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Making it fit: a report of a survey into the structure of technology departments in secondary schools in the north-east of England

Jane Scarff and George Shield
University of Sunderland

Abstract
This paper looks at the changes implicit in the inclusion of Technology as a new subject in the National Curriculum. It uses data from a survey of secondary schools in north-east England to discuss how pre-existing methods of curriculum organisation and interpersonal relationships have affected the implementation of the new curriculum and the extent to which these variables impinge on the shape of the Technology curriculum at key stage 3 and 4 (11-16 year olds) in individual schools.

Introduction
The data in this paper come from a survey into the structure of Technology departments in secondary schools in the north-east of England conducted in the Spring term of 1995, together with interviews with the teachers in charge of Technology in two schools in one north-east city. This survey forms the basis of a wider study into teachers' perceptions of National Curriculum Technology at key stage 3 and 4, and a search for a growing 'Technology' subculture. In particular, the research focused on the extent to which the delivery of the new curriculum in schools matched both the letter and the spirit of the 1990 Statutory Orders for Technology (and by implication the proposals for future changes to the technology curriculum). Have schools adapted to the new curriculum or has the curriculum been tailored to the existing subjects that went to make up the new curriculum area (that is, CDT; Home Economics (Food and textiles); Business Studies; Art & Design and Information Technology)?

The questionnaire was used to collect very basic information about the pupil intake, curriculum organisation, range of subjects covered and exam opportunities within the Technology curriculum in individual schools. One hundred and nine questionnaires were sent out and 77 schools responded by returning the completed questionnaires. Most of the schools were divided between the age-ranges of 11-16 and 11-18, although in Local Education Authorities with middle schools, some secondary schools' age-range was from 13-18.

Background
The Technology curriculum has been in place in secondary schools since September 1990. In that time, it has gone through the consultation process leading to the production of three draft proposals culminating in the curriculum that will be put into secondary schools in September 1995 for key stage 3, and in 1996 for key stage 4. This was the result of continuing criticism of the curriculum voiced by teachers, Inspectors and other interested bodies1-2. This dissatisfaction centred on the open nature of the curriculum document, with its emphasis on cross-curricular, student-centred, process-led learning and on the perceived drop in standards of skills-acquisition and outcome3.

Corbett and Rossman4 argue that studies of planned curriculum innovation have in the past focused singly on technical, political, or cultural areas without taking into account the interaction between each of the areas. Technical refers to the planning and implementation of change, focusing on the success or failure of resources and technical help; political refers to the interplay of interests among participants in the process, focusing on the changing balance of power and status; cultural refers to deeply held
systems of values and beliefs, focusing on how participants perceive change will affect these values. They show that while all these influences come to bear on the process of curricular change, to what degree each variable applies depends on the individual's place and role in the change process.

Research has shown the extent to which the subject taught affects the whole spectrum of roles and relationships a teacher takes part in\textsuperscript{5,6,7}.

Curriculum organisation

Many organisational structures were set up pre-National Curriculum, while others designed with the National Curriculum in mind, have had to attempt to keep pace with the constant flow of change since its inception. In the past, individual Heads of Department (HoDs) have had to fight hard for staff, resources and power for their domains. Evidence suggests that this continues to happen within the new Technology areas, making it even more difficult to deliver the new curriculum confidently as a team, unless one teacher takes responsibility for coordinating the curriculum's delivery. When asked to provide a job title, 27 respondents said they were the Technology Co-ordinator. It must be borne in mind, however, that the questionnaire asked for the job title of the 'teacher with overall responsibility for technology'. It may be the case that teachers from other subjects (e.g. Science or Mathematics) may hold this post in some schools where technology is part of a multi-subject faculty.

The survey collected data on what units of management the schools used to organise the curriculum. Over half of the schools responding were based on departments, while around one-third used a faculty system. Of the remaining, eleven schools used a combined faculty/department structure to organise Technology while one used 'curriculum areas' as the basis for organisation.

For example, the curriculum structure at South School\textsuperscript{b} is divided into faculties and departments. Technology is part of a faculty comprising Technology and Humanities. The teacher in charge of Technology is a Home Economics specialist who holds no departmental responsibility. As the Co-ordinator of Technology she is responsible for taking all curriculum decisions which she then passes on to the Heads of Department who pass information on to individual teachers in the five departments. At North School\textsuperscript{b} the curriculum is organised through a faculty system and the teacher in charge is the Head of Technology, a CDT specialist who was Head of the CDT area pre-national curriculum.

Subjects covered as part of National Curriculum Technology

Respondents were asked to indicate which areas of the NC Technology curriculum they taught within their school departments, as well as giving the staffing levels for each area. In particular, the researchers were interested in two questions:

1. How many of the six subject or materials areas that make up NC Technology are actually being taught in schools as part of that curriculum?
2. Are teachers delivering more than one specialism within the curriculum?

Analysis shows that a wide variation in what constitutes NC Technology exists. One school delivered Technology through Resistant Materials and 'other' - Electronics and Control. At the other end of the spectrum, twelve schools delivered the Technology curriculum through all six areas. In 95% of responding schools, Resistant Materials and Food Technology provided the basis of NC provision with a variety of other subjects from the range of Textiles, Business Studies and IT. Subjects mentioned in the 'Other' category included Electronics, Control, Pneumatics, Graphics, Photography, Ceramics and Music! What are the explanations for the wide differences in curriculum content across schools? In large part, they may reflect long-standing alliances and divisions within and across traditional subjects.

A comparison between the subjects taught at South and North schools illustrates the scale of difference between individual schools. At South school, Technology is delivered across
all areas mentioned in the Statutory document\(^3\) (i.e. CDT, Art & Design, Home Economics, Business Studies and Information Technology) across the five attainment targets. This was due to the Headteacher’s decision to apply the new curriculum “according to the letter of the law”. The Headteacher is said to be very sympathetic to the aims of the new curriculum and to the Technology staff, with a very broad definition of what ‘technology’ comprises - “he works on the principle that Technology is any GCSE with a D&T prefix”. In contrast, at North school Technology consists of CDT and Home Economics using two attainment targets. That National Curriculum Technology is delivered through only these two subjects within the school appears to be the result of pre-NC curriculum organisation and responsibility.

Several respondents commented that Art & Design, Business Studies and IT would soon no longer be part of NC Technology. Art is a constituent subject of Technology at South school, for example. However this causes some friction as the Art department feels it is unable to deliver its own Art & Design curriculum properly. Post-Dearing, Art will no longer be part of Technology at this school. Whether these respondents have already dropped these aspects of the curriculum or are planning to do so in the near future is not clear. What is clear, though, is that many schools are using spare timetable space and accommodation to offer a range of GNVQs. This will be discussed further below.

Subjects taught by individual teachers

The questionnaire provided space for respondents to give details about the number of teachers working in each materials area and the total number of staff in the Technology area. This data will prove useful in highlighting where teachers are teaching in more than one area of the curriculum. Further research will need to be done to ascertain the particular reasons for this in individual schools. However the data collected in this survey suggests that two particular combinations that are covered by teachers are Food Technology/Textiles and IT/Business Studies. Where IT is part of the Technology curriculum, it is often taught by many or all of the Technology teachers in a school.

At South School teachers from Art and Food teach Textiles at different Key Stages and Business Studies is taught by one of the IT staff, whereas, at North School, teaching is very much along subject specialisms. There is one exception, however. The Head of Technology spoke very highly of one member of staff, whom he described as a “Super Technology Teacher”. This was a (female) Home Economics teacher who was both qualified and happy to teach Food, Textiles and CDT-based areas of the curriculum. The debate about whether the ‘ideal’ NC Technology teacher should be a specialist or a generalist is one that should be borne in mind. It may be the case that the constraints of resources and staff numbers necessary to deliver Technology to all pupils at all Key Stages forces specialists into delivering parts of the curriculum they are not fully trained to teach.

Examination courses offered within Technology areas

Respondents were asked about the examination courses offered to pupils in the Technology area. All schools in the sample offered GCSEs. At the time of the survey Technology was still compulsory as either a full GCSE or a combination of full and short courses. This year’s, 1995, Year 11 pupils will be the only students to sit the GCSEs envisaged in the original Statutory Orders. Technology is in limbo at key stage 4 until the new Statutory Orders come into force in Summer 1996.

The Headteacher at South School has decided to carry on delivering Technology as a full course to pupils at key stage 4 during the period of limbo before the introduction of the post-Dearing curriculum, so that teachers and pupils have continuity. At the time I spoke to the Technology Co-ordinator, the school had not yet decided how the new curriculum would be put in place in September 1995 for key stage 3 and September 1996 for key stage 4. In comparison, things are very different at key stage 4 at North School. The school appears to have an ethos strongly based on excellence, both academic and otherwise. Before the introduction of the National Curriculum, the CDT and Home Economics teachers were proud of the examination
results their pupils gained. The Head of Technology feels that after the introduction of the Technology curriculum, the quality of work has gone down, despite the best efforts of the staff, pupils and parents. The Headteacher has decided to suspend the curriculum at key stage 4 until the new Orders come on line. This means that the pupils who will sit their GCSEs in June 1995 will be the only cohort to have completed the original Technology curriculum. While the Headteacher feels this will give the Technology faculty a rest after a difficult time spent coping with all the changes in the curriculum over the past few years, the Head of Technology sees this as inevitably leading to a questioning of his worth, and that of his staff, when the results are posted.

Introduction of GNVQs
The greatest surprise was the number of schools offering examination courses leading to GNVQs in the Technology area. Of the 77 schools responding, 29 offer GNVQ at KS 4 and/or at 16+. Five of the schools that do not offer GNVQs at present, intend to offer them in the 1995/6 academic year.

A wide range of GNVQs is being studied under the auspices of Technology departments in schools in the area. This is evident from the comments made by those respondents who gave additional information about the subjects they were teaching. The following GNVQs were mentioned: Art & Design; Construction & Built Environment; Manufacture; Health Studies and Caring; Engineering and Business Studies. One school offered two GNVQs in its Technology area. Anecdotal evidence suggests that there is a wide range of feeling about the introduction of GNVQs. Some teachers think it is an excellent opportunity, while others, in the words of one head of Department, “wouldn’t touch them with a barge pole”.

While South School currently offers an NVQ course and is looking at offering GNVQs in the future in Technology, boasting as it does, excellent relations with several local businesses, there are no intentions of offering vocational qualifications at North School. The Technology staff at North School support a long-running and successful club for young engineers and prefer to keep its links with local businesses alive through this avenue.

In the context of the research the principal researcher is interested in whether teachers in Technology view GNVQs as an opportunity to use pedagogical skills and knowledge the National Curriculum no longer provides.

Conclusions
The survey has proved very useful in providing a basic picture of the structure of school Technology in the north-east - NC Technology in the classroom as opposed to the ideal model envisaged in curriculum documents.

The two schools discussed above help to illustrate the extent to which schools take one document and come up with many methods of delivering a ‘National’ curriculum. If the Statutory Orders for Technology comprise the technical element of Corbett and Rossman’s (op. cit.) equation for curriculum implementation, then it appears that the political and cultural elements are equally, if not more, important. The research will continue by gathering interview data from teachers in charge of Technology in a number of schools in order to study the extent to which the prior political and cultural organisation within schools affects the implementation of new curricula.

References


\[\text{\textsuperscript{a}}\text{ Taken from informal discussions with the teachers in charge of Technology at the schools, 2.3.95.}\]

\[\text{\textsuperscript{b}}\text{ The names of both schools are pseudonyms}\]