National Curriculum Review in Design and Technology for the Year 2000

Abstract
To those of us involved in design and technology reviewing the National Curriculum appears to be such a regular event that there is real danger that teachers will become disinterested and therefore not participate in the review process. In the past teachers have not had time to reflect on and discuss the curriculum before the review takes place. It is for this reason that in November 1997 DATA produced a consultation document on the National Curriculum Review as it relates to design and technology. This paper will place that document in context, summarise the responses and consider the likely outcome for the new National Curriculum in the Year 2000.

Andrew M Breckon

Chief Executive, DATA

RESEARCH

Introduction

In July 1987 Kenneth Baker, the then Secretary of State for Education, announced that there was to be a National Curriculum and one of the ten subjects named, but not defined, was 'Technology'. In April 1988 a Design and Technology Working Group was established, already indicating a degree of confusion over what the subject would be called. In the 10 years since that group started work there have been many versions of the curriculum for the subject, which have been confusing to those responsible for teaching it. In retrospect, this instability was part of the subject's attempt to identify a feasible path between ideal educational principles and practical teaching of the subject. The 1995 Order for Design and Technology brought better clarity to the subject by defining the fields of knowledge and understanding and the principal activities through which teachers should teach their pupils. The slimmed down refocused National Curriculum provided by Sir Ron Dearing was welcomed by most of the design and technology profession. Dearing also gave one assurance that was accepted by all teachers, and this was that there would be a five year moratorium on changes to the curriculum – the next review would not come until the year 2000.

Instigating the Review of the National Curriculum

When the Qualifications and Curriculum Authority (QCA) was established in 1997 one of its major tasks was the review of the National Curriculum. It started this in October 1997 by looking at the whole curriculum through a questionnaire to schools. DATA was keen to be proactive in this and wanted to provide evidence to QCA and the government which was based on genuine consultation. It therefore launched 'DATA's initial thoughts on the National Curriculum Review' at the Design and Technology Education Exhibition at the NEC in November. Six thousand copies were mailed to DATA members and a wide range of other bodies. By the end of the consultation period in February 1998, more than 300 responses had been received from professional institutions, schools, teachers, lecturers, trainee teachers and a range of individuals, and responses are continuing to come in.

'DATA's initial thoughts on the National Curriculum Review' briefly reviews the whole curriculum and the role of design and technology. It shows great improvement in the subject's current performance and positive attitudes to the subject. The paper also looks at international trends. DATA then develops its model for the subject and sets out some principles and suggestions for change.

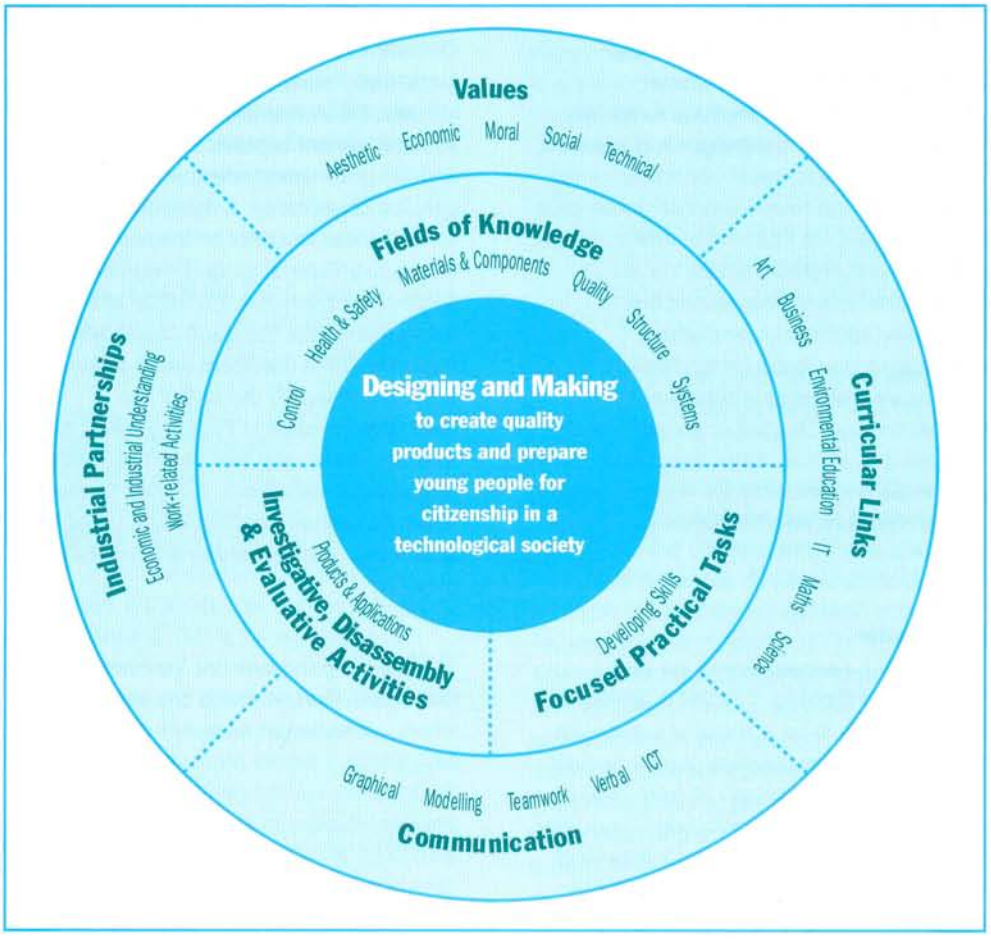
As the consultation process by QCA and DATA was underway, the Secretary of State made the announcement in January 1998 of suspension of part of the statutory requirements for primary schools from September 1998. This included design and technology and five other foundation subjects.

The analysis below will take account of the new and changing context, and the views from evaluation of the responses to the DATA consultation document.

Analysis of responses

All respondents welcomed the consultation document and most were highly supportive. The significant challenges came where specific changes had been proposed in the document. Most respondents wanted further statistical support for the subject in terms of Ofsted findings, attendance statistics, and examination performance.

DATA's model for design and technology



DATA believes the subject requires a clear coherent model and one was included in the document. This was well received. Respondents agreed with DATA that designing and making quality products should be placed at the centre of design and technology, and the emphasis on quality products was seen as a move in the right direction. This was broadened to stress preparing young people for citizenship in a technological society. As some respondents suggested, this does challenge the basic interpretation of the term 'making'. DATA believes that the emphasis on making by hand-crafted methods should not be totally dominant; design and technology in the next decade must balance hand-crafted skills with the use of appropriate new processes and equipment which can liberate the process of manufacturing components and also raise the quality of the outcomes.

There was a high level of consensus on the supportive role of focused practical tasks (FPTs) and investigative, disassembly and evaluative activities (IDEAs) and how these combined with knowledge and understanding to support the core designing and making activity. A number of respondents wanted the model to clearly identify the materials to be studied. This raises the question of the level of specificity required within a model, and the problem of defining a model which covers all age ranges.

The DATA model went on to emphasise values, including aesthetic, economic, moral, social and technical aspects related to designing and making and products analysis. This focus, together with the emphasis on communications skills and team work, was praised in the consultation, and good cases were made for even greater emphasis on values and the development of key skills such as written and graphical communication and encouraging and rewarding pupils for working in teams. DATA sees the development of the IDEAs and products and applications as a key part of preparation for living and working in a technological society.

In the DATA model there was also emphasis on cross curricular links and developing industrial partnerships to enhance teaching and learning. In the primary sector, cross-curricular links were emphasised, especially with literacy, numeracy, science, art and ICT. In secondary this was considered less important and there was only limited enthusiasm for high emphasis on industrial partnerships in secondary as part of the National Curriculum. Several commented on lack of time for developing this work in schools and the rigid, unsupportive approach of examination boards to such work.

Principles for change

DATA established a number of principles which were intended to be used when making proposals for modifications to the Order. Feedback on these is given below:

- There was almost total support for DATA's belief that design and technology should continue to be compulsory through all four key stages, and that in Wales it should be made compulsory again. It was noted that there has been an incredible reduction in students taking a Design and Technology GCSE or equivalent subject at Key Stage 4 in Wales to only about one third of the school population, and they may be skewed to the less able. This surely cannot be the best approach as the pace of our technological society develops. However, DATA accepts the limited disapplication of two subjects from among science, modern foreign languages and design and technology for disaffected young people in Key Stage 4, where quality work related curriculum is offered such students.

- The general direction in which the subject was focused in 1995 by the Dearing Review was sound and has been accepted by teachers and industrialists as a workable model, and their confidence is now growing significantly. There was almost universal support for the Dearing framework for the subject with DATA's increased emphasis on developing creativity and innovation, designing and making quality products, and increasing the emphasis on values and communication skills including teamwork. Many teachers and lecturers commented on the growing confidence within the subject as training competences have been developed, coherent messages are being given to parents – helped by the DfEE leaflet – and resource development has now taken place, especially within the secondary sector with Nuffield, RCA and TEP, in a manner which supports the agreed framework.

A number of respondents insisted that DATA should oppose major changes which were not based on a sound research basis. Comments included:

"In a target-setting, highly accountable structure, teachers in design and technology can not be guinea-pigs any longer."

"Design and Technology must continue to move forward, with incremental change based on the Dearing model. DATA's approach is sound and the appropriate strategy."

"I envy your success and the consensus in your country; you have greater potential than any country that I know. Don't change for change's sake."

- DATA's third principle was to reduce the workload in primary education and support the government's initiatives in literacy and numeracy through design and technology. This has to some degree been superseded by the government's actions in January 1998. Many respondents were most annoyed by the government's action and felt betrayed by the Secretary of State.

DATA suggested that FPTs could be removed at Key Stage 1, but this suggestion was universally rejected by those replying. Most felt there was no need to significantly change what was on offer in primary schools. Four common suggestions emerged:

- the minimum entitlement for all pupils must be at least one complete design and technological activity each term

- the three key activities, DMAs, FPTs and IDEAs must continue to reflect a holistic design and technological activity

- the breadth of materials, knowledge and understanding must be maintained, with ICT better reflected

- the general advice offered in Key Stage 2 to teach most areas of the programmes study in both the lower half and upper half of the key stage is wasteful and the programmes of study should be focused into these areas.

- One of the most controversial elements of the 1995 Order was to have food compulsory in Key Stages 1 and 2, but optional at Key Stage 3. DATA believes food is a basic human requirement and food technology is an important aspect of manufacturing industry in this country. Food technology meets the statutory requirements for design and technology, and is probably the best part of the current curriculum to deliver vital information to pupils about nutrition. While food remains optional nothing specifically related to food can be included in the programme of study at Key Stage 3. There is also a need to develop biotechnology, an area which many countries in the developed world are starting to address.

  There was a mixed response to DATA's suggestion that food technology became compulsory at Key Stage 3. There were slightly more supporters than detractors, but there was some strong representation that the position should continue as is. Some respondents based their case on a lack of facilities, others on a lack of belief in food technology as a design and technological experience, and still others pointed to senior management being very unsupportive of food as a material experience. Clearly much debate is still required in this area.

- DATA proposed that at Key Stage 4 there should remain a flexible approach with the programmes of study remaining compulsory for all. The support for the broad range of technological courses that are offered, including both long and short GCSE courses, and GNVQ Part 1's in Engineering and Manufacturing, was endorsed by most who responded. The formal recognition of the Part 1's as meeting the Key Stage 4 Programmes of Study in design and technology would be welcomed by those teaching these courses, however the loss of interest in Part 1 GNVQ Manufacturing was noted by a number of those who responded. A few felt that GCSE short courses should not be advocated as the work load on students and teachers is unrealistic. However, others had been surprised by the quality of students' work on short courses, and they felt their schools could not deliver compulsory full course design and technology at Key Stage 4.

  DATA's suggestion for promoting team work at Key Stage 4 was welcomed by most who responded. However most teachers stated that they would need positive encouragement and support by GCSE examination boards before they would risk such work.

- DATA proposed increased emphasis on ICT throughout all the programmes of study. This should include opportunities to design using the computer and Internet in primary education. In Key Stages 3 and 4 ICT generated design work should be linked to manufacturing, either school-based or remotely through on-line services. This was warmly welcomed, however in secondary the resource implications were mentioned in almost all cases. A number of Technology Colleges pointed out that they could not deliver such expectations at present and therefore it might be too ambitious. DATA currently believes that at the start of the next century we must move to use modern methods of designing and making, if the subject is not to become irrelevant. As a number of respondents stated the use of ICT for designing and making would be only part of the course.

- DATA also proposed that the Key Stage 3 and 4 programmes of study must place greater emphasis on electronics and control systems. This was challenged by a number of respondents who felt there was neither the equipment or the trained teachers to carry this out. In one case DATA was challenged that a clear rationale for emphasis on this specialist area had not been identified or justified. DATA accepts this but would argue that electronics and control systems are fundamental technologies for the early part of the next century and as yet we do not envisage the demise of these technologies.

- The final principle was one of continuing to promote innovation in design and technology, and DATA believes that such innovation is not feasible without support from within the Order. The current Order uses optional areas of study as a means of supporting innovation and we believe the new Order could be used in a similar manner to encourage new developments in areas such as new materials, smart card technology and biotechnology. This proposal for innovation was welcomed and a number of respondents drew attention to the new products being developed by TEP and the educational resource supply industry.

Conclusion

DATA feels much better equipped to represent the profession in debates over the curriculum changes following this major consultation. The very detailed and high quality responses, especially by student teachers, were most helpful in formulating the views set out in this paper. Overall the profession wants to see the Dearing model remaining central to the subject with the maintenance of the subject in all four key stages. There is a clear recognition that the subject must move forward, but only with the development of appropriate resources and training, and based on sound development with a qualitative research base. It will remain vital that everyone interested in the subject continues to contribute to this debate.

References

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DFE (1995) *Design and Technology in the National Curriculum* London: HMSO