

## Is there a future for food education in schools?

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Food education has suffered in the frequent revisions of the technology curriculum. Here Gill Fine recounts the battle and how BNF has fought for food education.

The British Nutrition Foundation (BNF) is a scientific charity whose aims are Nutrition Research, Nutrition Information and Nutrition Education.

During the past four years we have been particularly active in schools education because if individuals are to make informed choices about diet and health, they need to have a good understanding about food and nutrition. For this to happen we believe that *all* pupils should receive *comprehensive* food education whilst at school, beginning at five years and continuing throughout their school career. We have, therefore, been undertaking actions towards the achievement of this aim.

### ■ The Foundation's Education Initiative

In 1988 the BNF convened a Working Group of expert educationalists (EWG) to help identify objectives for a comprehensive food and nutrition programme for schools, *Food — a fact of life*. The following objectives were identified:

- To help individuals recognise that food is a basic requirement of life and should be enjoyed.
- To help develop an understanding of the underlying scientific principles upon which current issues in nutrition are based.
- To inform about methods of food production and food processing in domestic and commercial situations.
- To encourage an awareness of social, economic and cultural aspects of food choice.
- To enable individuals to demonstrate and apply appropriate and relevant knowledge of concepts and principles when planning and/or preparing meals, and making choices related to food.

With the EWG's help we devised a framework for teaching food and nutrition within National curriculum from Key Stages 1 to 4:

- Food components and their function
- Socio-economic aspects of food
- Food production and processing
- Food preservation and storage
- Food preparation and hygiene

These five themes were structured to ensure progression at each key stage and integration with Programmes of Study and Attainment Targets in relevant National Curriculum subjects.

### ■ Where does food education occur in the curriculum?

#### Science

- AT 2 — Life and living processes
- AT 3 — Materials and their properties
- AT 4 — Physical processes

#### Technology

- AT 1 — Identify needs and opportunities
- AT 2 — Generating a design
- AT 3 — Planning and making
- AT 4 — Evaluating

#### Geography

- AT 2 — Knowledge and understanding of place
- AT 4 — Human geography
- AT 5 — Environmental geography

#### History

- AT 1 — Knowledge and understanding of history
- AT 2 — Interpretations of history
- AT 3 — The use of historical sources

The *Food — a fact of life* programme framework has been cross-referenced with these four main subjects but some reference is also made to the cross-curricular themes, especially Health Education.

By 1990 we had developed and trialled a resource pack for Key Stage 1 (levels 1–3) in 29 LEAs. The Stage 1 pack was launched by the Food Minister, David Maclean in June 1991. By 1992 we had developed and trialled a resource pack for Key Stage 2 (levels 2–5) in 61 LEAs. The Stage 2 pack was launched by the Food Minister, Nicholas Soames in 1993. To date, over 2,100 Stage 1 packs and 680 Stage 2 packs have been sold and the pack is in use in the vast majority of LEAs in the UK. The Foundation is now working on the resources for KS 3 and 4. The resources will comprise six units which are to be developed in three phases during the next six years:

- Unit 1: Nutrients and Energy
- Unit 2: Diet and Health
- Unit 3: Food Technology
- Unit 4: Food Microbiology
- Unit 5: World Food Production
- Unit 6: Food Trade and Society



We have decided to continue with our whole curriculum approach but certain units will target specific subject syllabus requirements. Within the National Curriculum, science and technology remain the key subjects, but opportunities also exist in history and geography. The cross-curricular themes — especially Health Education — could make a significant contribution provided that they survive and their implementation in schools is improved.

Outside the National Curriculum, particularly at KS4, there are several specific subjects that are important — notably Home Economics: Food and Nutrition/Food studies. The emerging GNVQs must not be forgotten — modules on food and diet are already included in Levels 2 and 3 of the Health and Social Care syllabus and there may be opportunities for some food-based modules in the Science and Manufacturing GNVQs. Our intention is to produce a range of resources for pupils and teachers that will have relevance across the curriculum. The first two units: Nutrients and Energy (for pupils and teachers) and Food Technology (for teachers) will be ready for a school-based trial during late 1994/early 1995.

Thus the Foundation is taking an active interest in the food education in schools — but what does the future hold?

As a result of our work at KS 1 and 2 and the developmental work undertaken for KS 3 and 4, we have built up a clear picture of the contribution that different subjects make to the delivery of *comprehensive* food tuition for all pupils aged 5–16 years. We are therefore in a good position to make a contribution to the improvement of food and nutrition education in schools and to the ongoing consultation process regarding the curriculum.

We are concerned that the future of food education will be threatened unless a whole curriculum approach is adopted. First of all we believe that it is of fundamental importance for certain aspects of food education to be retained within the four key stages of the National Curriculum subjects science and technology.

We do not in any way wish to denigrate the importance of health education or home economics, but in view of the current uncertainties surrounding these subjects, BNF believes that comprehensive food tuition for *all* pupils will not be guaranteed unless specific elements of food science, nutrition and microbiology are retained at their current level

of rigour within the science curriculum and that food is included as a material within technology.

## ■ The Foundation's involvement in the education debate

We welcomed the Secretary of State's proposals for food technology, *Technology for ages 16* (1992):

The programme of study section on Food specifies the knowledge and skills that pupils need to be taught to make food products effectively. It forms a separate programme of study section, owing to the unique physical properties of food which distinguish it from construction materials. When designing, pupils are required to understand and use the physical, chemical and nutritional properties of food.

Our approach to the use of food requires a change of emphasis from domestic to commercial production and teachers will need to update their knowledge in this area.

Although we had some reservations about the progression, we were pleased that:

- the nature of food technology as a scientific discipline had at last been understood
- food technology had not been confused with cooking
- the need for training and updating of teachers' knowledge had been recognised
- aspects of home economics which did not belong to technology were nevertheless regarded as being important in the curriculum.

We were, however, concerned at the National Curriculum Council's interim response to the Secretary of State's proposal which indicated that the place of food was 'unresolved':

Council considers that all pupils should be given opportunities to work with *Food*, but has not yet been able to resolve whether it is appropriate for this work to take place within technology. Council believes that . . . increased flexibility in the curriculum should allow for life skills such as cooking to be taught alongside National Curriculum subjects. *Report on National Curriculum Council Consultation: Technology*, May 1993



This paragraph suggested that food technology was really a form of cooking (regarded as a life skill) to be taught in other areas of the curriculum, although the exact place was not specified.

At the beginning of August 1993 we sent a detailed response to Sir Ron Dearing, and to the Welsh Curriculum Council (the WCC took an even more negative view of food in technology), explaining the nature of food technology and its relevance to the curriculum with respect to pupils' well being and career opportunities. We also encouraged industry and academics to support the case for retaining food in technology.

### ■ Has any progress been made?

Yes — some. First of all, several companies agreed to support the case for the retention of food in technology. Some responded to Sir Ron Dearing and several agreed to assist the Foundation in the development of training courses and resource materials for teachers.

Second, at the end of August we received a fairly encouraging response from Sir Ron Dearing to our submission — which gave us some cause for optimism.

Third, we have detected a change in the nature of debate about food in technology. Earlier in the year the gist of the anti-food lobby argument was that 'Technology is essentially about making, structure and artefacts, so to include food would reduce rigour and diminish the status of the subject'.

There was then a shift in the argument: 'Food has a place in the curriculum, but not within technology' — Engineering Council view (*TES* 22.10.93). 'The difficulty with food in technology is not that there is no food technology. It is rather that the arguments for including it have been based more on keeping home economics alive and making technology girl friendly than on its intrinsic value. A possible way out of the impasse would be to recognise that the fastest developing area of technology is biotechnology and treat food technology as a sub category of that, lending itself to practical work in schools,' Prof. Smithers (*TES*, 29.10.93).

It appeared to us all that the anti-food lobby, which includes the very vocal Engineering Council, had started to change its arguments.

However, a new round of debate began after Sir Ron Dearing published the NCC's final response to the Secretary of State's proposals:

2.19 Council considers that the Secretary of State's proposals present a convincing case for the inclusion of food technology.

In KS 1 and 2 . . . food is included as a compulsory area of study.

At KS 3 . . . allow pupils to undertake additional work with compliant materials as an alternative to food.

At KS 4 . . . pupils to select according to their developing skills and aptitudes.

. . . increased flexibility should allow for important aspects of Home Economics to be taught outside technology. *Technology Programmes of Study and Attainment Target: Recommendations of the National Curriculum Council*, Sept. 1993

The good news is that the NCC appears to have accepted that food is a suitable material for study in technology. Indeed it is compulsory at KS 1 and 2 but optional at KS 3 and 4. The Foundation welcomes some of the NCC proposals with respect to food but finds that others are unacceptable.

In our view, the major problem appears to be that Sir Ron Dearing and NCC have still not fully understood the true nature of food technology. However, they are not alone!

### ■ What is food technology?

First, let us sort out some definitions.

#### Design & Technology:

'Design and technology involves applying knowledge and skills when designing and making good quality products fit for their intended purpose.' (Secretary of State's proposals, 1992)

#### Technology:

'Technology is the creative application of knowledge, skills and understanding to design and make good quality products.' (NCC, Sept. 1993)

Both of these definitions are set in an educational context — how do they relate to food technology? Let us remind ourselves what food technology is all about:

'Food Technology is the process involved in the conversion of raw materials to edible food products including meals.' (BNF, Nov. 1993)



There are two categories of processing:

#### Primary:

The conversion of raw materials to food commodities, e.g. milling of grain, extraction of oils from seeds, cleaning of fruit and vegetables, etc.

#### Secondary:

The conversion of commodities to meal components and ancillaries to food preparation, e.g. mixing, stabilising, cooking, preservation, etc.

Primary processing is nowadays almost entirely industrial. Secondary processing is both domestic and industrial. In many cases industrial processing is a scaled-up version of what is conducted on a small scale in the home.

We would like to emphasise three points about the nature of food technology:

- It is an ancient technology, founded in domestic practice.
- There is a continuum from the domestic to the industrial. There is therefore, a progression of learning from KS 1–3 which should *begin* with domestic but then explore the industrial development with more depth at KS 2 and 3.
- Food technology is about the conversion of raw materials to edible products. The processing enables the nutrients contained in the materials to be made available to people. This is true of both industrial and domestic practice, and as a consequence nutrition is an *essential* component of food technology.

BNF believes that these points should be borne in mind when considering food technology from an educational viewpoint. We have devised the following working definition for Food Technology in schools:

Pupils need to have the knowledge and skills to design and make food products effectively. When *designing* they need to understand and use the physical, chemical and nutritional properties of foods to meet a specified need. When *making* they need to implement their design hygienically, safely and effectively. They need to evaluate the design and the product.

Because food is a very complex material we believe it offers plenty of scope for rigour when designing and making at each key stage.

## ■ Why should pupils study food technology in school?

Let us consider the intrinsic value of food technology and its contribution to food education across the curriculum:

- Everyone experiences it at first hand, its activities and products affect everyone.
- It is of world-wide importance — in another fifty years there will be widespread food shortages unless food technology can solve the problem.
- There is a wide range of food-related careers both vocational and academic. The food industry offers a wide range of employment opportunities based on the scientific and technical nature of food.
- Its inclusion in the curriculum will enable pupils to understand the nature of food, what it contains, how it is produced and its contribution to satisfying the nutrient requirements of different groups.

This last reason provides a link with the other aspects of food education taught in science, home economics and health education, all of which contribute towards the achievement of comprehensive food education for all pupils.

The Foundation's ultimate aim is that all pupils will acquire greater understanding of food and enhance their ability to choose a diet that meets their requirements. This level of understanding is essential if the Government's Health of the Nation initiative is to be successful in the long term.

We believe that the study of food technology is important in its own right as well as for the significant contribution it makes to food education in schools. We welcome the NCC's proposal that food technology should be compulsory at KS 1 and 2 but believe it should also be made compulsory at KS3.

## ■ Why should food technology be compulsory at KS3?

First, the linkages between science and technology are extremely important. The current science POS contains the food science, nutrition and microbiology content required to underpin technology at KS 1, 2, 3 and 4. The linkages could be made more explicit, particularly if food is a mandatory material at KS3. As a result pupils will experience food study as a rigorous scientific discipline.



Second, there is already some scope for using food to demonstrate the technological applications of science. If this is encouraged at KS3 it would help upgrade the status of food studies in school. If, however, food continues to be regarded as a less academically challenging subject, we believe there is a real danger that food will be a target for slimming down the curriculum.

Third, although food provides opportunity for both academic and vocational study, our concern is that if it is made optional in technology at KS3, *some* schools may remove their food preparation and storage areas and reduce the number of food teachers. This will affect the likelihood of other food-based courses being offered at KS4 such as the GCSE Home Economics — Food and Nutrition or the GNVQ modules mentioned earlier. As a result pupils' choice will be restricted.

The BNF believes food technology makes a major contribution to the technology syllabus, as well as being a key element in the delivery of comprehensive food education for all pupils. It should therefore be a compulsory element at KS 1–3, and optional at KS 4. We have written to Sir Ron Dearing and asked him to reconsider the nature of the NCC advice and to request SCAA to look again at the content of food technology at KS 1–4. We have also asked him to consider whole curriculum approach to food education. This is quite a challenging task.

### ■ What happens if this challenge is not met?

Pupils will lose out as a result of studying a National Curriculum that is not fit for its intended purpose:

- They will fail to fully understand the technological society in which they live and work.
- They will fail to gain an insight into a range of career opportunities.

As a result, the curriculum will not deliver comprehensive food education to all pupils, which is necessary if people are to understand what good nutrition is all about. This understanding is essential for the improvement of the health of the nation.

The BNF does not underestimate the challenge that has to be met in order to deliver effective food technology in schools. We have given some thought to identifying the action that needs to be taken:

- The nature of food technology must be properly understood: it is *not* the same as cooking. It must be accepted as a subject in its own right. Strong messages to that effect must be received and understood by SCAA.
- Teachers must recognise the contribution their subject makes to the achievement of comprehensive food tuition. They need to recognise the inter-relationship and identify areas for a collaborative approach to food tuition.
- Teachers will need training and resources.
- Curriculum time should be provided for all pupils from KS 1–3, and for some pupils at KS4.
- The fundamental objective is to establish food technology alongside other specified materials in technology as the basis for a range of courses at KS4: Full and short courses in Food Technology, Food and Nutrition, Food Studies and GNVQ modules in Health and Social Care, Science and Manufacturing. A range of courses could be developed that would cater for both academic and vocationally orientated pupils.

### ■ Who should undertake the action?

#### Government

There needs to be collaboration between Government departments which have an interest in food education. Where possible they should support the training of teachers and development of the resources that will be required if pupils are to receive effective tuition. MAFF and DH are already making contributions in this area through their support of the *Food — a fact of life* programme.

#### BNF

We stand at the cross-roads of academia, industry and education, so we are well placed to make a major contribution. The Foundation is prepared to initiate a campaign supported by the food industry and academics to make the case that food technology should rightfully stand alongside engineering technology as a progressive KS 1–4 foundation subject area. We will continue to develop pupil and teacher resources regularly for food education — including food technology. We are proposing to develop and run training courses for teachers and already have substantial industrial support.



### Teachers

Above all it is the teachers at all key stages who must be enthused to pick up the challenge and want it to succeed. If they do, and the various actions that have been identified are undertaken, then we think there is an excellent future for food education in schools. We believe it is a challenge that is worth accepting!

### ■ The Current situation

In January 1994, Sir Ron Dearing published his final report on the National Curriculum and its assessment. The Foundation welcomes many of the recommendations but is concerned that some of them will have an adverse effect on the level of food tuition in schools.

We agree with the recommendations that all orders should be revised together but believe the timescale is overly ambitious for both the revision and the consultation.

We support the recommendations for short courses, for the scope for different GCSE syllabuses to be enlarged and for the opportunity for GNVQs to be introduced into the 14-16 curriculum as well as an option in the 16-19 curriculum.

We have reservations about adopting the concept of identifying statutory and optional areas of subjects as the preferred model for slimming down the orders. Considerable care will need to be taken by the working groups to ensure balance within and between the subjects and this is likely to prove particularly difficult for science (especially for single science at KS4). We urge that the PoS, ATs and SoAs which relate to food and nutrition within the science curriculum from level 1-10 are retained in the statutory requirements. (Unless this is done, the effect on food tuition within schools will be disastrous.)

We are dismayed that schools are to be encouraged to adopt the NCC's final recommendations for Technology (September 1993) for KS 1-3, albeit on an experimental basis, *before* the new Orders for Technology come into force in September 1995 (September 1996 for KS4).

We believe there is a lack of clarity in the NCC proposals, in particular with regard to the food component at each key stage. We have therefore sent a further detailed submission about the nature of food technology, the PoS content from KS 1-4 and the types of courses

that could be developed for KS4. We also reiterated our wholehearted support for the inclusion of food within technology and its status as a compulsory material for study at KS 1 and 2 but disagreed once again with the proposal that food should become optional at KS3:

In our view the removal of food from the compulsory technology curriculum in secondary schools downgrades food as an academic subject. It is at KS3 that the depth and rigour required to understand the true nature of food technology begins to be taught and the links with the science curriculum become much more important. These links are essential if the myth that science is for the academic elite and technology for the less able pupil is to be dispelled. Retaining food at Key Stage 3 would ensure that pupils of all abilities can develop their understanding of this important aspect of technology and help prevent academically bright pupils from being discouraged from studying food at GCSE and beyond. Furthermore, if pupils do not study food as an option at Key Stage 3, it is unlikely that they will be able to cope with the requirements of food as a component of a full (or short) course at Key Stage 4. This will have a detrimental effect on the type of food-based courses that are offered at KS 4.

We are also concerned that the selection of materials will be dictated by the availability of resources thereby denying some pupils the opportunity to show their abilities to the best advantage. We suggest that either food is reinstated as a compulsory material or that all compliant materials as well as food are made optional. This will increase flexibility but remove the bias against the inclusion of food in the KS 3 and 4 curriculum.

We hope that SCAA has finally understood and accepted the need for food education to be retained as a compulsory component in the National Curriculum and that it has recognised the importance of food as an important facet of technology — we will not have long to wait before we find out whether our hope proves to be misplaced.