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## Getting Design and Technology cross-curricular work started

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**GETTING DESIGN AND TECHNOLOGICAL CROSS-CURRICULAR WORK STARTED.****F. PEARSON****DESIGN AND TECHNOLOGY CO-ORDINATOR.****CHELTENHAM BOURNSIDE SCHOOL AND SIXTH FORM CENTRE,  
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5EF.****ABSTRACT**

This paper describes a means of formulation and compiling design and technological surveys in the form of grids to show existing technological duplication of overlap between technological and non-technological subject areas. The methodology used in the above surveys can be used as a starting point for future development and planning in relation to the Design and Technology National Curriculum.

**INTRODUCTION**

The purpose of this paper is to show how a curriculum survey/audit can be used in schools (particularly Secondary Phase because of subject specialisms) to obtain an accurate degree of quantification of how much "Design and Technology" is being taught both directly and indirectly across the whole curriculum. Such information can then be used to organise and develop a cross-curricular scheme of work which follows the National Curriculum guide lines with regard to Design and Technology.

Initially the curriculum areas of Craft, Design and Science were chosen because of their direct technological relevance and similarities in terms of Technological Awareness, Implications/Applications and Capability. Also to keep the number of curriculum area small so that staffing and general resourcing (required to organise and implement a technology cross-curricular scheme, whether partial or full) could be kept to a minimum, and to give some staff (starting with those whose curriculum areas have a lot in common) the experience of planning, teaching and co-operating with each other in a partial (for the time being) Design and Technology cross curricular scheme.

**THE CURRICULUM SURVEY**

The Curriculum Survey (formulated by Dr. B. Gunnell, Design and Technology Adviser for Gloucestershire) for the subject areas of Craft, Design and Technology, Home Economics (including Textiles) and Science consisted of the following parts;

1) Curriculum Review - Each of the above subject area's scheme of work for years 1, 2 and 3.

2) Curriculum Links - The same topics or part topics being taught in each of the above subject areas.

3) Technology Curriculum Audit - An analysis based on the experience gained by all pupils.

(Note - because of this parameter (i.e. technological experience, of whatever category, gained by ALL pupils) only years 1, 2 and 3 were considered. Years 4 and 5, because of the usual subject option system, being ruled out). The sub-categories of this part were;

- a) Applications of Technology - Examples given.
- b) Implications of Technology - Examples given.
- c) Technological capability (actually, Design and Technology Capability) in terms of;
  - i) Open ended whole problem, tackled without guidance.
  - ii) Open ended whole problem, tackled with guidance e.g. structured instructions.
  - iii) Aspects of capability developed (e.g. design brief, writing, evaluation, no problems tackled)
  - iv) No capability developed.
- d) Problem Solving.
- e) The topics of (including a list of sub-topics - to each one);
  - i) Energy
  - ii) Control
  - iii) Bio-Technology
  - iv) Information Technology
  - v) Electricity
  - vi) Electronics
  - vii) Materials
  - viii) Structures
  - ix) Mechanisms
  - x) An Appreciation of Industrial Manufacturing Processes

Such an approach has enabled myself and a few colleagues to formulate a design/technological cross-curricular scheme between the subject areas of Craft, Design and technology, Home Economics (including Textiles and Science. It has also allowed us, due to its methodology, to incorporate (for the present at least) our design/technological cross-curricular scheme into the existing time-table and staff allocations of each of the subject areas involved. Also, additional resources have been kept to a minimum so far.

As well as the information obtained from the Technology Curriculum Audit part of the overall curriculum survey, we also used the Attainment Targets of the Science National Curriculum and the guide lines generally expressed in the Interim Report of the Parkes Committee on Design and Technology in relation to the National Curriculum. This was done because the Curriculum Survey described so far was primarily related to T.V.E.I. in terms of technological education. However, it is now known that more subject areas related to technology have been included as part of the Design and Technology National Curriculum. Therefore, the above curriculum survey/technology audit can be modified to include additional subject areas and particular aspects of the National Curriculum in Design and Technology.

One of the aspects or considerations that emerged fairly early in our cross-curricular design/technology task was that of feeder Primary Schools. Obviously, this is a very important and integral part of the Design/Technology/Science and overall National Curriculum, which must be taken into account with any interim or final cross-curricular design and technology scheme. Therefore, visits were arranged to our main feeder Primary Schools to obtain details of the stage they had reached with regard to Design/Technology/Science. This information was then taken into account with our initial cross-curricular design/technology scheme. Also of course, contacts were made and professional relationships established; a crucial factor if good liaison is to be made between the Primary and Secondary phases of education and a critical factor for the success of the National Curriculum.

#### **AN OVERALL CURRICULUM SURVEY (ALL SUBJECT AREAS) RELATED TO TECHNOLOGICAL AWARENESS**

In order to fulfil the requirements of the National Curriculum, in terms of an all - pervading technological element or awareness, a technological cross-curricular scheme (to include all subject areas) is required.

Again I have used (for my school) a survey procedure formulated by Dr. B. Gunnell (see previous reference) called Technological Awareness.

This survey (package) includes;

- 1) A broad definition of Technological Awareness.
- 2) A spider like diagram (entitled "Some Areas of Technology") linking a number of technological topics/related areas of study.
- 3) Examples of the Applications of Technology and their Implications.

These take the form of Newspaper articles concerned with medical, environmental, industrial and social issues from a technological point of view.

- 4) Departmental Summary Sheet. This section includes;
  - a) Key - having three levels or categories of technological contributions/involvement, indicated by a narrow band at the side of each technological topic and under each year.
    - i) Leaving the narrow band blank indicates:  
"Applications of technology covered/used but no significant considerations of implications"
    - ii) Part shading of the narrow band indicates:  
"Evaluation of implications led and directed by the teacher - little independent work by pupils"
    - iii) Full shading of the narrow band indicates:  
"Pupils discuss/evaluate implications in detail for themselves"
  - b) Examples given from several Departments. Some of these are in list form giving the technological area covered and some in grid form giving both technological areas covered and where they occur in years 1 to 5.

Both forms of example use the above key and consider technologically related work done in years 1 to 5 by ALL pupils irrespective of option choices in years 4 and 5.

- 5) An example of a total curriculum, that cites technological awareness issues, is also given. This includes the previous subject examples and is essentially a grid, having subjects along one axis and age (years 1 to 5) along another axis. It also uses the above Key to depict the levels of involvement in technological awareness in relation to a number of stated technological topics. These stated technological topics are the same for each department or subject area (i.e. Energy, Materials, Control, Bio-Technology, Medicine and Health, Information, Technology, Transport, Agriculture and Horticulture, Environment).
- 6) A blank departmental summary sheet (see note 4b - grid form) is supplied which requires completion by each department.

The purpose of the above Technological Awareness Package is to enable Heads of Departments (especially non-technological departments) to focus their attention upon technological aspects of the subject areas that they are teaching at the present time. Having identified in a coherent way a variety of technological issues, any

existing links (in terms of areas of overlap) between technological and non-technological departments can be noted and used as a spring board for potential expansion/closer co-operation (related to technological education) between departments in the future.

Depending on the level of technological co-operation within a school, it may be necessary for someone having a Design/Technology Co-ordinators role to explain the above package to Heads of Department before they are asked to complete it.

Once all Heads of Department have completed the necessary part of the package for their departments, the "Total Curriculum Grid" can be completed, by the Design/Technology Co-ordinator, to give a clear picture of the strengths and weaknesses of Technological Awareness across the total school curriculum.

The technological areas/topics outlined in the two curriculum surveys were put together using essentially T.V.E.I. considerations. However, they can still be used, to a large extent, in terms of Design and Technology National Curriculum considerations or the technological topics can be changed to relate more directly to the Design and Technology National Curriculum. Changes in the technological topics included in these surveys can also be made to address particular technological strengths and weaknesses in a given school.

## CONCLUSIONS

By using the two surveys outlined (not that both have to be used, or with exactly the same technological areas/topics) the following can be achieved relatively quickly;

- 1) Focusses attention of staff to technological education in general.
- 2) Enables staff to identify particular roles in the (possible) overall scheme.
- 3) Gives a sound framework for future development/expansion based on precious good (design/technological education) practice (albeit in individual subject areas at the present time).
- 4) Idiosyncrasies of individual schools (in terms of design/technology) can be catered for, as well as fulfilling the National Curriculum requirements in Design and Technology.
- 5) Such an approach to the business of beginning to formulate a cross-curricular design and technology framework/scheme of work, affords a sense of security for staff and pupils i.e. moving from established technological areas to ones less well known, with some confidence.

The task of completing the two design/technological surveys ensures that teaching staff from a variety of technological departments begin talking to each other about their schemes of work and start to consider design and technological education in general (i.e. aspects of technological education that relate to areas of their technological specialisms) This, hopefully, will in turn help to break down negative attitudes (held by some design and technology teachers) related to particular subject areas of specialisms within the overall area of Design and Technology.

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