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NATIONAL CURRICULUM: DESIGN AND TECHNOLOGY - A TECHNOLOGIST'S POINT OF VIEW

Lewin R.H

Technology Consultant

For me this is a very special year. We celebrate the 20th Anniversary of man landing on the Moon and it is the year when the Government introduces Design and Technology as a Foundation subject for all pupils from 5 - 16 years of age.

Twenty years ago I worked on the NASA space research programme and saw at first hand the contrast between the American and British approaches to Science and Engineering. There was a nation excited by technology and their President telling the people that shortly they would land Americans on the Moon. Here was a nation rapidly loosing its industrial base and Universities pre-occupied by academic work with little direction; engineering and industry were seen as dirty and not the place for aspiring pupils and students leaving university. All this was symptomatic of a nation that had little regard for those activities which produced a large proportion of the inherent wealth on which it was founded.

By 1976 the pound was under extreme pressure and the interest rate in the U.K. was at its highest level. In October, the Prime Minister, Mr. James Callaghan raised the subject in a speech at Ruskin College, Oxford, and started a debate which has continued to the present time. His message has been accepted by all political parties and since then there has been movement within education circles leading to the National Curriculum and more specifically the Foundation subject - Design and Technology.

In June 1989, Lady Parkes, Chairman of the Design and Technology Working Group, sent a letter to the Secretaries of State for England and Wales, which included the following paragraph:-

'Our approach to Design and Technology is intended to be challenging and new. The aim of our proposals for Design and Technology is to prepare pupils to meet the needs of the 21st Century: to stimulate originality, enterprise, practical capability in designing and making, and the adaptability needed to cope with a rapidly changing society.'

This statement captures very well **what** we want to achieve, the challenge now is **how** can this be realised.

As professionals in the subject, the answer surely must be to adopt sound design principles incorporated in the four Attainment Targets namely:-

Identifying needs and opportunities
Generating a design proposal
Planning and making
Appraising

Identifying Needs and Opportunities

The need was identified several years ago by Government and powerful influential bodies including: CBI, TUC, RSA and The Engineering Council.

This need has turned into an opportunity which this country cannot afford to miss. Our first task is to make clear to Parents, Governors, Teachers and Students that the National Curriculum aims to :-

- a) promote the spiritual, moral, cultural, mental and physical developments of pupils at the school and of society
- b) prepare pupils for the opportunities, responsibilities and experiences of adult life

Even a cursory reading of the Design and Technology Document will show how these statements are incorporated in this new Foundation subject, but considerable effort will be required to unpack the document so that people can understand and believe in it. Many will be discouraged by the wording and the apparent complexity, bearing in mind that this comes fast on the heels of the three core subject documents which also need to be understood and implemented.

Clearly, it will be an up-hill task at first but both industry and education will reap the rewards in the future by producing a society having positive attitudes.

Generating a Design Proposal

Viewed through the eyes of a design brief the Design and Technology Document has passed through a series of sketches, information has been collected from different sources and early models and prototypes produced. A successful designer must keep in mind the receiver of the design proposal or to use words taken from Attainment Target 2 'produce a realistic, appropriate and achievable design...' and by refining and detailing the design proposal chosen.

The Working Party must be congratulated for adopting this strategy; they toured the country collecting examples and information on good practice, an Interim Document was circulated to a wide range of interested parties and have now produced the present Document ready for fine tuning by the National Curriculum Council and the Schools Examination and Assessment Council.

Planning and Making

The vision, creativity, drudgery and discussion over the past two years has not to be put into practice. To quote AT3 - 'Working to a plan developed from a previously developed design ... identify, manage and use the appropriate resources including both knowledge and processes.'

Ideas into action calls upon a wide range of constraints - finite resources such as finance, time, people, materials, communications and motivation. To take one example - communication and interpretation. What is an Attainment Target, Level of Attainment, Profile Component, Programme of Study, Standard Assessment task or even the National Curriculum. What do these words mean to a Home Economics teacher, Art teacher, Head teacher, primary teacher, pupil, parent or Governor; there is a lot to be done!

Seeing projects through to completion is a fundamental weakness in the British system. We abound with ideas but fail to capitalise on them for a host of reasons: sometimes designers cannot persuade those holding the purse strings to invest in their ideas while on another occasion a new idea excites our attention. We only have to look at all the imported consumer products which started life in the U.K.

These observations apply to the National Curriculum which is in effect a social invention. If we are to implement the Orders we must not lose sight of the original objectives and have political and financial will to introduce it properly.

This will mean on the one hand, considerable funds for equipment and premises, while on the other hand an adequate In-service training for teachers. At the present time education is the poor relation of industry and the services who recognise the value of high quality and extensive staff training. Without sound INSET the motivation of teachers will further decline leaving the National Curriculum.

Appraising

Finally, we come to evaluation and testing, which most people find the least interesting part of the design process, and yet it is the key to a successful outcome. Psychologically it is painful to see an idea which you have loved and made being critically examined by others. The party is over but the washing up has to be done. But within this reflection considerable learning takes place and we can see whether our objectives have been met. Rarely are ideas fully realised at the first attempt and this will certainly be the case with the Design and Technology Document.

Future Action

To succeed we must demonstrate that Design and Technology is a cross-curricular subject which naturally brings together Home Economics, Art, Business Education and C.D.T. At the same time it relies heavily on the other Foundation subjects and in turn can help enrich them.

Particular attention must be paid to those subjects extra to the statutory National Curriculum particularly religious and moral education, and personal and social education, without whose input design and technology would make little sense.

Finally, we must demonstrate that underpinning the knowledge of design and technology is the process of how to achieve effective results and that this new Foundation subject teaches a range of transferable skills which will equip our young people to meet the challenges of the 21st Century.