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Twenty Years On: Ownership and influence

Dr Eddie Norman and David Spendlove

In 1988, *DATER* (*The Design and Technology Educational Research and Curriculum Development Conference*) was started by the Department of Design and Technology at Loughborough University and directed by John Smith. It was started in order to support the development of a research base for design and technology (D&T) as it emerged within the National Curriculum in England and Wales. The establishment of such a conference had been advocated by several people and was universally supported. It was recognised very early in its history that strength came from shared knowledge and understanding, and, consequently *DATER* went international in 1992, and became *IDATER*. *IDATER* was highly successful even in its final year before going online in 2001, and had developed a strong international reputation. In the early years D&T specialist advisory teachers from local education authorities made up a significant proportion of the delegates, but these posts had become much rarer by 2001, and the decision was taken to move the conference closer to teachers by transferring its stewardship to the Design and Technology Association. Without effective dissemination routes even an excellent, well-established conference risked marginalisation. Such history is well-known, and there is little to gain from its detailed review, but some of the issues, for example establishing research agendas, dissemination, inclusiveness and quality assurance, are perennial and worthy of occasional reflection. So what position have we reached? And which way from here?

Table 1 shows a summary of some key aspects of the past six years. The starting position in 2002 was similar to the last *IDATER* conference and the fluctuations in support in the odd

years are probably explained by researchers choosing to support (entirely reasonably) the biennial CRIPT conference. The 2007 PATT conference will also have attracted the attention of many D&T researchers this year, and there are time and financial limits on conference attendance. Nevertheless, the strength of the support and policies of the D&T Association has clearly led to the establishment of a strong position from which to build.

Action research

There is a limited, and declining number of researchers in higher education with specialist interests in D&T education, and it is clear that research is not largely going to be done 'for teachers' in the future, if it ever was in the past. If there is going to be significant evidence-based decision-making, then any research evidence contributing to such processes is going to have to largely come from teacher-researchers. There may be some major research projects or curriculum development projects funded by Government Agencies or Research Councils, and any would be welcome, but the primary means of addressing the wide-ranging research agendas is likely to be 'DIY' (and 'Do-it-Yourself' is a popular UK pastime!).

Eddie Norman's PhD was focused on the improvement of his own teaching at Loughborough through a series of action research case studies. The great body of work that the *IDATER* conferences represented was essentially small-scale research, and Keynote Speakers at *IDATER* consistently supported an action research approach (Archer, 1992; Green, 1998; Roberts, 2000). New entrants to the profession are now being

Year	Theme	Venue	Research papers	Posters and PowerPoints	Research workshops
2002	...	The Royal Court Hotel, Coventry	21	5	...
2003	<i>Design Matters</i>	The Hilton Hotel, Warwick	15	1	...
2004	<i>Creativity and Innovation</i>	Sheffield Hallam University	30	0	...
2005	<i>Inspire and Educate</i>	Sheffield Hallam University	17	9	...
2006	<i>Designing the Future</i>	The University of Wolverhampton	21	3	4
2007	<i>Linking Learning</i>	The University of Wolverhampton	13	9	4

Table 1: Data relating to the D&T international research conferences 2002-2007

encouraged to undertake M-level studies and action research will undoubtedly be a central strategy within such work. Andy Mitchell has been the key person in the drive to include research workshops for 'new researchers', which have appeared in the Conference Programme in the last two years, which is a crucial initiative for the future.

Online publishing and internationalism

There is no disputing that the essential weakness of small-scale research is that however well conducted it can only really be considered to apply reliably in the 'local circumstances'. However with the democratising power of the Internet, it is not difficult for a number of such studies to be brought together, and in combination to become more powerful. All the 400+ *IDATER* papers are online, but so now are the papers from the D&T Association research conferences alongside them on the Loughborough University website. They can be searched and the result can be merged with other searches of for example the PATT Conference papers¹.

So it is possible to quickly gain both historical and international insights into particular current research issues. Conducting such a search and reading the associated papers can be very revealing. There has always been a belief in establishing research foundations for D&T education through many small steps. It is the emerging power of the Internet which is set to make this a reality. Such a development was unlikely to have been anticipated by the researchers in the 1980s, but there is no doubt in my mind that many of them were working towards such a possibility.

Of course, everyone is mistrustful of information obtained online, and that is why it is important that conference referees continue to do all they can to assure the quality of the research papers published. Once online, they are likely to be there for a very long time, and certainly beyond our lifetimes. The papers published in this conference book are not 'just for this conference' as might occasionally be thought.

Inclusiveness and research agendas

Not all new researchers are ready to publish research papers and the emerging trend to see more poster and PowerPoint presentations is again a key feature of the development of the conference. Such presentations do not have to be as formally refereed, because they are not likely to become 'published work' with any longevity. They are stepping stones for the researchers, but within the conference as a whole they can

play a much more significant role. The D&T Association has set conference themes in most years relating to national policy agendas, but research agendas are just as likely to arise from classroom practice. The on-going conversations between teachers, researchers and policy makers are crucial to steering research effort towards the most important areas. It is certainly important that all new researchers feel able to participate in the research conference.

Ownership and influence

It would appear that whilst the D&T Association has taken ownership of the research conference and supported it strongly by putting significant resources into it, and that there has been a continued stream of quality research contributions, the conference does not yet have the influence that it should. D&T educators are used to evidence-based decision-making within their students' projects, and there is every reason to believe that they would welcome research evidence to support reflection on their practice. It is possible to speculate on some possible reasons as to why research and practice remain somewhat distant from each other. Perhaps, D&T professionals feel little ownership of the research outcomes generated? Perhaps research seems too remote from the classroom? (...even though some of the researchers are classroom teachers). Perhaps it is a matter of insufficient time? In this hectic world which we have created, perhaps it might be useful to publish research updates by topic and with web links. The research paper abstracts were intended to perform this role, but perhaps it is no longer enough.

Anyway... the D&T Association has a research strand of activities of which it can be justly proud, and, in the spirit of continuous improvement, strategies must be sought to ensure that children and teachers, and through them our designed futures, obtain the maximum benefit from it.

2007 research papers and PowerPoints

David Barlex's paper discusses some of the support for cross-curricular activity involving science, mathematics and technology that has developed in different countries in recent years. It also notes some of the difficulties experienced in England in achieving success for these activities in secondary schools. Some of the potential drivers for taking such initiatives are discussed and some potential next steps identified. Cross-curricular, or multi-disciplinary, approaches have been repeatedly identified as key to supporting creativity and

¹ The IDATER and D&T Association international research conference papers can be accessed through Loughborough University's Institutional Repository at <https://dspace.lboro.ac.uk/dspace/> and the PATT papers on the ITEA's International Technology Education Association) website at: <http://www.iteaconnect.org/Conference/pattproceedings.htm>.

innovation, and research in this area must be of a high priority for informing curriculum development.

Soo Chin Chia and Jason Tan are reporting the results of the first two phases of their investigation of the use of Tablet and sketching software with secondary pupils in Singapore. The paper reports the results of exploring a number of designing tasks and there is a range of interesting outcomes. This is one of a number of papers at the conference that are linking new technologies with creative designing and there will undoubtedly be significant interesting research completed in this area over the next few years.

Alister Fraser and Tony Hodgson build upon their previous research related to Computer Aided Design. In their paper, drawing upon a web based survey, they highlight a strong relationship between CAD implementation in schools and an increase in pupil attainment. They suggest that CAD allows pupils to consistently meet a level of quality, manufacture and accuracy that is well rewarded by some specific points of assessment noting that teachers observed an increase in the percentage average A*-C grades of around 10%.

Su Garlick, Kate Jones and Mary Roberts are presenting some of the outcomes of a timely research study concerning the transition from teaching in schools to becoming involved in initial teacher education (ITE). Teacher Fellows were appointed to the University of East London and their experience has been recorded through logs, questionnaires and interviews. Some of the outcomes will be shared in this PowerPoint presentation.

Wesley Hamilton reports the outcomes of research into interactive and authentic learning environments. The environments were based on narratives that brought the students into real world situations (e.g. the 2005 Make Poverty History campaign). The key classroom issues that led to engagement and motivation are described, and the key issues relating to the cultivation of a supportive learning environment identified and discussed: namely, the classroom ethos and vibrancy, talk-in-interaction, openness (freedom of choice) and assessment.

Creativity has been at the top of many people's agendas for some years, but little detailed work has been done relating it to specific design tools and areas. It is interesting that a number of such studies are emerging at the 2007 Conference. This PowerPoint presentation by Aede Hatib Musta'amal, Tony Hodgson and Eddie Norman will describe the beginnings of the task of mapping the multi-dimensional characteristics of creativity on to aspects of designing with CAD/CAM. Some findings from the literature and early pilot studies will be presented.

Gill Hope extends her previous research into primary pupils understanding of design capability. In this paper, Gill unpacks the dynamics of a pupil design activity and the hidden rules that we sometimes are not aware of. By reflecting upon the complexities of trying to facilitate design capability Gill reflects that "no wonder I confused the children", something we should all be mindful of.

Steve Keirl provides us with an interesting insight into how he has used debating as part of the student experience in a B.Ed programme in South Australia. Steve explains that discomfort, as a component of critical thinking, is both valid and positive, and seeks to show how this use of debating contributes to a meaningful educational journey for the students.

The paper by Tim Lewis and Gary Drabble reports the results of the analysis of a case study concerning work placements as an aspect of one of the new specialist diplomas that are currently under development. In this case the work placements concern the motor trade with a potential to contribute to the engineering diploma. The outcomes are important for the development of this and diplomas in other areas and also for their curriculum implications. Such diplomas clearly cross curriculum boundaries and consequently the research fits very closely within this year's conference theme.

Mike Martin's paper looks at the current theme of electronic portfolios and evaluates a three-year activity which has been used for developing undergraduate capabilities in Design and Technology. The PowerPoint presentation by Mike Martin and Paul Spencer is directly discussing the PGCE programme recently developed at Liverpool John Moores University. Although this might be the focus, the wider agenda they suggest of the relationship between engineering and design and technology and other areas of learning is a key current and future concern. There is a long tradition of research in this area, but many new contexts and agendas to explore.

Alexandros Mettas, Gisli Thorsteinsson and Eddie Norman report the findings of their study to establish a starting point for pursuing a PhD research programme concerning design decision-making through action research. The intention was to explore and articulate current practice in this area for pupils aged 11-14 by comparing the national curricula and teachers' perspectives in Cyprus, Iceland and England. The results of this comparative study are presented.

Bill Nicholl and Ros McLellan continue their work looking at pupil 'fixation' when designing. In their paper they attempt to shed light on how students generate design ideas and how a particular teaching approach, product analysis, influences

pupils. They conclude that current practice tends to promote 'fixation' as thinking is constrained down a particular path.

Peter Simmons and Kevin Badni are presenting an update on their research concerning the effectiveness of sustainable design websites. At the 2006 conference they described their approach to classifying such websites and the key issues concerning the analysis of their effectiveness following a literature review. This update explains the results of a cluster analysis of the websites and initial investigations in classrooms concerning whether the websites are being used.

Torben Steeg and John Martin report the first preliminary analysis of their research concerning whether the use of microcontrollers (PICs) and CAD in electronics projects can support pupils in making more creative responses. The teaching of electronics has tended to require careful management, and consequently been seen as 'not creative'. This study is exploring the key agenda of whether new technologies can liberate the students from some of the shackles whilst retaining quality, functional outcomes.

Donna Trebell's paper describes the outcomes of a literature review concerning how socio-cultural theory can be applied to frame a study of designerly thinking. The research study is to focus on 'design-without-make', which is a further recent initiative targeted at facilitating more creative outcomes from designing. The proposed research study and analysis methods are described.

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