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A TVEI and AUTHORITY PARTNERSHIP

SCIENCE AND TECHNOLOGY: THE INTERFACE 14-19

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1. Introduction

By September 1989 all secondary schools and colleges in Northamptonshire will have joined the TVEI Scheme as part of the extension contract with the Training Agency. The phased entry of institutions into the scheme has allowed the officers, inspectors and TVEI co-ordinators to evolve agreed common objectives and strategies. This has been most important in moulding training programmes, INSET support and National Curriculum planning as well as soothing tensions and misunderstandings! The key common objectives in the field of science and technology included the need to:

i) deliver appropriate broad and balanced science for all students 14-16.

ii) develop design and technological capability in all students 14-16.

iii) consider an appropriate science and technology context for all students at 16+ to ensure continuity and progression within an ‘entitlement curriculum.’

In practice this has resulted in a variety of strategies and initiatives.

2. Curriculum review, audit and planning

2.1 Grouping into geographical areas, the TVEI consortia offered a valuable asset in mutual support, curriculum development and consortium initiatives. The schools/colleges on entering the scheme had produced a submission including a one and three year curriculum plan, the same plans form part of the authority’s return needed for National Curriculum planning.

These reviews include a technological mapping exercise across the curriculum and development plans for science and technology. Most schools have considered that a full audit of current practice will be necessary to identify the profile of skills and processes already being delivered throughout the curriculum also, which are repeated in a number of curriculum areas and those given a cursory treatment.

Arising from these reviews, audits and mapping exercises, training programmes, development plans and resource implications can be drawn up. These are either consortium proposals or individual institution plans.
3. **Initiatives**

3.1 **SATIS development**

Most schools now use SATIS (SCIENCE AND TECHNOLOGY IN SCHOOLS) materials as a key resource. Some departments use the ideas and contexts as ideal vehicles for cross-curricular links and projects. This will involve a unit being the foundation of a scheme of work. Industry links are naturally brought into the investigation.

Eg. Island project using local engineering company in alternative energy production.

3.2 **Science Mode 3 Double Award "The Sciences"**

This SEAC approved course has been developed by science teachers in Northamptonshire to allow greater flexibility in the delivery of science and the development of technological skills and links. Ten schools start this course in September 1989, involving students of all abilities.

As part of their planning, schemes of work are being designed to allow the practical skills including "solving technological problems" to be centrally to the notion of students planning and carrying out their own negotiated investigations.

This will be part of a science and design technology audit which is using the following headings:-

- **Practical Skills** -
  - eg. solving technological problems.

- **Curriculum Area links**
  - eg. maths.

- **Attainment Targets**

- **Whole School Themes**
  - eg. Health
    - Environment
    - Citizenship
    - I.T.
    - R.O.A.

- **Teaching and learning styles**
  - eg. Problem solving
    - Making/using models
    - Team work
3.3 Northants TVEI Modular Scheme

Although partially approved by SEAC the value of 3/4 years of development by Northants teachers in terms of staff development including process teaching and assessment cannot be understated.

To have such a vehicle for curriculum change is a powerful tool.

The scheme allowed schools to create a matrix of modules and a cross curricular team of Science, CDT, Fabrics, Home Economics, Business Studies and I.T. teachers to deliver combinations of modules like Prototype to Product, Food Technology and Textiles.

3.4 Special Projects

(a) County Technology Day - 18 secondary and middle schools combining Farming Year Support, technological activity and development issues under the title of 'Cows for Uganda.'

(b) Technology Weeks/Days

Cosmetic production
The Island problem.

(c) Industry Days

Supported by the Industry Education Unit secondees.
eg. Motor Transport.

(d) Economic and Industrial Awareness Group

Producing cross curricular material.

(e) Curriculum Development Groups

Working in consortia to develop teaching materials.

(f) College of Agriculture

10 special schools will commence Science and Technology projects at the College of Agriculture in September 1989, using their variety of resources including:

Wheat to bread
Sheep to clothes.

Other modules are being prepared for use as science/technology contexts e.g.

Animal Husbandry
Protected Cultivation.

Enterprise modules involving ice-cream/yoghurt making is being considered for 16+ enrichment.
3.5 16-19

Using the curriculum audit instrument, consortia have identified in their present practice elements of the 'entitlement curriculum' as described by Northamptonshire. This has highlighted, in schools and colleges, a need to consider the science and technology experience for all 16 year olds. Courses being considered are enhanced general studies courses, enterprise modules, A level college enrichment courses and two year CPVE courses.

Two consortia in the county will pilot the Four Counties Modular General Studies A/AS course from September 1989, making a negotiated science/technology module compulsory linking it to work experience.

4. Curriculum Models

Following a period of great invention and investigation schools are beginning to consider school organisation, to accommodate the links and National Curriculum requirements.

Eg. Model 1

One model involves drawing staff from areas of experience and creating a design and technology department which is fluid and can change quickly to changing need and build on work already being done.

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MATHS  SCIENCE  ART/DESIGN  HISTORY
GEOGRAPHY HOME  CERAMICS  ENGLISH
ECONOMICS DRAMA  MUSIC  LANGUAGES

DESIGN AND TECHNOLOGY
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This team would have a timetable slot but would draw the contexts, themes and projects from core curriculum activity.
5. Development Plans

5.1 National Curriculum Training

The county has appointed and set up core National Curriculum training teams, which include Science, Maths, Design and Technology and English specialists. These teams have a brief to assist all schools in their allotted age range (Primary, Middle, Secondary) to not only consider the subject specific National Curriculum requirements but the cross curricular messages as well.

6. The Challenge

The dissemination and use of many collaborative exercises between science and technology within a National Curriculum framework is now essential. The whole school perspective must be made apparent to all teachers if such a comprehensive, coherent curriculum is to develop from subject related curriculum statements. The holistic nature of technological activity must harness the investigative skills nurtured in science and use them as a set of learning tools and contexts for developing a design and technology capability. This process must be central to development and training, both feeding off each other and combining together with other areas of experience in the curriculum.

Phil Garnham
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