

ICT Education – The Challenge for the Future

Richard Hogg

National Chairman
Australian Computer Society
P.O.Box 534
Queen Victoria building
Sydney, 1230
Australia

richard_hogg@acslink.net.au

Keywords: ICT, education, government policy.

The ACS is very supportive of IFIP, its Technical Committees and the associated Working Groups. In particular we support our Members who are actively involved at all levels of the organisation. We believe that these people are instrumental in raising the profile and awareness of Australian technological capabilities.

As the professional society for the ICT industry in Australia, the ACS has a vested interest in the quality of ICT education available to our young people. I am particularly concerned about the school system and the quality of education we are providing for our next generation.

This in no way denigrates the excellent work being done by many of our educators, often in the face of quite difficult circumstances.

The first point I want to make is that there needs to be much greater understanding and awareness of the importance of ICT Education and the *impact* of ICT on education.

In recent years, we have seen this issue take greater prominence in the various political arenas around the nation, particularly at times such as the Federal election campaign.

However, all too often our political leaders seem only to be paying lip service to the problem, rather than taking the firm and decisive action that is needed to ensure our schools and educational facilities have the resources they need. These resources include funding, staff, infrastructure and the training required for them to take advantage of what ICT has to offer in the educational environment.

Without these resources we will not be able to overcome the difficulties I referred to above, viz.: the head ICT teacher is also Network Manager, Purchasing Officer, provider of technical training to other teaching staff as

well as setting and marking examinations. You can easily see that in a school where this person is the only ICT teacher on the staff, the problems are further exacerbated.

The ACS released a new research report in June last year that reviewed a broad range of government policies and past policy recommendations in relation to the ICT sector. Produced by Professor John Houghton of the Centre for Strategic Economic Studies, this report stated that the foundation for Australia's future prosperity would come from the scientific, technical, managerial and entrepreneurial flair of our people.

How do we foster and encourage this expertise and capability if not through our education system? British Prime Minister Tony Blair commented that his Government's Education Policy is the most important policy of his administration, with the biggest potential to impact the lives of British people in the years to come. If I asked any Government Minister whether they agreed that ICT Education is important, I'm sure they'd agree with me.

Yet what we are not seeing is that acknowledgement translated into the kind of action that is needed to ensure that Australia is equipped and ready to take its pace in the Knowledge Age.

The ICT industry is unlike any other in terms of its dynamic nature, but the rate of change is such that inaction will see us left behind as more competitive nations move forward. The first mover advantage is very real in ICT and we cannot afford to sit back and let others set the standards for ICT Education.

If we are to succeed in this critical area, it will require major stakeholders like Government, the education sector and the industry to co-operate more effectively and to set and meet some aggressive targets in the short to medium term.

So what are the challenges facing us as not only a nation, but as a global community, in relation to this issue?

One of the biggest issues for me is the provision of infrastructure like networks and laptop computers for teachers but without the appropriate training necessary for them to take advantage of these resources.

What a waste of money!

We must ensure that funding for technology also includes the provision of adequate support and training to ensure the equipment available to our educators can actually be

used effectively. Clearly, Government has a major role to play here both at the Federal and State level. We need our Governments to show leadership in relation to ICT Education, to establish clear policies with a timeframe for implementation, and measurable outcomes.

From where I stand, there currently appear to be no policies that relate specifically to ICT Education that seek to engage the industry and provide the necessary links between the professional community and the education sector. I see little co-ordination between the various Government Departments and Agencies, even in terms of how we, as an industry body, can provide input into the policy-making process.

A similar lack of co-ordination can also be seen between the Federal and State Governments, and then between State and Territory administrations themselves. There is a lack of public policy information and the fact that we don't know or understand their goals prevents us from effectively supporting them in achieving them. That is, assuming that goals have even been identified.

Of course, some States and Territories have acted in isolation to implement infrastructure initiatives—the Queensland Government is doing some interesting things in this area—but these could be far more effective if they were part of a greater strategic plan that is clearly enunciated and widely supported. The Victorian Government has been very active in the setting up of, and support for, initiatives that provide ICT Cadetships and Traineeships.

We need information to be shared and discussed more widely. The different States are setting their own individual agendas using different criteria and there is little consistency across the board.

I doubt anybody, in Government or elsewhere, has a clear and complete picture of what is happening, what initiatives are working or where the greatest needs are. This needs to change.

We need to look at the international experience and see what lessons can be learned and what elements can be adopted and applied for Australia's benefit, and do this as part of a strategic plan that has specific outcomes tied to it.

Within our schools, we need a consistent approach that accords with national requirements and standards for curricula, knowledge and skills. We need standards about how technology is applied within schools to aid the learning process, whether it is in Year 4 English or in Applied Computing at Year 12 level.

I am consistently amazed and impressed at the number of teachers who have taught themselves about computers, some of them achieving a very high level of expertise. But we all know there are others who struggle to stay ahead of the students they teach.

We must have standards in relation to the knowledge and skills of teachers, not only for those engaged in specialised computing studies, but also for all teachers, to enable them to effectively apply technology to aid the learning process. This requires an enormous commitment

from government in terms of infrastructure, training and technical support.

We are increasingly seeing a situation where schools are using technology as a differentiator to attract students. I don't see this as a bad thing, but it should be the case of schools with plentiful ICT resources winning students over schools that meet a set minimum standard for ICT resources, rather than the "haves" versus the definite "have nots."

We also need a better mechanism for the industry to feed back into the education system about emerging technologies that offer benefits for schools, to enable them to take better advantage of the latest developments. The ICT industry itself has its own issues. Its culture is that of fast change, constant development and learning and enormous competition.

The industry is such a demanding employer that there is often little opportunity for companies and professionals to engage the education sector in ways that will benefit both parties.

I'm now talking about things that have a greater impact on Tertiary students. For example, providing work experience opportunities for students or the industry collaborating to help provide support and resources for schools. Yes, some of this happens on an ad hoc basis, but better coordination, ideally provided by the government, working with bodies like the ACS, could deliver enormous benefits. If the industry knew more about the needs of the education sector, and a clear framework within which to work to provide assistance, I'm quite sure we would see a significant response from individuals and companies.

When the ACS launched the ACS Foundation almost a year ago to provide ICT scholarships and research funding, we anticipated that we would award maybe ten scholarships in 2002. The level of support we achieved in fact enabled us to award over 50, and there is funding for a number of major research projects in addition to that.

For students, the issues are completely different. They need to have better information about the range of ICT careers available to help them make appropriate choices. Media stereotypes don't help our industry to attract the brightest and the best, and the situation is far worse when you're talking about encouraging girls to study ICT. The fact that too many teachers are inadequately equipped to discuss these issues, and perhaps don't provide the best role models for students, further exacerbates the situation.

Sure, we're facing a glut of people in the ICT sector at the moment with high unemployment, but this will change as the economy picks up and I am confident that ICT employment opportunities can only improve.

It's also critical that ALL students receive a level of tuition to achieve a level of competence with computers while at school. There is no industry sector today that does not rely heavily on technology to enable it to operate more efficiently and cost-effectively.

Regardless of whether they plan to do a trade, engage in tertiary studies or move straight into a job in retail,

tourism, agriculture—it doesn't matter—students must have a knowledge and understanding of computers in order to hold their own in the world today. Computing skills are no longer an optional extra—the Internet has changed all that.

So what is needed?

While Australia currently does some things very well, when it comes to technology and education, we need our Governments to commit to more aggressive goals and timeframes,

We need a standardised ICT Education policy that sets out minimum standards for the infrastructure and resources provided to teachers, as well as a consistent approach to curriculum throughout both primary and secondary schools.

This policy must also detail the basic computing skills and knowledge that all students should attain as a natural part of the primary and secondary schooling.

This will require vision and leadership from the Federal Government as well as significant level of co-operation between the States and Territories. It also requires a level of coordination not only with the public school sector, but also with private schools, to ensure that standards are adopted and maintained right across the board.

We need to empower our schools and our teachers with the facilities to do their job well. We all know that teachers receive little recognition and operate within tight constraints. When it comes to technology, we must ensure adequate resources and support and a better understanding of how technology can assist the learning process.

We want to improve understanding of the importance of the ICT sector, and the wide variety of interesting and rewarding careers it can offer students. We particularly need to encourage girls to consider a career in ICT in order to address the gender imbalance and stereotyping that currently exists.

Over the years we've been vocal in our support for the education sector, and the need for more funding in support of education.

We've made formal submissions to Government enquiries and will continue to lobby on these issues.

We actively provide input to a wide range of departments at both State and Federal level, both as a Society and through the work of individual members.

We are currently looking at funding a study to benchmark global experiences in ICT education to help provide input and balance to the debate and to help inform the policy development process.

I believe the ACS has a role to play in helping to bring together stakeholders and interested parties from government, industry and the education sector to facilitate discussion that leads to action. Our members have expertise that can help to inform the debate and they are willing to give their time and energy to progress this cause. The ACS is responsible for accrediting tertiary

ICT-related degree courses in Australia and we operate our own world-class Certification Program and professional development activities.

The ACS also administers the International Computer Driving Licence the global standard for assessing and recognising basic computer literacy.

We provide support to a wide range of education conferences and initiatives and encourage excellence in ICT research and academic publications through our Journal.

We are active in engaging media interests on education-related issues, and provide a range of career resources to schools and other education institutions, including running summer schools for Year 10 and 11 students.

The ACS is currently working to develop our own ICT Education policy document and the international benchmarking exercise will feed into this process.

We would welcome your input to this complex and significant issue.

Education is an issue that reaches the very heart of who we are as Australians and who we want to be in the future. We must work together to ensure the best possible outcome for everyone.