

# Review Section

## Introduction

This edition's reviews focus on a complete series of books produced as a joint initiative of the Association for Science Education (ASE) and the Design and Technology Association (DATA). The series, *Science with Technology*, is aimed at supporting both curriculum areas and provides resource materials for students and support for teachers. Initially aimed at the 14-19 age range, for use with courses leading to GCSE, GNVQ and A/AS level, the books will prove a useful background resource for teachers of all key stages. In particular, many teachers will find them a valuable means of filling the gaps in their own professional knowledge, particularly with respect to industrial applications and manufacturing.

The series was introduced into the Design and Technology Department at Selly Park Technology College, Birmingham some 18 months ago and since then colleagues have used them continually. I have therefore prevailed upon my departmental colleagues to review the series and am grateful for their time and efficiency.

The 'Science with Technology Tool Kit' comprises three separate units (*Teamwork*, *Project Management* and *Product Development*) presented in the same style and format. As the title suggests, these books form an excellent toolkit for use by teachers and their students as an introduction to the generic skills needed not only to simulate industrial practice, but also as valuable life skills. The books are clearly set out and fairly easy to use, with a range of visual material which could be successfully enlarged and used as a motivational display or as a source of information. However, I would suggest that the books need to be studied quite carefully by staff before using them with students, in order to ensure that they are fully conversant with the concepts, knowledge and skills contained within the text, some of which may be unfamiliar in the world of education.

The teachers' notes at the beginning of each book are easily recognised by the pale blue paper on which they are printed and take the user through:

- the intention of the unit;
- the knowledge and skills that students will acquire;
- other useful resources;
- syllabus links;
- and how the units may be applied to syllabuses, including ways of organising the activities for maximum benefit.

The text then follows on white, photocopiable pages, containing information on key concepts together with explanations and further information. Line drawings and other black and white illustrations are used to good effect to reinforce and extend ideas and explanations. Students' activities are included at strategic points in the text, and the purpose and intended outcomes of each are identified, so that students may have a clear view of what they should achieve before they begin.

## Teamwork – solving problems and improving quality

The teachers' notes explain succinctly that the purpose of this book is to enable students to:

- learn a range of skills and techniques to enable them to work effectively in teams;
- learn how to use a structured process to solve problems and improve quality;
- acquire key skills valued by business and industry.

To enable students to achieve this the unit is divided into three distinct, but inter-related sections.

Part 1 '**Teamwork**' covers Getting into teams; Why work in teams; Getting to know your team; Using teams to solve problems; and Tools for effective teamwork.

It is recommended that students have a problem or situation to work on; suggestions are made within the text, but many teachers or older students may find it more beneficial to work on a problem that they have identified themselves.

## The Science with Technology Tool Kit Teamwork

ASE: £6.00

ISBN 0 86357 240 5

## Project

## Management

ASE: £6.00

ISBN 0 86357 237 5

## Product

## Development

ASE: £6.00

ISBN 0 86357 241 3

*Reviewed by Jenny Jupe, Head of Technology, Selly Park Technology College for Girls*

Appropriate content	////
Pupil/student use	///
Teacher resource	////
Visuals	////
Overall style	////
Generic use	=
One of a series	=
Photocopiable	=
Pupil/student activities	=
Cross-curricular	=





Students at the end of Key Stage 3 or early in Key Stage 4 may certainly benefit from situations with

which they can more readily identify or which appeal equally to both sexes. Although mixed teams are obviously desirable, I would also suggest that many less confident girls, and possibly boys, might benefit from initially working in single sex teams, where they can adjust to given roles within a team.

Students will need a problem to contextualise Part 2, '**Solving problems and improving quality**', either home grown or from the text. The purpose of this section is to provide a process for solving a problem or improving the quality of a situation. A case study is provided and students may then work on parts of the process as individuals, contributing their findings to the group as a whole.

Part 3 '**Techniques for analysis and presentation**' provides more detail about the range of techniques used in parts 1 and 2. A summary provided at the start of this section explains, in tabulated format, what is to follow. I found this to be an extremely useful tool, particularly as some of the techniques were quite sophisticated and definitely more appropriate for advanced level students.

The pages are clearly set out, although one or two are very packed with information, but it is obvious to both the student and the teacher what the main information is in each section or on each page. Key concepts relating to industrial practice are explained in simple terms and exemplified with case studies or role play situations.

For example, an early activity concerned with working in teams describes how quality circles or quality action teams are used in business and industry. Students are then taken through a series of activities where they are prompted to question the value of

working in teams, through a role play situation – the NASA moon survival test.

One of the strengths of this first book, in my opinion, is that it brings together, in an appropriate format, many of those teamwork techniques that I have previously come across and possibly forgotten. Here they are presented in such a way that students can access a whole range of activities all focusing on the centrality of teamwork to successful production.

### Project Management: Research – collecting data and information

According to the teachers' notes the purpose of this book is to enable students to:

- learn how to use a structured process to manage extended projects and assignments;
- learn how to manage their time effectively;
- learn how to carry out a research enquiry;
- acquire key skills valued by business and industry.

To enable students to achieve this the unit is divided into two distinct, but inter-related parts.

Part 1 '**Project Management**' covers What is project management?; Planning; Analysing; Scheduling; Managing your own project; Checks and controls; and Time management.

Definitely more accessible to the student than the previous book, this section can be dipped into and worked at by individuals. Indeed, teachers may identify sections which may help some students overcome certain weaknesses in aspects of their work, for example the time management section. Photocopiable activities are provided, such as those for task three – Preparing a Network. This activity, placed in the context of making slice and bake cookies, enables students to understand and apply the concept of a Network, i.e. the presentation of all the associated activities showing how

Appropriate content	////
Pupil/student use	///
Teacher resource	////
Visuals	///
Overall style	///
Generic use	=
One of a series	=
Photocopiable	=
Pupil/student activities	=
Cross-curricular	=



they are related and depend on each other. Time scheduling is included as part of Networking so that by the end of the activity students may have a clear view of the concept and consequences of Critical Path Analysis. I would suggest that a later section on time management makes useful reading for teachers as well as students, even if it is just to remind us who stole our time this week!

#### Part 2 'Research - collecting and recording information for your project'

takes students through the process of planning and carrying out a research enquiry which could include practical investigation. Having read so much student research that has been almost entirely copied from books I would highly recommend the use of this section with all students embarking on a major project!

The first sheet sets out a research process, while subsequent pages take each section and expand it with tips and techniques to achieve success. A valuable part of this section are the two planning and organising pages which encourage students to identify a time limit for the whole of their research, an area which many of them tend to make elastic! The recording and analytical tools links with the previous book suggest that, for best effect, the series needs to be considered in sequence.

#### Product Development – Products and innovation, product development, quality

The teachers' notes explain that the purpose of this book is to enable students to:

- learn how to use a structured process to develop successful products;
- learn about innovation;
- learn about quality systems;
- acquire key skills valued by business and industry.

To enable students to achieve this the unit is divided into three distinct, but inter-related parts.

In Part 1 'Products and innovation' students are encouraged to consider the factors that contribute towards a successful product by discussing a range of familiar items such as Lego, the cordless kettle, Walkman and the mountain bike. Having captured students' interest the book then explores the concept of innovation through the use of a novel type of asthma inhaler. The whole is presented in a variety of formats and although complex by definition, successfully presents the key ideas.

Part 2 'Product Development' builds on work found in the previous two books. Students are introduced to the notion of goals or milestones as key stages in product development. The work is complex, but by being broken down into milestones I felt the teacher and students could work through product development goal by goal. Many teachers will recognise the design and make process embedded in the milestones.

Part 3 tackles the abstract issue of 'Quality'. I found this section extremely useful for my own professional knowledge and for helping me through the confusion of quality terminology. The section headed 'Why should I care about quality' is particularly thought-provoking for students and should help them to consider ways of ensuring quality in their own products.

Overall, I would highly recommend this tool kit to all departments, particularly at a time when the National Curriculum has been revised and new schemes/syllabuses are being developed. The ideas contained within the text would make an excellent introductory course for the new GCSEs or GNVQs as well as AS/A levels. For teachers at Key Stages 1 and 2 I think it would be worth borrowing from your local support service resource library or from secondary colleagues before deciding whether to invest.

Appropriate content	////
Pupil/student use	///
Teacher resource	////
Visuals	////
Overall style	////
Generic use	==
One of a series	==
Photocopiable	==
Pupil/student activities	==
Cross-curricular	==



# Understanding Control Investigating and Designing Control Systems Understanding Sensors Control in Action: Designing a Fermenter

## Understanding Control

ASE: £12.00

ISBN 0 86357 216 2

## Investigating and Designing Control Systems

ASE: £12.00

ISBN 0 86357 235 7

## Understanding Sensors

ASE: £6.00

ISBN 0 86357 219 7

## Control in Action: Designing a Fermenter

ASE: £6.00

ISBN 0 86357 235 9

*Reviewed by  
Elizabeth Grant,  
Head of Information  
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Stage 3 Co-ordinator  
for Design and  
Technology*

## Understanding Control

This book is divided into four parts:

'Introduction to Control systems';  
'Investigating types of Control Systems';  
'Analysing Control Situations'; and  
'Assignments'.

The book provides a useful set of teachers' notes with timings provided for each part, while the list of resources included is useful, as is the mapping to National Curriculum Key Stage 4/GCSE, GNVQ and AS/A level. A clear description of intentions for pupil understanding for each section is a helpful planning tool, as are the resource sheets, such as the graph quality check list.

Within the text clear diagrams and daily control activities are used to illustrate various concepts. Similarly, introductory sections clarify terms such as 'inputs', 'outputs', and 'transducers' in a pupil friendly way. I would suggest that the work has applications for GCSE/GNVQ IT as well as design and technology.

Investigations of digital and analogue control and continuous and sequential control are dealt with in a range of contexts, e.g. bottling plant, shower system, making these areas accessible to many students. I have used the book to help students gain an understanding of basic control and to see how it applies to contexts such as washing machines, paper mills and how it compares with control in the human body – thereby making a direct link to science.

The tasks are clearly outlined and the resources required are listed for the pupils, who should then be able to work fairly independently. Prompts in the form of things to consider are provided to help pupils move on. I have generally found the book to provide a range of usable tasks which put across the main concepts, together with a set of assignments with aims and outcomes clearly identified. Undoubtedly the strength of the book is in the links to real situations, which do appeal to students. There are plenty of pictures and illustrations, although there are times when I have felt some pages to be very busy. Recommended.

## Investigating and Designing Control Systems

This extended unit is divided into three parts: 'Explaining Control Systems'; 'Some ideas for Control Projects'; and 'Designing Control Systems'.

Like *Understanding Control*, this book begins with a clear set of teachers' notes with timings for some sections and a summary of objectives. Once again, the list of associated resources is useful, together with the mappings to National Curriculum Key Stage 4/GCSE, AS/A level and GNVQ Manufacturing and Science.

Part 1 contains a good set of block diagrams and an analysis of familiar systems, e.g. food mixers and washing machines. Clear coverage of open/closed loops and sequential control and feedback including on/off and proportional feedback link with the previous title. Part 2 provides seven project ideas, all of which have linked extremely well with GCSE projects and will no doubt also link with manufacturing activities. The final part provides a comprehensive section to support pupils through designing their own system.

This book has been an effective pack for pupils at Key Stage 4 carrying out their major control project. With the booklets on *Understanding Control* and *Understanding Sensors* pupils have been supported through each stage of designing and making. The text has provided excellent resource material and a basis for enabling students to undertake manageable control projects with a degree of independence. In particular, the charts have helped pupils decide which sensors to use and whether to use a computer – these are also found in the *Control in Action* book. Project ideas tend to be broad and include suggestions for specific projects, e.g. there are four suggestions for the alarms and warnings project. Part 3 has proved useful in taking students through the steps for designing their own system with sheets helping them to choose transducers and design circuits. The design ideas have provided an excellent source of initial ideas for projects, enabling students to choose and then refer to part 3 for further information.

Appropriate content	✓✓✓✓
Pupil/student use	✓✓✓✓
Teacher resource	✓✓✓✓
Visuals	✓✓✓
Overall style	✓✓✓✓

Generic use	
One of a series	⇐
Photocopiable	⇐
Pupil/student activities	⇐
Cross-curricular	⇐

Appropriate content	✓✓✓✓
Pupil/student use	✓✓✓✓
Teacher resource	✓✓✓✓
Visuals	✓✓✓
Overall style	✓✓✓✓

Generic use	
One of a series	⇐
Photocopiable	⇐
Pupil/student activities	⇐
Cross-curricular	⇐



Good background material is provided in the book with plenty of ideas, so that even the most reluctant student is encouraged to undertake an activity. Some pages do tend to be cluttered and difficult to read, although most are clearly presented. The whole book is logical to follow, with plenty of illustrations and comprehensive charts and diagrams, and well worth purchasing.

### Understanding Sensors

This book has four sections: 'Sensors and Switches'; 'Investigating electrical components'; 'Making use of characteristics'; and 'Choosing sensors - some design information'.

As with the previous books this has a comprehensive set of teachers' notes with suggested timings for each section. The book is well referenced to National Curriculum Key Stage 4/GCSE, to GNVQ science and engineering and to AS/A level. A good set of support sheets provide useful information for the teacher who is unfamiliar with comparators, together with a well laid out investigation planning sheet.

The text provides a clear description of the types of switches with good illustrations and sensible research tasks based on the use of catalogues, which students can find readily available. The concept of the potential divider and its use on light and temperature sensors is well covered.

The book provides good coverage of sensors with appropriate use of everyday examples, e.g. security systems, pedestrian crossings as well as less familiar systems such as fermenters, while the level is appropriate for Key Stage 4. It includes a wide range of information and related tasks which students have been able to prepare and research independently, using the book as a reference point. In this respect students are well supported by the variety of information sheets on different types of sensors and in particular an extremely useful page taking students through what to consider in choosing a sensor. This section covers characteristics, ease of use and speed of reaction.

Teacher support is good, both in terms of the initial teacher outline and in the pupil materials which allow self supported study. Clearly detailed practical activities using both bread boards and electronic kits have been an advantage. The diagrams are clear and consolidation questions develop the students' understanding step by step.

I have found the book easy to follow with clear, well presented diagrams and good use of examples.

### Control in Action: Designing a Fermenter

This is a focused unit which provides independent study notes to be used for student research, with suggested timings. Useful associated resources are included as are references to National Curriculum Key Stage 4/GCSE, GNVQ science and manufacturing and AS/A level and a recipe for use in the fermenter!

Clear diagrams and a particularly good section at the start can be used for student research and provide an excellent introduction to the possibly unfamiliar topic of biotechnology. Early on a range of products produced via the fermenter is discussed, so that part 1 contains a set of research tasks providing data for use in part 2, which guides pupils through creating their fermenter.

The information is pitched at a suitable level and makes the task accessible to those who have little experience of the topic of fermentation. This should be a valuable resource providing students with excellent guidance through research of both the theoretical and practical aspects of the task, leading the student to create the fermenter by simple stages. The pupil is moved on step by step through collecting all the information required to carry out the task and should be able to carry out much of the work independently.

A number of strategies are provided to help the teacher and these, together with the introductory section, provide comprehensive coverage of the topic. The book's main strength is the way in which the activity has been broken down into simple stages with plenty of ideas as to how to undertake the tasks and how to apply the results. The only weakness is that some pages tend to be over full. However, the book is eminently readable and well worth using.

Appropriate content	////
Pupil/student use	////
Teacher resource	////
Visuals	////
Overall style	////

Generic use	
One of a series	=
Photocopiable	=
Pupil/student activities	=
Cross-curricular	=

Appropriate content	////
Pupil/student use	////
Teacher resource	////
Visuals	////
Overall style	////

Generic use	
One of a series	=
Photocopiable	=
Pupil/student activities	=
Cross-curricular	=



**Cars and the Environment**

ASE: £6.00  
 ISBN 0 86357 218 9

**Green Buildings**

ASE: £12.00  
 ISBN 0 86357 244 8

**Human Factors in Design**

ASE: £6.00  
 SBN 0 86357 220 0

**Evaluating Environmental Impact**

ASE: £6.00  
 ISBN 0 86357 223 5

*Reviewed by Deputy Head Teacher and Teacher within TEP Co-ordinator within Design and Technology Department*

**Cars and the Environment**

*Cars and the Environment* is a focused unit which is divided into three parts: 'Cars and Environment'; 'Designing an 'Eco-car'; and 'Students' Assignments'.

Part 1, '**Cars and the Environment**', has three sections looking at:

- Car exhaust emissions – what they are, what they do and how their impact on the environment can be reduced. The topic sheets are well presented, giving good starting points for other investigation and research covering the effects of lead in fuel, how fuels burn, Global warming, controlling exhaust emissions and the catalytic converter.
- Cars and energy, which investigates the energy used to make and run a car.
- Cars and materials, which investigates the materials used to make a car, the properties of those materials and how the materials used can be recycled to reduce future material demands.

This section may be used to support GCSE Science and Technology as well as GNVQ Manufacturing.

Part 2, '**Designing an Eco-car**', involves the students carrying out market research, entering the data collected onto a spreadsheet, evaluation of choices and then preparing a report. The detailed information for setting up the spreadsheet relates to Lotus 123 for Windows. A second information sheet for Microsoft Excel would be useful for the less computer literate teachers. The section clearly highlights the costs involved in reducing the environmental impact of cars.

The third section has two assignments: cars and materials, and monitoring and measurement of car exhaust emissions. The two assignments would be useful in AS/A level as an extended investigation in, for example, Physics Modular Science or as a design and make assignment for design and technology. The assignments could be further developed to deliver some elements in GNVQ Manufacturing or Engineering.

The teachers' notes are very useful, helping to position the materials in a range of syllabuses and subjects. The integration of GNVQ core skills in communication, application of number and information technology are especially welcome. The notes also suggest the time needed to complete the work and other resources to support delivery.

The layout and illustrations are clear and easy to understand. The materials are generally easy to read and use though some students will find the language a little daunting. However, that can be overcome with support from the teacher. Recommended.

**Green Buildings**

*Green Buildings* is an extended unit divided into four parts: 'What is a healthy environment?'; 'Some science of green buildings'; 'Green buildings and the community'; and 'Assignments'.

Part 1, '**What is a healthy environment?**', establishes some basic ideas about what makes a good working environment. Topics such as lighting levels, furniture, temperature and noise are covered giving information and activities for each. It concludes with an activity on the basic principles of green building design. This section can be used to support a wide range of GCSE, GNVQ and AS/A level courses.

Part 2, '**Some science of green buildings**', aims to reinforce students' scientific understanding of a range of environmental issues related to the design of green buildings. It starts with an investigation into the burning of fossil fuels to produce energy for buildings. It then develops investigations into topics such as acid rain, passive solar design, insulation and radiation. The point of this investigation is to show how reducing energy consumption will reduce the effects of global warming. The conclusion of this section is an examination of the criteria for green buildings and consideration of their positive and negative effects. As with part 1 this section can be used to support a wide range of GCSE, GNVQ and AS/A level courses.

Appropriate content	////
Pupil/student use	////
Teacher resource	////
Visuals	////
Overall style	////
Generic use	
One of a series	=
Photocopiable	=
Pupil/student activities	
Cross-curricular	

Appropriate content	////
Pupil/student use	////
Teacher resource	////
Visuals	////
Overall style	////
Generic use	
One of a series	=
Photocopiable	=
Pupil/student activities	=
Cross-curricular	=



Part 3, 'Green buildings and the community', is based on the simulated community of Southford and uses real data that has been adapted for the situation. Students investigate the use of energy, transport and waste in the Southford community. The students use the data provided to identify and quantify the environmental impact of each of the three topics. The students work in groups and are expected to make a presentation at the end of the activity. This section is designed to raise the students' awareness of the role of the whole community when developing criteria for green design.

Part 4 offers eight detailed assignments that can be used in a wide range of GCSE, GNVQ and AS/A level courses. Each assignment has clear accreditation links and provides opportunities to develop GNVQ Core Skills in Application of Number, Information Technology and Communication.

The teachers' notes are very useful, helping to position the materials in a range of syllabuses and subjects. The notes also suggest the time needed to complete the work and other resources to support the delivery with students. The book is very detailed and I would suggest that teachers will need to gather the additional resources if students are to get the maximum benefit.

The layout and illustrations are clear and easy to understand and the book is photocopiable. Some students will find the language used a little daunting but that can be overcome with support from the teacher. Recommended.

### Human Factors in Design

*Human Factors in Design* is a focused unit which is divided into four parts: 'Variation in humans'; 'Anthropometrics'; 'Using the data'; and 'Applying this to your own project work - Case Studies'.

Part 1, 'Variation in humans', has a variety of activities designed for groups of students to measure each other and furniture so that they see for themselves the variations in humans.

Part 2, 'Anthropometrics', takes the data on human size and shows how it can be used to calculate standard deviation. It further develops the data to show how factor such as clothes or if humans are in a static or dynamic situation will affect the calculations.

Part 3, 'Using the data', provides valuable information on human measurements and how this data can be applied.

Part 4, 'Applying the data to your own project work' is an excellent section for all students involved in design activity. It leads students through collecting information, checking British standards, using anthropometric information as a part of the design criteria and into product analysis.

*Human factors in Design* tackles all the issues of human dimensions in design work and will provide students with a competent understanding of the topic. It can be used by students to introduce themselves to the topic or has teaching activities for a whole group. The materials contained within the book are essential for all students undertaking a technology course at GCSE, AS/A level and GNVQ Manufacturing. The investigations could be used in GCSE Science and the data collected would relate to GCSE Mathematics when collecting quantitative data and using graphs.

As with the other books, the teachers' notes are very useful, helping to position the materials in a range of syllabuses and subjects. The integration of GNVQ core skills in communication, application of number and information technology are especially welcome. The notes also suggest the time needed to complete the work and other resources to support delivery.

The layout and illustrations are clear and easy to understand. The materials are easy



Appropriate content	✓✓✓✓
Pupil/student use	✓✓✓
Teacher resource	✓✓✓✓
Visuals	✓✓✓
Overall style	✓✓✓
Generic use	
One of a series	←
Photocopiable	←
Pupil/student activities	←
Cross-curricular	←



to read and use but some students will find the language used a little daunting but that can be overcome with support from the teacher.

I would highly recommend this book to teachers of design and technology!

#### Evaluating Environmental Impact

*Evaluating Environmental Impact* is a focused unit divided into four sections: 'How should we live?'; 'Environmental reviews, audits and assessments'; 'Products and life cycle assessment'; and 'Assignments'.

Part 1, '**How should we live?**' introduces students to the idea of rapid population growth and how this impacts on what people need to live. This section then investigates the environmental problems that have resulted such as global warming, acid rain and deforestation. The topics then progress to reasons for moving to a more sustainable life style. The section has a mixture of information and activities that fit well with Key Stage 4 Science developing scientific understanding of environmental issues.

In Part 2, '**Environmental reviews, audits and assessments**', students plan and complete an environmental evaluation. The section takes the students through why an environmental evaluation, what to measure, how to carry out an environmental evaluation and Legislation. This section is ideal for a scientific investigation at Key Stage 4 involving the students in the collection and analysis of data.

Part 3, '**Products and life cycle assessment**', introduces students to the process for evaluating the environmental impact of a product. It gives the example of a disposable cup comparing the benefits of waxed paper and polystyrene form. It then guides the students through a series of activities including a dustbin survey. This section has applications for Key Stage 4 Science and Technology, GNVQ Engineering, Manufacturing and Business Studies and AS/A level Modular Science or Technology.

The two assignments in part 4 on environmental impact or developing an environmental policy statement fit well with GNVQ Engineering, Science or Manufacturing and AS/A level D&T/Technology.

The teachers' notes are very useful, helping teachers to position the materials in a range of syllabuses and subject. The notes also suggest the time needed to complete the work and other resources to support the delivery with students.

The book has many strengths. The layout and illustrations are clear and easy to understand. The materials are easy to read and use but some students will find the language used a little daunting but that can be overcome with support from the teacher. Recommended.

Appropriate content	////
Pupil/student use	////
Teacher resource	////
Visuals	////
Overall style	////
Generic use	
One of a series	=
Photocopiable	=
Pupil/student activities	=
Cross-curricular	=



These two books are complimentary to one another and are essential for any Food Technology teacher.

*Understanding the Science of Food* is a focused unit dealing with the scientific principles which underlie the development of food products. It is divided into an introduction and four further parts, each giving suggested times in which the activities could be completed, for example the introduction, designing a new food product, is a short activity (1 hour) which presents a context for all the remaining activities.

Part 1, '**The nutritional function of food**', covers a wide variety of nutritional topics including nutritional value and use, testing for nutrients, use of spreadsheets as a design tool, DRVs and RDAs and their use in food labelling, using food tables and the role of the nutritionist in the food industry. The remaining three parts deal with the physical function of food, cooking and nutrients and microbiology and food. This final section requires access to laboratory facilities.

This book will be of use to teachers and students of GNVQ Manufacturing, A/AS Level Food, National Curriculum KS4/GCSE Science, Design and Technology and Information Technology. Photocopiable information and work sheets provide a very comprehensive resource which is able to support a wide range of activities.

*Developing Food Products* is an extended unit which makes use of the information gained from *Understanding the Science of Food*. The unit is a resource for use in Food Technology, Science, and Information Technology at KS4/GCSE as well as GNVQ Core Skills, Manufacturing, Science, Health and Social Care, it could also be used to support work in Food courses at A/AS Level.

This is a book which deals in an easily accessible way with the methods used and problems which may be encountered in product development through the medium of tofu. For those of us who are unfamiliar with this area of food technology the information is presented clearly in a user friendly way.

The unit is divided into four parts dealing in turn with 'Product Development', 'Making Tofu', including Scientific Investigations,

'Scaling-up Production' and 'The Science of Proteins and Diet'.

The overview at the beginning of Part 1 states, 'This part sets out a framework that can be applied to the development of any Food Product'. As a member of staff new to this area of the curriculum I have found this section very useful indeed as it deals with areas such as tasting panels, health and safety, the reasons for developing new products, market research, product specification as well as packaging design and nutritional labelling.

Part 2, '**Understanding how Tofu is made**' demonstrates very clearly the process which is used, while the flow chart for making Tofu could be adapted to the production of other products. The questions used in the 'Investigation Planning Checklist', are of a generic nature and applicable to the majority of investigations.

Part 3, '**Scaling-up Production**' begins in pictorial form showing domestic, batch and mass production; it also includes a list of factors which need to be considered when planning for batch production. There are charts showing mass production, quality control and assurance, listing both safety and quality checks. The Food Safety Act 1990 is summarised as bullet points on a single A4 sheet.

Part 4, '**The Science of Proteins and Diet**' contains a section dealing with why we need proteins, what happens to proteins in the body and the quality of protein. This section also highlights words which pupils may need to write into a glossary notebook. It is more scientific than the rest of the unit giving information which will enable both staff and pupils to calculate the value of different proteins in the diet.

The appendix at the end of this unit shows recipes using tofu which could form the basis for experimental recipe development.

I thoroughly recommend both books to teachers of food technology at all levels and I am sure that other colleagues will also find the books very stimulating.

### Understanding the Science of Food

ASE: £6.00

ISBN 0 86357 221 9

### Developing Food Products

ASE: £12.00

ISBN 0 86357 217 0

*Reviewed by*  
Margaret Clarke,  
Food Technology  
teacher



Appropriate content	////
Pupil/student use	////
Teacher resource	////
Visuals	////
Overall style	////
Generic use	
One of a series	<=
Photocopiable	<=
Pupil/student activities	<=
Cross-curricular	<=



**Energy Transfer from source to load**  
**Managing Energy**  
**Making Use of Renewable Energy**  
**Energy in Kalyanpura (Investigating energy and developmental issues)**

**Energy Transfer  
 from source to load**

ASE: £6.00

ISBN 0 86357 222 7

**Managing Energy**

ASE: £12.00

ISBN 0 86357 215 4

**Making Use of  
 Renewable Energy**

ASE: £12.00

ISBN 0 86357 224 3

**Energy in  
 Kalyanpura  
 (Investigating  
 energy and  
 developmental  
 issues)**

ASE: £6.00

ISBN 0 86357 247 2

*Reviewed by  
 Margaret Clarke,  
 SEN and Equal  
 Opportunities co-  
 ordinator for Design  
 and Technology*

These four books fit together well, and can be used as either stand alone units or to complement one another. All the books are of use to more than one area of the curriculum.

The lay out of all the books is similar. Each commences with a 'Plan of the unit'. This gives a brief overview of the contents with a possible time span for activities. The outcomes for students are then listed under the heading 'By using this unit the student will'. This is followed by links to other SWT units. Resources and equipment are listed briefly but clearly. For all units there is a curriculum focus. The units give links to National Curriculum science, design and technology and information technology, GNVQ links to manufacturing, science, engineering, science and Core Skills and A/AS levels.

*Energy in Kalyanpura* enables students to extend their knowledge into issues related to the developing world, it encourages skills in analysing data and information to make informed decisions, it also enables students to see how both science and technology influence peoples everyday life. This is possibly of greater use to Post 16 General Studies students, but could be used at Key Stages 3 and 4 to raise awareness of the developing world and associated problems.

I found the focused unit *Energy Transfer from source to load* very useful both for my own development and to enable me to explain simply to students how mechanical systems work. The clear explanation and diagrams enabled students to understand a variety of types of movement with little previous knowledge of this area. The clear diagrams also enable students to draw their own diagrams more clearly. The Investigation Planning Sheet could be used to assist pupils planning in other areas of technology and science.

*Managing Energy* and *Making use of Renewable Energy*, both extended units, are more scientifically based and of greater use to science than to technology at Key Stage 4. However both of these units would be useful for GNVQ and A/AS Level, and an outline for using them at GNVQ is suggested.



I feel confident in recommending these units for use at both Key Stage 4 and Post 16. They would also be of use to staff who wished to update or learn new skills at all levels. Some parts of the Focused Unit would also prove useful to staff teaching at Key Stage 2 both for their own professional development and for use with bright/gifted pupils.

Appropriate content	////
Pupil/student use	////
Teacher resource	////
Visuals	////
Overall style	////
Generic use	
One of a series	=
Photocopiable	=
Pupil/student activities	=
Cross-curricular	=

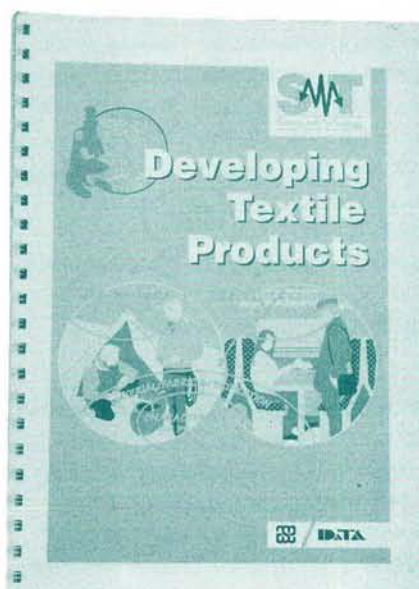


*Developing Textile Products* is divided into five sections, three relating to different aspects of problem solving in the broad area of textiles product design, the remaining two being divided between notes for teachers and technical support material.

Despite its slim appearance, *Developing Textile Products* contains a vast amount and variety of information, yet each page is clear, uncluttered and easy to read. This has been achieved through the somewhat uncomfortable and unstylish use of varying print size and style on the same page. In addition, background information is given in a different font from activity material. Where diagrams or illustrations appear, tone and texture are used to complement print style. The overall effect is highly readable, although the language used will, in many instances, need clarification for the average student – who might well feel intimidated by a page which not only lists the stages of the design process in unfamiliar terms, but also contains a helpful explanation of each stage descriptor in sophisticated language!

The three sections of student activities contain materials which vary a great deal in degree of difficulty. Part 1, which deals broadly with the properties of textiles and forms the basis of the unit could, with teacher support, be tackled easily by the majority of Key Stage 3 students. It offers a basic overview of textiles and their various functions in modern product design, together with a brief description of the development of a new 'natural synthetic' fibre by Courtaulds. Students at all levels might find the inclusion of the 'Textile Descriptor Word Bank' particularly useful.

Parts 2 and 3, which investigate commercial textile product design, production and marketing methods are far more complex, both in content and in layout. These pages could form the core structure of an entire course – requiring much enterprising individual research on the part of both teacher and student, whilst providing an excellent breakdown of the world of professional textile product design. These sections are not to be attempted by the student in isolation; the teacher will need to be able to offer further explanation and support at every stage – the final section,



containing technical support in the form of background information and useful hints, is by no means exhaustive in its assistance with the activities contained in the first three sections.

*Developing Textile Products* is highly effective in its attempt to bring the world of commercial textile product design within the reach of the classroom, its scientific content being appropriate to the activities offered and helpful to those teachers of design and technology who have little scientific background, although it might be helpful to indicate which activities require to be undertaken in laboratory conditions. The overall emphasis is on the provision of sound background knowledge in its juxtaposition with the design process and on how the textile industry functions and interacts with other associated industries. It also emphasises the importance of considering the teaching of design and technology in whatever form as an enabling process, offering pupils transferable skills and knowledge and thus giving them the opportunity to discover how to approach technological problems in a professional way – how to use the design process in the real industrial world, not just in the classroom. *Developing Textile Products* treads that path, as a relevant and useful collection of activities and opportunities for research, discovery and realisation. Highly recommended.

### Developing Textile Products

ASE: £12.00

ISBN 0 86357 238 3

*Reviewed by Jane Greenwood, Textiles teacher within Design and Technology*

Appropriate content	////
Pupil/student use	///
Teacher resource	////
Visuals	////
Overall style	////
Generic use	
One of a series	=
Photocopiable	=
Pupil/student activities	=
Cross-curricular	=



**Simple Mechanisms  
– Focused Practical  
Tasks: Teacher's  
Book No. 1**

TTS: £19.50

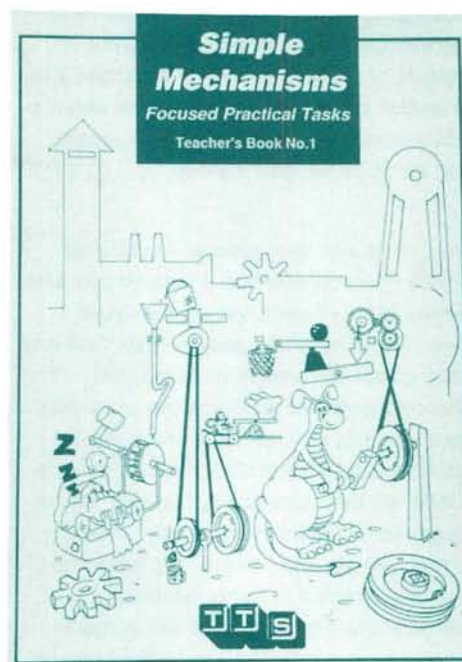
*Reviewed by Andy  
Breckon, Chief  
Executive, DATA*

This new publication by TTS shows the company's ability to pitch material at the appropriate level for non-specialist teachers and children. The pack is designed to help teachers and children with focused practical tasks. It is made up of 16 cards covering pulleys, gears, levers and cams, an A2 poster showing a vast range of simple mechanisms in full colour, and a teacher's guide to support the cards and give additional information for children.

The cards are in full colour on one side and black and white on the rear, and are of excellent quality though the lack of colour on the back detracts from some excellent materials for children. They use two characters, Douglas the Dragon and Blue the Bird, to encourage children to use the cards. Douglas explains the principle and Blue asks questions which should help stimulate ideas for future development. This pack of cards is a must for all teachers wishing to teach simple mechanisms in the primary school through focused practical tasks.

The poster summarises the 16 cards in a very colourful, attractive manner which will brighten up a technology area and provide a first class teaching aid. The teacher's book is perhaps the weakest element of this excellent resource. It sets a good context for FPTs and integrates well with the *DATA Guidance Materials for Key Stages 1 & 2*. However, the explanation on the cards lacks consistency with this booklet where more detail would have been helpful to the non-specialist teacher. The presentation is inconsistent in style and this detracts from an otherwise high quality product.

This pack of resources is highly recommended for children's use when teaching mechanisms in primary schools.



Appropriate content	✓✓✓✓
Pupil/student use	✓✓✓✓
Teacher resource	✓✓✓
Visuals	✓✓✓✓
Overall style	✓✓✓✓
Generic use	
One of a series	
Photocopiable	
Pupil/student activities	⇐
Cross-curricular	⇐



# The role of D&T's own show

When the law requiring a man with a red flag to walk in front of a motor car was repealed a hundred years ago this year, few could have predicted the consequences of this milestone in technology – for instance the motorway network with the National Exhibition Centre sitting at its hub amid vast acres of car parks, which is home once a year to the Design and Technology Education Exhibition.

When ICHF Ltd inaugurated the exhibition, just short of a couple of decades ago, we didn't envisage such widespread changes either. Initially the idea was simply to provide a shop window for suppliers. Those were the days when, under the old CD&T label, the subject was confined to secondary schools and was, with the exception of one or two pockets of enlightenment which attracted articles in the education press, confined to boys only.

The enthusiasm of teachers for the event soon convinced us that it had a wider role to play and, fuelled by the long debate about the purpose of design and technology and the content of its curriculum, the show soon began to expand. The most important step forward, following the appointment of John Swain, ex HMI, as our first Education Consultant, was the setting up of a seminar programme running concurrently with the displays. There quickly followed the participation of colleges and other academic institutions (for example, WISE always spectacularly present with the latest of its fleets of buses), examining boards and professional organisations (with DATA since its foundation playing an increasingly important part).

Meanwhile the face of the supply side has changed dramatically too. Over the years it has grown to meet the needs of the much wider range of options offered by design and technology departments (food, textiles, business studies, etc., in addition to the traditional base of workshop experience with resistant materials), the bringing of primary schools into the technology fold with a need for their own 'sympathetic' equipment and materials, and of course the advancing technology of equipment. In the early years the sight of a VDU was a rarity. Last year we were demonstrating 'virtual reality'.

Despite the mushrooming of education exhibitions since the introduction of LMS it is a fact that design and technology remains the only subject in the school curriculum with its own annual national show. It is also one of the biggest education exhibitions of any sort anywhere in the world and this is something of which the profession can be proud. The strength of their unique single subject exhibition is of course due to the fact that they are the prime providers of hands-on experience for the nation's children. Giving them the opportunity to review resources for that task remains one of the main functions of the show, but by no means the only one.

Equally importantly it has become an occasion for professional encouragement and refreshment. The chance to hear a variety of speakers, to see demonstrations of work in other schools and to exchange experiences is something people in any job need from time to time. The event is also to blow the trumpet a bit for design and technology, which is why politicians and other decision influencers are invited.

Finally, the exhibition has a valuable role in helping departmental budgets to be spent effectively. In years when funding is skimpy it is easy for teachers to feel that a trip is not worthwhile and easy for headteachers to feel that they cannot afford staff being away, but arguably these are the very times when the event is most valuable. With pared-back budgets the opportunity of comparing all available alternatives, handling things for yourself and being able to ask questions is more economical in the long run.

We have been proud to be associated over the last 19 years with such an important and vigorous subject and to provide a national focal point in the Design and Technology Education Exhibition, which will continue to develop in line with the profession's needs. For this year's show, from 14-16 November, a number of exciting new features are in hand. As teachers find it increasingly necessary to plan well in advance we are publishing an earlier Advance Seminar Programme which also includes details of travel subsidies, pre-registration incentives, special displays etc. Copies may be had on request to ICHF Ltd, Dominic House, Seaton Road, Highcliffe, Dorset, BH23 5HW. Tel. 01425 272711, Fax: 01425 279369.

*In Volume 1, Number 1 we published a review of the 1995 Design and Technology Education Exhibition. In keeping with the Journal's policy of encouraging dialogue on issues raised, we are now publishing the following response to the review from David Bennett, Managing Director, ICHF Ltd.*