Values and Food Technology — Towards a Practical Approach

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The teaching strategies by which pupils can be made to confront the values issues in technology must involve giving them opportunities to make decisions and reflect on those decisions (Prime, 1993).

Introduction

Prime has argued convincingly that every technology involves value-based choices (Prime, 1993). Perhaps there is no area of technological activity where this is more so than food technology. Here the products of technology are the very basis of our survival and therefore they are very high in our hierarchy of needs (at the biological level). For this reason food technologies have a direct impact on our personal lives and hence become the focus for the expression of a considerable range of values. These include values related to our health and safety, our creativity, and decision-making. Food technology therefore represents both a 'nexus' of values issues and a significant context for exploring these values in a practical way. As the quotation above suggests one of the challenges now facing technology educators is to make the values issues in technology accessible to pupils and give them the opportunities to make decisions which help to make their own and others' values more explicit. Therefore, the teaching and learning strategies we use should be capable of supporting these key requirements.

The value-based choices that people make about food have changed as the technologies of food production have changed. Prime has pointed out that participation in a technological society demands an understanding of the ways in which technology is changing society (Prime, 1993). In the pre-industrial phase of a culture food may be gathered or grown using traditional knowledge acquired over many generations, and involving a significant proportion of the community. This self-sufficiency leads to the development of certain values and attitudes, for example, a deep respect for the environment. At the same time the types of foods eaten and the manner of their preparation become distinctive aspects of a culture, reflecting not just taste, but fundamental features of the land and climate as well as religious and spiritual values.

In industrialised economies the connection between a food product and the environment is no longer experienced by most people, except indirectly through packaging and advertising. The values nexus may be no less deep seated in personal and social lives, but in such societies it also has a strong economic dimension which may overshadow some of the spiritual, cultural and environmental values associated with food. 'Value-addedness' becomes an economic rather than a cultural factor! Pupils need to understand these changes and their impact on the way we live our lives and the food we eat. For these reasons the controversies and value conflicts arising in modern food technology as an industrial process need to be made accessible to discussion by pupils.

Using Simulations to Explore Values in Technology

The Biotechnology in Schools Project (Henderson and Lally, 1987) did some pioneering research on the use of simulations as a teaching strategy in technology. It was found that simulations provide a sophisticated yet flexible framework for addressing values issues in technology education and giving pupils access to the values conflicts and controversies arising from rapidly changing technology. Simulations can also be an excellent framework for promoting pupils' discussion.

A simulation involves planning a clear structure for students' work so that they may proceed to the creative part of the work without the direct intervention of the teacher. Obviously the role of the teacher changes in this situation from that of lesson director to lesson co-ordinator and activity facilitator. For the teacher this may take some getting used to but the benefits in terms of increased pupil confidence, responsibility and creativity may be considerable. Of course the teacher remains fully in control of the lesson by means of the simulation structure, but through its use provides students with a 'creative space' for their thinking and imagination.

The basis of the simulations used by the Biotechnology in Schools Project is a three-stage framework derived from Jones (1980, 1985):

a. The Briefing;

b. The Action;

c. The Debriefing.

The classroom simulation described below is a whole investigation taking three to four hours worth of lesson time. It is a highly structured

activity in which students have a lot of control over the communicative aspects (the discussions, evidence analysis and presentation) but less over the basic problem definition.

■ Dairy Biotechnology — An Example of A Simulation

This example is called 'Designing a New Yoghurt' from a unit called Dairy Biotechnology (Ingleby et al. 1987, section 1). Yoghurt is used because it is very suitable as a familiar fermentation product which is easy to work with. Pupils will have previously made yoghurt for themselves and be familiar with the manufacturing process from an earlier part of the unit. In addition they will have conducted a simple consumer survey of commercial and home-made yoghurts, comparing them for price, flavour, texture and colour.

a. Briefing

At the start of the simulation students are briefed and the scene is set for the work. First the teacher gives a short overview of the whole activity. The aim is for students to work in small groups as 'commercial' companies. The problem is to design a new yoghurt including packaging and contents, and then produce a marketing campaign, package design and logo for the product. Companies of six students are formed and within this group each of three pairs receives a different role card for (i) Customer Researchers, (ii) Yoghurt Scientists, or (iii) Marketing Advisers.

b. Action

During the first part of the action each pair of students from the company then carries out the task assigned to it. The customer researchers use a systematic testing procedure of commercial and class-made yoghurts to find out which combination of price, packaging and ingredients is most popular. They record this information on a pro-forma which they can then take with them to the board meeting that follows. While they are engaged in this work the yoghurt scientists are analysing the ingredients of yoghurt using information from a diet and health report. At the same time the marketing advisers are engaged in an analysis of recent market trends in the yoghurt industry.

All of the support materials required by the pupil 'companies' including report proformas, are available in the room. The teacher is not needed to direct the lesson and is free to act as a 'consultant' to the companies. He or she must take care, though, not to dominate students' discussions with directive questions or suggestions. It is the students, in the roles of company personnel, who are 'in charge' of the work. The teacher must take care to maintain this student-centred atmosphere during the work.

In the second stage of the action the pupil pairs convene as a company board, complete with an agenda. Each company will have representatives from each of the three specialist activities, as described above.

The board meeting is a small group decision-making discussion. After the election of the chairperson and his or her opening comments each pair in turn presents the evidence of its findings to the board. These presentations may well lead to conflicts of opinion within the group. For example, the customer researchers often find that sugar is popular as a yoghurt ingredient. The scientists, on the other hand, may sometimes suggest that this ingredient has damaging effects on health. When added to the findings of the market researchers some heated and sophisticated discussions very often ensue. Once again the teacher must take care to do no more than 'eavesdrop' on these discussions.

In the final part of the action each group prepares a marketing strategy, package design and logo, and a rationale for its product profile. For example, a group may decide to market its yoghurt as a health food, use an alternative to sugar as a sweetener, and design its advertising to aim at this market. In doing so they may have decided on a compromise between the protestations of the scientists and the insistence of the marketing advisers. This is all wrapped up in presentations to the other companies (the rest of the class). These occasions are often fired with a friendly rivalry and reveal enormous involvement, imagination and command of relevant knowledge on the part of students. What might in another context be a rather timid and brief explanation by a group may, within the real context simulation framework, become a much anticipated and prepared for 'event'.

c. Debriefing

In the debriefing that follows the teacher's role reverts to the more usual one of 'director'. During the action he or she will have made note of any misunderstandings or issues which

arose. In this last part of the simulation the students also return to their more usual roles. A whole class discussion will then be used to address the points noted. For example, if a group did not use a fair test in its customer survey this might be raised as a general point. Another group might have marketed a yoghurt with high sugar content as healthy. This might be challenged on the basis of the evidence provided to the yoghurt scientists (not all the students will have seen this information during the action). One group may have used a particularly innovative approach to package design. The teacher may wish to draw this to the attention of the whole class. The simulation, when used with Y10 (14–15 year-old) students, takes about two hours to complete.

■ Conclusions

There are several general points arising from Dairy Biotechnology. There is no single 'correct answer' to the product design part of the problem so there is room for students' creativity. However, the yoghurt production is highly structured. Teacher direction reduces through the unit as students gain in confidence. All sections have plenty of guidance so that students cannot easily get lost or lose their focus on the task. This is particularly important for starter activities of this type.

Prime (1993) has pointed out that there is no neutral technology – it is heavily value-laden. In this article I have tried to describe one practical teaching approach which may help students to explore this value- ladenness in a structured and meaningful way. Food technology is central to our lives, and at the same time represents a nexus of value issues. Hopefully, by using it as a context for design and technology activities, we may address some of the requirements of the National Curriculum. At the same time it may help us to meet the 'values challenge' now facing technology educators.

■ References

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