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Design and Technology preparation and provision - a pilot survey

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Abstract

The paper describes some findings of the preparations made for design and technology and work during the Autumn term of 1990 in a random sample of 28 primary and 27 secondary schools in England and Wales. A preliminary account of part of this survey was presented as DATER 90.

The survey reveals:

- * *wide variations in the amount of time spent in preparation by schools*
 - * *a significant minority of primary schools who reported no joint preparation or planning*
 - * *wide variations in the amount of time devoted to design and technology in both primary and secondary schools*
 - * *very few primary schools making use of food within design and technology*
 - * *an overwhelming preponderance of CDT specialist appointed as design and technology coordinators in secondary schools with very few home economists*
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INTRODUCTION

This paper presents the results of a pilot survey into the provision of design and technology in some maintained schools in England and Wales. The survey aimed to establish:

- 1 the preparation that the primary and secondary schools had made for design and technology
- 2 the kind of work that had been undertaken
- 3 the extent to which the activities undertaken meet the requirements of the national curriculum.

An attempt was made to assess the quality of provision and to analyse the findings to see if any particular aspects of preparation eg the amount of inservice, correlated with this. With the small sample surveyed, meaningful analysis of this kind proved impossible.

Methodology

The method used was telephone interviews. Interviews have the major advantages of a high response rate and the ability to explore both quantitative

and qualitative issues¹. Telephone interviews were used to reduce the time and cost for a national survey.

A total of 29 primary and 29 secondary schools was selected from the total of all maintained schools. The schools were selected by systematic sampling from published 2,³ lists of primary and secondary schools. The total length of the published lists of schools was divided by 29 and schools at this interval were selected. This method is superior to random sampling in producing a sample which is more representative of the general population¹. One primary and two secondary schools refused to participate in the survey. In consequence of the high response rate, the results are considered to give a broadly representative picture of schools in England and Wales.

The interviews were conducted by Stephanie Oates, Chris Ford, Wendy Wren, Martin Coleman and John Martin.

Some of the questions (associated with school size, type, staffing and timetabling) were directed to the headteachers. In the case of the primary survey, questions on implementation were directed to the class teacher for Y1 or Y3. The interviewer (not the school) made the decision on which year teacher to interview (alternating within the sample). In the case of secondary schools, questions on implementation were directed to the coordinator for technology (all schools in the sample had appointed a coordinator) and focussed on Y7.

Preparations made by schools

We asked all schools for details of the use they had made of: centre-based inservice training, school-based inservice, staff meetings and advice from visiting support staff. In order to gain an overview of general preparation all methods of preparation were aggregated to describe the total number of 'person days' preparation per member of staff involved.

We found very wide variations. The amount of preparation time was much lower in primary but this is only to be expected because primary teachers were also faced with implementing national curriculum requirements for mathematics, science and English during the same period. However, the discrepancy is very large. The median time per member of staff reported for joint planning and preparation amounts to about one hour in primary schools surveyed, compared with two days in the secondary schools – a difference of a factor of ten. Six primary schools (21% of the total) reported no inservice, no discussion of design and technology in any staff meetings and no advisory teacher support. It is clear that design and technology represents a low priority for a significant number of primary schools.

Staffing

In the case of secondary schools we sought to determine the number of members of staff from the areas suggested as contributing to design and

technology⁴ who were: available; involved in planning the provision of design and technology and involved in providing design and technology to Y7 pupils.

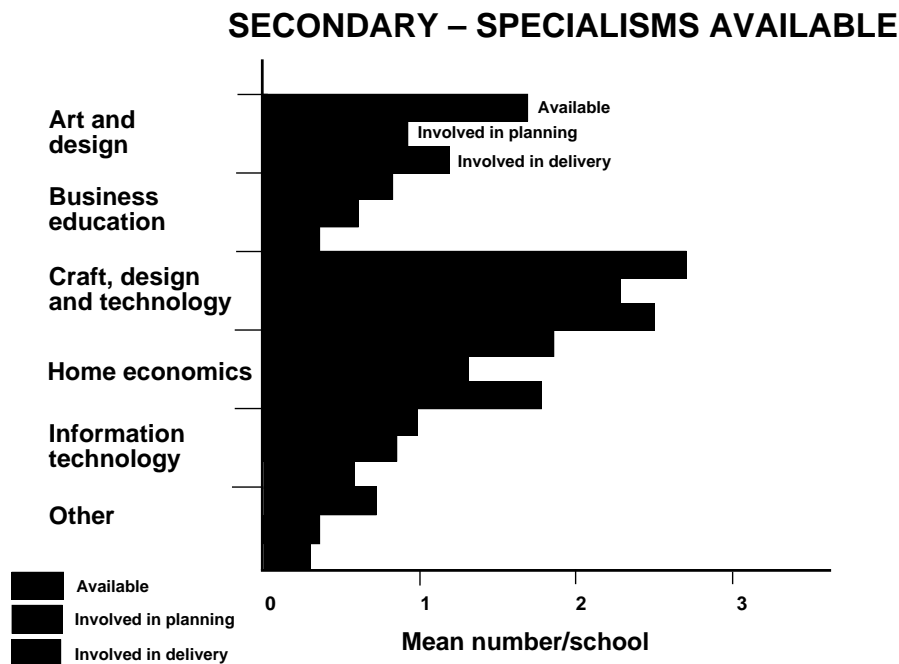


Fig 1

Figure 1 shows the average reported staffing in these categories in secondary schools surveyed. Of course, the actual numbers of staff available in a given school varied with the size of the school. In some smaller schools no staff were available in some areas: eg six of the schools (22% of the total) had no business education staff available. The largest available group reported was CDT teachers (an average of 2.8 teachers per school), followed by home economics (1.9), art and design (1.8), IT (1.0), business education (0.9) and ‘others’ (0.7).

These figures are rather lower than the numbers that might be inferred from the latest DES secondary school staffing survey⁵ which would suggest numbers of: CDT (4.0), home economics (4.2), art and design (4.2), IT (1.1) and business education (2.8). However the DES survey was confined to England and surveyed qualifications rather than subjects taught. Furthermore difficulty arises with classifications like ‘craft’ (which has been aggregated with CDT). Having said this we suspect some under-reporting of some specialism.

Nearly all CDT and home economics staff reported as being available were involved in design and technology with Y7. Only 70% of art and design teachers were involved (no doubt reflecting the continuing uncertainty about the role of art until the national curriculum orders are finalised).

In the case of business education and IT the smaller numbers involved probably reflect the predominant involvement of these staff with GCSE courses.

We asked about the specialist background of the design and technology coordinator.

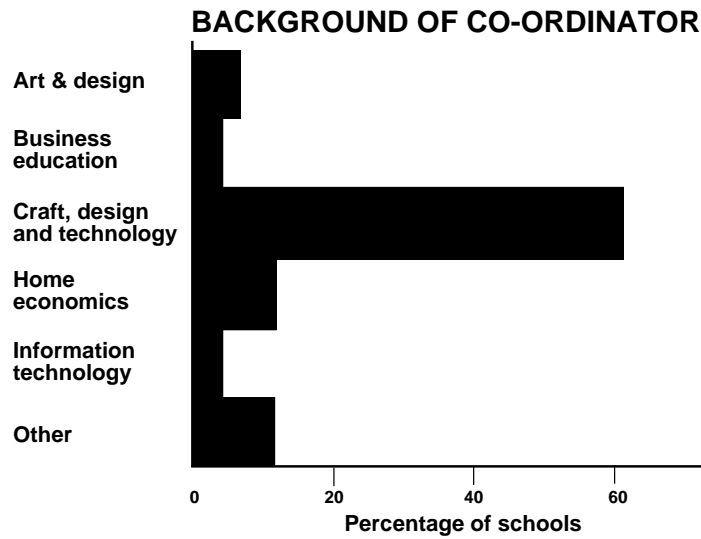
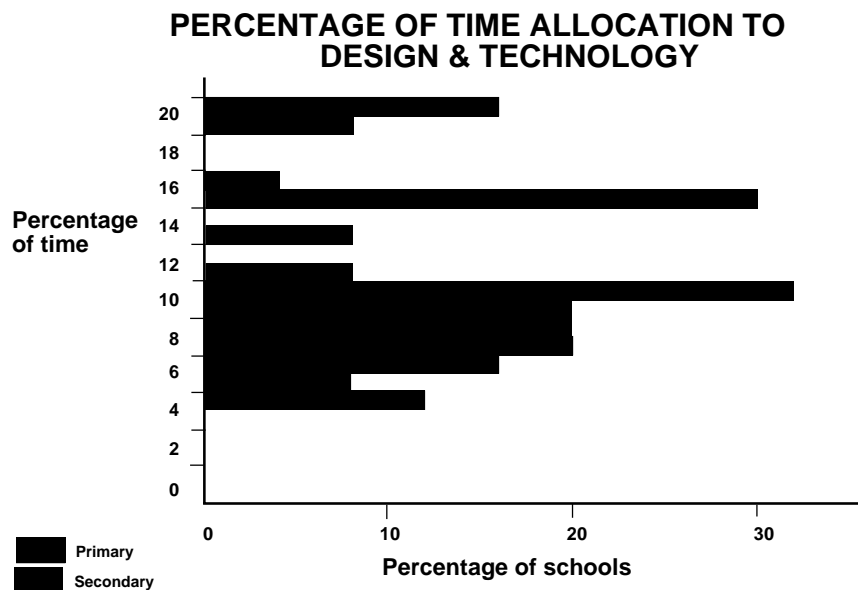


Fig2

A massive 62% of schools had appointed a coordinator with a CDT background. All other subject specialisations were at or below 11%. This enormous disparity is certainly one of the most significant (and, in the authors' judgment, alarming) findings of this survey.

The relatively low representation (11%) of home economics specialists as coordinators is particularly noteworthy. It is very unlikely that the low representation of home economics teachers as coordinators can be accounted for by an aberration of the schools sampled. With the number of schools surveyed there is a 99% probability that less than 27% of schools in England and Wales have appointed a home economist as design and technology coordinator. It would appear that senior school management consider (see figure 1) that home economics specialists are an essential part of the 'delivery' team but are reluctant to appoint home economics specialists as coordinators.



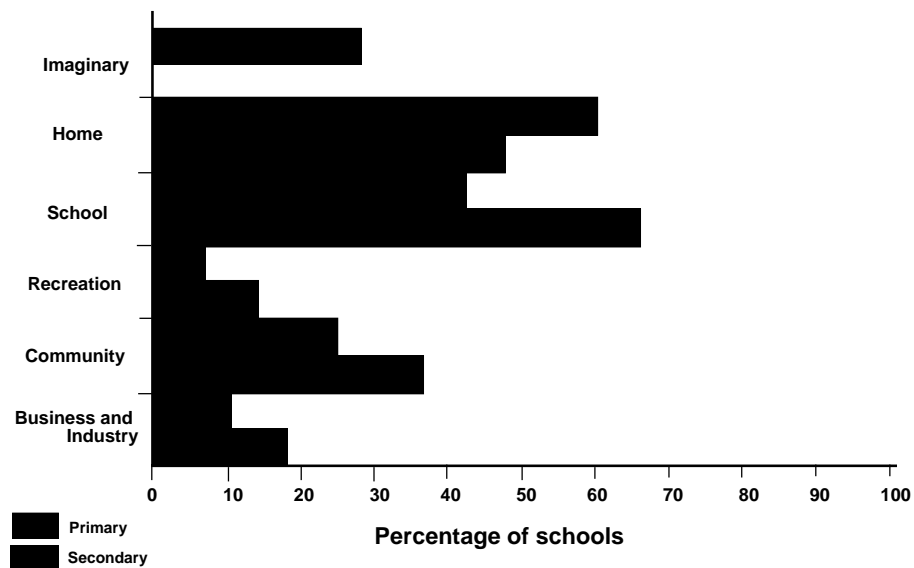
Whatever the reasons, a gender biased and subject specialist stereotyped management has been established which is likely to distort secondary technology education for years to come.

Time

We found wide variations in time allocation at both a primary and secondary level.

Many primary teachers found it difficult to estimate time allocation because the time devoted to design and technology in topic work varied from week to week. One all girls' secondary school had no time-tabled allocation for design and technology but used some science and some geography time.

Fig 4
CONTEXTS



Pupil Work

We sought to establish the 'contexts' in which pupils were working.

Not surprisingly, the familiar contexts of home and school were widespread. There is some indication that less familiar contexts were more widespread in secondary work, which corresponds to the national curriculum guidance⁶. But an interesting issue arises, in the authors' judgment. Much of the more interesting work was almost impossible to 'pigeon hole' in the way that the neat 'contexts' of the orders invites. What is the 'context' of work by a primary school who were investigating an archeological dig in their neighbourhood and re-creating the tools, clothing, dwellings, boats and food of their Saxon forebears to meet the needs of that society?

Of course, the concept of 'context' is useful. Design and technology necessarily involves working in a situation which presents needs and opportunities. And the range of contexts selected should ensure variety. But, in the authors' judgment, 'contexts' are more useful to check for breadth and balance than as starting points for teacher planning (which is how they are often being used).

Materials

We asked the teachers about the activities involved and the materials pupils had used.

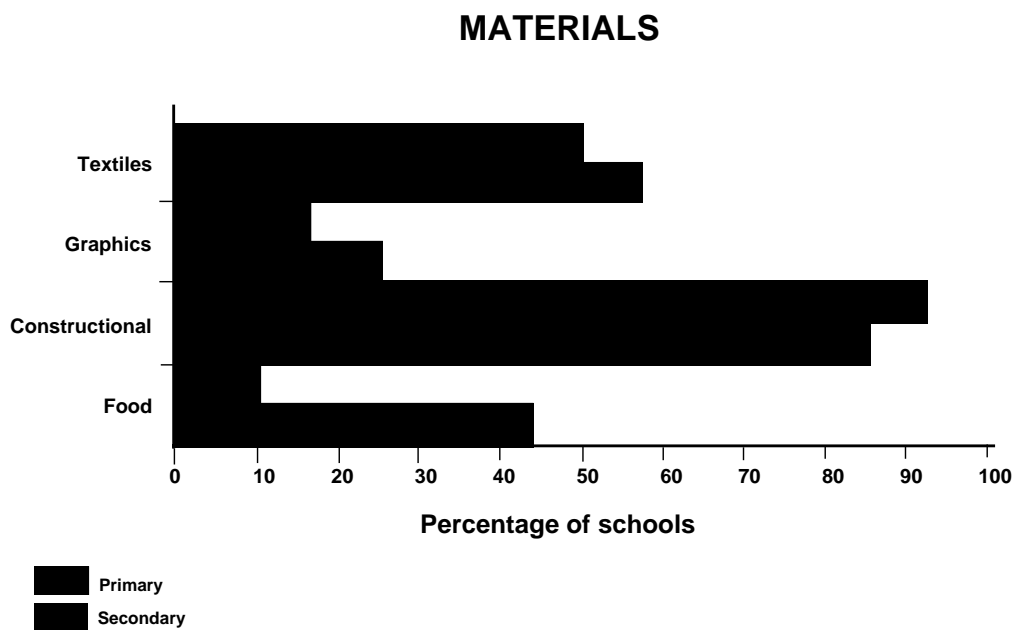


Fig 5

Most secondary schools had made a wide range of materials available to pupils.

We suspect that 'graphic materials' are more widely used than our results appear to suggest. We were concerned not to 'prompt' teachers by suggesting materials. But it is likely that teachers would not necessarily think of paper, pencils, etc as 'materials'.

In the case of primary teachers there is a clear under-representation of work with food. Only 11% of the primary schools in the survey reported any work with food associated with design and technology during the Autumn term of 1990. It is clear that there is a substantial need for some reconsideration of practice and provision in many primary schools.

Products

The statutory orders⁶ require that: 'In each key stage pupils should design and

make: artefacts; systems; and environments; in response to needs and opportunities identified by them.’ Of course, it is often difficult to make clear distinctions of this kind. But our survey at least suggest that, as far as could be determined, schools were providing opportunities which lead to a variety of types of products.

‘Themes’ in Primary and Secondary

Most schools in both phases claimed to be using topics and themes for design and technology work. It was, however, noticeable that there was greater variety and clarity of purpose in the primary topics. In secondary very broad themes were widespread – Our School, Entertainment, Communications, Christmas and Survival were typical and widespread. We suspect that these broad ‘themes’ were often a way of superficially integrating contributing areas without a clear perception of the purpose of the theme. In secondary, unlike primary, very few schools introduced work via evaluation of existing products.

Attempted Analysis

In the case of the primary survey, the reports of the interview with the class teacher gave us a clear picture of the activities provided. We therefore sought to make some evaluation of the ‘quality’ of design and technology provision with the purpose of seeing whether there was any correlation of this with other factors.

The ‘quality’ was assessed by four people (the authors, Claire Benson and Wendy Pitt) independently looking at the interview reports (which described the work being done, the ‘contexts’ used, the kinds of investigating encouraged, the material used and what the children were producing) and rating the work on a scale of 1 to 5: unsatisfactory (1), patchy (2), satisfactory (3), good (4) and excellent (5).

The mean correlation between the four ‘assessors’ was 0.68 which implies a good measure of agreement as to the evidence of ‘quality’ from the interview reports.

We sought to see whether there was any discernible relationship between our estimated ‘quality of provision’ and the size of the school, the amount of preparation, the existence (or otherwise) of a policy statement or a scheme of work, time allocation, and the extent of teacher’s reading of the statutory orders and the non statutory guidance.

Perhaps not surprisingly, our attempt was unsuccessful in almost all cases, almost certainly in consequence of the small sample size. Any trends discernible were less than the estimated errors in the trend. There were two exceptions.

There was some evidence of the importance of schemes of work in facilitating ‘quality’. 36% of the primary schools surveyed did have schemes of work.

These schools showed a mean 'quality enhancement' (on our scale of 1 – unsatisfactory – to 5 – excellent – of 0.57 over those which had not. The standard deviation is rather large (0.30) but is understandable with the small sample. Of course, this does not imply a simplistic cause and effect relationship.

We did find clear evidence of a greater amount of preparation time by staff in smaller schools. This almost certainly reflects the well-known problems of delegation and role differentiation in small schools. Within the statistics, no discernible correlation existed between 'quality' and school size.

Conclusions

The sample size of the survey was relatively small. It surveyed only the first term of work of schools in design and technology. In the limited time available, no classroom observation or in depth interviews could be attempted.

For these reasons the results of the survey must be regarded as tentative and preliminary. However, with these reservations, we conclude that many schools have expended considerable effort in planning and providing design and technology. A minority appear to consider it a low priority.

We have noted three particular areas of concern – the small number of home economists appointed as coordinators in secondary schools, the small percentage of primary schools making use of food in design and technology activities and the lack of clarity of purpose in the broad 'themes' used by most secondary schools.

References

1. C A Moser and G Kalten Survey Methods in Social Investigation, (1979) Gower
2. The Primary School Directory Hutchinsons, (1990)
3. The Education Year Book Longmans, (1990)
4. Non-statutory Guidance Design and Technology Capability (1990) National Curriculum Council
5. DES, 1988 Secondary School Staffing Survey (1988)
6. Department of Education and Science and the Welsh Office Technology in the National Curriculum (1990)