

DATA Annual Conference

Address by Andy Breckon, Chief Executive, DATA

■ Introduction

May I join Ray Peacock and John Collier in welcoming you to Barnwood today for the Annual DATA Conference. I would just like to endorse the chairman's comments about the support from Nuclear Electric and in particular Sue Merrill and the staff at Barnwood. I would also like to thank you as delegates for attending and the many suppliers and sponsors for their support of the conference and the support of DATA.

It is a great privilege for me to be leading the Design and Technology Association and I have been delighted by the support from colleagues in the six months I have been in post. Chief Executive of DATA is a very exciting, challenging and rewarding post and one which I am determined to make a success, as I am convinced DATA is the only organisation in the D&T field that can unite all those working for the subject. My criteria for success as Chief Executive are very simple. Firstly, it is to enhance the understanding of design and technology in our society, secondly to improve the quality of teaching and learning in design and technology and thirdly, to ensure that policy makers have had coherent arguments as to why design and technology should be supported. One of the principal functions of this conference is to bring together leading policy makers in order to begin this process and to establish a good platform for a bright future. I have taken the liberty of speaking first at this conference in the clear knowledge that the speakers that we have invited will raise the standards as the conference unfolds.

I believe today is a vital day for design and technology because it marks the start of a new era for the subject. In my lecture this morning I want to consider how we are going to pick up the opportunities that lie before us and capitalise on them to establish a bright and purposeful future for design and technology.

I am very optimistic about the future and in this lecture I will:

- set out why I am optimistic
- analyse the lessons that have been learnt
- suggest some areas for future development
- through the discussion groups, get some ideas and strategies for the future from the delegates.

■ The reasons for optimism

Why am I optimistic? Firstly, because I know that the subject of design and technology is a most powerful curriculum experience which, when done well, motivates, captivates and provides a form of education for young people that can not be surpassed. D&T provides that excellent method of learning — learning through doing.

Sir Alex Smith, former Chair Schools Council, Director of Manchester Polytechnic and Rolls Royce Engineering, summed this up when stating:

The activities of designing and making should be regarded as being at the fundamental stage, every bit as important as reading, writing and arithmetic, and, at the more advanced stages, as important as literature, science and history. Every child in every school, every year, should be involved in designing and making activity, on the grounds that, in its own right, it is a very valuable educational approach.

Few would disagree with this statement, which is as true today as it was in 1980.

Secondly, I am optimistic because we appear to have learnt from our mistakes of the last few years, and a more consensus approach to D&T is being developed.

Thirdly, most people working in design and technology and those supporting from government and industry want us to succeed. This also has an international dimension with many countries wanting to learn from us.

Fourthly, I have faith that teachers have the resolve and commitment to get it going, providing external sources do not distract them.

Finally, design and technology wants and needs some stability and national leaders must establish a clear consensus which will give teachers confidence in what they should be doing. If teachers are confident in what should be taught and what should be expected from a learning activity in design and technology, I have faith that they will strive to achieve that providing they have been adequately trained and have resources to do the job. I am optimistic because I see a growing confidence.

I am optimistic for other reasons also, not least the positive support that industry offers in many ways. Industry and commerce like promoting pupil competitions, but I detect them increasingly realising that the best value

for money is by supporting teachers through training and resources to enhance their teaching. This was excellently articulated by Alan George at this conference last year. If this trend continues I am confident that we can enrich training through support from industry. The development of schemes such as Neighbourhood Engineers and Young Engineers Clubs, which bring those involved in industry into the school — preferably the teaching area — can improve the understanding of each group and improve the relevance of the work undertaken by pupils.

Industry, particularly the manufacturing industry, recognises the continuing challenge of changing the culture of the society in which we live. This was one of the main planks of the Finniston Report which helped to establish the Engineering Council, with the hope it would develop the third culture in our society.

However, we still have much to do to meet Finniston's aims, or the aims of the Education for Capability movement which stated '... there exists in its own right a culture which is concerned with doing, making and organising. This culture emphasises craftsmanship and the making of useful artefacts; the design, manufacturing and marketing of goods and services'. Schools remain a major vehicle for addressing this vital cultural aspect and within the curriculum, design and technology is one of the principal means of achieving this. I am optimistic because increasingly I believe industry and the Engineering Council recognise this factor and are seeking to address it in a positive manner.

The training of future teachers and the continual professional development of teachers are crucial and DATA, with the support of the Teacher Training Agency, is currently working at this in the secondary sector and will be tackling it in the primary sector shortly. This gives me optimism for a future framework for training in design and technology.

Finally, I am optimistic because I detect a new sense of reality and purpose in D&T, with a willingness of all agencies to work together in a sense of collaboration at all levels. DATA is determined to foster this collaboration in order to help create a single unified voice that represents those involved in design and technology. DATA intends to be proactive rather than reactive in this area of work.

■ The climate is right

My optimism is based on the view that the climate is right for a positive approach to the future. The new Order provides a sound basis for setting up a good platform upon which we can build design and technology. I have been impressed by the manner in which teachers have taken a positive approach in reviewing and rewriting their schemes of work in Key Stages 1 and 2 and Key Stage 3. I am delighted to report that the DATA guidance materials have been very well received by teachers and I would like to record my thanks to the DFE for their enlightened support of that initiative. Already some eight LEAs have adopted the material for all their schools.

At Key Stage 4 in England D&T remains compulsory and here is an excellent opportunity with new GCSE syllabuses being developed. SCAA has a major challenge to ensure coherence in the subject field — certainly the last attempt was far from successful — and we cannot afford another shambles like the current National Curriculum syllabuses. I believe SCAA will not on this occasion let D&T down and the current thorough reviewing mechanism should ensure that we don't have unworkable syllabuses. It is disappointing that the examination groups and SCAA could not have got together to provide a limited number of syllabuses so that standards and rigour would have been more easily established. I live in hope that SCAA may face up to this challenge as they have in the core subjects.

The GNVQ developments at Key Stage 4 and beyond are also promising. Here it is very important that the concept of designing and making is not lost or manipulated into focused tasks which lose the holistic nature of designing and making.

The revision of the A level core is another initiative which should enhance post-16 design and technology. Thus the next two years will see the opportunity to re-establish the direction of design and technology and the opportunity is with those working in the field of design and technology, SCAA and NCVQ. I am confident we will capitalise on this.

If we can orchestrate these changes in a coherent manner we have real opportunities for optimism about the future.

■ Lessons that must be learnt

Before moving into the future I must very briefly reflect on the past to record the errors we have made, in order not to fall into the same traps as before. In 1987 in July I was ecstatic: as secretary of the advisers' association I had been canvassing Kenneth Baker to place Design and Technology in the National Curriculum and there it was in the consultation document. In fact he called it Technology, but went on to state that Information Technology was a cross-curricular activity. You will recall that primary technology was part of the Science Working Group's remit and they recommended 4 ATs, Technology in Context (10%), Designing and making (60%), Using forces and energy (10%) and Communicating Technology (20%). In April 1988 the Design and Technology working group was established. It took over the Science work in D&T and produced what were described as the most innovative proposals from any National Curriculum working group.

In November 1989 I gave the first Maurice Brown memorial lecture and although I was still working from The Parkes Report I advocated evolution rather than revolution in developing the subject. NCC, in drafting the Orders, moved the subject into a free-for-all and the contradictory Non-Statutory Guidance led to innovation on a scale never seen before in an area of the curriculum. This de-stabilised the whole subject, previous good practice went in the bin, teachers became insecure and lost confidence, criticism from all levels grew and design and technology lost a significant amount of its credibility gained through hard work in the 1980s. The approach to the subject was breadth and process, which undervalued the quality of the product, progression and continuity of learning, and left many pupils with an insecure knowledge and skill base. The Order and guidance were written in a manner that did not give a clear guidance to teachers who needed direction and the directive material produced was in many cases produced to meet philosophical views rather than suited to practical application in schools.

The damage has been costly for many teachers and more important, to many pupils, the parental support has diminished and senior managers have become less sympathetic. The lessons learnt from this experiment during the last six years are clear, and if we can use them

well we will be able to benefit over the next decade. The lessons are these:

- We must develop design and technology with clear objectives, a sound rationale and a good understanding of what we wish to achieve
- We must put pupils' experience at the centre of any plans for the future, with high quality learning experiences that are relevant and purposeful, but which also are interesting and motivating to pupils
- We must communicate what design and technology is to pupils, parents, governors, industrialists and very importantly, senior managers in schools — we must kill the playful but hurtful comments of senior managers who tease with comments like 'What is technology this week?'
- We must only innovate when a sound, well established foundation has been created
- We must frame the future curriculum in a manner which is feasible and capable of being achieved by the majority of teachers and pupils
- We must create a framework that enables teachers to be trained in a cost-effective manner, but which gives them the skills and knowledge to carry out their work
- We must give teachers the environments and resources to enable them to do the job
- Finally and most importantly, we must give teachers confidence in the work they are undertaking, and pride in getting young people to design and make high-quality products.

■ Suggestions for future development

Let me now make some suggestions and possible strategies for future developments.

We need to be clear what we are trying to achieve with design and technology in the curriculum. I will set these out simply under three headings which are all interrelated. It would be easy to be more expansive but that would be clouding the issues. The three areas I will focus on are:

- learning technological processes and developing attitudes through designing and making, integrated with
- learning to design and make and developing skills and knowledge associated with such activities
- increasing an awareness and understanding of, as well as developing an empathy for, the technological society in which we live.

We need to understand what these areas provide for young people, because it is crucial they are placed at the centre of planning for design and technology.

Learning through designing and making is a unique educational experience which involves pupils engaging in a complex, multi-faceted activity, which can stimulate and challenge pupils to interface with the made world in which they live. It develops initiative and enquiring minds and promotes flexibility, adaptability and collaboration within the context of project management.

Learning to design and make places purpose and relevance into the activity. This involves the teaching of related technological knowledge and skills and the development of capability in designing and making. Through the various activities of product analysis, which will include disassembling products, focused tasks and designing and making a range of skills are developed which help prepare young people for citizenship in the twenty-first century. The new emphasis on the creation of quality products is an essential element of the future of design and technology. The pride in pupils making something of value to them must not be underestimated, and when this can be combined with a product which can help others, then it is of even greater value.

The emphasis on increasing the awareness and understanding of the technological society in which we live is crucial. This must be addressed in both a positive mode which celebrates the achievements of our technological society as well as rightly assessing the consequences of certain technological developments. The future design and technology curriculum must address the values issues and the environmental aspects in an analytical manner.

It would be easy to spend more time on this vital aspect of the subject. However, it is vital that we communicate these points to pupils, parents, other teachers, senior managers and industrialists, as well as teachers of the subject having not only a clear understanding but a commitment to delivering D&T to the specification set out. Here I would like to congratulate those colleagues who helped to develop the DFE/DATA leaflet, which I hope you will distribute widely. The communication of clear consistent messages is a crucial aspect of the future developments in the subject and I hope that DATA can provide a forum for such work. The increased collaboration between the various projects and professional associations is having a most positive effect in this area, and I hope it will grow in the future. At the same

time we must challenge those who all too frequently wish to malign the subject or who communicate poor images about the subject or those who work in it. This needs the attention of everyone in the field of design and technology.

There is one additional, but fundamental focus that I want us all to address. It is a simple, yet frequently lost, aspect of the subject. Design and technology in schools should be fun and enjoyable — the subject has the flexibility of interpretation to enable teachers to make it motivating and challenging. My experience is that when pupils are enjoying their work they are usually learning more by simply being more involved and broadening their understanding.

Such attitudes in planning D&T will undoubtedly quickly enhance the quality of teaching and learning and the standards of achievement.

I have now briefly addressed the central focus of the subject and some attitudinal elements. I now want to move on to look at some other elements which need to be considered, if we are to enhance the quality of teaching and learning in D&T.

■ Initial teacher education and continual professional development

The issue of initial teacher education and continual professional development cannot be ignored in a subject which is still in its infancy and which is one of the most demanding to teach, with a breadth of subject knowledge coupled with the challenge of practical application, in a rapidly changing technological world.

DATA, with the support of other agencies including the TTA and industrial companies, has taken the lead in trying to establish a framework for training for secondary education which will include a minimum entitlement. This work is well under way and details are included in DATANews. DATA is also trying to address the issue of safety certification at the same time. However, we must recognise that PGCE courses do not allow much time for students to develop subject expertise, especially if there are areas of major weakness on entering the course. One of my greatest concerns is 'those who don't know what they don't know'.

In 1996 DATA intends to address the same minimum entitlement issue in primary education.

Many may ask why DATA is devoting so much energy to this aspect of its work. I believe it is crucial to establish the minimum entitlement upon which we can build for the future a structure of continual professional development. As training costs continue to grow, there is a clear need for a structure into which teachers can plan coherently their future training over a number of years. The minimum entitlements could serve as a baseline from which we can build other stages of training.

The training needs in D&T are very significant and must be addressed centrally if the quality of teaching and learning is to be improved. I see little point OFSTED reporting poor standards in D&T and then the government doing nothing to rectify the situation. I do not believe individual schools or many LEAs are in a position to do much without earmarked central funding. In DATA's own recent research published this week, the demand for training was very significant, but obtaining priority in school budgets is very difficult in many schools.

In DATA's own survey, the demand in the secondary sector was for new technology training, IT and its applications as well as issues such as departmental management. However, in primary the emphasis was on practical skills development. In many primary schools non-specialist staff often lack confidence to get started. Despite the designated courses in primary there is a clear need for a national initiative to get primary design and technology up and running and to develop research, resources and some high quality national training. The research should include the specialist teacher role and the design of primary classrooms.

■ Resourcing design and technology

Another major initiative for the future is the issue of whether there are sufficient resources in order to allow pupils to design and make products. In DATA's recent survey we discovered that the level of funding had fallen in both sectors since 1992/3. In primary the figure has fallen from £1.80 per pupil in 1992/3 to £1.44 in 1994/5. This may be a result of schools not investing because of changes in the Order and pressure to support the core

subjects, as well as tighter school budgets. In secondary the capitation was down from £5.19 per pupil in 1992/3 to £4.91 in 1994/5. This may appear insignificant, but in 1994/5 Key Stage 4 was compulsory which on average has increased the number of students studying the subject by 15% across Key Stages 3 and 4. These levels of capitation are clearly inadequate if pupils are to be resourced with appropriate materials to design and make quality products.

DATA has boldly set out the figure it recommends from its own research. In primary the figure of £3.40 and in secondary a figure of £9.30 appear to be adequate. However, DATA would like to see more research into funding of D&T and some guidance for headteachers on suitable formulae.

The resourcing of capital equipment for D&T is another issue and clearly some of the modern equipment required is beyond the scope of many secondary schools. If we are to develop pupils' understanding of modern technology through learning by doing, clearly schools require the resources. I believe we need a national match funding scheme to address this challenge. I believe government could establish such a scheme in conjunction with industry.

Clearly the teaching environment is an important element if design and technology is to develop in a positive manner and the cultural dimension is to be adequately addressed. The D&T environment needs most of all to reflect the nature of the subject. It needs to be clean, well organised, with tools easily available, pupils' work celebrated in the area and products available which stimulate young people to ask 'How is this made? How does this work? How could we improve this?'

■ Time to deliver design and technology

DATA believes that quality D&T cannot be delivered without adequate time and engagement in sufficient design and technological activities. In primary schools, DATA believes it is essential that each term a child undertakes some design and technological activity. These will vary in length. In Key Stage 3 we believe 10% curriculum time is required if quality designing and making across a range of materials is to be provided. The reports of departments being asked to deliver it in 2.5% of curriculum time

is totally acceptable as an aspect of the statutory curriculum. However, a question remains: what can staff do when confronted with such inadequate allocation? Perhaps there should be an appeals system for staff.

■ Examinations — 1996 onwards

In looking at the climate I referred to examinations, but they remain a major issue for the future which we must address.

Much work is currently taking place evaluating new GCSE syllabuses for 1996. Clearly the syllabuses currently in use leave in some cases room for improvement and some of the combined syllabuses have made significant challenges to pupils, their parents and to some staff. I had hoped that SCAA would limit the number of syllabuses, since the plethora submitted cannot be a sensible way forward, especially as SCAA has limited the core subject syllabuses to two per board; in D&T there are two additional boards. I also remain concerned about the viability of short courses in D&T; these will require thorough evaluation, in terms of the demand on pupils and staff and whether D&T capability can be achieved which provides real progression from Key Stage 3. In 1996 I hope OFSTED will ensure that all schools meet their statutory requirements in D&T.

The new A/AS core provides an opportunity to rethink provision at this level and hopefully will lead to a clearer message about D&T and this may be helpful in improving the levels of acceptability of the subject in Higher Education.

The development of GNVQ in manufacturing and engineering is very slow compared with other areas of the curriculum. It is important that these two GNVQs are well resourced if they are introduced and that the differences as well as the commonality are clearly explained to teachers and then parents, students and industrialists. These will be demanding courses to deliver in a normal school environment, but to have value they must be rigorous.

■ National Forum

In design and technology there remains confusion about the subject and clearly, as a highly expensive subject, there is a need for the purpose and rationale for the subject to be understood by the widest audience possible. DATA believes that this can be best developed

by establishing a National Forum, and during the next six months we will endeavour to establish this as a means of support the subject; we will of course be interested in your views on such an initiative.

One of the key issues that has emerged during the last twelve months is the need to improve the understanding of senior managers in school. With LMS and GMS the senior managers are the people who establish class sizes, capitation allowances and time allocations in secondary schools. The forum may be one way of addressing this group but there remain many other ways and again DATA is interested in your views.

These points are challenges which we will not fully solve, but I still feel positive because identification of the issues is crucial to setting up the strategies for the future.

■ Conclusions

I am very optimistic about the future because I see a great opportunity which we must grasp. We remain the international leaders in design and technology and although we may have led some countries astray I believe we have learnt a great deal from the experiences of the last few years. I am immensely impressed by the common sense approaches that many schools have adopted over the last few years to improve what is being offered and I believe this is very important.

I believe that to capitalise on the opportunities:

- we need clear, simple to state (not necessarily simple to achieve) objectives
- we need to be goal directed, placing effort and resources into core activities rather than peripheral activities
- we all need to work as a team towards those common goals
- we need a national plan which involves all schools, primary, special and secondary, in raising standards in design and technology, rather than focusing resources in a minority of schools
- we must invest in more training and research if we are to achieve the objectives. We must learn from the mistakes of the past.

Finally, the future is very bright, if we can generate the enthusiasm, passion, commitment and spirit to take design and technology forward in a manner which will motivate pupils and allow D&T to achieve its full potential.