Children and electronic media: the home-school connection

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ABSTRACT

Educators worry away at issues of teaching, learning and technologies in the classroom without acknowledging that today's children and their world are being dramatically changed by electronic media and communication technologies. Children's life experiences, attitudes, knowledge and skills in relation to these new technologies need to be understood if classrooms are to meet the needs and interests of today's children.

This study focuses on one aspect of children's changing world—electronic media in the home. The first part of the study examines the growing incidence and use of electronic media in the home. The second part of the study examines children's perceptions of learning and playing at home and at school.

Main conference themes: information technology, social issues

Educational areas:

Study topics:

Secondary keywords: games, home learning

INTRODUCTION

Technology: the home versus the school

When computers first started appearing in Australian primary school classrooms in the late 1970s, our children's world was very different from today. Telephones, stereos, radios and televisions existed in homes along side print media. Even at this time, books, newspapers, magazines, and paper based mail no longer played a dominant role in entertainment, information and communication in the home. The telephone and television were well established in children's lives. Classrooms, however, continued to be predominantly print based learning environments. Telephones never became a part of the classroom technologies and while radios and televisions could be found in every school they had little impact. Some viewing of educational television or listening to radio broadcast was commonplace, but few teachers chose to or were able to fully exploit the power of these media when designing classroom learning. Even the advent of video recorders, tape recorders, and listening posts with multiple headphone sets, did not facilitate a more wide-spread use of these technologies in classrooms.

Today a much broader range of electronic information and communication technologies are found in children's homes and communities. The home technologies now include the video recorder and computer, and more recently, the answering machine, mobile phone, fax and modem. One distinctive feature of many of these technologies is their multifunctionality. Televisions have become a very versatile device. Video recorders, game playing devices, cable and satellite receivers can connect to the television. In fact, in many homes there are now multiple televisions, often for different purposes. Many homes also have a range of electronic game devices. These include hand-held games, video games machines and personal computers. These electronic media combine to make the world outside of school a predominantly electronic one, characterized by images and sounds.

In contrast most classrooms still focus on print based text, and on developing print based literacies. Even practical activities such as mathematics are still predominantly reading and writing activities. 'Hands on' is seen by most teachers as little more than a stepping stone to written symbolic representations. Talking and listening also suffer, usually being thought of as precursors to reading and writing. Very few primary schools in Australia have significant programs in public speaking, debating, the art of conversation and discussion, or of using devices such as the telephone to seek and share information. Visual literacy is also marginalized with studies in drama, mass media and the visual arts on the very periphery of the curriculum. Even computer technologies in classrooms are at the service of a print dominated

culture. A key example of this is the universal popularity and mode of use of word processors in primary school classrooms. Rarely are word processors used for any function beyond the typing up of final copy.

A widening technological gap

Concern about this growing gap between real-world and classroom technologies is not new, but it is becoming harder to ignore because it is widening at an ever increasing pace. The rate of technological development in the area of virtual theme parks will see children's entertainment shift into the realm of virtual reality within the next ten years. The issue is more complex than merely a gap in technologies. The entertainment industry has acknowledged and is exploiting new technological advances to the fullest. Commerce, industry and government are, in varying degrees applying the advances to processes of manufacture, management, communications and information. Yet classrooms rely on print technology for learning. A clear dichotomy is emerging between the technologies of entertainment and business and the technologies of school learning.

While some educators may be excited by the advent of multimedia software and hardware in schools or be reassured by the partnership between Seymour Papert from MIT and the Nintendo Corporation, the author believes that these events distract us from the real problems of education. Adding a technological layer to existing practice in schools will not see any fundamental improvements in education, nor will packaging learning 'Nintendo' style. The ultimate questions about children, teachers and technology do not relate to how we best use new technologies in classrooms to enhance classroom learning, but rather how should we be redefining classroom learning to harness the energy and enthusiasm of children of the electronic age so that they engage in deep and meaningful learning with old and new technologies. A key element in redefining classroom learning is a deeper understanding of the children's electronic world and their own perceptions of the differences between their electronic world of home and their print world of school.

This study investigated these issues in two stages. The first stage involved an investigation of children's access to electronic media in the home. The second stage involved surveys and interviews with children about their beliefs and their perceptions of playing and learning, of information and entertainment, both inside and outside school.

This paper covers some of the issues identified in the literature and reports the findings of the first stage of the study. The results of the second phase will be reported in the conference presentation.

LITERATURE REVIEW

A literature search on the topic of children's use of media in the home revealed some interesting findings. Firstly, very few studies focus on children from five to twelve years of age. Research with young children in the home is usually related to print literacy and occasionally television. Studies which concentrate on electronic or mass media tend to focus on adolescents and young adults [1]. Even the recent *Times-Mirror* study in the US [2] focusing on technology in the American household defined 13-17 year olds as children.

Secondly few studies address children's perceptions of the growing gap between home and school technologies. Almost all studies are concerned with the impact of these technologies on children's behaviour [1], [3]. Many stem from concern about addiction to viewing or playing these devices or concern about the effects of violence and stereotyping on children's attitudes and behaviours. While these concerns are real, few researchers have asked children their views on these important matters.

Thirdly there is little if any Australian research beyond investigations of children's attitudes and use of computers. One notable exception is the work of a Deakin University group who have been bold enough to ask the question "Are their Aliens in our Classrooms?" [4]. This work, however has focused on adolescents.

The following sections summarize some of the important international findings in the area of access and use, and some of the implications directly related to schooling.

Access and use

Most of the findings on access and use confirm the belief that electronic media are natural ingredients of children's lives [1, 2, 3]. As well as television, video, electronic games (video, computer and hand-held) and computers, there is also a significant component of listening to music through stereos, walkmans, and music videos [1]. Television still dominates children's lives. Patterns of family life and children's leisure have also changed significantly over the last 20 years. Leisure activities such as reading and outdoor and indoor unstructured play have decreased, but not necessarily in direct response to access to electronic media in homes [5].

Patterns of access and use vary according to geographic region, the socio-economic status of the community and family, and the child's age, gender, and peer culture [2, 6]. In many ways the advent of electronic technologies in the home is further widening the gap between rich and poor, powerful and marginalized, literary cultures and popular cultures, generations and genders.

Relationship between home media and classrooms

A number of research studies have focused on the relationship between home media and classrooms. Some findings include: children's views on computer use at school are shaped by home experiences [7, 8]; metaphors and images found in games extend to real and classroom life [3]; and excessive game playing is linked to poor academic performance [1].

Overall the literature poses more questions than answers. However, it does suggest teachers need to pay serious attention to a range of issues. It also clearly identifies a significant gap in our understanding of the experiences and perceptions children bring from their electronic world outside the classroom to their classroom world of learning.

THE STUDY

The first part of the study involved teachers enrolled in a university course on educational computing. As part of their course, the teachers surveyed some or all of the children in their class about the technologies they had access to in their home. The method and content of the teachers investigations varied. Teachers read what others had written on the topic, analyzed their own results, and discussed the implications of their findings in terms of policies and practice, and finally designed a unit of work for their class. Teachers talked and wrote about how they shaped their curriculum to build on children's home experiences with electronic media.

The second part of the study involved in-depth interviews and discussions with both individual children and groups of children in a number of primary schools. Children from kindergarten, Year 3 and Year 6 were involved. The interviews focused on the key notions of learning and playing, of information and entertainment both at home and at school.

Results—Part 1

In the first part of the study there were 17 teachers and 460 students. In describing the school community eight teachers reported low socio-economic status (SES) and nine reported middle socio-economic status. In general schools had high populations of children from language backgrounds other than English (LBOTE). For the purposes of analysis the children were placed in two grade groups—younger children (5-7 year old students) and older children (8-12 year old students).

The following results cannot be generalized beyond the classrooms of this particular group of teachers. Also in many cases one or more teachers did not collect information on a particular device, or collected it in such a way that it could be combined.

Children's access to technologies

Table 1 displays family ownership of a range of technologies. Televisions and telephones were almost universal and more than 50% of families owned computers.

Table 1 Family ownership of electronic technologies

<i>Technology</i>	<i>Family ownership</i>
television	99.5%
telephone	99%
VCRs	90%
video games	62%
computers	58%
printers	40%
video cameras	33%
answering machines	27%
hand-held	25%
fax machines	10%
modems	5%

As reported in the literature there were technologically affluent and poor families within the communities surveyed. At one end of the spectrum 53% of families owned television and telephone plus three other technologies and 37% of families owned both computer and video games machines. At the other end of the spectrum 3% of families owned no other technologies beyond television and telephone, 5% of families owned neither video recorder or video games and 18% families did neither computer nor video games machine.

There were also age and gender differences in a number of areas. Family ownership of computers and video games increased with the child's age. Gender differences were mainly related to video game ownership. There were no gender differences in family ownership of computers.

Children's use of technologies

Table 2 displays the percentages of children who reported that they used these technologies in the home. While reported usage was high, less than 5% of the children responded that they used any of these technologies for purposes other than entertainment.

Table 2 Children's use of electronic technologies.

<i>Technology</i>	<i>Use</i>
television	100%
telephone	80%
video recorders	70%
video games	50%
computers	45%

There were age and gender differences in use. Younger children only used the video recorder for entertainment. Although older boys were more likely to use a video recorder than older girls, they less likely use it for purposes other than entertainment.

Boys were more likely to use video games than girls and the gap between the usage widened with age. In classes where teachers asked the students to talk about the games they played, or to name the games, further gender differences emerged. Boys could name and discuss a far wider range of games, most of which were games of aggression. Girls named few games, some could not remember or did not know the name of the games they played, and in all but one case named or described games of adventure or sport. These games were also on the boys lists.

There were age differences in computer use. 33% of younger children and 55% of older children reported usage. About 10% of all children reported that they used their computer for purposes other than games, for example homework or making cards. There were no gender differences.

Classroom pictures

The following paragraphs briefly describe some of the results by classroom.

Ted's Classroom

- Year 4, low SES community, 50% LBOTE children.
- Television is dominant technology in terms of ownership and use.
- Of children who had either video or computer games in their homes, 30% indicated that they played games every day.
- There was little overlap in the types of games the boys and girls played; There seemed to be boys' games and general games (adventure and sport) that both girls and boys played.

Di's Classroom

- Year 5, middle SES community, 20 % LBOTE children.
- The television, VCR and telephone are universal.
- The boys are great users of video games, they could talk at length about their games and strategies.
- The teacher discovered a strong game player's network within the class which she had not known about.
- Just less than half of the class owned computers.

Teacher responses

Teacher responses to the information they collected varied enormously. Most teachers were surprised and agreed that their classrooms needed to change in some way. Few teachers mentioned the strategy of greater use of computers at school. Strategies seemed to relate mainly to broadening the range of technologies in the classroom; less common was the notion of changing curriculum content or processes. A few teachers mentioned explicit teaching for some children who did not have access to computers at home, or special attention to grouping strategies when using technology.

The following is a sample to demonstrate the range of teacher responses to the statement: "The children will need to use television, videos and communicate with experts on the other end of fax machines or telephones—as primary source of data in classroom investigations".

- Will children need a new range of skills to gather information from these media, from images and sound?
- If my school can spend lots of money on new computers surely it can find money for children to access the fax and phone for classroom work?
- Somehow I need to find out more about the video games. I've never seen the boys so eager as when they were telling me about their playing.
- The next time I need the boys to collaborate I think I will invoke images of game playing teams!
- Maybe that's why some of these children have so much trouble doing research—I always use books as the main source of information. Next time we search for resources, the learning centre could include posters, cassettes, the old film strips, and even videos on the topic.

DISCUSSION

The results of the first part of the study clearly indicate the extent of electronic media in children's homes. While the methodology does not allow the results to be generalized beyond the sample classrooms, they are reasonably consistent with recent US findings [2].

Several important issues emerged which guided the second stage of the study. Firstly many classrooms have children from both technologically affluent families and from families with little ownership of technological devices. Care was taken to include children from a range of families in the second part of the study.

Secondly there are gender differences in patterns of ownership and use. The existence of gender differences with regard to access to and use of video games is not surprising as 8-11 year old boys are a key market of the major game machine companies [3]. Similarly the lack of gender differences in access to computers is not surprising since the 'ownership' of home computers is usually decided by older siblings or parents [2]. In the second part of the study some interview groups were single sex while others were mixed gender. This strategy allowed for interaction between boys and girls as well as opportunities for both boys and girls to focus on issues of importance and interest.

Thirdly the statements made by the teachers are interesting in several regards. The words 'multimedia' and 'telecommunications' were not used. A number of the teachers did have the technical expertise and the resources in the schools, yet did not mention these technologies in their responses. More often than not, the teachers came up with ideas about making changes in their classrooms which relate to the way they will organize and teach in the future and to the range of technologies they will use. It is interesting to note that few, if any, quoted problems with access to computers, but several did mention lack of access to cameras, telephones and fax machines. These teachers' comments do suggest that they are prepared to change their classrooms in response to a greater understanding of children's access to and use of electronic technologies in the home.

The second part of the study will provide further information about children's use of electronic media in the home and their perceptions about key issues in classroom learning. This should provide a richer understanding of the life experiences, attitudes, knowledge and skills which children bring to school, and ensure that classroom practice continues to change to meet the needs and interests of these children of the electronic age.

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