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Taking Stock, Scholarship and Getting Online

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In his Keynote Address to the inaugural IDATER Conference¹ in 1988, the late Professor John Eggleston discussed the challenges that the introduction of the National Curriculum in England and Wales in 1990 would present. Eggleston was concerned about the preparedness of the D&T education profession to face these challenges and particularly about the research foundations.

Perhaps the task that this conference needs to lend itself to most urgently is that of recognising that research and development is an integral part of our educational activities. It is something that we have to take on board as an essential component of the whole process of teaching design and technology. The need has never been greater than now as we are set to deliver a major expansion of design and technology. If one listens to the politicians you will hear that design and technology is expected to provide virtually the whole range of the new learning opportunities that are seen to be particularly relevant to the kind of society into which we are moving.

...
At the moment we are in such an uninformed position that we cannot even be specific about what we hope to deliver and therefore we cannot even devise strategies to respond.

(1989:129-130)

One of the key reasons for starting the IDATER conferences was to help support the development of a research base in the area of D&T education at that crucial point in the subject's development, and, of course, there were several parallel initiatives as indicated later in this Editorial. Crucially, there is a sense in which the hoped for foundations are only really now taking shape nearly 20 years on. Eggleston ended his 1988 Keynote Address as follows:

What I am trying to suggest, very simply, is that we cannot set up a new kind of activity which

requires new people doing different things, but rather that we ourselves as teachers, lecturers, writers and administrators need to add research to the work we are currently engaged in. This is an addition, which is neither theoretical nor remote, but immediate, practical and relevant. If we fail to do so then, ultimately, all the other professional activities we undertake will be increasingly impaired and vulnerable. I hope this conference will present the opportunity for us to make the move before it is too late and provide us with the support to do it well and effectively.
(*ibid*: 131)

In my view, the evidence suggests that the D&T education profession, not only in the UK, but internationally, can take significant pride in the progress that has been made in its research base. There have been few major funded research projects, but D&T people have added research to their personal journeys, and carried the subject area forward as a result. One critical failure prevents the extent of the successes being clearly visible, and that is a rather neglectful approach (at least in England) to archiving and making research available online. My view of the research which has been completed is a limited, but nevertheless privileged one, in that I attended all the IDATER conferences, and have continued my role as Co-Editor of the later IDATER conferences with the D&T Association International Research Conferences (D&TAIRC), which took up IDATER's mantle. Other researchers and scholars can now get a better view of the progress that was made in those years because all the 400+ papers presented at IDATER conferences are now freely downloadable (www.lboro.ac.uk/idater). Nevertheless, there are still about 60 keynote addresses given during that period to make available, and only a few copies remain of the 1988 Conference Book which was published by Longman, in which Eggleston's keynote address appears. Many researchers might be interested to read the whole of Eggleston's paper

¹ The first Design & Technology Educational Research and Curriculum Development conference, IDATER88 was held at Loughborough University in 1988. The conference became 'international' in 1992 (ie IDATER) as it became clear that the growth of design and technology in school curricula was a truly international phenomenon and delegates from all around the world attended the IDATER conferences.

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from which the above quotes are taken, but only few could access it easily.

There are occasional assertions that D&T education remains an under-researched area, but that is a relative judgement, and often associated with vested interest groups with particular interpretations of legitimate 'ways of knowing': D&T educators engage with practice as a matter of course, so different epistemological foundations for curriculum development are perhaps less challenging for them, than for more traditional educational researchers. There have been major curriculum initiatives which embraced research dimensions e.g.:

- Project Technology (Loughborough University, early 1970s).
- Design and Craft (Keele University, early 1970s)
- Design in General Education (Royal College of Art, late 1970s).
- D&TA/ASE (Association of Science Education) Project (1990s).
- Royal College of Art (RCA) Schools Technology Project (early 1990s).
- Nuffield Project (1990s onwards).

There were the APU (Assessment of Performance Unit) surveys conducted by TERU (the Technology Education Research Unit at Goldsmiths, University of London) in the early and late 1980s and research has been conducted for the UK's Engineering Council, Craft Council and Design Council. Many D&T practitioners have formalised their curriculum development into targeted action research projects. Research relating to all of these projects, and much of the practitioner research, has been published.

For example, my stocktaking towards the end of 2006 indicates (approximately):

- 420 IDATER papers (as well as the 60+ keynote addresses);
- 142 D&TAIRC papers (including the Millennium conference);
- 140 CRIPT (Centre for Research in Primary Technology at the University of Central England) papers (as well as the 6+ keynote addresses);
- 171 research papers at the PATT (Pupil's Attitudes to Technology) conferences (based in The Netherlands, and now linked to the

International Technology Education Association (ITEA) in the US);

- Research papers resulting from the biennial International Conference on Technology Education Research (TERC) (2000-2006, Griffiths University, Australia);
- Research papers in the series of D&TA journals: 20 Design and Technology: an International Journal articles (D&TE:IJ) articles (2005-), 114 Journal of Design and Technology Education (JD&TE) (1996-2005), (together with research articles published in Studies in Design Education, Craft and Technology (SDEC&T) from 1968-1988 and Design & Technology teaching (D&TT) between 1989-95);
- 106 National Association of Design Education (NADE) Journal articles published between 1992 and 2002 (available via www.lboro.ac.uk/idater/);
- 159 Journal of Technology Education (JTE) research papers (published in the US);
- 153 International Journal of Technology and Design Education (IJTDE) research papers (published in The Netherlands);

... or 1400+ papers or articles in the specialist D&T education literature, most of which were formally peer-reviewed. Of course, the major design research journals, such as Design Issues, Design Studies, and The Design Journal, also contain research papers, and have published Special Issues, relating to design education.

Continuing evidence of a 'low profile' for D&T education research

Harris and Wilson (2003) were contracted by the D&T Education Strategy Group to complete a literature review relating to D&T education in England and Wales. In 2002, they identified over 1500 items using a combination of 'technology education' and 'design and technology' key words. (The study was completed between August and November that year). Their review eventually referred to 169 (65 JD&TE, 14 IJ&TE, 11 IDATER, 7 PATT, 7 JTE, 1 D&TAIRC) So, 11% of the items they identified, 68% of the JD&TE articles then written, 3% of the IDATER papers and 0% of the CRIPT papers. So, the review could be viewed as in large part a summary of the research

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published in the JD&TE, either indicating the importance of the journal or the limitations of the review depending on your viewpoint no doubt.

To be fair, Harris and Wilson restricted their review to papers published since 1990, relating to primary and secondary mainstream schooling, 'studies of well-designed experimental interventions in D&T education' (ibid:2), papers published in peer-reviewed journals and Government policy documents and where 'these were not sufficient, relevant conference papers may have been included' (ibid:3). Although I, at least, might dispute how complete the picture of D&T education research resulting from these criteria might be, it is perhaps even fairer to note that the IDATER papers, and others no doubt, were not online or searchable in 2002, so their task was not being made easy.

Scholarship

Searching this research base as it becomes available online will now reveal numerous papers on most topics in D&T education. There is a significant research base, and, most importantly, it now needs to be further embodied in people through scholarship. In fact, in my view, although 20 years ago it might have been sensible to state that your research interest was 'design and technology education', it is now more realistic to state a specific topic within that area to provide some boundaries. Being fully conversant with the 1400+ specialist research papers which exist now might be more than one individual can deal with.

Good scholarship demands a knowledge of all prior art. ('Prior art' is a better term than 'previous literature' for the design area in my view because it embodies practice, which might not be articulated.) Once such status is attained, then the advice or commentary that scholars give on subject developments, should reflect not only their own work, but that of those on whose 'shoulders they stand'. That is why 'state of the art' reviews have been published in previous issues of D&TE:J on particular topics eg 'creativity' (Spendlove, 2005), 'learning styles' (Atkinson, 2005), 'primary' (Benson, 2006). More such scholarly reviews would be welcome additions to the journal, and represent major contributions to the research infrastructure in themselves, whether or not 'new research' is also being reported.

The outstanding matter then would be to ensure that such scholars bring their expertise to bear on curriculum development. Perhaps, this will not be routine practice until the full dimensions of the research foundations which exist are evident to all, but it currently seems more common to me for the research evidence to be ignored rather sought after.

Further contributions

In this issue there are four further significant research contributions to our understanding. Newcomb looks at the issue of identifying relatively exceptional performance relating to visual-spatial ability in primary children. The challenge of supporting 'gifted and talented' pupils is currently a key issue, but clearly, identifying pupils with exceptional aspects of design intelligence must come first, and there is no reason to assume that design intelligence correlates with 'general intelligence'. This research paper discusses a small-scale case study undertaken in a school in Wales, and it describes a useful start to this difficult task at what is probably the more difficult end of the age range.

Regrettably by the secondary stage some pupils have become disaffected and the paper by Thomas and Denton looks at strategies for improving such students' perceptions of D&T. The 'relevance' that the pupils see in the subject has been found to be a key factor, and has been previously reported by these authors (Volume 11, Issue 1). This paper looks in detail at some of the important areas where relevance can be promoted e.g. classroom practice, departmental documentation, policies, development plans and schemes of work. This particular action research project is being undertaken with low ability students in a comprehensive school, also in Wales, and it would be inappropriate to generalise from one such study, but there is clearly potential for other researchers to build on the understanding that is being developed.

A further study relating to secondary age students (11-16) is reported by Nicholl and McLellan. Understanding creativity within design and technology and the drivers which move pupils towards, and away from, for example, risk-taking or being adventurous, are the concerns of every D&T educator. This paper looks at 'fixation', which literature relating to creative

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cognition suggests is a normal way of thinking. The research explored the ways in which fixation manifested itself within the D&T classroom, and shows the importance of targeted interventions by teachers. It also demonstrates how inter-disciplinary research can help to move D&T education research forward.

An equally timely research project with 16+ students in Scotland is reported by McLaren. Her research explored the motivational significance of using formats from popular culture, specifically 'forensic autopsies' and 'ask the audience', within pedagogy targeted at new curriculum content relating to commercial manufacturing. It is vital that pupils understand and interrogate the material culture they are inheriting, and strategies that promote that engagement are essential tools for all D&T teachers.

In addition, the 'reflection' piece in this issue is written by Dr Ivan Chester of Griffiths University, Queensland, Australia. His account of the development of appropriate pedagogy for CAD/CAM is highly informative, and will undoubtedly be paralleled by the experiences of other researchers in this area. The crucial importance found of developing strategic thinking (or metacognition) also has parallels in other areas, for example in the development of sketching capability. The paper makes the importance of international approaches to developing our understanding of key areas of D&T education research ever more evident.

The next issue of the journal will be a 'Special Issue' concerning assessment and is being edited by Professor Kay Stables of Goldsmiths, University of London. It will have contributions concerning assessment in D&T education from leading researchers in the UK and around the world. Assessment remains the source of some of the more intractable obstacles to progress in D&T education, and it is hoped that this Special Issue will play an important part in informing change in this key area.

A New Year Resolution

My resolution must be to complete getting the IDATER keynotes online, and to call repeatedly for other organisations that have significant D&T education research archives not yet online to similarly increase their visibility and accessibility by 'uploading them'.

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