Meeting the Challenge of Learning with Technology
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"Future Shock"

Presentation Notes

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This is a brief look at where technology is heading. A chance to 'Sail the C's of change' involving a view on what to expect in areas of **C**ommunication, **C**oaction, **C**onvergence and **C**ybernetics.

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Communication

Internet and the World Wide Web

The Internet is a major information resource that is growing exponentially. The number of users is doubling every year and has done so since 1988. World Wide web sites grew 20 fold in the last 18 months. The progress in New Zealand can best be seen in Wellington's '2020 Vision'. This vision includes two city based networks:
'Citylink' which will link the City Council and 5,000 connections in Wellington these being: the press, main industries and tertiary institutions and via Internet to the world.
Communitynet which will link the community electronically to publishing .houses, libraries, community centres, and even perhaps coffee shops.
More and more the way we communicate with each other will have an electronic option.
Another example is Artspace in Auckland which set up as a World Wide Web site displaying local art to the world.
Large numbers of connections are going into homes.
As educators we are expected to provide communication between students and staff with E-mail and electronic conferencing.
Educational institutions are setting up world wide web pages allowing you to remotely register and even complete a course of study over the. internet.
The pool of World Knowledge is increasing exponentially. Access to that knowledge is becoming easier. In many cases, having knowledge will become optional.

Satellite

A technological step further is the use of satellite communication. We have the Information Highway, we will soon have the information 'Skyway', using direct to home satellite links and then comes Information 'My Way', where we have personal mobile satellite communications anywhere any time. This is not pie in the sky as can be seen by recent claims that satellites can handle the bandwidth and prices are dropping.

Cable

"The potential for growth is such that the whole of New Zealand will be served by cable within five years." This is claimed by one of New Zealand's cable providers. Interactive television and wide bandwidth communication opens up whole new horizons of opportunity for education.

Coaction

It is well known that resource development requires large teams of people and significant funding. Other country's governments are investing heavily in technology and resource production not simply leaving it to institutions themselves. In New Zealand we do not have that commitment. Collaborative action with business and other partners is vital for development in this area. The development will happen anyway.
Industry sees the opportunity to push their products into the home -not necessarily based on sound educational principles. Increased collaboration with industry particularly communications and related areas

will provide .the resources education needs as well as provide the presence that industry needs.
It is important for institutions to have a plan and vision. There also needs to be increased coaction between various education institutions.
With the increased range of delivery options -local, distant, self paced etc, educationalists are expected to develop extensive transferable resources. There are large amounts of material currently under development, but in many cases the same material being produced.
Groups that do not build relationships now will find it is going to get harder.

Computer Supported Coaction.

Even within institutions there is a need for document sharing and resource sharing. Staff are constantly expected to do more with less and this is unlikely to improve. There is value in encouraging people to make progress moving existing material into more versatile technology based, shared resources.
The commercial area is also heading toward much more interactive development where the customer becomes part of the development team.

Convergence

There is a convergence of video, computer and communications technology. This is a 'natural' progression from the development of improved communication systems and ties in with coactive environments.
Everyone will be connected in some way. You already are if you have a telephone.
Information technology is changing the way we are entertained, for example affordable home theatre, video on demand and interactive television.
There is some evidence[1] that suggests that people are not ready for this convergence but technology is advancing at high speed and the majority of consumable suppliers are developing some form of 'set top' device.
Whether the computer takes on the attributes of the television and phone or the television doubles as a computer, the technology is going to come. The integration of CD technology in the 'entertainment centre' of homes is also upon us. Several companies are in the process of developing a multi- platform disk that can be played on an audio CD, a video CD player, CD Rom. or CDI.
Three years ago Disctronics in Australia produced 125,000 CDs. They .produced 3 million in 1994, and in 1995 they will produce close to 9 million.
CD media titles are likely to double every year until the end of the century. Multimedia titles have increased by 167% this year.

New high density formats are also being developed. Currently 74 minutes of video can be put on a video CD. The HD format will allow for 235 minutes.
We are moving from an information age to a participation age. You will soon connect your video to the network then everyone can participate. This CAMNET concept is a devolution from owners to users a sort of "Roll your own" video network. The Video Nation network is another example where people are taught how to use video and are down loading their own video to the network. Opening up television network creates a media democracy. "You speak, we listen, we both make".
Like the telephone -everyone can participate. The next communication revolution allows 'any to everyone' where any person can present information to everyone.

Cybernetics

Virtual reality is becoming very real. You are already able to participate in virtual shopping and virtual meetings. There are now people selling 'virtual real estate' containing virtual shops, virtual universities and virtual art galleries etc. It is estimated that virtual classrooms will be in place by the year 2001.
There is an increase use in speech recognition and as technology becomes cheaper we will all communicate with technology using voice commands. The skills we will need will include relating to an intelligent agent that looks after our needs. End user technology training may become unnecessary.
Technology will be pushed into the background. There will be a significant increase in technology occupations. Currently nine out of every ten NEW jobs are in the brain industry.
Industrial equipment growth has stayed static while the growth of electronics has soared.
The average car has only 6 spark plugs but 14 integrated circuits in it. $675 worth of steel and $782 worth of electronics. A mechanic has to .become versed in electronics as well as motor mechanics.
The positions vacant for secretaries in the last 5 years show a sharp decline.

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[1] Vivian Horner, Chief Executive Officer of the Information Highway Construction Crew claims US Research shows that people generally do not want to interact with their television but they will and they do with a computer. It is her strong belief that the computer is the way we will go for education and entertainment or infotainment rather than the television.