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Developing Economic Understanding through Design and Technology

Jephcote M and Hendley D

Department of Education, University College of Swansea

This paper specifically asks what design and technology can contribute to the development of pupils economic understanding. Most interpretations of economic understanding have placed it within a business and industry context. We acknowledge this but will argue that such a narrow interpretation which ignores the other contexts will not provide opportunities for economic understanding to develop on a broader front. By posing a number of questions we will suggest that we should look again at the relationship between design and technology and economic understanding. We suggest that this relationship is based upon the values and attitudes which teachers should seek to develop.

Questions to be considered include:

what is economic understanding?

what are appropriate contexts for developing economic understanding through design and technology?

what level of economic understanding should pupils attain, and how can that be described?

The authors wish to share their current concerns which are themselves the subject of their own research.

BACKGROUND

References

Recent years have witnessed an emerging number of terms and definitions of Technology in the National Curriculum, DES, 1990
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years: spurred on by key statements made by Callaghan and Joseph; reflected in DES and HMI statements; picked up as a key strand of TVEI, and now having separate non-statutory guidance for EIU in England and Wales

There is a growing amount of work taking place in schools aimed at developing and extending some form of economic understanding in pupils. That task is being undertaken in a number of ways including work experience, industrial links and enterprise activities. However, given the structure of the National Curriculum the question which now has to be addressed is what can each core and foundation subject contribute to the development and extension of pupils economic understanding. This paper considers that question in relation to Design and Technology - a subject which now has the opportunity to contribute to the learning of every pupil.

WHAT IS ECONOMIC UNDERSTANDING?

It is possible that 'EIU' means all things to all people, with the danger that it becomes everything yet nothing. That danger might exist because of the pressure which there is to deliver some common, but clearly some competing objectives from industry, government and professional educators. Even within each of these areas there are different objectives and different pressures being exerted.

There is no single term in use though 'EIU' is widely adopted, and there is certainly not a shared common understanding of this or any other phrase.

At its narrowest 'EIU' is seen as providing pupils with the necessary skills and competencies as a preparation for work; providing an understanding of the workings of business and the economy; to a broader view of contributing to their general education. As a cross-curricular theme and not a separate subject, forming part of every pupils' education from 5 - 16, agreement needs to be reached about what EIU is.

Davies (Economic Awareness Vol 3 No 2 Jan 91) analysed five HMI reports which looked into aspects of Economic Awareness and Economic Understanding (including work experience and mini enterprise). He concludes:

“ ‘Reviewing personal experience of the economy’; ‘developing a critical ability in relation to evidence’ and ‘an awareness of personal and social values’ are all mentioned in these reports. The notion that Economic Awareness is about learning economics, and that learning economics means learning particular economic ideas is, however, more prominent”.

A later HMI discussion document (Statement on Business and Economic Education 5-16, November 1990) indicates little change. Economic understanding it states is "...concerned with those concepts which underpin all human endeavour related to the creation and distribution of wealth. It is also concerned with an understanding of the institutional framework and those

social structures which currently exist to further wealth generation and order its distribution". The document recognises that a one-sided view should not be given and notes the importance of values, but generally it leaves the impression that pupils have to be aware that they live in a world where the die is cast, that they live in a business and economic society and need to learn about business. To gain an economic understanding they must grasp economic principles and concepts.

Curriculum Guidance 4 (Education for Economic and Industrial Understanding, NCC 1990) makes the broad statement "Education for economic and industrial understanding involves controversial issues, such as the impact of economic activity on the environment" and whilst noting that "schools should ensure ... where relevant ... a balanced presentation of opposing views" it does little to present such a view in its notes and examples. These emphasise another statement made in the introduction "Pupils need education for EIU to help them contribute to an industrialised, highly technological society....To meet this challenge pupils need to understand enterprise and wealth creation and develop entrepreneurial skills".

It was noted in an NUT discussion paper (NUT National Conference July 1990, in Economic Awareness Vol 3 No 2 1991) that the view put forward in Curriculum Guidance 4 promotes Economic Understanding as a body of knowledge with concepts and attitudes to understand rather than challenge, and it quotes the suggestion that in Key Stage 3 schools should teach pupils that "Companies compete in business through innovation, price and advertising, aiming to increase their share of the market and sell more goods and services". The NUT paper suggests that an alternative approach would be to "encourage pupils to question and challenge the whole notion of competition in business and elsewhere". It goes on to say "In terms of classroom practice this means that a 'knowledge' teacher would be in charge of 'the truth' and would help his/her pupils arrive there, while the 'critical awareness' teacher would confront the pupils with a range of views to be analysed and challenged".

Generally the focus and interpretation of 'EIU' is of personal financial management, work and industry. Stress is placed on the value of money values and profit. These interpretations do not constitute a cross curricular theme, rather straight-forward business studies and they ignore any real consideration of how values, attitudes and beliefs lie at the heart of economic understanding.

The then MSC in its document on Economic Awareness (TRIST Document of National Importance 1) provides the following description: "Individuals, industrial, commercial and other groups in a country, as well as national and international communities make decisions about the use of resources. Together their decisions create the institutions, habits, values and constraints which in turn influence individual and group behaviour and decisions which compromise the economic system. To understand how the economic system works - to be economically aware - means to be able to assess the implications

of individual and group decisions and to evaluate them.” This description gives an holistic view of economic understanding, which allows teachers to build a broad base for pupils' understanding of the decisions which they and others take and the consequences of those decisions.

This description gives us a starting point from which to develop our own interpretation of economic understanding.

The society in which we live is created by the people who make up that society. Acting individually or in groups people make decisions about the use of the world's resources which affects the quality of life for members of that society.

The process of design and technology - an integrated process of identifying needs, designing, making and evaluating - is one of developing and using skills, abilities and resources (including physical and mental effort) which brings about changes in peoples' lives and their environment. It is in part a decision making process which involves comparing the available alternatives and making choices based on an assessment of their consequences.

Making such decisions as individuals, and to begin to appreciate the basis on which decisions are taken - including knowledge, values, attitudes and beliefs - is to begin to develop economic understanding. To recognise how other individuals or groups such as community, business and commercial organisations make decisions about the use of resources is to further develop economic understanding.

What we should be asking pupils to consider is:

- * What type of society is it they want to live in now and in the future?
- * Which aspects of our society do they currently value and which do they seek to change?
- * How should society's resources be organised and distributed?

Specifically, we should consider how design and technology can help in causing pupils to reflect on such questions.

Our own view of what developing economic understanding is about does not itself provide or invite pupils to provide single or simplistic answers to these questions. The economic society in which we live is complex and answers to these questions are bound to be controversial. Descriptions of economic understanding which reduce it to a mere statement of skills, competencies or areas of experience are unlikely to give rise to a consideration of questions of this order.

What are appropriate contexts?

An assumption made by many is that within design and technology it is the business and industry context through which economic understanding will be developed. Contact with teachers in schools indicates this to be the case and furthermore some assume that economic understanding is an automatic by-product of doing any work in this context.

Design and technology is an important area through which economic understanding can be developed but little has been done to show how this can be achieved

The NCC non-statutory guidance for design and technology (NCC 1990) offers advice on this by stating:

“Pupils need experience of the technological needs and opportunities arising in business and industry, and one of the judgements which must be made. Considerations such as:

- * client and consumer satisfaction;
- * the importance of quality;
- * added value;
- * business structure;
- * production quantities;
- * market size;
- * environmental impact;
- * finance and deadlines;
- * health and safety;

can arise naturally when technological activity is related to business and industrial contexts. Work related activities can foster and demonstrate the value of personal qualities such as enterprise, self discipline, persistence, social responsibility and the ability to work with others, take initiatives, decisions and risks.”

Again what we see is emphasis on the business and industry context although there is an indication of the importance of the personal qualities which can come about presumably because of the process based nature of design and technology.

Curriculum Guidance 4(NCC 1990) illustrates the contribution of economic understanding to design and technology. For example, through applying innovations to production pupils can learn about 'efficiency' and 'productivity' and through enterprise activities can learn about investment, risk and marketing supply and demand.

HMI in their discussion paper (Nov 1990) extract specific attainment targets and programmes of study which specify an economic and business dimension and state their view:

"Given the focus of technology and the amount of time likely to be allocated to it, the business and economic dimension is unlikely to expand beyond a basic interpretation of these requirements in most schools".

Time will show how many teachers adopt this pragmatic approach.

The same paper makes the point that to focus on marketing costing etc., "... provides only a partial coverage of the desirable educational agenda." and a balanced economics education needs to consider broader issues including those on a local national and international level.

Achieving this will be difficult but it is a move which merits support.

It is the emphasis on business and industry which narrows the view of economic understanding and tends to limit the range of contexts and experiences through which it can be explored in technology. The economic system is complex and is made up of participants who take part. Economic understanding must embrace all aspects of economic activity, so just as people go to work or engage in business, it is necessary to include how people go about their daily lives and the paid or unpaid contribution which they make. Most important of all is the need for pupils to reflect on the economic system and their experiences of it.

In adopting a broader approach to economic understanding then so too can a broader range of contexts experience be included. Indeed just as design and technology contexts include the home, school, recreation, community, business and industry then economic understanding can be developed through them.

Without such a broadening of contexts through which to explore and develop economic understanding there is the possibility that a business view of the world is projected in which standards become business standards and where the language and terminology is affected - even taken for granted. Words such as profit, efficiency and productivity are adopted as part of every day speech and are used in a variety of situations as if they had a single meaning.

Knowing about business, how they operate, the constraints under which they work, and their contribution as producers and employers is important. The ability to questions and critically appraise their activities is equally important. To ensure this, it is vital that businesses are compared and it is vital that other contexts are explored when, for example, one wishes to consider how resources are used or decisions are made.

The home as a context can provide the focus for questions like 'Is there adequate housing for everyone? Why is there homelessness? What can be done about it? How can we improve the environment in which we and others

live?

The community can be used as a way of considering alternative means of provision of care and services, or be concerned with decision making about the use of land for building or other purposes.

Through recreation pupils could look into the provision of play areas, museums and other facilities, school too can become a context for economic understanding without being limited to business type activities.

Another context which the application of design and technology needs to be seen in is a global context.

A concern which technology has to deal with is the increasing interdependence of global societies, and their use of the world's resources. A second concern is that of the global environmental crisis caused by environmental degradation (witness, for example, acid rain, Chernobyl, the destruction of rainforests and depletion of the world's natural resources). These are areas which economic understanding has a great deal to offer Technology.

When the concerns of global interdependence and environment are included as a context technological response to societies problems have to be considered in a framework of economic understanding. If economic understanding is interpreted a narrow sense then it will ignore the key technological issues facing world society now and in the future.

If pupils are to consider what type of society they want to live in, the reality of global interdependence means this should include a world perspective; if they are to consider how the world's natural resources are to be organised and distributed, they must take into account what those resources are, where they are located and the consequences of using them. Other questions such as who is using them, and what for, will inevitably follow.

Other broader questions which we should ask pupils to consider are:

How should the world's resources be used?

What are the consequences of these decisions on the people of the world and the environment?

How can technology, based on economic understanding inform our solutions to these problems?

Appendices 1 and 2 pick up many of the references in the Standing Orders for Design and Technology which cover economic understanding.

Levels of economic understanding

Given the questions posed and based on what we see economic understanding to be, we would not expect there to be a predetermined set of outcomes or standard responses.

How pupils respond to any task or problem - what they say, how they act, the solutions they produce - must be taken individually. Pupils must make clear the reasons for their actions and justify them. Opportunities should be provided for individuals to be questioned and challenged.

What this might provide is insights for teachers into what the individual pupil understands and in turn how they are led to act. Ultimately this is not information which the teacher needs to know for any reason to do with measuring the individual's level of (economic) understanding, it is information which the teacher needs in order to help the individual understand how they make decisions and what has influenced them.

Attempting to produce simple measures or indicators of levels of economic understanding even if possible, is in itself unlikely to produce the reflection needed to extend or change an individual's thinking. This is only likely to come about by listening to and recording what pupils do and say and through constructing appropriate activities which allow pupils to explore and review their own understanding.

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Appendix 1

The list below indicates where in the attainment targets for design and technology that economic understanding could be brought out. The numbers refer to the different levels.

Attainment Target 1

2b, 3b, 4a, 4c, 4d, 4f, 5a, 5b, 6b, 7a, 7c, 8a, 8c, 10a, 10b.

Attainment Target 2

3a, 3c, 3e, 4b, 4c, 5b, 5d, 6b, 6c, 7a, 7b, 7c, 8b, 9a, 9b, 10b.

Attainment Target 3

3a, 3d, 4a, 7a, 9b, 10b.

Attainment Target 4

2b, 4a, 4c, 4d, 5a, 5c, 6e, 8a, 8b, 9a, 10b.

Appendix 2

The following are quotations taken from the Programmes of Study for Design and Technology.

Key Stage 1

“realise that resources are limited, and choices must be made”

“care for their surroundings”

“recognise that a solution may result in problems in other areas”

“recognise aesthetic qualities in things around and use them in their work”

Key Stage 2

“use knowledge and judgement to make decisions in the light of priorities and constraints”

“know that the needs and preferences of consumers influence the design and production of goods and services”

“recognise the importance of consumer choice”

“consider the possible consequences of their design proposals before taking them forward to completion”

“consider the needs and values of individuals and of groups from a variety of

backgrounds and cultures”

“investigate the effects of design and technology activity on the environment”

“establish and apply criteria for assessing:

the needs and opportunities identified;

the choice of materials and equipment to achieve the design;

the procedures adopted;

the end result.”

Key Stage 3

“set objectives and identify resources and constraints”

“investigate the effects of design and technology activity on the environment, and take account of its impact”

“recognise that economic, moral, social and environmental factors can influence design and technology activities”

“recognise potential conflicts between the needs of individuals and of society”

Key Stage 4

“recognise the economic, moral and environmental effects of technology”

“recognise and take into account in their designing that people can be an element in a system”

“recognise the needs of individuals and groups from different backgrounds, when designing for their needs”

“recognise the importance of the views of users and others affected by design proposals and take this into account in taking design decisions”

“explain the social and environmental issues arising from design and technology activities”

“devise alternative solutions which meet social and environmental concerns”

“recognise potential conflicts between the needs of individuals and of society.

Negotiate with people having different points of view”

Appendix 3

Some of the acronyms used in the paper:

EIU Economic and Industrial Understanding

SCIP Schools Council Industry Project

BIS Banking Information Service

EcATT Economic Awareness Through Teacher Training

SATRO Science and Technology Regional Organisation

UBI Understanding Business and Industry

CRAC Careers Related Advisory Council

TVEI Technical and Vocational Education Initiative

MSC Manpower Services Commission

TRIST TVEI Related In-Service Training

NCC National Curriculum Council
HMI Her Majesty's Inspectorate
CCW Curriculum Council for Wales
DES Department of Education and Science
BP British Petroleum
HMSO Her Majesty's Stationary Office