

'National Curriculum' Technology: The English Connection

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Uncertainty

If teachers feel bewildered about the 'National Curriculum' it is hardly surprising. In 1985 *Better Schools* contained the observation:

...it would not in the view of the Government be right for the Secretaries of State's policy for the range and pattern of the five to sixteen curriculum to amount to the determination of national syllabuses for that period...The Government does not propose to introduce legislation affecting the powers of the Secretaries in relation to the curriculum.¹

Then, two years on, just such legislation was introduced within the Education Reform Bill. Again, while we have had for some time a timetable for the introduction of the 'National Curriculum' and assessments, and more recently our marching orders for English, Maths, Science and Technology, in a fresh development² it now seems that full-blown testing in respect of Design and Technology and Information Technology Capability has been called off for Key Stage 1, and the same is predicted in respect of Key Stage 2. Furthermore, it appears not all non-core foundation subjects are to be equal after all: for example, while it may be possible to drop some subjects before 16 in some circumstances, this will not be possible for Technology and a Modern Foreign Language³. So these two subjects seem to be acquiring to some extent a sort of unofficial core status — certainly above that of History and Geography, for example. Some schools, in a situation for which no precedent could have prepared them, and reacting to what now turn out to have been misleading signals made at early stages of 'National Curriculum' Technology planning (eg the then more intimate relationship with science), may have made premature team and timetable decisions and 'coordinator' appointments which today they might not make and may well be rueing. Finally, to 'cap' it all — and promoting still greater uncertainty — from the head of the government that

gave us the 'National Curriculum' (and herself a former Secretary of State for Education) has come the following reflection on its unfolding (*Sunday Telegraph* 15.4.90,p III):

...when we first started on this, I do not think I ever thought they would do the syllabus in such detail as they are doing now. Because I believe there are thousands of teachers who are teaching extremely well. And I always felt that when we had done the core curriculum, the core syllabus, there must always be scope for each teacher to use her own methods, her own experience, the things which she has learned and he or she really knows how to teach.

So I did not really feel that the core curriculum or any subject should take up all the time devoted to that subject, because otherwise you are going to lose the enthusiasm and the devotion and all of the extras that a really good teacher can give out of her own experience... My worry is whether you put out an approved curriculum, if you have got it wrong, the situation is worse afterwards than it was before.

At any given time a large number of teachers are teaching a subject extremely well. But if you take them off what they know has worked for years, far better than anyone else's syllabus, then you wonder: were you doing it right?

It has been suggested that no pupil will ever experience the 'National Curriculum' as laid down in the Education Reform Act. This has always seemed likely to be the case (especially in respect of the full measure of assessment, testing and reporting procedures); now it is beginning to look like 'a racing certainty'. The nature, extent and quality of what pupils will in fact experience during the compulsory years of schooling is at this stage uncertain.

Promising Developments

Amid all such uncertainty, however, there are some highly promising developments stemming from the 'National Curriculum'

initiative. To some extent, debate about curriculum aims, content, processes etc has been stimulated; the nature, purposes and 'state of the art' mechanisms of assessment are being explored as rarely, if ever, before — the latter, at least, with resources hitherto undreamt of. These are two 'National Curriculum' developments of potentially major, by-product value. In the 'literature' (dating from around 1970) which discusses the idea of 'core curriculum' ('common curriculum', 'entitlement curriculum', 'curriculum framework' etc), support for the principle has been considerable. There, of course, consensus has tended to end. However, a common theme has been that any adopted 'model' of common curriculum must involve some measure of cross-curricular cooperation between teachers. This, in a current scenario characterised by curriculum development "on the hoof"⁴ and given what some see as the threat otherwise of an '125% curriculum'!, is potentially a force for reducing uncertainty and among the brightest hopes of the present conjuncture. Albeit one might not choose to 'start from here', there are in the requirement and potential for cross-curricular collaboration clear benefits for teachers in respect of their professional development and, more importantly, for their pupils in terms of curriculum coherence.

Technology and English

Just before Easter 1990 a parcel arrived from the DES. It contained folders enclosing the Orders for Technology and for English. It would be nice to believe their being packaged together was a subtle DES prompting as regards their curricular interrelatedness; however, whether this was intended or not, the effect was indeed to reinforce such thinking. In what follows, the suggestion is that, leaving aside the explicit requirement for joint ('Famous Five') 'delivery' of the Technology curriculum 11-16, a reading of the Technology and

English Orders suggests rich possibilities for 'meaningful interrelationships'.

"Design and technology has close relationships with English...

In design and technology pupils

- make spoken and written presentations of their design proposals (ATI and AT3);
- discuss their investigations, design ideas, plans and evaluations (AT1);
- use books and databases to research their designs (AT2);
- produce questions and reports (AT3)"

(NON-STATUTORY GUIDANCE; DESIGN & TECHNOLOGY CAPABILITY C10,3.2)

It is far from a fresh discovery that the Technology curriculum is 'language saturated'. Within the CDT curriculum alone (and that CDT is now seen as a constituent element of DT, and DT in turn as a subset of T, is an unusual Alice in Wonderlandish example of mores being parts of lesses!) a random sample of a handful of recent student-teacher lessons bears this out amply enough.

In one the pupils were near the end of a project planning the redevelopment of a piece of waste ground (eg play area? skateboarding facility? planting, recreational walks, seats?) They were collaboratively wordprocessing their formal covering letter; others were putting finishing touches to drawings and supporting explanatory text; yet others were preparing brief oral presentations to be given when a representative of the council visited their school.

In another lesson, pupils were evaluating a design-and-make packaging project. Guided by teacher questioning they were recalling the project specifications in order to match their artifacts against them:

- T: The next specification was time.
 P: Yes. Three double periods.
 T: You were allowed three double periods. Now I accept that there are some people here who have only spent three double periods doing this project; however, I don't accept that they've finished the project in three double periods!⁵

A generalisable evaluation approach (of which they were making notes) was being modelled for them.

In a third lesson, working from a written design brief pupils were starting to

produce an annotated design of a piece of jewellery to be made from copper for a relative or friend and to incorporate enamelling.

Part of a fourth lesson was given up to problem-solving group talk on designing and making circuits (in which a pupil was overheard referring to transistors as

them silver things with a tag and three bits of wire legs⁶

In a fifth lesson, a pupil was working on her designs for a garden, bearing in mind particularly the needs of blind people. In her researches she had made contact — in writing or in person — with the RNIB, local agencies and particular blind people; and had ransacked a range of texts for information on surfaces for walking and touching, fragrant plants etc. She was now annotating her drawings and drawing on her notes for examination presentation.

Within the "real" contexts of designing and making "artifacts, systems and environments" (AT3)) which characterise these lessons, the talking, listening writing (including wordprocessing) and reading inwoven suggest a range of language activity which could, as by product, help meet the demands of English ATs.

To approach from the other, English, direction is to suggest similar correspondences. Take two recent English lessons. In one a group of GCSE pupils was preparing an extended piece of writing on the impact of decisions to introduce new technology on people and environments; in another pupils were studying E M Forster's short story 'The Machine Stops' (among a range of modern dystopias). These appear to provide contexts for meeting such Technology Programme of Study requirements as that

pupils should be taught to explain the social and environmental issues arising from design and technological activities (p39)

and

recognise potential conflicts between the needs of individuals and of society (p41)

Indeed the English Programmes of Study are rich in experiences which clearly are also integral to CDT education. For example,

pupils should be given the opportunity to: present their ideas, experiences and understanding in a widening range of contexts across the curriculum and with an increasing awareness of audience and purpose (KS 2-4, p24)

Pupils should be taught how to handle, and be given experience in using, a range of

information texts in a variety of media...The texts used should include guide books, consumer reports, text books, instructions and manuals, directions, brochures, forms, contracts, information leaflets...publicity materials, newspapers and magazines,, radio and television programmes, electronically stored information...(KS 3-4, p32)

Pupils should have opportunities to:

write in a range of forms...for a range of purposes including describing,explaining, giving instructions, reporting,...

produce writing and proof-read on a wordprocessor...(KS3,p39)

Simply to set side by side the Technology and English Attainment Targets (ATs) is to suggest the extent of their potential overlaps, interpenetration and so on.

Technology	English
<p>AT 1</p> <p>Identifying needs and opportunities</p> <p>Pupils should be able to identify and state clearly needs and opportunities for design and technological activities through investigation of the contexts of home, school, recreation, community, business and industry</p>	
<p>AT 2</p> <p>Generating a design</p> <p>Pupils should be able to generate a design specification, explore ideas to produce a design proposal and develop it into a realistic, appropriate and achievable design</p>	<p>AT 1</p> <p>Speaking and listening</p> <p>The development of pupils' understanding of the spoken word and the capacity to express themselves effectively in a variety of speaking and listening activities, matching style and response to audience and purpose</p>
<p>AT 3</p> <p>Planning and making</p> <p>Pupils should be able to make artefacts, systems and environments, preparing and working to a plan and identifying, managing and using appropriate resources, including knowledge and processes</p>	<p>AT 2</p> <p>Reading</p> <p>The development of the ability to read, understand the respond to all types of writing, as well as the development of information-retrieval strategies for the purposes of study</p>
<p>AT 4</p> <p>Evaluating</p> <p>Pupils should be able to develop, communicate and act upon an evaluation of the processes, products and effects of their design and technological activities and of those of others, including those from other times and other cultures</p>	<p>AT 3</p> <p>Writing</p> <p>A growing ability to construct and convey meaning in written language matching style to audience and purpose</p>
<p>AT 5</p> <p>Information technology (IT) capability</p> <p>Pupils should be able to use IT to: communicate and handle information; design; develop; explore and evaluate models of real or imaginary situations; measure and control physical variables and movement. They should be able to make informed judgements about the application and importance of information technology, and its effect on the quality of life</p>	

To set out Statements of Levels of Attainment, similarly, would establish correspondences in depth. However, anyone who has accompanied me thus far will be relieved to learn that I shall not be doing this — rather as Aldous Huxley was when, asked by a reporter what he had thought of a Harvard inaugural lecture in which the speaker had made structural/thematic use of the constituent letters of 'H-a-r-v-a-r-d' (H is for honour...; A for ambition...), he expressed gratitude that they had not been at the Massachusetts Institution of Technology! Rather, a handful of examples will establish the principle.

Here are some Technology Statements of Attainment with 'Examples' attached.

Pupils should be able to::

AT1, Level 5:

show judgement in the choice of sources of information, both qualitative and quantitative, in the systematic search for a need or opportunity for a design and technological activity

Example:

decide what information is required for a project on a topic of their own choice and locate it by reference to chapter titles, subheadings, typefaces, symbol keys etc.

AT1, Level 7:

recognise that economic, social, environmental and technological considerations and the preferences of users are important in developing opportunities

Example:

introduced a research environmental topic for discussion, using slides, OHP transparencies, notes or diagrams in the presentation

AT2, Level 8:

record and present, using a range of methods and media, the progress of their ideas; detail and refine their design proposal and incorporate modifications; use computer aided design, image generation and desk top publishing techniques, where appropriate, to explore, detail and refine their ideas.

Example:

write a report of their chosen investigation... which is well-judged in length and form for the audience and uses a range of techniques of presentation,, including...analysis of

tabulated data and summary conclusions.

AT3, Level 7:

use a range of technical, symbolic and other means of representation to assist in planning, organising, making and incorporating necessary modifications

Example:

note the effect of the enhancement or suppression of colour, page layout, illustration, style and size of print

And so on. Readers will of course have spotted the deliberate mis-take! Those for whom the new DES folders have become their constant companions will have twigged that the *examples* sitting alongside the Technology AT Level descriptors are mis-taken from the **English Orders**. Clearly, the match is by no means exact; but arguably it is close enough to suggest the kinds of correspondences that exist between the two sets of Orders

Collaboration

Cooperative planning and 'delivery' as between Technology and English teams will yield obvious practical benefits and 'added value' as compared with going it alone. At one level gains will include curricular streamlining in the interests of timetable parsimony and to prevent duplication: ie being 'economical with' the time available. Beyond this, when teachers start to dismantle the Berlin Walls between their subjects and to flood across the frontiers they begin to understand their colleagues' work in new ways. This brings into focus a vision of coherent and truly unified curriculum for the benefit of learners. However 'local' collaboration initiatives — eg Technology/English; Science/English⁷ — scarcely go far enough. A **whole** curriculum planning approach that foregrounds ATs and Programmes of Study, and puts less stress on the subject labels under which they are collected, seems a more promising way forward in the present circumstances.

Brave words! Realising the vision they embody is of course another matter.. It entails (a) making available to planning teams adequate time (eg 'Big Mac Days' for joint planning) and other resources; and (b) in those managing 'National Curriculum' implementation, skill and sensitivity based on an awareness of the insights to be derived from the growing body of research about the prerequisites of successful curriculum change⁸

If development of the imposed 'National Curriculum' is to be professionally managed it must, at however late a stage, become properly collaborative. In Marion Dadd's formulation⁹.

If the National Curriculum is to prove, in time, to be an enhancing, fulfilling, productive and creative enterprise for children, and for the society which they will shape, it must be seen as a hypothesis to be tested and a framework to be refined in the light of experience and beliefs. This requires the full professional involvement of teachers.

References

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5. I am grateful to Tom Stephenson for this example.
6. I am grateful to Steve Bicknell for this example.
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