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ECONOMIC AND INDUSTRIAL UNDERSTANDING AND PRIMARY DESIGN AND TECHNOLOGY - IMPLICATIONS FOR INITIAL TEACHER TRAINING

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Introduction

The importance of co-operation between industry and education has come to be recognised in recent years, but the realisation of the relevance of this co-operation to primary schools is only just emerging (1). Education for economic and industrial understanding is one of the cross-curricular themes identified by the National Curriculum Council (2), "It helps pupils understand the world in which they live and prepares them for life and work in a rapidly changing, economically competitive world" (3).

The provision of the cross-curricular theme of economic and industrial understanding within the National Curriculum creates exciting possibilities for primary design and technology (4). The potential of the business context has been explored through the medium of retailing with an emphasis on establishing appropriate curriculum development in initial primary teacher training courses. This study focuses upon ways to provide for economic and industrial understanding in primary design and technology and their implications for initial primary teacher training.

METHODS

Liaison was established with J. Sainsbury plc in order to gain an understanding of aspects of retailing and the application of design and technology within a Sainsbury store. A detailed programme was formulated in conjunction with managerial staff from Sainsbury. This was achieved in two ways: Polytechnic staff working at a Sainsbury store, and Sainsbury staff contributing to staff development in industrial and economic understanding. In addition, a survey was undertaken of other industrialists and primary teachers to explore the scope for extending such work beyond the retailing industry.

Polytechnic Staff at Sainsbury plc

The authors spent a total of six working days at a Sainsbury store. This time was used in experiencing a staff induction programme, investigating details of the store and its management, and work shadowing managerial staff. This experience provided an overview of the company and in particular those aspects appropriate to primary design and technology. These focused on:

- (a) Customer selection of supermarket/layout of store.
- (b) Use of information technology - methods of payment, stock control and ordering.
- (c) Display techniques.
- (d) Examination of the range of products.
- (e) Customer services.
- (f) Safety and security within the store.
- (g) Supply, storage and distribution.

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Sainsbury Staff at the Polytechnic

The senior deputy manager of a Sainsbury store attended staff development meetings/workshops along with relevant members of staff from the Faculty of Education from Nottingham Polytechnic. The purposes of this series of meetings/workshops were to:

- (a) Inform and up-date staff on developments at the national level on economic and industrial understanding.
- (b) Foster relationships between the Polytechnic and commercial and industrial concerns and to involve their representatives in joint programme planning.
- (c) Establish a framework for course development.

Survey of Primary Schools and Non-Retailing Industries

In order to extend the scope of the investigation beyond the retailing industry, a survey was undertaken of four primary schools which had been involved in a Science and Technology Regional Organisation (SATRO) funded project and the associated industries. Schools had developed links with local industries in order to relate the 'World of Work' to the primary curriculum. The survey sought to determine the potential for design and technology through such links.

Structured interviews with the members of staff from both the primary schools and the industries involved in the SATRO project formed the basis for the survey.

OUTCOMES FOR INITIAL TEACHER TRAINING IN DESIGN AND TECHNOLOGY

The National Curriculum in design and technology requires that children identify problems amenable to solution by technological means from within a range of contexts. One of the contexts identified is that of business and industry. This, on first consideration, seems a difficult starting point for young children but our work has shown that, if a broad interpretation is given to the field, then it proves to be a very rewarding and fruitful area for exploration. What infant teacher has not at some time used "The Shop" as a context for all kinds of curriculum work? This business is perhaps the most easily accessible and is within the first-hand experience of every child. Our work with J Sainsbury plc is a natural extension of this into a more complex but nevertheless recognisable context. Other design and technology contexts such as "community" or "home" are also directly related in that the shop must be seen as part of the local community and the goods bought and sold support home life.

The richness of this context for design and technology can be exemplified by examining the range of possible areas for exploration.

For example:

Choice of Supermarket/Layout of Store

Why people shop at one supermarket rather than another - range and quality of goods, value for money, service, atmosphere of store (including environment), accessing the goods on the shelf, finding your way around the store, geographical location of stores in the community.

Range of Goods and Services

Types of food (dry goods, fruit and vegetables, bakery, grocery, etc.) and preservation methods, merchandising to provide additional services (travel agents, chemists, opticians, jewellers, etc.), health and safety considerations, dietary factors.

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Display of Goods

How the display is made attractive, logical and practical, location of popular/less popular items, use of colour, storage on the shelf, shelf life, pricing, stacking and stock control, "special" displays, packaging, recycling.

Methods of Payment

Cash, cheque, credit card, Electronic Funds Transfer at Point of Sale (EFTPOS), accounting, stock control and staff performance monitored from computerised tills.

Staff/Customer Relations

Training, customer services, car parking, "courtesy bus" provision.

Suppliers, Warehousing and Distribution

Specifications for goods, systems of ordering, distribution from central warehousing, distribution of the store, computer ordering and stock data.

Future Developments

Speculative thinking about future plans for the supermarket, its goods, its customer systems, e.g. on-line computer ordering, payment and direct delivery.

EXAMPLE CASE STUDY

This case study describes in outline an activity that might be undertaken in the field of design and technology in relation to a topic on the local community. Reference is made to those Statements of Attainment and Programmes of Study in design and technology for Key Stage 2 that could be covered. Other Statements of Attainment and Programmes of Study, both from design and technology and other curriculum areas, could also be satisfied.

Introduction

Pupils in the upper part of a junior school have explored the locality, both physically and from maps, and have identified the various types of shops and where they are. They have investigated the local Sainsbury store and have made a plan of the shop layout. They are now going to investigate the Fruit and Vegetables section (fresh produce) of the store in order to redesign the shelving (artefacts), the methods used to control stock on the shelves (systems), and the appearance of the section (environment).

Group 1 - Shelving

This group looks at the range of items on the shelves and the ways they are currently stored. The pupils notice that there is quite often a problem with the softer fruit and vegetables getting squashed at the bottom of the pile and decide to investigate how this could be avoided. They come to the conclusion that one layer would be best but this means not much can be stored in a small area. This has implications for Group 2 which is investigating how the stock is controlled. The two groups get together to look at how often the soft foods would have to be restocked if they went ahead with the one layer idea. Group 2 think it could be managed so Group 1 go ahead to design and make their shelving system which will be tried out in the classroom. During the activity the pupils think about how best to display the food investigated and they make spotlights to show up particular items.

Attainment Targets - AT1, Levels 3, 4, 5a; AT2, Levels 3, 4, 5abcd; AT3, Levels 3, 4; AT4, Levels 3, 4ad.

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* **Programmes of Study** - 1abefg, 2abcefg, 3abcdehi, 4abcdfhij; Level 3 - 1abfg, 2abcd, 3a, 4abcde; Level 4 - 1bcgh, 2abcd, 4adef; Level 5 - 2ab, 3ade, 4e.

Group 2 - Stock Control

This group has prepared a questionnaire in order to gain information about how often the fruit and vegetable area is used by both staff and customers. Some of the questions need answers from the staff; others need children to observe what is happening and to record this. The children are concerned about just how much the fruit and vegetables are moved about and handled by people and can see the need for packaging of some items, but are interested in looking for ways to minimise the use of packaging. They know that this is outside their brief for the work they are supposed to be doing, but it seems an important issue to them so the teacher says that this will be explored back in the classroom. (A short, one session minimum, packaging project results from this.) They also note the date code on these packages which helps to ensure that stale stock is not kept on sale. This is an important part of their brief. After the visit the children prepare a system to check the stock on the shelving that Group 1 has designed and made. Groups evaluate the outcomes of their work together, but also look at the work of Group 3.

Attainment Targets - AT1, Levels 3, 4, 5ab; AT2, Levels 3abce, 4, 5; AT3, Levels 3ab, 4; AT4, Levels 3, 4ad.

Programmes of Study - 1abfgh, 2i, 3cdeh, 4abcdfhij; Level 3 - 1abcfg, 3a, 4abe; Level 4 - 1gh, 2a, 4adef; Level 5 - 1bf, 2ac, 3bde, 4be.

Group 3 - Section Appearance

The fresh produce section is very attractive with the colours of the produce used to great effect. It is right by the entrance and makes you feel hungry as you walk through the door, but is it just the look? The smell of bread is also enticing, but the bakery is at the back of the shop. The smell is piped from the bakery section to here to make you want to buy and eat! The group look at where the different fruits and vegetables are within the section and how the organic ones are put together - this is still a small section and items are more expensive. The children take photographs of the displays and make plans of the general layout. When they return to school they re-design the layout using some of the information gathered by Group 2 on how customers use the area. They prepare plans and look at the colour scheme. All of this work is displayed in the classroom. They evaluate their own schemes but also consider how shelving units might be used.

Attainment Targets - AT1, Levels 3, 4, 5; AT2, Levels 3, 4, 5; AT3, Levels 3ab, 4bd, 5ab; AT4, Levels 3, 4abd, 5ab.

Programmes of Study - 1abfg, 2bi, 3abcdeh, 4abcdfhij; Level 3 - 1abfg, 3a, 4abde; Level 4 - 1agh, 2ab, 3bc, 4adef; Level 5 - 2ac, 3bde, 4e.

During the half-term there have been two working visits from trainee supermarket staff to the school and the teacher ends this half-term's work in design and technology by holding a class assembly illustrating the work.

It can be seen from this analysis that some of the activities are stronger in particular areas than others, e.g. the work undertaken by Group 1 is particularly strong in AT3. Other activities would need to be undertaken to reinforce some of this work and address the areas omitted. As demonstrated by the survey undertaken of industries, there is considerable scope for extending such work beyond the retailing industry.

IMPLICATIONS FOR INITIAL TEACHER TRAINING

Having explored the context of the Sainsbury store to develop design and technology activities, it is important to consider the implications of this potential for initial teacher training. The supermarket

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provides an appropriate context for students to explore for themselves the "World of Work" and subsequently plan schemes of work in a number of curriculum areas for all children of primary school age.

J. Sainsbury plc again provides an excellent resource with a large number of stores throughout the country, and contact with such an organisation provides students with an excellent model from which to diversify into other industries.

There is a range of course units which would be developed within initial teacher training which would build on the experience gained through this study. However, all course units should work to achieve the following aims:

- (a) to raise awareness of the way the primary curriculum can be enhanced by an industrial dimension;
- (b) to increase students' confidence in approaching the world of industry and commerce and to assist them to work in close partnership with an industrialist in developing their work;
- (c) to increase students' knowledge of the world of industry and commerce;
- (d) to raise the students' awareness of the variety of resources and skills needed to bring an industrial dimension into the primary school curriculum.

It is expected that the following processes will be fundamental in realising these aims:

- (i) introduction of students to design and technology using the industrial context;
- (ii) visits to a variety of industries;
- (iii) preparation for both teaching practice and industrial placement including visits to school, and negotiation of a short (2-3 day) placement in the industry, e.g. a J. Sainsbury store;
- (iv) identification of potential for design and technology from the store;
- (v) students planning design and technology work for children;
- (vi) evaluation of work by tutor, industrialist, teacher, student and children.

At all stages in this process it is essential for the student, industrialist and tutor to work together in close partnership.

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REFERENCES

1. Smith, D. (Ed.). Industry in the Primary School Curriculum. Falmer Press, London, 1987.
2. National Curriculum Council. The National Curriculum and Whole Curriculum Planning. NCC Circular 6, November 1989.
3. National Curriculum Council. Curriculum Guidance 4, Education for Economic and Industrial Understanding. NCC, York, 1990.
4. DES and the Welsh Office. Technology in the National Curriculum. HMSO, March 1990.

*** Programme of Study Coding**

- 1 - Developing and using artefacts, systems and environments.
- 2 - Working with materials.
- 3 - Developing and communicating ideas.
- 4 - Satisfying needs and addressing opportunities.