et al., (1997) who contended that “...most children lead a rather unmediated existence within the theatre of the screen. They are not being educated and supported to develop a critical awareness of their experiences, to explore quality issues relating to them or to understand their role as consumers and users, in the face of powerful commercial forces” (p. 169). Many of the boys in the study bought their own games but few girls (Figure 5). In most instances the parents of boys and girls paid for the games.

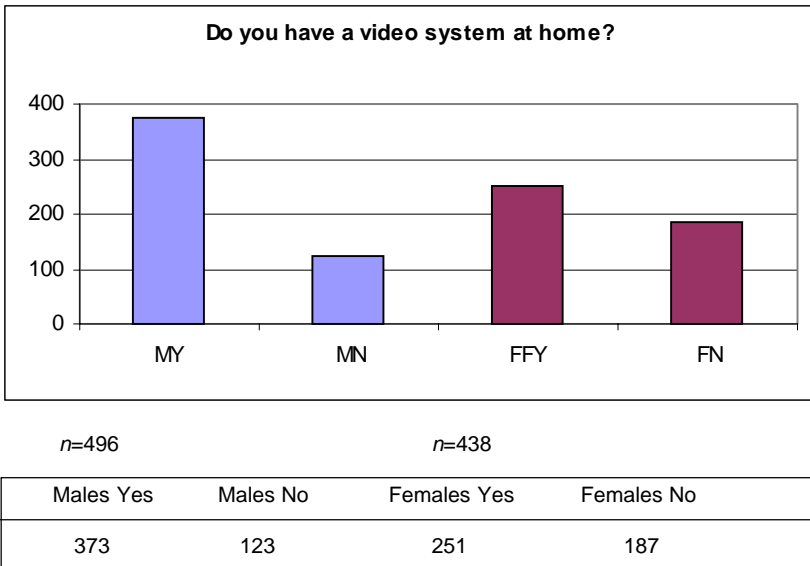
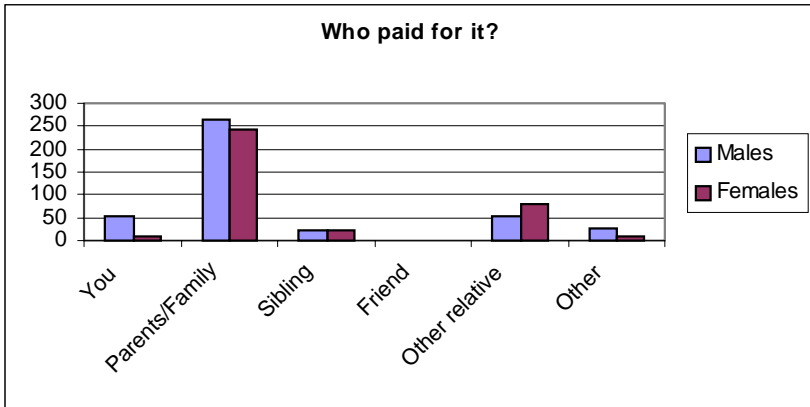
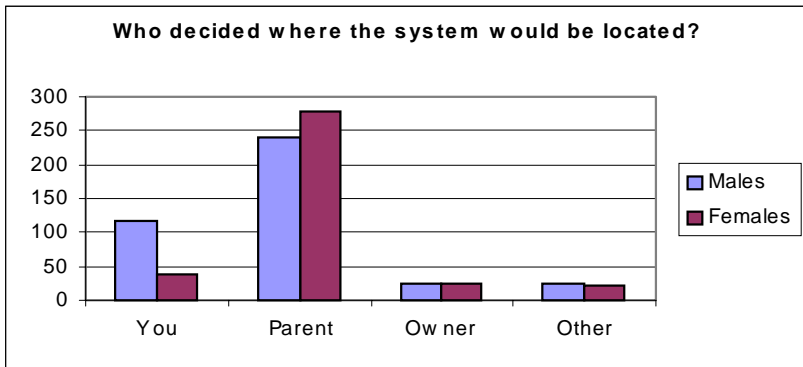


Figure 1. Do you have a video game system at home?



	You	Parents /family	Sibling	Friend	Other relative	Other
Males n=417	54	263	20	1	53	26
Females n=362	9	241	22	1	79	10

Figure 2a. Who paid for the game system?



	You	Parent	Owner	Other
Males n=263	116	239	25	24
Females n=360	38	277	24	21

Figure 2b. System location

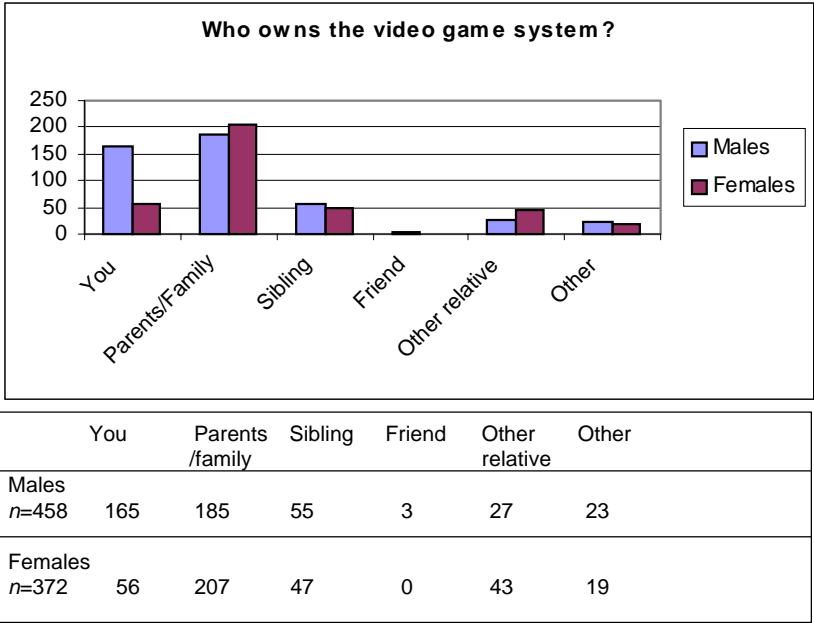


Figure 3a. Ownership of the video game system

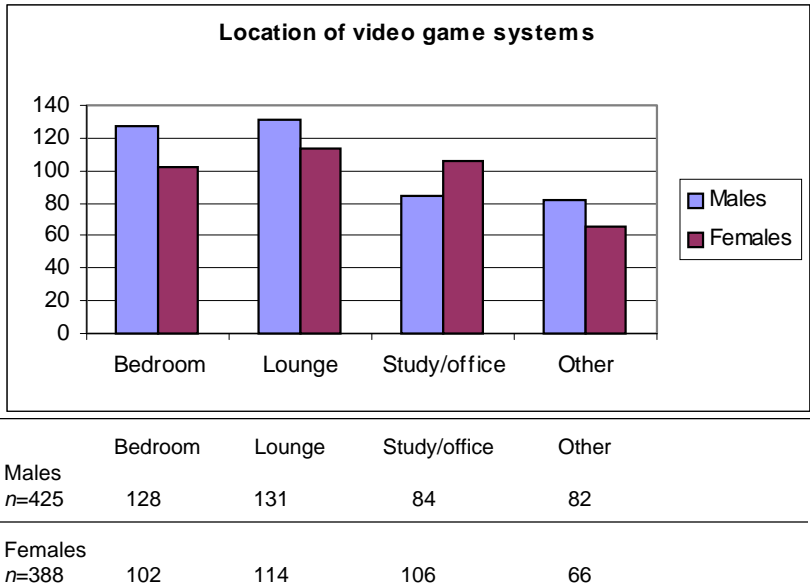
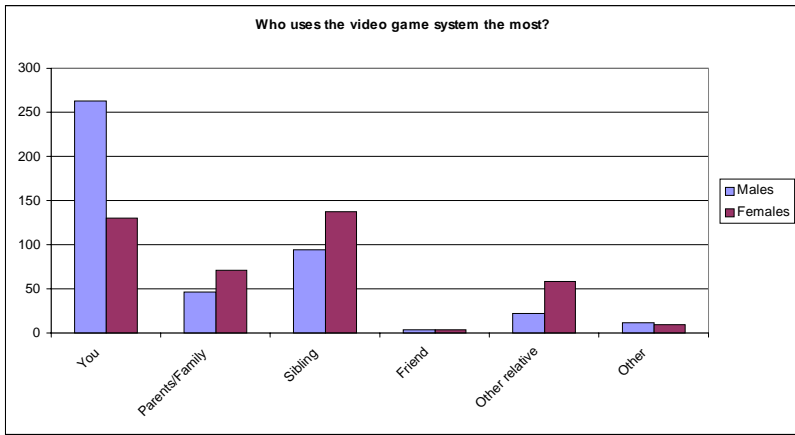
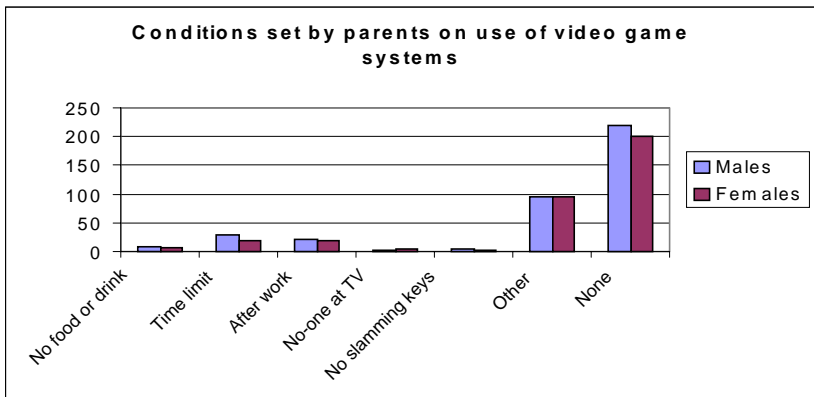


Figure 3b. Location of game system



	You	Parents	Sibling /family	Friend	Other relative	Other
Males n=440	263	46	94	3	22	12
Females n=409	130	71	137	4	58	9

Figure 3c. Dominant use of video game systems at home



	No food /drink	Time limit	After work	No-one at TV	No slamming keys	Other	None
Males n=378	9	28	20	3	5	95	218
Females n=348	7	18	18	5	3	96	201

Figure 4. Conditions set on use of system

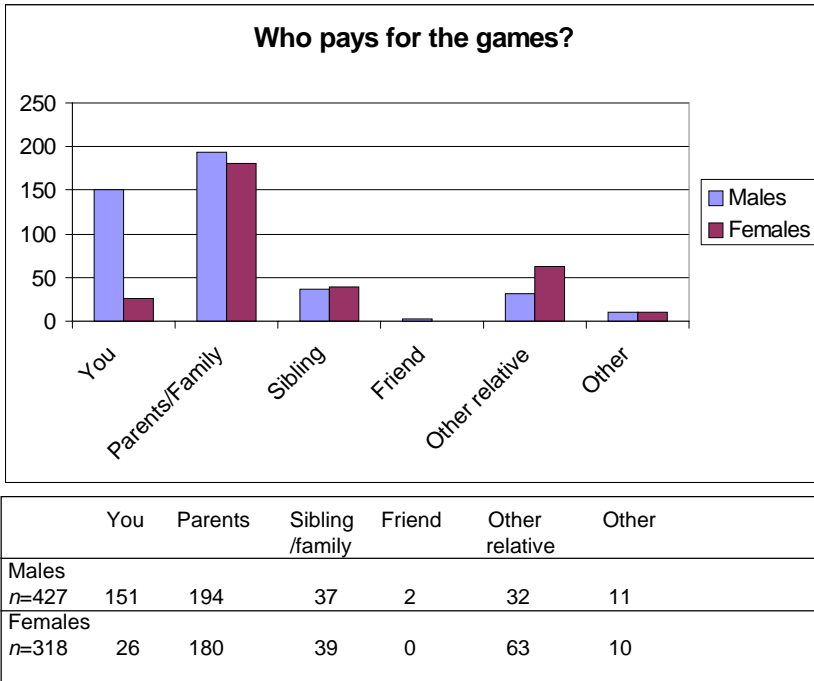


Figure 5. Paying for games

Theme and Genre of the Games

It was interesting to note the range of genres of games represented in this sample and the differences between the types across the two platforms of video and computer game systems. It was also interesting to note the range of genres of games represented in this sample and the differences between the types across the three platforms of video console, home computer and arcades.

Common game genres were chosen to categorise the examples given by subjects. These were fighting, sport, racing, puzzle, shoot ‘em, platform, role-playing, flight, and strategy. All genres are represented in each of the environments chosen for study, namely video/console, computer and arcade games. It must be noted however that this representation is not equal. For example, strategy games are more likely to be found on the home computer and considerably less prevalent in arcades. Where fighting games are available on the home computer, they are likely to be arcade conversions (such as the popular *Street Fighter* series).

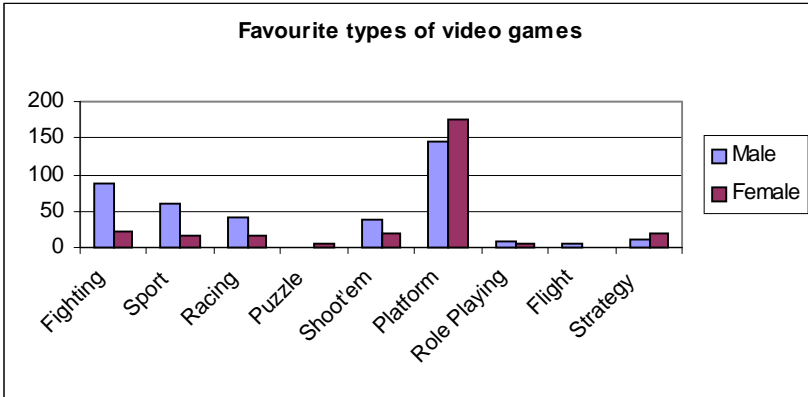
Fighting games follow a standard pattern across the three environments considered. Two protagonists are positioned as combatants within a static setting and are controlled through a variety of mouse, paddle, or keyboard inputs. A player can usually choose which character he or she wishes to be and can often set the variables of the character's strength or unique skill. If successful, more lethal opponents are encountered. The goal of the game will be achieved if all comers are beaten. Fighting games are the most common in arcades, and this must be a contributory factor in its popularity. One of the best-known examples here is *Mortal Kombat* (which has spawned a film of the same name).

Games based on sport were popular in all environments. Such a game is *NBA Jam*, a basketball simulation that follows the same rules as the game it is based upon. Sports games are significantly popular with girls in arcades and this may be due to the social factor not present in the other environments considered. For instance, most games in arcades have the options for multiple players. This may also begin to explain why the more competitive genres (particularly racing) are the most popular for both girls and boys in arcades. Racing games are simulations of car or motorbike races, often based on specific events or places. The player is often positioned behind the wheel and his/her responses control the direction and speed of their vehicle. Another good example of simulations is flight games, which are best suited to the broader screens and finer resolutions of the arcade systems.

The most popular game for boys (on computer and in arcades) are Shoot 'Em Ups. The genesis of all Shoot 'Em Ups lies in the original Space Invaders games where the aim of the game was to "shoot" down as many alien ships as possible within a given time span. Contemporary Shoot 'Em Ups are essentially the same but have become faster, use sharper graphics, and are smarter in varying the pace and difficulty of the game. An example of this is *Doom*. The physicality of shooting and fighting games (where success often is reliant on rapid hand-eye co-ordination) may appeal to boys where their behaviour in this environment mirrors their participation in sports and other games.

The favourite video/console games reported (Figure 6a) were platform games. This is weighted by the understanding that platform games were the first available in this environment with the earliest being the *Mario Brothers* series, and remain the most prevalent (and now least expensive). Many console systems are sold with such games included as part of the purchase package. What is significant here is that more girls than boy prefer platform games (on computer and console system). The reasons for this are conjectural and may concern their availability, their ease of use, their lack of competitiveness or the brightness of colours and inclusion of music and sound

effects. Guest and Eshuys (1998) described platform games as being “re-stricted to repetitive settings, with a limited number of characters...They are similar to fantasy board games, following a simple plot line with no variations. The plot usually comprises a set of levels to be completed in order” (p.208).



	Fighting	Sport	Racing	Puzzle	Shootem	Platform	Role Playing	Flight	Strategy
Males n=397	89	59	40	1	38	145	7	6	12
Females n=282	21	17	17	6	19	175	6	1	20

Figure 6a. Favourite video games

Strategy games such as Solitaire are often packaged with operating system software or as packages with the computer purchase. Puzzles are often electronic versions of popular board games or other entertainments (such as Chess, Pictionary, or Monopoly). Both strategy games and puzzles operate on simple rule systems which (as with sports games) reflect their origins.

What limits findings in a study of this kind is the transience of the technology itself. New generations of video/console systems (such as Dream-Cast and Play Station) have come closer to the resolution, memory and speed of the home computer and the arcade systems while simultaneously falling in price.

The environments considered are themselves of interest. The home computer or video console is more likely to be played individually whereas

the arcade is more social. Players are rarely on their own in these environments. Girls showed an increased participation in the more physical or competitive games (namely fighting, sport, and racing) in the arcades where this social interaction is more likely.

Favourite and Least Favourite Types of Games and Why?

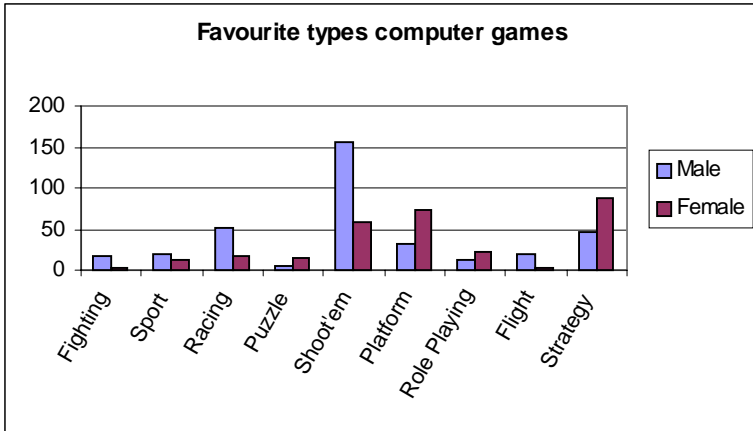
There were differences between the types of platforms and the types of games selected as favourites. For example, in terms of video games, most of the children (and more girls than boys) chose platform games, but for computer-based games, the shoot 'em games were more well-liked by boys while girls indicated that they liked strategy games on computers the best.

Video games. Most of the students indicated that their favourite games were the platform games, like Mario Brothers and Sonic Hedgehog (Figure 6a). This data should be viewed in the context of the age of the students who were all attending primary school. More recent work by Yelland (in preparation) indicates that secondary aged boys prefer Fighting and sport games on both video and computer game systems. There were a similar amount of girls and boys who indicated that platform games were their favourite but it is interesting to note that there were still large numbers of boys who liked fighting, sport, racing and shoot 'em games compared to the girls in the study who virtually all seemed to like playing platform games to the exclusion of all the other types available, with the exception of 20 girls who chose strategy games (e.g., Tetris) as their favourite. Role-playing games and flight simulations were the least favoured by the students

Only the girls said they liked a particular game because it was “challenging” and “hard” and mainly did not like games because they were considered to be “boring”—although occasionally a girl said she did not like a game because it was “hard and boring”. Most of the students indicated that they liked the various games because they were “cool” and “fun” and did not elaborate beyond this explanation.

Computer games. A different picture emerged with computer-based games. Many of the boys indicated that they preferred shoot 'em games while girls preferred strategy games first (Figure 6b). In terms of not liking games, simulations were not favoured, especially by boys, and considered to be “boring”—For example one boy said that Gold Fields which involved setting up a site and life on the gold fields was one that he “hated” because it was “soooo boring!” Other boys said they did not like platform games

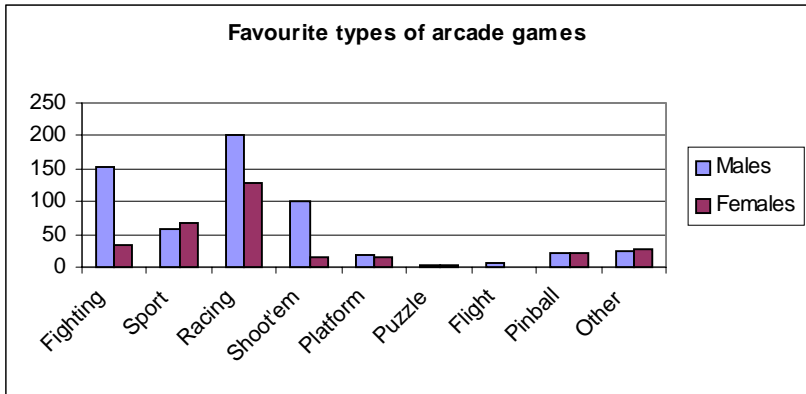
like Super Mario because it was only for little kids and they were older now. Some girls said they did not like a particular game because it was “boring” and the graphics were poor. On the positive side boys and girls liked the games because they were fun and in one case a boy said that he liked Crystal Caves the best because “I’m a legend at it!” The same boy said that Word finder was his least favourite game “because it sucks and its too easy.” Mine sweeper was another game labelled as boring because “all you do is try to get rid of the bombs!” Tetris was considered to be boring by a number of kids, “because all you do is connect blocks together.” Good games were again viewed as being challenging by girls “Because it makes you think” but for the boys most explanations centred around being “cool,” “fun,” “exciting,” and having good graphics. For example, Street Fighter was chosen as a favourite game because “it’s a beat em up game and its two players.” For the same boy Fishing was chosen as the worst game because “it’s one player and there is only three ponds where you can fish.” Another boy liked Teken2 because it was “cool” and he did not like Pitman because it was “boring.”



	Fighting	Sport	Racing	Puzzle	Shoot'em	Platform	Role Playing	Flight	Strategy
Males n=356	16	19	51	4	155	31	13	20	47
Females n=293	3	13	18	14	58	74	22	3	88

Figure 6b. Favourite computer games

Arcade games. In video arcade games (Figure 6c) the pattern changed again with racing games the most popular with boys closely followed by fighting games and then by shoot 'em games. Girls also liked the racing games the best but as is evident from the numbers on this Figure, many girls chose not to answer the questions in this section based on their limited use of the arcade context.



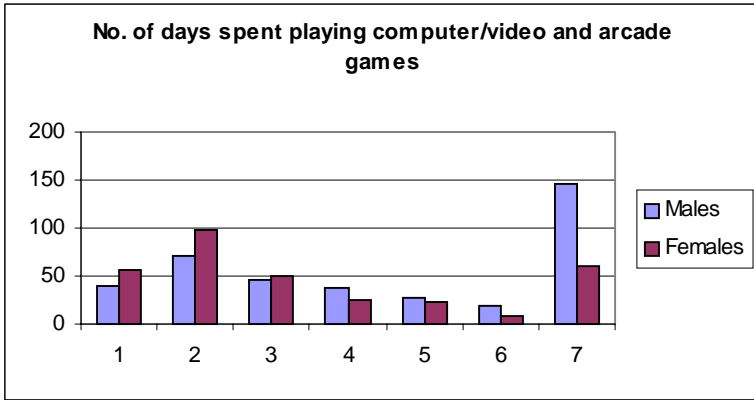
	Fighting	Sport	Racing	Shoot'em	Platform	Puzzle	Flight	Pinball	Other
Males n=580	152	57	200	100	18	2	6	22	23
Females n=310	34	67	129	14	15	3	1	21	26

Figure 6c. Favourite arcade games

PLAYING STYLES

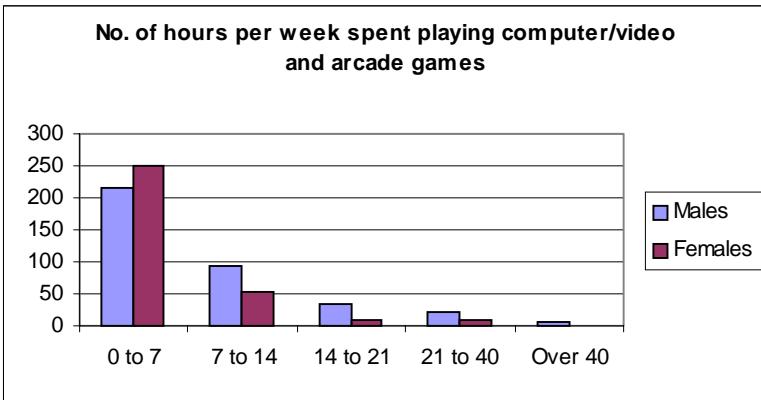
Leisure time

146 boys indicated that they played the games every day and 215 recorded that they estimated their game play accounted for about 0 to 7 hours a week (Figures 7a and 7b). Follow up interviews revealed that this number increased during holiday time as would be expected and was dependent on other activities such as sport and was also influenced by the weather, whereby they stayed indoors more in the winter with their “mates.” The students in this sample lived in a moderate climate where going to the beach and swimming was a popular pastime for 8 to 9 months of the year.



	1 day/wk	2 days/wk	3 days/wk	4 days/wk	5 days/wk	6 days/wk	7 days/wk
Males n=385	39	70	46	38	28	18	146
Females n=320	56	98	49	25	23	8	61

Figure 7a. Days spent playing games each week



	0 to 7	7 to 14	14 to 21	21 to 40	Over 40
Males n=372	215	94	35	23	5
Females n=323	251	53	10	8	1

Figure 7b. Number of hours spent playing games in a week

CONCLUSIONS

This study sought to provide some basic information about video and computer game ownership and use by a relatively large cohort of students attending urban elementary schools in Australia. It both confirmed existing data that indicated major gender differences in ownership, use, and preferences and highlighted that students enjoy playing computer and video games and that they also enjoy a range of other activities as well as games.

Video and computer games are an integral part of students' lives today and their existence or impact on children cannot be ignored. The sheer volume of money spent on the games is overwhelming, and given the content of many, opportunities and assistance for children to be critical of them as well as being enthralled by them need to be provided. Additionally, there are opportunities to provide contexts in which the students are encouraged to question the media and role of corporations in selling the products and the myriad of *spin offs* that are associated with them. Schools should not be competing with the corporations but offering different contexts that focus on different aspects of use for technologies. Yet, what is done in schools needs to be viewed in relation to society and with reference to what is meaningful or relevant in the lives of young people. Schools should be preparing students for life in the 21st century not the 18th.

What this study revealed is an additional need for more in-depth information so that we can delve into what students think and understand about their use of new media. This will inform educators about ways of learning *in school and out* and informal learning contexts that have so much to offer in terms of engagement with ideas and high levels of motivation. We need to know more about how children view their relationships with computers and other technologies and the ways in which they enjoy using them and for what purpose. Of interest is how they perceive they can balance game time with other activities and whether or not computer and video game experiences influence the ways in which they view themselves and those they interact with. Certainly the evidence collected here serves to illustrate that all children are exposed to video games and the content and experience of playing them touches every aspect of their play and lives in some way.

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