

## The Business of Technology

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The role of the business and economics education teacher in design and technology has been discussed by many and, arguably, dismissed by others. The purpose of this article is not to revisit the various viewpoints, but to show the role of business and economics education in the delivery of the subject. In a time when the National Curriculum spotlight is being turned onto design and technology it would, to start, be helpful to put aside the present targets and programmes of study to consider this issue.

An illustrative example is that of marketing, it is true to say that those companies that ignore its basic principles do so at their own peril. Consider the case of the often quoted example of the Sinclair C5. It may be argued that the design of the product resolved a perceived need of the designer of a particular form of transport. However the basic principles of marketing seemed to be lacking when the C5 was given its 'launch' to the general public — nobody wanted it. A contrasting example is that of Amstrad; here it would seem is a company that is able to apply these basic marketing principles and is able to produce goods which sell. The point here being that the company is able to identify the requirements of the market and produces a design and product which meets them (and not necessarily by being innovative). This does not mean however that the design and technology curriculum should be solely concerned with educating for enterprise, or with mass production techniques. If there is an acceptance that the 'real world' must have an influence on our work in schools these concepts must be addressed. The 'one-off' design must still have a place in the development of pupils design and technology capability; but as they progress through the Key Stages this capability must be accompanied by an awareness and understanding of the principles that are used, and drive, producers in the market place.

It is possible within design and technology to develop an understanding of marketing at Key Stage 3. A company would consider the following when developing a product for a market:

- Product Design
- Market Research
- Test Marketing
- Distribution

- Advertising
- Pricing

Though these concepts may seem to lie in the realm of 'business jargon', consider briefly how the products that are offered to us as consumers come into being. New goods and services are developed by companies as they seek to replace their existing products, which may not always be in demand, or as they seek to increase their range of products. (product development). This is driven by the fact that all goods and services have a 'life' cycle (product life cycle), during which their popularity changes. A firm will strive to increase the length of time over which they can sell a product, for example by improving or altering the design.

Due to competition for consumers a firm will develop a brand image for their products which makes them different, in the eyes of the consumer, from their competitors products (branding). An example to consider here would be the different images created by Nike and Reebok for training shoes. Their products are essentially the same but their design and advertising attempts to differentiate them.

The choice of advertising media and the methods used will also go a long way in determining whether a product, no matter how good its design or quality, is a success with the consumers. Individual factors such as packaging, which are part of the marketing strategy, will re-enforce the brand image as well as attract attention.

Before products are offered to consumers, they will all have been the subject of much research by their manufacturers. The development of an idea into a product requires questions such as; What age group is it for? What is the income level of potential consumers? to be answered. The methods of market research enables the collection of this information and its analysis enables the producer to modify a design (or abandon it altogether) in order to meet the needs of the consumers. The information can be obtained in many ways eg. desk research, consumer panels, the method(s) chosen being appropriate to the product. Even the use of a questionnaire is not as simple as it may seem. If this method is to be employed the researchers are faced with questions such as; Who are we going to ask? What age groups? How many people? These are just the start of the process of deciding which method of

sampling a producer will use in researching the market for a product.

The development and research that will be put into a product will be overshadowed by the price that consumers can be expected to pay for it. An understanding of the mechanism which determines price, coupled with appropriate research and development, enables a company to produce a product that they feel will be purchased by consumers.

A more comprehensive list of the points that would be considered by a company in the development of an idea into a product are given in Table 1.

These concepts relate to the development and selling of a product in a market and impose additional factors that have to be considered in the design and make process. Additional factors relating to the operation of a business have also to be considered, which should be developed through design and technology, at Key Stage 4. A company will operate a business plan which will contain:

- Internal Organisation
- Method(s) of Production
- Organisation of Resources

- Scale of Production
- Costs of Production
- Type of Production
- Type of Ownership
- Finance

These points are considered in Table 2.

Reference to the present programmes of study has so far been avoided. However it can be seen that the concepts above are *outlined* in them but are given little or no detail eg. Key Stage 3 'Identify markets for goods and services and recognise local variations in demand', 'Prepare a business plan...'

The development of these business concepts are central to the development of design and technology capability at Key Stages 3 and 4. However they cannot suddenly appear at the secondary phase of education, they need to be introduced at Key Stages 1 and 2. Turning to the existing Programmes of Study gives us;

Table 1

<p><b>■ Product Design</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Research and Development</li> <li><input type="checkbox"/> Product Life Cycle</li> <li><input type="checkbox"/> Packaging</li> <li><input type="checkbox"/> Quality Control</li> </ul>	<p><b>■ Market Research</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Methods: Primary Sources — Desk, Field, Consumer Panels. Secondary Sources — Retail, Audit, Observation etc.</li> <li><input type="checkbox"/> Methods of Sampling</li> </ul>
<p><b>■ Test Marketing</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> The information gained about the product by introducing it into one region of the Country before launching it nationally</li> </ul>	<p><b>■ Distribution</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> How and where the product is to be sold</li> </ul>
<p><b>■ Advertising</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Types: Persuasive, Informative, Generic, Corporate etc.</li> <li><input type="checkbox"/> Choice of media</li> <li><input type="checkbox"/> Constraints on adverts</li> <li><input type="checkbox"/> Sales promotions (eg) Free Offers, Vouchers etc.</li> <li><input type="checkbox"/> Point of Sale Promotions</li> </ul>	<p><b>■ Pricing</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Factors affecting the demand for a product</li> <li><input type="checkbox"/> Factors affecting the supply of a product</li> <li><input type="checkbox"/> Price determination (Market Price)</li> <li><input type="checkbox"/> Deciding on a selling price (eg Cost Plus, Methods —</li> </ul>

**■ Key Stage 1**

- ‘Know that goods are bought, sold and advertised’
- ‘realise that resources are limited, and choices must be made’
- ‘Ask people about their preferences
- ‘recognise that goods are designed, made and distributed’

**■ Key Stage 2**

- ‘know the needs and preferences of consumers influence the design and production of goods and services’
- ‘recognise the importance of consumer choice and hence the importance of product quality and cost’
- ‘understand that goods may be designed to be produced singly or in quantity, and that this affects what each item costs’

These not only support what has been suggested, but also raise the question that if these capabilities are present in Year 6, should they not be used and further developed in Years 7 to 11.

The points outlined can provide a basis for both the specialist and non-specialist to appreciate their roles and the central role of business and economics education in the delivery of design and technology.

Table 2

<p><b>■ Internal Organisation</b></p> <p><input type="checkbox"/> What type of management structure is suited to the operation of the firm? How are production decisions affected by this?</p>	<p><b>■ Organisation of Resources</b></p> <p><input type="checkbox"/> The management of resources such as raw materials, labour etc</p>
<p><b>■ Scale of Production</b></p> <p><input type="checkbox"/> Is the product suitable for mass production? Are there possible economies of scale? How is the product design affected? Who benefits — the consumer or the producer? (Value Analysis)</p>	<p><b>■ Costs of Production</b></p> <p><input type="checkbox"/> Types of costs — Fixed and Variable</p> <p><input type="checkbox"/> Average Total Costs — what does it cost to make each item produced?</p> <p><input type="checkbox"/> Break-even analysis — at which level of output are the costs of production met?</p>
<p><b>■ Type of Ownership</b></p> <p><input type="checkbox"/> What type of ownership is suitable for the business? What constraints would this impose upon the working of the firm? (eg Capital, Size etc.</p>	<p><b>■ Finance</b></p> <p><input type="checkbox"/> Sources</p> <p><input type="checkbox"/> Type — Circulating and Fixed Capital</p> <p><input type="checkbox"/> Cash flow/forecast</p>