
Introducing National Curriculum Technology: A Case Study in Curriculum Change

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Introduction

In the Autumn Term of 1989, as the nature of National Curriculum Technology began to emerge, some teachers of a comprehensive school in North Eastern England expressed uncertainty and unease about their future roles. Traditionally, the teaching of the areas of Home Economics (HE) and Craft, Design and Technology (CDT) was through more or less mutually exclusive departments. There was agreement that this could not continue in teaching for 'technology capability'. Concern was also expressed that existing interests and teaching expertise would fall by the wayside. There was also, perhaps, a little underlying fear of the unknown.

Faced with this disquiet, the headteacher suggested that some sort of National Curriculum dummy run might be useful and I was asked to coordinate the project. The intention was to develop some useful teaching materials and strategies, to demonstrate the feasibility of a productive fusion of departments, and to reduce uncertainty and unease. The staff welcomed the suggestion and, at a joint meeting, the nature of National Curriculum Technology was discussed and the theme of Packaging selected for testing with the current Year 7 (11+ years). This theme was to last for about half-a-term and no-one felt that he or she was at a disadvantage because of the topic. An art teacher also agreed to take part in the project.

The children of Year 7 were in two broad bands for timetabling purposes and were of mixed ability within these bands. They were taught HE, CDT and Art as a part of a carousel arrangement, each class receiving instruction in one area then moving on to the next. The children received no separate instruction in Information Technology or Business Studies in Year 7. It was not possible to re-timetable the Year to accommodate a short exercise in integrated Technology teaching so a coordinated teaching scheme was agreed, to take effect in January 1990. This allowed time for

evaluation of the project and planning for the following academic year.

A booklet briefly summarising the aims and the five Attainments Targets of National Curriculum Technology, the Profile Components and the agreed teaching scheme was issued to all staff involved at the end of the Autumn Term. This ensured a smooth start to the project in the Spring term.

The lessons

All classes received a common, introductory lesson on packaging and its modern uses and were set the problem of designing, making and testing a packet for ½ kg of nails.

In the teaching time allocated to HE (Food), the children considered the need to protect foodstuffs like eggs and biscuits. Part A of Package Deal, a T.V. programme in the BBC series *Mindstretchers*, introduced the problem. The children set about solving it then Part B, largely about testing solutions, was shown and the children tested theirs similarly. The need to package other foodstuffs, like potatoes, was introduced through a brief account of the satchel-bottomed paper bag invented by Margaret Knight (1838-1914). This was an economical way of covertly pointing out that invention is not the exclusive preserve of men while leading to a problem on the design of a paper bag to carry 2kg of potatoes¹. The need for a wise choice of materials used to package and transport foodstuffs was discussed and practices surveyed.

In the teaching time allocated to HE (Fashion and textiles), the focus was upon the packaging of clothes. The children soon realised that, while some clothes like shirts were packaged in very sophisticated ways, others were not packaged prior to sale. The children's survey and display showed that the packaging of such items was often by means of a general purpose carrier bag of some form. This was a natural way of leading into the design and realisation of a carrier-package such as a roll-up, tool

kit holder, shopping bag, or a pencil case, in which there is a need to consider the load and its nature, to select an appropriate material, to design, plan and make the artefact, and to appraise the solution.

In the teaching time allocated to CDT, a brief history of packaging was described and a comparison made between earlier packaging materials and their modern counterparts, relating material and function². *The Story of Oxo* was used to tie the message to a concrete instance and make it meaningful³. For the lesson, the children brought a variety of boxes and examined how they were made and decorated. Based on this experience, they designed and made a cubic box using card and glue or interlocking tags. In the later lessons, more difficult packaging problems were presented involving the protection and display of, for example, a chocolate car. Appraisal of solutions centred on effectiveness, appearance, and facility with which they could be stacked. A concluding lesson widened the subject to consider such aspects as the re-cycling of packaging materials.

In each of these areas, the role of Art was readily perceived. For instance it is soon apparent that none of the briefs is so tightly drawn that only one acceptable solution is possible; matters of good artistic design enter into, for instance, the making of labels, boxes, and pencil cases. Similarly, Information Technology is able to contribute to the design of boxes, the production of labels, and the handling of survey data. Some aspects of packaging and good business practices are apparent in many aspects of the theme and, in particular, in the *Story of Oxo*.

At the conclusion of a unit of work with a teacher, each group moved to the next, as dictated by the existing timetable.

The outcome

Each teacher expressed his or her feelings about the project in individual interviews. All felt that the standard of work was good. Pupils were generally well-motivated doing more than was

asked and continuing their work in their own time. The project highlighted the general lack of manual dexterity in Year 7 but, it was felt, experience of this kind would improve it.

Having children working in groups on different versions of a problem was felt to be a useful strategy. For example, some might work on a package for an egg, others on one for biscuits. Since, inevitably, children are interested in what others do, this variety widens their experience.

All felt that traditional work areas were too cramped, constraining and inflexible and did not lend themselves to discussion and planning (a criticism also made by HMI⁴). Lessons were of one-hour duration and, it was felt, this was too short and led to a lack of continuity and quality of realisation.

The overall opinion was that the project had been worthwhile and interesting and the staff would use the material in the future. It had demonstrated how each teacher, regardless of background, could make a worthwhile contribution to the development of technological capability. The staff expressed a willingness to develop more material in a similar way.

The children of Year 7 were also asked to write their views of the project. A large majority expressed very favourable feelings about it. The following is a particularly articulate example:

'I have enjoyed doing the project on packaging in all of the CDT subjects. It was fun making and learning about all the different packages. It made a change from doing ordinary work in these subjects, like sewing in the sewing lesson, woodwork in the woodwork lesson, etc. I enjoyed making the different shaped boxes and bags from paper and card. I also enjoyed making things like cars, robots, boats and many other things from packages that people would have thrown away. I have looked at packaging in fashion. I have learnt what is written on the labels of packages why we package food and why different things are packaged in different things. Altogether the work we have done on packaging has been fun'.

Of course, there were a few who would not agree. The following is an extreme expression of that:

'I have not enjoyed doing the packaging project it was really boring. the only thing that I liked was Art. It

was the worst project I have ever done'.

Planning for Key Stage 3

The Packaging project was reviewed and the outcome summarised in a short booklet for the staff concerned and the headteacher, who encouraged further development. A GRIST funded day was arranged soon after to develop a plan for Key Stage 3. One of the products was an agreed outline scheme based on a thematic approach, like that of Packaging, for the younger children. Amongst the common themes discussed were: Survival, Energy, and Christmas.

Some staff were of the opinion that some themes did not lend themselves to a worthwhile contribution from 'particular areas of expertise' and it was agreed that they might like to develop more limited themes of interest to themselves — a reasonable and apparently innocuous point which left me uneasy for reasons which become clear only later. It was, however, emphasised that continuity and progression are important and that any activities should aim to develop technological capability as described in the National Curriculum document. A model for working with older children based on the cross-curricular Technology course of the T.R.I.P.S. Project⁵ was outlined to the group and it was agreed to try a modified version of this approach in Year 9

A second point was an agreement on what was needed in terms of the timetable. Contiguous lessons, in blocks of two, one-hour units were wanted to maintain momentum and coherence. Advantage was also seen in having all Year 7 lessons for a band taught at the same time so that there could be movement of pupils between teachers on an as need basis⁶. There were also some thoughts on designing and making a simple record system which would suit coordinated teaching and pupil movement between teachers.

The aims of the project now seemed to have been largely fulfilled. The feasibility of working together as a team had been demonstrated, teaching material had been developed, the way forward seemed clear, and concerns appeared to have been reduced. The requests for contiguous and simultaneous lessons were granted and an Art teacher and an Information Technology teacher were to be included in the teaching unit. Plans to modify teaching facilities were also made.

The veneer of change

In the next meeting, at which I was largely an observer, discussion focused on an alleged reduction in teaching time afforded Technology in the new timetable. In absolute terms, this was correct; the time for teaching National Curriculum Technology in Year 7 was going to be less than the previous provision for teaching CDT, HE (Food), and HE (Fashion) taken together. Somewhat heatedly, the question was asked, 'How can we possibly teach Technology with less time than we have now?' The Deputy Head explained that CDT and HE had been replaced by a new subject, technology, and that Technology was a Foundation Subject with the same entitlement as the other Foundation Subjects. This explanation was not well-received.

When discussion turned to progress on preparing a detailed scheme of work for the themes, it became apparent that the escape route offered to 'particular areas of expertise' would be used to the resurrect teaching activities which did not fulfil the spirit of the National Curriculum for Technology. It seemed likely that it would be used to maintain the status quo.

Forcing the pace of change

The amount of teaching time afforded the subject seems to be perceived as an indication of its status: the more time it receives, the higher its status. Simply pointing out that it is no longer entitled to more than the others was insufficient to salve the feeling. There was a need to emphasise the potential gains; at last Technology is being made equal to other subjects, it has suffered for too long from the image of refuge for less able, and so on. The staff had demonstrated that they could work in a cooperative unit on Technology but the meeting showed that some, at least, did not see it as one area of the curriculum but as what the Non-Statutory Guidance describes as a federation of subjects. A concluding activity had been for teachers to construct a concept map of Technology Education. A part of one teacher's map is shown in figure 1. The 'consists of' line was the first to be drawn and it suggests that this teacher sees Technology Education as the sum of subjects listed. This may stem from an unwillingness to submerge a valued and distinctive identity in a larger pool. It carries with it the temptation to perpetuate that identity through the escape route from the common themes. This supports the opinion of the National Curriculum Council that a federal view of

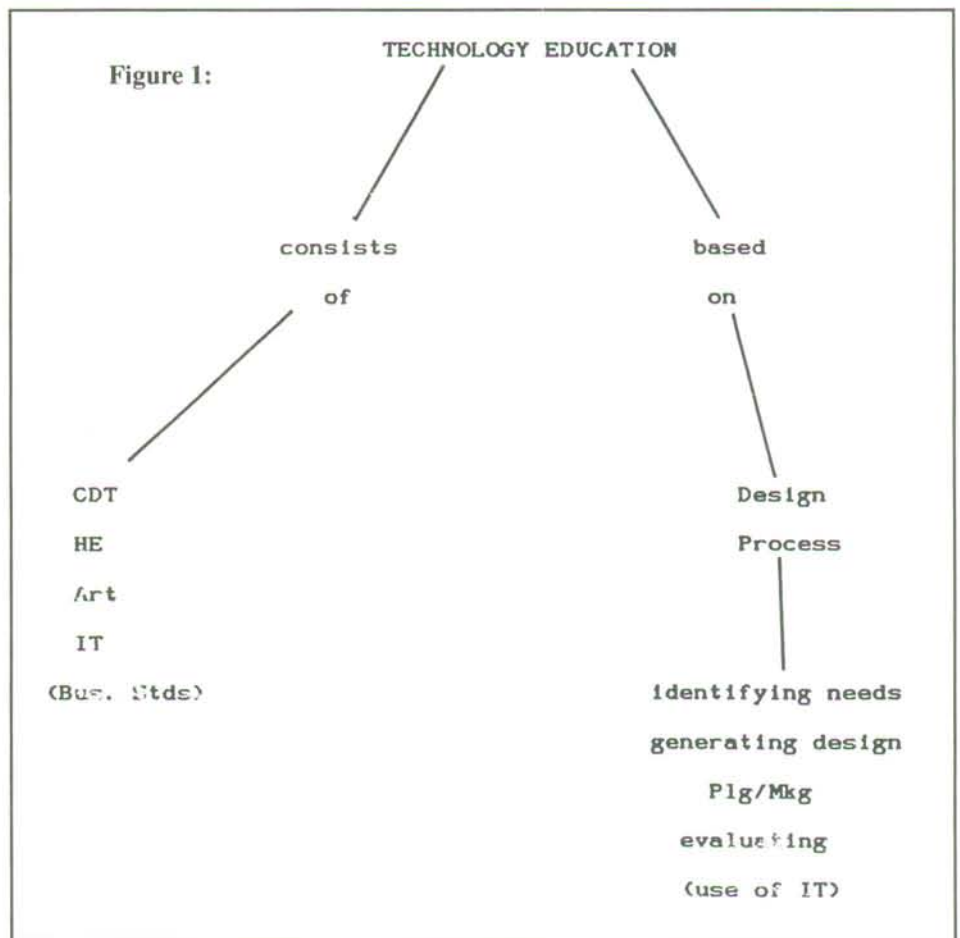
Technology could lead to fragmentation into unco-ordinated parts⁷.

Only demonstrating the feasibility of change and showing how to effect it hardly touches deep attitudes, values and commitments, even in the face of inevitable change. Will some teachers continue to dabble surreptitiously in the past or will their attempts fade away with the need to produce results for all to see? When curriculum change is effected post haste, there is little time for much more than a forced march to the starting point and having got there, the troops are looking every which way but forward.

The smoothly functioning unit with a common view of its purpose is probably a myth but it is the ideal that the conscientious Head of Department works towards. In this case, the Head of Department was made aware of the fragile nature of the gains and the incipient danger of fragmentation. By monitoring classroom activities and guiding development, progress could be consolidated and extended. These teachers also need to spend time together discussing, planning and experimenting with Technology Education so that they might begin to share Technology-oriented values.

References

1. Newton, D.P., Newton L.D. (1990) Bright Ideas: Design and Technology (Scholastic Publications) also Newton D.P. and Newton L.D. (1987) Footsteps into Science (Stanley Thornes)
2. Crampton K. and Finney, M. (1988) Design and Communication (Collins)
3. 'The Story of Oxo' is available from Brooke Bond Foods Ltd, Education Service, Leon House, High Street, Croyden, CR9 1JQ, who also have an information leaflet on Packaging.
4. Nash I. (1990) 'Two in three schools unready for technology'. The Times Educational Supplement, 4 May A3
5. Smith, B.P., Warriner, M.P., et al, (1990) paper presented on 'Technology and Initial Teacher Training' at Leeds Polytechnic, 20 March, outlining the Technology Resources Information Problem Solving Project for 12 to 14 year olds at Greenhead Grammar School, Keighley. A significant part of this project is for children to work on a Small Business Scheme.
6. Similar to Teaching Model B described in the Non Statutory Guidance for Technology of the National Curriculum Council (1990) B13 D&T.
7. National Curriculum Council (1990) Non Statutory Guidance for Technology, B9 D&T.



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