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LIAISON AUDIT/QUESTIONNAIRE FOR NATIONAL CURRICULUM IN DESIGN AND TECHNOLOGY BETWEEN THE PRIMARY AND SECONDARY SCHOOL.

Pearson F

Cheltenham Bournside School and Sixth Form Centre

In an attempt to obtain information concerning the Design and Technology Capability of the main feeder Primary Schools to a large Comprehensive School, an Audit/Questionnaire was compiled and used. This took the form of lists of items (of both a curricular and logistical nature) involved in the teaching of Design and Technology. The Audit/Questionnaire was completed for each Junior School by a member of the school and the Technology Co-ordinator from the Comprehensive School. This person also produced a variety of summary sheets concerning a number of Technological aspects from all of the Junior Schools involved in the survey. Such an exercise has proved to be useful (and it is hoped increasingly so) in the task of planning a Technology Curriculum within the National Curriculum framework for Technology from five to sixteen.

INTRODUCTION

The Audit/Questionnaire is in two parts. The first consists of lists of considerations related to Design and Technological Education as it exists at the present time in Junior Schools, and second, a number of Summary Sheets that relate the Design and Technological activities of several Junior Schools simultaneously.

DESCRIPTION OF THE AUDIT/QUESTIONNAIRE

The audit/questionnaire consists of a long list of items under the general headings of Areas of Knowledge/ Activities, and a variety of Additional Considerations which are related to them in terms of the eventual delivery of Design and Technology Education/ Technological Capability within the National Curriculum for Technology. The items/considerations included in the Audit/Questionnaire were not taken directly from the National Curriculum-Technology document or any other document. They were compiled by the author in an attempt to take account of the likely areas of knowledge and activities that are part of Design and Technology Education in both Junior and Secondary Schools prior to the implementation of the National Curriculum in Technology.

Within the Areas of Knowledge/Activities there were a number of sub categories in each case. These were as follows;

1.SCIENTIFIC/TECHNOLOGICAL

- Structures
- Electricity
- Electronics
- Mechanisms
- Energy Control
- Pneumatics

2.MATERIALS

- Woods
- Metals
- Plastics
- Card
- Paper
- Clay
- Fabrics
- Food Stuffs

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Sand
Water
Types of Finish

3.DESIGNING/INVENTING

Sources of Ideas
Collecting Ideas
Generating Ideas
Developing Ideas

4.COMMUNICATING IDEAS

Drawing/Sketching
Painting
Use of Drawing Instruments/Aids
Photography
Cutting and Gluing
Collage
Writing - description
- explanation
Numerical - size
- weight
- speed
Modelling

5.USING MATERIALS

Safety
Tools - Hand
- Machine
Equipment
Processes
Fastening Methods
Planning (of making) - materials/components lists
- sequence of operations

6.MONEY MATTERS

Related to a particular artefact etc., in terms of
- overall cost
- cost of certain materials and/or components
- possible market/selling price

7.INFORMATION TECHNOLOGY

Related to - designing
- data base
- control
- monitoring/testing
- word processing
- computer assisted learning (content specific)

8.EVALUATION

1)In terms of a particular artefact etc.,
- how functional
- aesthetic qualities
- usefulness to individuals i.e.either pupils themselves or someone else.
2)In terms of educational value
- teacher(s) opinion of a given artefact/project/topic.

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Each of the Areas of Knowledge/Activities and their various subcategories were in turn related to the following Additional Considerations:

1. TRADITIONAL SUBJECT AREAS

(Those that will be centrally concerned in the National Curriculum - Technology)

Craft, Design and Technology
Home Economics (including Textiles)
Art (and Pottery)
Information Technology
Business Studies
Science - indirectly

The above were included in the Audit/Questionnaire to act as reference points when moving from pre-National Curriculum-Technology to National Curriculum-Technology, mainly for the benefit of secondary specialist teachers when planning the "follow on" work within the next Key Stage (3).

2. PROJECTS/TOPICS

1) Pre N.C.-TECH.
2) N.C.-TECH. (Intended)

This part is an attempt to address and account for a possible emphasis change within Technological projects/topics when moving from pre N.C.-TECH. to N.C.-TECH.

3. RESOURCES

Materials - availability/supply
Equipment (e.g. specialist benches or fixtures)

4. STAFF SPECIALISMS (JUNIOR)

By tradition Junior School Teachers, although multidisciplinary teachers, have not had to deal with Technology in the sense of Technological Capability (i.e. Design, Make and Evaluate) nor with Science to any large extent.

By establishing the identity and scope of those teachers with technological specialisms (in terms of backgrounds, interests and/or INSET courses) the process of technological liaison and its rate of progress may be assisted. This takes the form of knowing whom to approach or ask advice of in the Junior School for Junior School or Key Stage 2 Technology. It also encourages Secondary Specialist Technology Staff to get involved in liaison with Junior School colleagues when they know there will be some common ground from the start.

Usually, a Deputy Head or a teacher appointed as the Technology Co-ordinator is the first point of contact (after obtaining the permission of the Head of the Junior School for Technology liaison meetings to take place).

5. TEACHING APPROACH/METHODOLOGY

This can take the form of a "free" or structured approach related to a particular project or a combination of the two when dealing with several projects within an overall scheme.

"Free" in this context meant allowing the pupils to explore and experiment with materials and processes as they were designing or to explore a wide range of Technological Capability possibilities within a given framework or scheme, e.g. a Fairground - design and make a device one would expect to find there.

The degree of freedom in either of the contexts of "free" would depend on the age of the pupils, (perhaps experience), resources and staff expertise.

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A structured approach would be one where the pupils would be led through each stage of the process of Technological capability but without eliminating spontaneity and creativity related to designing and making.

The choice of approach might depend to a very large extent on the desired degree of integration of Technological Capability with other areas of the Curriculum and resource constraints of various kinds.

6.TIME ALLOCATED FOR PROJECT/TOPIC (CONTEXT)

Although the Junior Schools are concerned with a different Key Stage and therefore less technological detail for the majority of children than are the Secondary Schools, knowing how much time spent on a particular piece of work is useful. This is especially so in terms of the National Curriculum - Technology framework of Attainment Targets and Programmes of Work.

7.ADDITIONAL REQUIREMENTS

Examples:

1)VISITS - to museums, places of interest, by both teachers and pupils as an integral part of a particular piece of work.

2)SPEAKERS (organisations/firms) - visiting the school to talk about/demonstrate aspects of a particular topic being studied. The value of this information is not only good from a continuous (Junior to Secondary) curriculum planning point of view but also from the point of view of not taking advantage of the good will of the possible speakers in a locality.

8.ROOMS

Availability of any specialist rooms/facilities or a traditional Junior School room with perhaps a few additional pieces of equipment.

9.STAFF/PUPIL RATIO

Traditional/Standard or half class sizes or groups taught particular topics (within the National Curriculum -Technology) by specialist teachers, e.g.Information Technology.

10.TEACHER EXCHANGE (PRIMARY/SECONDARY)

This could take two forms:

1) Primary Teachers from the main feeder Primary Schools attending a Technology Capability Course run by the Secondary School (the reason being that the Secondary School has the specialist facilities and staff).

2) Primary and Secondary Teachers visiting each other's schools to observe the teaching of Technological Capability. Both of the above ideas were mentioned as part of the present Audit/Questionnaire and both sets of teachers were generally in favour.However, idea(1) would perhaps need to be linked to ongoing L.E.A. INSET schemes for Technology.

11.DESIGN AND TECHNOLOGY/INFORMATION TECHNOLOGY IN THE NATIONAL CURRICULUM - COMMENTS RELATED TO PARTICULAR PARTS OF IT

This was an opportunity within the Audit/Questionnaire to raise questions/issues about Design and Technology, and Information Technology, that particular teachers, schools, were concerned about.The major fact to emerge from this question was that Junior School teachers perceived Technological Capability as an integral part of the curriculum in general. The same applies to the other National Curriculum subject areas. This is not on account of time and resource considerations but is a result of educational reasoning.

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The Audit/Questionnaire can be completed for each year of the Junior School or used to get a general idea of the work being done/intended in Design and Technology. It can also be used for the later Infant years and initial secondary years if it is thought to be necessary.

For an individual school the Audit/Questionnaire was arranged in a grid form with Areas of Knowledge forming a vertical axis and Additional Considerations with Years forming an horizontal axis. This enabled the state of Design and Technology in a particular Junior School to be seen at a glance.

Information obtained from the Audit/Questionnaire can be fairly easily related to the main parameters of the National Curriculum - Technology, such as Key Stages, Attainment Targets, Levels of Attainment and Programmes of Study. For this purpose planning sheets need to be prepared that list the details of the above parameters.

SUMMARY SHEETS

It is important for the Secondary School to be able to establish any general trends or similarities in choice of Design and Technology topics and the teaching methodology employed. For this reason it is useful and convenient to produce summary sheets of all the main feeder Junior schools involved with the Secondary School. Two forms of Summary sheet were used. The first of these had Areas of Knowledge and Additional Considerations forming a vertical axis and Schools (each with the Junior School Years) forming an horizontal axis. The second type of Summary Sheet had Schools forming a vertical axis and Projects/Topics for each Junior School Year forming an horizontal axis.

CONCLUSIONS

Without exception, all of the Junior Schools' visited (of which there were five - the main feeder Junior schools for the following academic year) by the Technology Co-ordinator from the Secondary School associated with the Junior Schools were enthusiastic to form National Curriculum links. The Secondary Teachers involved were also keen to know what was being done and what was intended to be done in their main feeder Junior Schools in terms of Design and Technology/Technological Capability.

Because the Secondary School Technology Co-ordinator visited the Junior Schools to work through the Audit/Questionnaire with the Junior School Technology Co-ordinator, many of the misunderstandings and perhaps inaccurately preconceived ideas between Junior and Secondary Teachers were able to be resolved. In some Junior Schools it was possible for the Secondary School Technology Co-ordinator to attend a staff meeting to talk about and show examples of Technological Capability. Also, meetings between the Junior and Secondary Technology Co-ordinator enabled any possible ambiguities within the Audit/Questionnaire to be quickly resolved.

The general findings of the Audit/Questionnaire from the main feeder Junior Schools have helped the Secondary School in its planning of the first year for Key Stage Three. It has helped in terms of knowing the level of designing experience, manipulation of materials and materials experience, and which general topics (within an overall context) to include or exclude for the time being. Updates of the Audit/Questionnaire will become more important as the National Curriculum in Technology follows on directly from Junior to Secondary School.

One significant finding from the survey was that the Science National Curriculum tended to be used as the basis for Technology. This tended to take the two forms of 1) a starting point for Technological Capability, ie, an area of knowledge from Science used as a stimulus for the designing, making and evaluation of an artefact, system or environment, and 2) Technological Capability bias towards science ie, to investigate a scientific principle, apparatus was designed, made and evaluated to test the scientific principle. Sometimes kits were used for this purpose. Both of these forms of activity are not surprising when one considers the close links between science and technology, and the fact that the National Curriculum for Science is already underway and the Technology resources of most Junior Schools are limited at the present time. However, perhaps more important than any of the above reasons is the integrated, cross curricular approach of Junior School Education.

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Although technology specialists in Secondary Schools are familiar with a design approach to the production of a variety of artefacts, and have enjoyed specialist training and facilities over the years, they can learn from their Junior School colleagues when a cross curricular approach is required, as it is in the National Curriculum for Technology. Likewise, the Junior School teachers can learn from the Technological expertise and experience of their Secondary School colleagues. The process of technological liaison is two way, requiring an appreciation of the different teaching skills and experience in both sections of the educational system.

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