Boys in video arcades, young men at computers in high schools, men programing and having control over computers in the business world.

Until the last decade or so, this was a generally unchallenged view of computers: male oriented, male dominated. Recent literature confounds such a view. Studies have shown that there is little cognitive difference between girls and boys, and that there is really no reason why girls should not be able to use computers as an integrated learning tool.

Ms Val Clarke, lecturer in Social Psychology at Deakin University, said there were a number of myths about girls and computing, which are often the basis of popular thought on girls and computing, but which can be proven groundless.

According to Ms Clarke the most basic myth is that girls are no good with computers. This myth stems from sex difference literature which concludes that there were gender differences favouring boys in mathematical and spatial ability. The common association between computers and maths reinforces these ideas, despite the lack of grounding such research has.

Looking at it this way, gender difference in computing is less to do with sex difference than with achievement gained through this. Another myth Ms Clarke points out is that computer culture is male oriented and therefore excludes females. This is a self-perpetuating belief. The computer culture itself does not exclude females, but rather assumptions of this nature exclude them. For example, timetabling in schools often takes the exclusion of girls from computing as read, and computing is timetabled against subjects girls enjoy and wish to to pursue. So, rather than the computing culture being male oriented, certain practices keep it male dominated.

As Ms Clarke points out, sex typing itself is a male pursuit. Girls are often advised against computing, especially in the middle school years when sex typing becomes most apparent. But this in itself should not present huge barriers for girls interested in computers, although strategies need to be developed to eliminate sex typing.

Another myth is that to understand computers, one must understand the technological aspects of computers. Ms Clarke dismisses this, saying 'sensible' software doesn't rest on that kind of knowledge, and software that does is not really useful.

There is also an assumption that girls are not interested in computers. Rather than making such a blanket assumption, it is more useful to see why girls don't show interest in what are basically male-oriented computer practices. Ms Clarke has found that girls may not take an interest in a computer culture that is based on programming and computing science, but will look for relevance and usefulness. Ms Clarke has identified strategies which will not only explode the myths about girls and computing, but will make computers more accessible to girls.

It is important to recognise that problems for girls in computing generally begin in the middle school level, where gender difference becomes more of an issue than at other times. So, strategies for change should be aimed at the secondary level.

It is important to distinguish computer science from computers as an integrated learning tool. This removes the maths emphasis from computing and makes computers more accessible.

Also, there is a need to recognise girls' need for relevance, and the social needs of girls. This involves an alternative attitude towards computing, and education in general. Studies have shown girls prefer to work in groups, and to see why they need to solve a problem, or use a computer. The computer as means to an end, rather than an end in itself. So there needs to be some change in the spatial ordering of computer rooms in schools, and a different slant on curriculum.

The need to recognise the different ways of working that girls employ is vital to make computers accessible to young women as they are to young men. The challenging of "normal" male ideology in computing can only work as a positive thing for the liberation of students of both sexes.
A major use of Teleteaching is to foster the environmental education and development of present and future generations.

In his keynote address to the Teleteaching 90 mini-conference, Norman Longworth realised the desires of teachers nationally and internationally, to set up electronic mail, distance education and computer pal links to educate students on environmental concerns.

Included in Mr Longworth’s speech was a personal video-taped message from Gro Harlem Brundtland, former Norwegian Prime Minister, who cited the environment as the most important challenge to future generations around the world.

"Present generations must move together nationally and internationally - there are now more basic threats to our environmental security, such as the rainforest and ozone depletion, one of the most serious issues facing us today," Ms Harlem Brundtland said.

She went on to say the concept of Teleteaching shows ours is a truly global generation, where young people will be relied upon to invent a sustainable future.

"Poverty is the worst polluter, and a world of poverty will never be sustainable, therefore new economic growth must be able to sustain a healthy environment," she said.

The computer is a relevant teaching tool especially as an information storage and retrieval system for large data bases and is especially useful in environmental studies. Mr Longworth said in these instances, the past merges in with the present to improve the result.

Hopefully this will be the case with the environmental problems our world is currently facing. Ideally there is a continuum from data to wisdom: data - information - knowledge - insight - understanding - and finally wisdom.

By using Teleteaching, children have the chance to gather real information and collaborate with other educational institutions.

Teleteaching’s future applications are becoming more relevant to the problems facing the planet, and offer exciting possibilities for the future for distance learning, global teaching strategies and a new range of open ended software based on hypermedia tools.

ACS Supports World Conference

The Australian Computer Society (ACS) was the major under writer of WCCE'90 and supported it in many ways as have they supported computers in education over the past decade. For example the ACS provided the resources for the establishment, in 1982 of the Australian Council for Computers in Education (ACCE) and has been an active member ever since.

In conjunction with the ACCE and the state/territory Computer Education Groups the ACS funded a competition which provided one airfare per state for a teacher to attend the conference. The winners were:

<table>
<thead>
<tr>
<th>State</th>
<th>Winner</th>
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<tbody>
<tr>
<td>NSW</td>
<td>F. Westley</td>
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<tr>
<td>QLD</td>
<td>Alan Waldron, Rochedale State School</td>
</tr>
<tr>
<td>NT</td>
<td>Sandra Bargery, Sanderson High School</td>
</tr>
<tr>
<td>VIC</td>
<td>Ian Penny, Melbourne High School</td>
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<tr>
<td>WA</td>
<td>Mark Weber, formerly from Woodvale High School</td>
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<tr>
<td>SA</td>
<td>Phil Roach, South Australia College of Advanced Education</td>
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<tr>
<td>TA</td>
<td>no entry</td>
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<tr>
<td>ACT</td>
<td>no entry. However, Alison Welsh from Ainslie Primary School won an ACS sponsored WCCE registration at ACEC'89.</td>
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Multi-media is the "flavour of the month" amongst computer professionals. Multi-media has been a long held dream; a single computer that can combine the many elements of a presentation, including text, graphics, sound, video and photographic imagery. Multi-media has applications including the use of multi-media designs in schools, homes and other venues such as libraries, museum exhibitions and video arcades.

Multi-media programs have been applied in the production of the CD-I Sesame Street program and also in the production of Lucas Arts Entertainment films like Indiana Jones and Star Wars. This led to the development of the Lucas Learning corporation four years ago which is dedicated to exploring the design and development of interactive media projects in education.

It's only recently that multi-media has come to the level of the classroom. Until now, only professionals were able to use the multi-media system but for the average person this has been impossible until now.

The Commodore Amiga is fast becoming the machine "of choice" for multi-media applications. The specialist software house Gold Disc has enabled Multi-media production to be accessible to anyone. For the first time in multi-media development Amiga and Showmaker can produce fully professional standard multi-media presentations.

Showmaker is a powerful system that lets you visualise and "construct" the show, from both Amiga and external elements.

For example, a teacher might want to produce a video showing some elements of a course. You could use video from a taped source, animation from the Amiga, computer generated graphics and text and music from a MIDI source. Showmaker has the capacity to instruct the teacher on how to do it. Showmaker, available through all Dataflow Computer Services Dealers, allows you to "author" what you produce. An advantage of the Showmaker is that it is capable of producing very long shows and lets your Amiga control a range of external devices from CDs to laser disks, MIDI interfaces to video cassette recorders.

The Amiga Showmaker, however, is but one of the multi-media computer systems for educational purposes available. Multi-media applications also are available on Apple Macintosh and IBM computers among others. Dr Cheryl Weiner an Independent Multi-media Producer from Cambridge Massachusetts who works as a consultant for Apple Computers in the US, said that she expects the multi-media developments in the 1990s to occur in the software and hardware platforms.

Ms Weiner said that multi-media systems in the future would probably include the use of music, narration, digital images and would be able to edit and display on the same screen. She said computers in the future would probably have an unlimited memory capacity for image and sound processing as well as digital manipulation.

Ms Weiner said that the latest in computer technology includes the Geography television system (or 9GTV) which is produced by the National Geographic Society in the U.S. by Lucas Learning. This includes multi-media functions to teach students about American history. This program is now being developed for Australian students and is being converted from the Apple Mac system to be used on IBM computers. The program combines video images, narration and sound in the program.

One of the most interesting developments according to Ms Weiner is the Discis program which is a literacy program helping students to understand English or other languages. Beethoven's Ninth Symphony program is designed to teach music via totally integrated sound, visual effects and image-making.

Multi-media systems can express curriculum content in schools in many new and interesting ways. New technologies in the multi-media field such as the Virtual reality program system can offer new ways of thinking about educational environments.

An example of the uses of the multi-media design system in the classroom include such innovative teaching techniques as teaching the evolution of rainforests by using a computer program where by students can take an imaginary walk through a make believe forest via a computer terminal system. Another potential program might be using the multi-media system to use rap music to teach poetry or history or many other subjects. Another potential use for the system is using multi media created video games as educational programs.

The current systems that are able to use the multi-media system include the CD-I, DVI, CD-ROM and IVD systems.

The field of multi-media is an area of rapid expansion. It heralds a revolution, helping to make learning a more enjoyable experience for both teacher and student.
Educators often fail to observe what tasks need to be performed, and question whether these are better accomplished with or without technological assistance.

In recent years, even months, the distinction between education and computers in a teaching environment has become somewhat blurred. One must keep in mind that certain aspects of education can successfully take place without technological equipment.

Current literature, and the words of many speakers present at WCCE/90 suggests that perhaps decision-making which rests on an understanding of students, learning processes, and content, might lead educators to use technology to its best advantage.

Teachers internationally seem to hold to an unfortunate tradition of adopting current trends, attempt to use these trends to develop all aspects of education, become disheartened with the trend's inadequacies and thus move on to another.

The success of present technology and future advances may depend on adequate decision-making, an assessment of the present and potential functions of particular items, and the application of these.

Educators must not only consider what they do or don't know about computing, but more importantly, what they do and don't know about education as a whole.

Videodisc, with its ability to store sound and images has been a valuable tool in training programmes where a visual medium with definite accessibility is working. There is the question, however, of whether or not videodisc enables the teaching of something which could not other wise be taught.

The text-storing capabilities of CD-ROM has shown great potential in libraries where student are searching for written material. Yet one must still ask the question, Is CD-ROM the best method of handling this sort of information?

There is the trend toward specialised hardware and software for specific areas of education. Special hardware and software for specific purposes have been a feature of WCCE/90, such as the possibility of designing computers specifically for young children. Yet by shaping a particular tool to a particular area, that tool loses its relevance to other areas.

The question of networking-the advantages of being able to tap into a combined information pool, and the disadvantages of losing personal access to personal information - is another current concern.

The question of instructional computing has been an ongoing dilemma. While today's students are being taught in a relatively computerised environment, today's teachers (yesterday's students) spent those formative years with little or no computer contact. The task of teaching the teachers is difficult as this comparatively new and unexplored field is still searching for answers. Perhaps learning control of decision-making and direction more in the direction of the students, at least with regards to computer facilitation, allowing them to select strategies and media holds some merit.

Perhaps questions of keeping up with technological development, emerging literature and products and matters of direction should also be asked. Indeed, many researchers of computers in education today would have acted differently in the decisions they've made and directions they'd moved in, had they considered the consequences more thoughtfully.

The educator is in a position to link necessity and technology where appropriate, to implement technology where appropriate and keep educating where it is not. Technology may be an integral aspect of education today, yet it is not education itself.

Qi
Photographs clockwise from top left:
Sandra Wills, Seymour Papert & John Hughes;
Darling Harbour;
Delegates in Session;
Allan Kay.
Centre photograph:
Delegates at the Australiana Dinner
Some Extracts From the Conference Evaluation:

The evaluation team concluded that the conference was an outstanding success - it had more delegates than any other WCCE; it was the largest Educational Conference ever held in Australia; it had more countries represented than any other WCCE; and almost, without exception, participants indicated that the conference was one of the best, in all aspects, that they had ever attended.

Goals of WCCE'90

The evaluation reported that the following goals of the Program Committee Chairperson were achieved:

- an internationally represented program
- an internationally representative audience
- representation from developing nations in the program and the audience
- a focus on kids
- representation from all sectors of computer education
- cross fertilisation between various sectors of computer education whilst at the same time preserving the unique identity and flavour of each sector
- an environment in which delegates could easily network
- a profile for the excellent and innovative work happening in Australian education with computers
- every opportunity for delegates to have a fun time and appreciate Sydney as one of the beautiful cities of the world.

Reactions of Delegates

The evaluation team made tape recorded short interviews with a random sample of 97 delegates. The sample included persons from 11 countries and every state/territory in Australia, and represented a broad cross-section of roles in education - teachers, consultants, private enterprise and university personnel. The responses below were taken verbatim. However, each response is representative of three or more similar responses.

Question: Why did you decide to attend the conference? What were your objectives/expectations?

Typical responses were:

- To meet new people and people I haven't seen in a while.
- To broaden my understanding of the use of computers on a world-wide basis.

Question: Would you like to make any comments about the organisation of WCCE'90?

Some responses were:

- Superb! Couldn't be better.
- It is all too much. I keep wanting to be in several places at once.
- I am really disappointed in the lack of use of technology in the sessions. At a technology conference the presenters should be using more technology.

Question: What have been the best things about the Conference?

Some responses were:

- Alan Kay.
- The opportunity to mix with people from other countries.
- The sessions which made me stop and think about what I was doing and why I was doing it.
- The low registration fee!
- The kids. They were fabulous.
- The fantastic venue. Why would anyone want to live anywhere else in the world.

The Commercial Exhibition

The evaluation concluded that both from the perspective of the exhibitors and the approximately 5000 persons who visited the exhibition it was a great success.

The whole conference could probably be best summed up by the following response: A magnificent effort.

WCCE'90 Conference Abstracts

A limited number of copies of the WCCE'90 Abstract Proceedings are available for purchase from the Australian Council for Computers in Education. The Computer Education Group of Victoria (CEGV) is handling sales on behalf of the Council. The price is $12 per copy plus packaging and postage at the rate of $6 for 1 copy, 2 copies $10, 3-5 copies $15, 6-10 copies $20 and 11-20 copies $25.

Orders (with cheque payable to CEGV) should be sent to:
CEGV Resources
PO Box 110
Mentone Vic 3194