

**Children, Computers and the Internet: A guide for parents and teachers in the Pacific region.**

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*With the recent upsurge of interest and use of electronic interactive media, there has come concern about the effects of these on young people. In this paper, the author critically surveys the research that has been done, discusses the educational benefits and offers some advice for parents and teachers.*

We are in a revolution in technology in which children are at the forefront. Increasingly, at home and at school they are exposed to interactive media: the Internet, video games, interactive CD-ROMs, computer software and their combinations with more traditional media, such as television and books. Growth in interactive media for young people has been dramatic since the first video games were introduced more than 20 years ago. It is clear that, for the foreseeable future, interactive media will have a central and growing role in the educational and social experiences of students in the Pacific region.

The University of California Los Angeles (UCLA) Internet Project gives some idea of the pace of this growth. This project surveyed over 2000 households in the USA, the country that leads the way in Internet use. The 2001 survey found that 72.3 per cent of Americans in 2001 went online (UCLA 2001:16). This was an increase from 66.9 per cent in 2000. Usage also increased. In 2001 users went online for about 9.8 hours a week, up from 9.4 hours a week in 2000. The study also found that users were satisfied with the Internet. In 2001, users gave the Internet an overall rating of 4.0 on a scale of 1 (not satisfied) to 5 (completely satisfied) (UCLA 2001:87). They were most satisfied with their ability to communicate with other people using the Internet. They were least satisfied with the speed of their connection to the Internet, rating it 3.2 on the same scale (UCLA 2001:87).

The study also found areas of concern, however. Of the respon-

dents, 61.1 per cent said that half or more of the subject matter found on the Internet contains too much sexual content, compared to 82.4 per cent for cinema films and 80.5 per cent for television programmes (UCLA 2001:35).

Internet access and use is less developed in the Pacific region. While most countries now offer Internet access, there is generally only one Internet Service Provider (ISP) in each country, connection speeds in those areas where it exists are slow, and the range of services provided is smaller than in the more developed countries. Fiji provides a typical example. The one ISP provides dial-up connections via traditional telephone lines and recently over digital ISDN lines. However, ISDN is only available in the capital, Suva, at the time of writing and at a cost that puts it out of reach of all except larger businesses. No Internet access is available in those parts of the country where there are no telephone lines or the lines are of poor quality. There is no access to the various high-speed options available in more developed countries.

Despite the limits on Internet access, organisations in Fiji have embraced the World Wide Web enthusiastically. There have been no surveys of web presence carried out, but questioning web design companies in Suva revealed the impression that, in some sectors such as tourism, about 80 to 90 per cent of companies now have a web site. Medium to large companies in the retail and service sectors are not far behind. However, the education sector is lagging, with only a few of the larger schools and colleges in the capital having their own web sites. In Fiji, for example, only two secondary schools have their own web sites (International School Suva and Yat Sen School). It is not known how many schools have Internet access.

### **Criticisms of interactive media use**

Like many parents in the Pacific region, the author has concerns about the use children and adolescents make of computers – particularly of computer games and the Internet. Children can spend many hours immersed in these activities and many parents wonder if this is healthy for them.

There is evidence that parents in Fiji are concerned about the effects of television violence on their children (Forster, 2002). With so many violent computer games, and pornography readily available on the Internet, parents are likely to have concerns about the effects of those too.

Such concerns were given support by the release of the study, *Fool's Gold: A Critical Look at Computers in Childhood* (2001) written by the Alliance for Childhood and supported by more than 80 educators and child-development experts. This group includes professors at the Universities of Stanford and California-Berkeley, and primate observer Jane Goodall. The report calls for an immediate halt to adding computers to classrooms until their benefits and hazards have been studied in more depth.

Criticisms in that report of computer use by school-age children include the following conclusions:

- computers create problems such as eyestrain and obesity;
- they deprive children of creativity, human relationships and hands-on learning that are important to their development.

The report also cites studies that claim computers have little beneficial effect on academic achievement and early childhood development.

The report recommends that the focus of primary education should be hands-on, real-world learning and that secondary students should learn not only how to use a computer, but also the ethical and social implications of technology. It also calls for urgent research on the physical, emotional and developmental hazards computers pose to children.

The report is not without problems, however. Many of the claims it makes are assertions, unsupported by convincing evidence. In fact, most of the children's educators and developmentalists of which this author is aware take the position that computers and the Internet are powerful tools that can help the learning process and stimulate cognitive growth, when used appropriately.

The report could also be criticised for attacking a *medium* of communication, rather than the content. One could equally criticise television on the grounds that children may become immersed in it and

some programmes contain violence or pornography. It would be difficult to justify preventing children from watching all television programmes on those grounds. Most parents and teachers know that not all programmes are a positive influence. They take steps to guide children towards those that are positive and to monitor the viewing habits of the children in their care. The Internet is the same. Web sites, Usenet groups, chat rooms and so on are of variable quality. There are some that no responsible parent or teacher would want children exposed to while others are helpful, informative and inspiring.

Many parents are also aware that it is not healthy for their children to spend long periods immersed in watching television. They encourage their children to balance their viewing with other activities. The Fool's Gold report is particularly critical of the unhealthy effects of spending long periods on the Internet because it means spending long periods on a computer. This, the report says, increases the risk of repetitive strain injury (RSI), gaining excess weight through lack of activity, failing to learn essential social skills and becoming isolated, and risking long term cognitive impairment. If true, these would be cause for concern, but there is currently insufficient evidence to support such claims. The American Academy of Pediatrics, for example, has pointed out that the research for negative health effects simply does not exist yet.

According to the UCLA Internet Report (2001:76), parents in the USA do not think their children spend too much time on the Internet. When asked about the time children spend using the Internet, 88.2 per cent of adults said children in their households spend "about the right amount of time" or "too little time" online.

Most parents also do not think that their children spend less time with their friends, compared to when they did not have Internet access, with 87.7 per cent thinking they spend about the same amount of time with their friends, 8.2 per cent thinking they spend less time and 4.1 per cent thinking they spend more time with their friends (UCLA 2001:79).

Some Internet sites, in fact, encourage better socialisation and relationships. The Sesame Street web site, for example, encourages awareness of many cultures and the differences between them in a way that promotes understanding between cultures.

Also, there is currently insufficient evidence that the risk of repetitive strain injury (RSI) posed by using a keyboard and mouse is significantly greater than the risk associated with repetitive movements of any kind, such as long periods spent handwriting assignments, for example. Web sites exist that emphasise the specific risk of RSI from computer use. However, most of these sites are of commercial organisations selling products that are said to benefit RSI sufferers. Computer technology neither increases nor diminishes parents' responsibility to ensure a healthy balance in their children's activities.

At current levels of knowledge, the most sensible advice is to treat Internet and computer access in the same way as watching television or reading books – it should be balanced with other activities, including physical and social activities.

### **Interactive media, learning and cognitive development**

There is a substantial body of research into the effects of computers on learning and cognitive development. The overwhelming majority of those studies report positive effects. Solarz (2002), for example, has edited an annotated bibliography of material published since 1995 that examines the role of interactive media in the lives of adolescents, the impact of interactive media, and uses of interactive media as an intervention or learning tool. The review revealed the existence of only a limited number of methodologically sound research studies on adolescents and interactive media. Although those studies that evaluated the effects of interactive media reported largely positive outcomes, there were areas of concern. The main area of concern was the effect of violent games where the consistent findings were of increased aggressive behaviour and reduced pro-social behaviour.

The New Zealand Council for Educational Research (NZCER) began a longitudinal study in 1993 called 'Competent Children.' The researchers carried out a follow up in 2001 when the children were aged 12, and they found that a family's ownership of a computer was associated with higher literacy, skill at mathematics and perseverance, inde-

pendent of family income and other possible confounding factors. The specific computer skills that children acquired were word-processing, use of graphics and use of CD-ROMs. The study also looked at the effects of playing computer games. This produced small improvements in fine motor skills and a small decrement in perseverance. Internet use at the age of ten had no effect on the competencies included in the study (NZCER 2002).

The same study also found that children who spent several hours a day watching television were likely to obtain lower scores on literacy and mathematics.

Most parents, however, think that the Internet has little effect on their children's education. According to the UCLA Internet Project (UCLA 2001:78), 76 per cent of parents say that since their household acquired the Internet, the grades of children in their households have stayed the same, 20.5 per cent think that their children's grades have improved, and 3.6 per cent think their grades have declined.

### **Web sites for parents, teachers and children in the Pacific**

Although the World Wide Web and widespread access to it are recent phenomena, there already exist many useful web sites for children, teachers and parents. Some of the better sites are those created by educators and developmentalists.

While there are regrettably few books for students in the Pacific region that reflect their lives and the uniqueness of their location and cultures, the Internet has begun to redress the balance. As Dalton (2000: para 6) pointed out:

The Internet has a great potential to address issues of equity and to support efforts that give a voice to those previously unheard, even in their own communities. The Internet is all about access; anyone can be an author and audiences can develop for quite specific niches, spontaneously and without restriction. The more conversational tone of Internet discourse and the multi media composing options are attracting new voices and forming new modes and styles of communication. Although

some lament the seeming chaos of the Internet, I believe that it can be a force for equality, and that schools in particular can take advantage of it as a tool for communication and cross-cultural understanding.

Dalton, together with teachers and colleagues at the University of Guam, created the Pacific Children's Literature web site, started as a project for trainee teachers, that went online in July 1999. This site goes some way towards filling the gap in the material available to students, teachers and parents in the Pacific. At the time of writing, the web site consists of seven sections: book reviews and teaching ideas, spotlight on authors and storytellers, original works (complete texts that are free to download), a teacher exchange, related web sites, information about the project, and a children's picture book entitled *Typhoon Go Away!* The site emphasises Micronesia and Hawai'i, but as the stated intention is to update the site with contributions from throughout the Pacific region, that is likely to change.

Pacific Resources for Education and Learning (PREL) is a non-profit organisation, based in Honolulu, USA, with centres in Pacific nations that have ties to the USA. Their web site includes resources for school teachers and school administrators, particularly resources that support literacy. In their own words, "PREL's programs provide resources and products developed to promote educational excellence for children, youth, and adults, particularly in multicultural and multilingual environments".

A gateway to more general resources of interest to people in the Pacific region is provided at Pacific Islands Internet Resources.

The Children's Literature Web Guide, compiled by a librarian, gathers together and categorises Internet resources related to books for children and young adults. The site includes lists of books that have received book awards. Each site is described in a sentence or two. Users of the site include teachers, librarians, parents, book professionals (writers, editors, booksellers and storytellers), and children.

The International Children's Digital Library (ICDL) is a project to develop software and on-line books for children. Researchers from computer science, library studies, education, art and psychology, working

together with children, created the site. The ICDL is building an international collection. At the time of writing, the collection includes material from 27 cultures in 15 languages.

The International Reading Association, with its head office in the USA, is specifically oriented towards improving literacy. In their own words:

The International Reading Association is a professional membership organization dedicated to promoting high levels of literacy for all by improving the quality of reading instruction, disseminating research and information about reading, and encouraging the lifetime reading habit. Our members include classroom teachers, reading specialists, consultants, administrators, supervisors, university faculty, researchers, psychologists, librarians, media specialists, and parents. With members and affiliates in 99 countries, our network extends to more than 300,000 people worldwide.

The Adobe Digital Kids Club was created by the US American software developer. It is designed to promote the use of digital photography in schools. It provides teachers, parents and students with digital photography resources such as advice, training, lesson plans and curriculum ideas, a community to share best practices and a show case for student work.

CleverIsland is a commercial US American site, created by Dr Miller of New York University. It is designed to help children learn skills relevant for school and to enjoy the experience. The site requires membership and invites participation by parents. Outsiders cannot contact the children and, while they are in the site, they are in a safe environment.

ALFY is a free site created by the same developmental psychologist as CleverIsland, but aimed at younger children. This site is rich in graphics and makes less use of text.

The Discovery television channel has constructed a web site for students, parents and teachers entitled *discoveryschool.com*. It provides a wide range of resources and also includes a commercial page that sells interactive media products.

Education World is a commercial US American site which is mainly oriented to teachers, with some pages for school administrators. The site includes lesson plans and lesson planning, resources for professional development, feature articles on teaching and a free e-mail newsletter.

Parents and schools without access to the Internet can still access interactive, educational media, such as computer software, CD-ROMs and educational games. Postal addresses of a small sample of companies that provide products and information are given in Appendix One.

The core of Kathy Schrock's Guide for Educators is a free, categorised list of over 2,000 Web sites for enhancing teaching and learning. However, the site also includes information about other interactive media for schools without Internet access, including CD-ROMs and educational software.

The GetNetWise Online Safety Guide is a guide for parents and teachers about the risks that children and adolescents face when they access the Internet. It includes tips on how to avoid the risks, which are grouped by age, by type and by technology.

The University Book Centre of the University of the South Pacific does not have a large collection of interactive media, but those it does stock, *The Pacific Islands: An encyclopedia* (Lal and Fortune 2001), for example, are very relevant for educators in the Pacific region.

Finally, educators wanting to pursue this subject further may find the *Journal of Educational Computing Research* and the *Journal of Interactive Media in Education* useful resources.

## **Conclusions**

Having reviewed the studies currently published in the relatively new field of the effects of interactive media on children's development, including some not available to the authors of the strongest criticism in the Fool's Gold study, the present study concludes that these media can have a positive influence on several educational outcomes. The evidence suggests that these media can be used safely and can improve literacy

and mathematical skills in particular. However, to achieve these positive outcomes requires the active involvement and guidance of parents and teachers. Caregivers and educators need to be aware of the hazards associated with violent computer games and the ready availability of violent and explicitly sexual content on the Internet. Parents and teachers should monitor children's and adolescents' use, and guide them away from games, chat rooms and web sites which are likely to have destructive effects. Where possible, this approach is better than the use of so-called 'nanny software'. The latter are designed to prevent access to set lists of violent and sexually explicit web sites. The problem with this approach is that new sites are created regularly, and faster than the software can be updated. The web sites included in this paper are both safe and informative at the time of writing.

However, as these new technologies have only become available in this region more recently than in the countries where they were invented and developed, there is a need for parents to be able to take courses in the Internet so that they know what to watch for and how best to guide their children. It is also often the case that televisions, unlike computers, are located in public spaces in the home, where monitoring is easier. It makes sense to locate video game and Internet-connected devices in places where they can be monitored easily.

There is no satisfactory evidence that the use of interactive media have negative effects on physical, social or emotional development. However, a balance is needed between different activities, including the newer interactive technologies as well as the older media and other activities. This is one of the responsibilities of parenthood – interactive media simply give parents new activities to monitor.

By following the guidelines above, parents and teachers in this region can be confident that they are helping, not harming, children's development.

### **Acknowledgement**

The author wishes to thank an anonymous reviewer for helpful comments on the first draft of this paper.

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- GetNetWise Online Safety Guide** <http://www.getnetwise.org/safetyguide/>
- International Children's Digital Library** <http://www.icdlbooks.org/> Accessed on 14<sup>th</sup> January 2003.
- International Reading Association** <http://www.reading.org/> Accessed on 15<sup>th</sup> January 2003.
- Journal of Educational Computing Research.** <http://www.baywood.com/Journals/PreviewJournal.asp?Id=0735-6331> Accessed on 26<sup>th</sup> February 2003.
- Journal of Interactive Media in Education** <http://www-ijme.open.ac.uk/> Accessed on 25<sup>th</sup> February 2003.

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**New Zealand Council for Educational Research (NZCER)** (2002) Home computers and children's development . *Researched News* 33, (1) April. New Zealand Council for Educational Research.

**Pacific Children's Literature** <http://www.uog.edu/coe/paclit/index.htm>  
Accessed on 14<sup>th</sup> January 2003.

**Pacific Islands Internet Resources** <http://www2.hawaii.edu/~ogden/piir/> Accessed on 14<sup>th</sup> January 2003.

**Pacific Resources for Education and Learning** <http://www.prel.org/>  
Accessed on 14<sup>th</sup> January 2003.

**Schrock, K. B.** *Kathy Schrock's guide for educators* <http://school.discovery.com/teachers/> Accessed on 25<sup>th</sup> February 2003.

**Sesame Street** <http://www.sesameworkshop.org/> Accessed on 14<sup>th</sup> January 2003.

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Full report at: <http://www.apa.org/pi/pii/inirtactive.pdf>

**UCLA Internet Project: Surveying the digital future** (2001)  
<http://www.ccp.ucla.edu/>

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**APPENDIX : Postal addresses of suppliers of interactive media information and products**

**Interactive media information:**

Kathy Schrock, Administrator for Technology  
Nauset Public Schools  
78 Eldredge Park Way  
Orleans MA 02653  
U.S.A.  
Voice: 508-255-0016 x216  
Fax: 508-240-2351  
Email: [kathy@kathyschrock.net](mailto:kathy@kathyschrock.net)

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New Zealand Council for Educational Research  
P.O. Box 3237  
Wellington  
New Zealand  
Voice: +64 (0)4 384 7939  
Fax: +64 (0)4 384 7933  
Web site: <http://www.nzcer.org.nz/index.htm>

**Interactive media products:**

McGraw-Hill Australia  
82 Waterloo Road  
North Ryde  
NSW 2113  
Australia  
Voice: +61 2 9900 1800  
Web site: <http://www.mcgraw-hill.com.au/homepage.htm>

Thomson Learning Australia  
102 Dodds Street  
Southbank  
Victoria, 3006  
Australia  
Web site: <http://www.thomsonlearning.com.au>

University Book Centre  
University of the South Pacific  
Suva  
Fiji Islands  
Voice: +679 321 2500  
Fax: +679 330 3265  
Email: [info@uspbookcentre.com](mailto:info@uspbookcentre.com)  
Web site: <http://uspbookcentre.com/>

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Editor's note: This issue of *Directions: Journal of Educational Studies* has a cover date 2002 and publication date 2002.