Looking Out and Looking In

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In 1984 I was working in Canberra as a project officer for a program called the Curriculum Review and Renewal in Science and Technology. The intention of the program was to get teachers involved in examining teaching practice in these areas and to see what new initiatives might be taken. In the course of the project we looked at a number of issues that were regarded as important at the time. Such issues as making better connections between the science and technology studies in primary schools within a geographical area and the local high schools, better connections between parents and schools in terms of parents' understanding what teachers were trying to achieve, the kinds of professional development and resources primary teachers wanted in science and technology, and the kind of resources we might develop for early childhood teachers, among others.

Part of my job involved attending meetings of both technology and science teachers. On one particular day I had to attend a meeting of science teachers at a senior secondary (Years 11 & 12) college. I sat at the back of the room and listened, wanting to get some sense of the issues that were important to science teachers, because part of the agenda at that time was to see what possibilities there might be for collaboration between the two areas. There was no shortage of ideas and opinions about science and science teaching but what surprised me was that they were overwhelmingly negative. They decried the reduction in teaching time for science, the loss of laboratory time, the loss of status, reductions in budgets, shortage of suitably qualified teachers, inability to change the gender balance in the physical sciences and a general disinterest in science by students. While I knew the issues, I nevertheless did a double take and wondered if I had come into the wrong room. Here was a group of teachers in an area we all know has high status, sufficient resources, plenty of influence with school administrators, politicians, parents and the community generally, not to mention all the support from high-profile television programs, complaining about their lot in life!

Fast forward to a conference of Design and Technology teachers held in the Design Centre in London in 2002. There were several upbeat presentations and enthusiasm, particularly (but not exclusively!) from younger D&T teachers, but there was an eirie similarity between what I had heard 18 years earlier from science teachers and what I was hearing on this occasion from D&T teachers. Teachers were complaining about reductions in teaching time, lack of status and regard for the area, problems with the public examinations and so on.

What is one to conclude from these two observations 18 years apart in time and half a world apart in distance? You could come to the not very original conclusion that one thing that unites teachers, across disciplines and countries is our capacity to complain. Having thought about the two experiences for some time, however, I have a rather more positive interpretation. Teachers, in all disciplines, are basically positive people and optimists. That is, they develop a positive view about their role and what they can achieve, and rarely see it as just a job. This seems to be particularly so with D&T teachers. They know that they work within the constraints of budgets, competing demands on the school timetable etc, and they do the best job they can within these constraints. In fact most do a fantastic job. BUT they always know what they could do if they had better resources, more class time, etc. So, the things teachers do that need to be celebrated are often not spoken about, in part because many good D&T teachers will say "that's just what I do". Their focus is on what needs to be done and this can always be framed as a negative.

So, where are these reflections heading? Thinking about the field since the start of the naughties, it is possible to see a number of changes that have happened that provide the basis for optimism.

There is a greater sense of the need to work together across borders to advance the area. This can be seen in terms of conferences

where, in the last five years, I have attended technology education conferences with participants from a variety of countries in London, Paris, Glasgow, Haarlem, Nizhni Novgorod, Washington and Brisbane. Some of these conferences would not have happened if they had had to rely on domestic participation. Further, when a conference in a country is attended by a significant number of overseas presenters and participants the leverage this can give to negotiations with domestic policy makers can be significant.

We are getting better at working with groups and organisations outside our area. In 2001 I attended a technology education conference in Washington, sponsored by the American Association for the Advancement of Science. It wasn't a meeting of science educators wearing their technology badge for the day, but a meeting of technology educators from around the world, most of whom would be known to this journal's readers. There are other examples of this kind of collaboration with associations, industry and foundations in England, Finland, Sweden, Germany, Australia and Russia.

A flow-on from the contact these conferences and collaborations provide is an increase in the number of international research projects being undertaken and written up in international journals. The fact that they are happening is good for the area in terms of the sharing of ideas and research findings. Possibly of equal importance is the recognition by educators outside our area that they are happening, and that the research is generating new and interesting knowledge, not only about technology education, but about how learning occurs and of new ways to research learning.

Increasingly, researchers in D&T are discovering that existing educational research methods, borrowed from the social sciences, are not sufficient for uncovering the specifics of how learning in D&T occurs. One example to illustrate the point is the research examining the act of designing. One method for collecting and analysing data to study designing is protocol analysis. In protocol analysis, the subject is given a design problem and asked to verbalise every thought that comes into their head. This is recorded and analysed. If, as is usual in designing, the subject is sketching or drawing, this has traditionally been regarded as either irrelevent data or merely a mirror image of the verbal data. Recent research has demonstrated that contrary to the earlier view, the visual data provides addditional and sometimes unique data that significantly changed the conclusions that might be drawn about the thinking involved in designing. This is generating new methods that are causing changes to research methods both within D&T educational research and educational research more generally.

So, I think we still need to complain, lobby and harrangue, to get the kinds of support we need to provide excellent D&T programs. However, we also need to acknowledge and celebrate that we are making progress, because this provides further progress by changing perceptions. We do this already with such activities as design competitions and awards, but we need to do it in terms of all the activities that strengthen D&T as an educational area. This includes research projects and findings, and international collaborations.

Finally, returning to the title of my musings, we need to acknowledge that we are insiders and necessarily see a picture that is "warts and all". This can be a very different picture from that of the non-D&T person looking in, which from my observations, is often much more positive.

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