

Supporting Science, Design and Technology in the Early Years

Reviewed by Alan Cross, Lecturer in Education, University of Manchester

This valuable book has been written at an important time for the education of young children. The establishment of a new key stage, the Foundation Stage, occurs when we are dealing with the first cohort of children whose education will occur solely in the 21st Century. It is essential that they and future cohorts learn about the scientific and technological world and develop positive attitudes towards science and technology. This book was a delight to read as it was so clear that the authors were sharing the best of what they knew from their wide experience.

It was particularly pleasing to see science and design and technology being dealt with together in a fair, balanced and complimentary way. These subjects, in the hands of a skilled primary or early years practitioner, integrate so well together. Importantly the audience for the book includes all of those adults involved in the education of young children including teachers, other professionals and of course parents and carers. The theme of parental involvement is rightly emphasised throughout the book.

The authors have a good understanding of science, design and technology and the education of young children. They draw on the work of fellow educationalists and others to give valuable insights which are well illustrated in the text with examples which illustrate many of the points made in the book and work well. This combination goes to make a powerful blend. The outcome is that this book will be meaningful to the broad range of professionals involved in the education of young children.

Much of the current good practice is reflected in the sections of this book. The

Supporting Science, Design and Technology in the Early Years

John Siraj-Blatchford and Iain McLeod-Brudenell, Open University Press: £12.99 (pb) £40.00 (hb)

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

Supporting Science, Design and Technology in the Early Years

John Siraj-Blatchford · Iain McLeod-Brudenell

SUPPORTING EARLY LEARNING

Series Editors: Vicky Hurst and Jennifer Joseph

Supporting Science, Design and Technology in the Early Years

● John Siraj-Blatchford
● Iain McLeod-Brudenell



authors usefully question existing practice. They point out that when adults continually provide sets of resources, thus limiting choice, the opportunity for creativity in young children's design and technology activity can be limited. This book emphasises the role of parents and teachers in, for example, providing role models to young children. These roles might have been examined in a little more detail, as it was not clear whether there were any differences in the role of teacher or parent.

The authors develop a very useful theme throughout the book associated with the role of adults. This is to develop the idea of providing scaffolding to support children's learning. Whilst recognising that explanation is not the only response to a child's question, the authors offer some advice and specific examples of

teachers and adults working with young children providing explanations of scientific principles. These are potentially extremely useful. One can imagine that many adults working with young children would be very interested in further clear advice in this area.

Books such as this one, aimed at non-specialists, ought to make use of the full range of pictorial and diagrammatic communication. This is one area where the book is a little disappointing – it would benefit from more diagrams of a better quality than those provided.

Chapter 2 explores ways of responding to the differing needs of children. It contains some challenging and welcome questions and discussion about diversity and difference in both children and the wider human population.

The book points to pedagogic methods which can be adopted by all adults working with young children. The questioning of children by adults is one example as is the role play in both science and design and technology. Other good advice is given, for example, that children might model in plasticine prior to constructing in clay. Speaking and listening, so critical in the Foundation Stage, is emphasised for instance in design and technology when young children might be encouraged to talk through the evaluative process.

The authors talk very usefully about children 'being' scientists and design technologists.

The section referring to the design and make process is particularly good. It suggests that varying starting points in the 'design and make cycle' can be used to achieve different educational ends. Good examples were given to illustrate these. Whilst the theme of scientific investigation permeates the book, the section dealing specifically with the investigative aspect of science is not as strong.

I had expected ICT to be given a little more attention. I would be very interested to read more from these two experienced authors about the contribution of ICT to science and design and technology in the early years.

This is a very useful book. It addresses its audience well and would be a useful addition to any professional dealing with the early years curriculum. It gives particular assistance to those wishing to raise the quality of involvement of other adults involved in the children's education. For those in training the authors have provided sufficient theoretical background with substantial practical advice and illustration. The fact that it refers to SCAA's Desirable Outcomes and not to the QCA Early Learning Goals in no way detracts from the book as it is articulating much that would be recognised as good practice. I know that I will make use of the book and recommend it when leading training sessions on science and design and technology in the early years.

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Dazzle Plus

Reviewed by David Foster, Head of Technology Faculty, Tibshelf School, Alfreton

This CD-ROM is a comprehensive painting package which allows the user to create images from scratch or to manipulate other images from a variety of other sources. These include video digitiser, scanner or photo CD sources. The package provides the user with the facility to utilise 16 million colours. The initial software was apparently developed to cater for the needs of the special needs youngsters and has retained what the software designers refer to as 'flexibility of use'. The software can be altered so that all levels of abilities and experience can be accommodated throughout Key Stages 1, 2 and 3. An interesting feature is that for younger children or perhaps those with a visual impairment, the tools can be made larger. This has long been a problem where the tools are indistinct or the windows are too complicated for younger pupils.

The software comes complete with a 40-page support document which is clear to understand and has lots of diagrams which show clearly the screen images at many points. I would imagine that in a primary school it would be used effectively by restricting the tool range to a simple style such that the younger children familiarise themselves with the program without the distraction of too many 'whistles and bells' to play with. Once they have become competent users, they could progress onto a machine with the full range of options available. The software allows these features to be customised and the changes saved so that each time the machine is operated it retains its customised level. These can be reset at any time.

There is a good print preview which allows the pupils to effectively choose whether their work is ready for printing or whether it requires modification. This

Dazzle Plus

Granada Learning/Semerc: £75.00 + VAT (single user), £10.00 + VAT for each additional user

Orders: 0161 827 2927

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



should save paper and the comment that 'it didn't work out right' should be less frequently heard!

For all those colleagues who are familiar with !Flare from the Acorn platform, it would be fair to comment that there are many useful similarities between the two. I have used Dazzle Plus with pupils in both the primary and secondary sectors and have found pupils in both areas to be fascinated with the package. I have used it with pupils studying the GCSE Graphics Products course when designing commercial packaging and all have enjoyed the facilities that it provides.

We should not forget that the final image is only as good as the printer and the paper used. Children are soon disappointed when a spectacular screen image is reduced to a wishy-washy version on photocopier A4 plain paper. The package really comes into its own when used in conjunction with a good quality coated paper reserved for photographs from the school digital camera. I would argue that the print preview facility would save enough printer cartridge ink to enable the pupils to print out only their 'masterpieces' at a reasonable cost!

At £75 plus VAT, the software represents excellent value for a single user. Multiple license applications are available.

Design and Bake – Wheat and Other Cereals

Reviewed by Marion Rutland, Senior Lecturer in Design and Technology Education, University of Surrey Roehampton

The photocopiable book provides an interesting design and technology food resource for the primary classroom. The foreword explains that Helen Taylor has considerable experience in outside catering and managing a very successful restaurant. Her interest in the primary curriculum came from involvement in a local primary school.

The book is a good combination of interesting, relevant information on food technology for primary school children and practical food based tasks. The design and make folios look at four major food products and the things that can be, or have been, made from them. They are listed as wheat, sugar, vegetables and fruit and dairy products, though the main focus of this publication is wheat and other cereals.

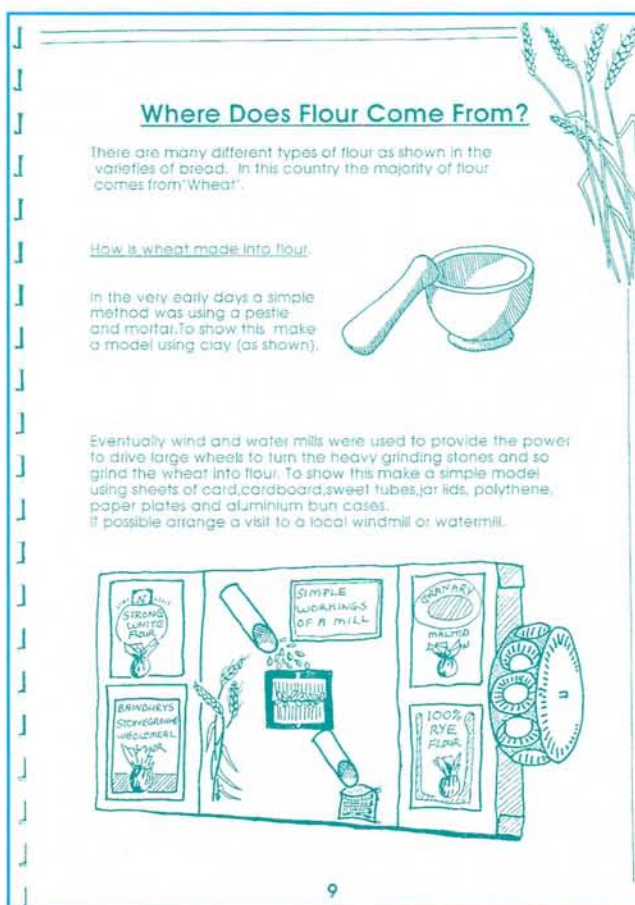
The contents page divides the book into Key Stage 1 and Key Stage 2 sections, indicating clearly which pages can be given to children in the classroom. The types of tasks include information sheets, for example on bread, different shapes for sandwiches, where does flour come from, yeast; simple focused tasks, for example make a dinosaur, making a sandwich box, simple experiments; work sheets, for example on breads of the world; design and make tasks, for example how to make sesame seed hot cakes, soda bread, naans, pizza and cornbread.

The Key Stage 1 section centres on wheat, sandwiches, bread making. In the Key Stage 2 section there is information on 'Breads of the world' and an interesting section called 'Bread calendar' which carries on the theme of breads around the world with information and a range of recipes. The last section in Key

Design and Bake – Wheat and Other Cereals

Helen Taylor
£6.50 plus p&p
Orders: 01709 816358

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



Stage 2 focuses on nutrition and includes information on a nutritious sandwich and worksheets on learning about a range of nutrients.

As a resource for the classroom it will be useful for the class teacher as it is clearly presented, well illustrated and has useful worksheets for the children. The book shows good links for the curriculum planner with other subject areas. The book is a mixture of teacher and pupil resources with a language level and depth of information not always suitable for direct use with young children. Teachers will need to use the information for their planning and, in some cases, write their own sheets at the appropriate reading age. The recipes are very interesting and well documented. Again, the teacher would need to produce additional teaching materials at the appropriate age for the children. I would have liked to see the nutrition section integrated into the practical activities.

Some of the recipes could present problems when the children attempt to make them in the traditional primary classroom. There is no guidance given on how the teacher will organise and manage

such practical food activities in the primary classroom, perhaps it is not intended that the children should make them all. I do have doubts about the ability of a whole class of children to produce such products without thought given to resources, organisation, health and safety issues and experienced, individual adult help and support for the children. Lack of success with some of the recipes could be very disappointing for the children. Some of the recipes require in-depth skills and knowledge of the properties and characteristics of foods. There is no reference to how the children will learn these and how they will apply them and make 'design decisions' when they design and make with food.

I see the book as a useful, very reasonably priced resource providing good background information on cereals, which the class teacher will adapt to suit the individual needs of the children. There is evidence of considerable research that could be used very effectively when planning lessons. As for the activities, I would have liked to see some guidance on how the teachers would organise the activities, rather than a recipe and method for each product.

Design and Technology and the Historic Environment

Reviewed by Michael Lawrence, Head of Faculty, Art, Design and Technology, Bishop Fox's Community School

Published by English Heritage in its *Education on Site* series, this book is a teacher's guide focusing on 'educational strategies for the use of sites and buildings'. Written by Jonathan Barnes, formerly a seconded teacher working at Dover Castle, now headteacher of a primary school, the book 'suggests practical activities and ideas for using the historic environment in a stimulating way for teaching the skills and concepts of design and technology'.

Barnes and English Heritage have managed to pack this slender A4 paperback of 36 pages with ideas for projects able to span all *four* key stages: an unusual achievement and an interesting read for those who feel they ought to do more to break down the primary-secondary divide. The style of writing is clear and paragraphing is concise, making the chapters easy to scan. Every page contains illustrations, either black and white photographs or drawings (or both), and there are six case studies in which bullet points highlight design briefs, focused tasks or extension activities for teachers and eventually pupils to follow.

The aims are clearly set out at the beginning (paraphrased below) and teachers are encouraged to:

- explore ways in which any historic environment can be used to stimulate exciting design and technology assignments or to build up a fund of knowledge to be applied to otherwise unrelated projects
- get out of the classroom so that design and technology work can be placed in a real context

- use historic sites ... for more than just the predictable history field trip
- keep design and technology projects small and manageable unless many days are available for planning.

This last point is worth examining in more detail. One of the major benefits of this book is that its author is a serving teacher and the projects described seem to reflect an efficiency of effort in organising tasks for pupils which go on to produce a large return in terms of learning. Too often, outside study trips are reduced to a minimum by teachers because of the pressures of delivering the National Curriculum and achieving 'targets' in school. Some of the case studies provide healthy evidence that many projects can stay quite close to home and be highly productive in terms of design and technology outcomes.

The 'Design a Tie' is a case in point. A group of Year 5 pupils were set the assignment of designing a tie on the theme of walls. After detailed and fully annotated drawings had been made of a number of textures of building materials within the vicinity of the school, repeat patterns were eventually developed and prototyped onto paper tie templates. After evaluating each other's work and adapting some of their designs, the pupils drew their proposals onto cloth templates with special coloured pencils. Their designs were worn home. The entire project is described and illustrated on one side of A4 in the book.

Other case studies are of a similar length, the longest spans three pages. The author gives an account of a larger project in primary school lasting a term and requiring more careful preparation involving professionals – architects, planners, builders and local authority officials. The brief focused on an industrial site near the school for a redevelopment project involving 'conservation and the sympathetic realisation of a community's needs'. The pupils carried out research and investigation, recorded findings and drew up plans of group proposals and eventually constructed models and held an exhibition. The author reported that 'parents and professionals outside education were surprised at the high quality of the pupils' work'. Moreover, 'teachers could ... see how much high quality geography, history, maths, science, art and English was involved in the project'.

This type of cross-curricular value is prominent throughout the book, just as it permeates all good design and technology work of any kind as readers of this journal will know. The book concludes with an illustrated glossary of Building Materials and a Bibliography and list of Resources, including videos available from English Heritage for free loan or purchase.

At £6.95, the volume would not over-tax a departmental budget, especially since it is not a textbook but a Teacher's Guide after all. For me, the true value was in the wealth of ideas and applications it could provide in primary and secondary schools alike. In fact, it would make a great read on an INSET day – even better if a head teacher had the foresight to include it as part of an official INSET programme. I'm sure Mr Barnes has the right idea.

Design and Technology and the Historic Environment

Jonathan Barnes
English Heritage: £6.95
ISBN: 1 85074 399 1
Orders: 01604 781163

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

The Millennium Train
Reviewed by Chris Snell

The Millennium Train resource is produced under joint authorship by the Institution of Mechanical Engineers (I Mech E) and the support of The Railway Industry Association, with input from various other bodies, universities and others. Although aimed at the early years of secondary education there is plenty of material to satisfy Key Stage 4 activities.

The pack contains a Teacher's Guide, six photocopiable workbooks for pupils, each eight pages long, a 22-minute video and an Excel 1.4Mb floppy for spreadsheet analysis. The six workbooks sport the following headings:

Costs – the costs of the system compared with other methods of transport

Journey time – designing for a journey time that is competitive with other transport systems

Energy resources – the efficient use of energy resources

Signalling and control – systems

Materials – the efficient use of materials

Safety – safe working systems

The booklets are not hierarchical, so can be used in any order. Pupils are introduced to the principle of project mission statements:

The Millennium Train will move people and goods –

- more safely
- more quickly
- using less fuel
- producing less pollution
- at less cost to the environment.

The intention is to engage young people as engineers, encouraging individual, group and team work. Science Club activities tie in with other channels e.g. I Mech E initiatives, British Association BAYS initiative, the Neighbourhood Engineer Scheme or the Chemistry Club.

The video stimulates interest in the 'real life' issues, events and problems tackled by engineers from design and material choice through to mathematical and logistical analysis – albeit at a level suited to Key Stages 3 and 4. There is a comparison of topics with National Curriculum programmes of study embracing science, mathematics, design

A dynamic, informative Multi Media Resource Pack for Key Stage 3

Pack Includes:
6 Pupil Booklets, 1 Video,
1 Computer Disc, Teacher Notes.

THE MILLENNIUM TRAIN

and technology, ICT; Northern Ireland Curriculum and Scottish Curriculum links are also detailed.

Each pupils' book follows the same format:

Cover page sets the scene.

Page 2 outlines a particular design or engineering challenge and profiles an engineer involved in such work.

Fact Files are introduced, providing **Action** sections requiring the pupil to take action using information contained in the former (on subsequent pages). These follow a variety of forms from passive, deductive class work to readily achievable but worthwhile research.

Page 8 is headed **MEMO** and takes the form of a memorandum requiring pupils

to respond to an issue or problem raised by a fictitious department requesting enlightenment, further research or action to be taken over some aspect of the project. This introduces disciplines of report writing skills, fax writing and other such communication exercises.

The **Action** sections contain varied assignments for pupils involving practical experiments, data handling, comprehension of facts and issues, mathematical calculations, written assignments – letters, reports, investigative tasks.

The booklets provide a spectrum of ideas and experiments requiring simple models to be constructed and apparatus to be set up using readily available materials and components. This extends from

tasks/experiments using simple objects such as rulers and cotton reels to such investigations as examining the dynamic imbalance of a front bicycle wheel when the handle bars are suspended from a spring.

There are suggestions for the use of different software packages to achieve hard copy. The Excel disk being an included contribution to this end. It contains sections related to problems/tasks encountered in the booklets and allows pupils to investigate various scenarios in a stimulating way.

This package has been put together with a care and insight not evident in earlier educational packages produced by well-meaning industrial/official sponsors a few years ago. The authors are to be congratulated on the 'punchy' style, brevity of explanation that does not sacrifice comprehension, and clarity of diagrams and layout. It should stimulate a very real interest in the various areas of creativity that engineers engage in.

It was a pleasure to review material that did not provoke an information-fatigue response in me. Busy teachers do not have the time to wade through educational padding masquerading as educational wisdom; this resource gets to the point without wasting time.

DATA members would do well to draw the attention of their science, maths and ICT colleagues to the various topics in this package.

The package should prove a very worthwhile addition to any school resources library.

The Millennium Train

1 Mech E: £14.99

Orders: Institution of Mechanical Engineers

1 Birdcage Walk, London SW1 H 9JJ

Tel: 020 7973 1309

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

FROM TRENTHAM

IT SKILLS PARTNERSHIPS FOR THE INFORMATION SOCIETY

Lord Puttnam of Queensgate CBE

In this inclusive document David Puttnam highlights and analyses the exponential growth of information and Communication Technology and the crucial partnership of education in ensuring that its growth is both successful and sustainable.

This is the text of the Lord Alexander Memorial Lecture, given to the Society of Education Officers Conference in 1999.

1999, ISBN 1 85856 207 4, 16 pages, A5

Price £4.95

OPPORTUNITIES FOR INFORMATION AND COMMUNICATION TECHNOLOGY IN THE PRIMARY SCHOOL

Helen Smith

Information and Communications (ICT) Technology is now part of almost every aspect of the primary school curriculum. This book is for primary school teachers of all subjects and shows how they can enhance their teaching opportunities with ICT – whether or not they are familiar with it. There are chapters on all main curriculum subjects, on Information and Communications Technology itself as a subject and on how to ease school Information Technology equipment into the new millennium.

Dr Helen Smith is a Senior Lecturer at King Alfred's College, Winchester and member of Kent Advisory Service.

☐ ... a celebration of what can be achieved ...

– MAPE (Microcomputers and Primary Education) Newsletter

1999, Reprinted 2000, ISBN 1 85856 106 X

160 pages, 228mm x 145mm

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AUTOCAD WORKBOOK

A guide to drawing and modelling using Release 14

Mike Veveris and Julie De Rosa

AutoCAD is one of the world's leading design instruments for 2 and 3D work. This guide, in plain, comprehensive language is designed for students in schools, colleges and universities. Extensively trialed at the University of Derby, students have found that it tells them 'everything you ever wanted to know about AutoCAD but never dared to ask'. The guide is fully up-to-date with the latest release (No.14) but readily usable with earlier releases.

Contents include Object Drawing – flat and isometric, 3D Modelling, User Co-ordinate Systems, Rendering and numerous graduated exercises.

Mike Veveris and Julie De Rosa lecture at the University of Derby.

1998, ISBN 1 85856 107 8

140 pages, A4

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GCSE Food Technology for OCR: Pupil Book and Teacher's Resource File

Reviewed by Roy Ballam, Education Liaison Officer, British Nutrition Foundation

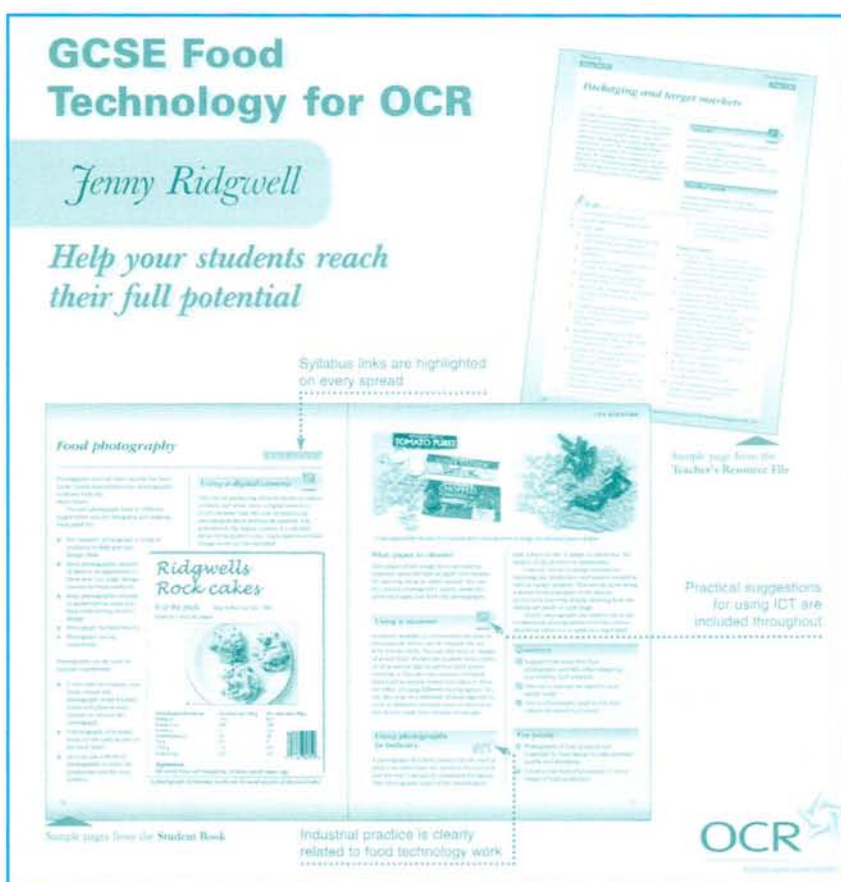
These two new resources from Heinemann are written specifically for OCR, with charts and planners to help with their coursework and examinations procedures. Such help is sometimes useful, as they state the blindingly obvious; for example coursework assessment objectives are presented, helpful when you're teaching 28 Year 10 pupils. The Teachers' Resource File is supplied in a sturdy folder, with loose-leaf pages (142 pages) – ideal for the photocopier. The pupil textbook is 160 pages, in colour, although some of the printing seemed rather hazy. The presentation is simple, and a useful cross-referencing system is in place, linking both publications and the syllabus requirements.

The pupil book is intended to cover all the requirements of the short course, and if following the full course, the extra material required is in the Teachers' File. Clearly a great marketing angle. The book supplies a wealth of information concerning elements of food technology, and although not intended as a criticism of this book, as it contains well-researched and useful case study material, represents no innovation. It is what it says, a resource that fits with one syllabus, supplying information that has been produced in other publications, including those by Heinemann and Ridgwell Press. However, one new touch is a 'Key Points' box for every topic, summarising the pertinent elements of an information page in 2–3 sentences. Handy for quick-revision and helping lower ability pupils. Industrial practices and ICT symbols are scattered throughout the

GCSE Food Technology for OCR: Pupil Book and Teacher's Resource File

Heinemann Publishers: £11.25 (Pupil Book) and £29.99 (Teacher's Resource File) ISBN: 0 435 41946 3 (Pupil Book), 0 435 41947 1 (Teacher's Resource File) Orders: 01865 311366

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



book, indicating opportunities of further development or investigation. Although superficial, they offer an 'at a glance reference' where these two important elements of food technology are placed.

As mentioned, the Resource File is mapped against the OCR syllabus for easy reference, and contains useful experimental tasks, process flow charts and other handy 'store cupboard' proformas. However, the file also contains many pages of information, some with rather unchallenging comprehension tasks at the end. I'm personally doubtful of this approach, as although arguably any exam practice is useful, this assesses what the pupil can reproduce from the text given, rather than applied in a design and technology context. Additionally, the number of information pages, focused tasks and experiments begs an important question; why buy multiple-copies of the pupil book? At £11.25, multiple-copies could prove expensive, and when taken into account that a department may already have a number of relevant food technology books/resources, the Teachers' Resource File represents a much more prudent investment at £29.99. (Although, as with all photocopy resources, there is a danger of 'design and make' paper

overload – and mounting copying costs.) However, if you prefer the one book approach, then the cross-referencing system employed in these publications will keep you happy.

The strength of these two publications is also their weakness; they are useful in providing structure to tackle the OCR assessment procedures, yet this is at the cost of having to repurchase information that is already available. You are paying for convenience – as one may purchase a 'ready meal' to save preparing and cooking food, these types of publication offer a 'ready-made' course. However, such criticisms are not solely directed to these publications. In essence, the two resources offer a structured approach to the OCR syllabus, and provide 'tools' in order to tackle its requirements and assessment procedures. If you're running OCR courses and have the budget, they offer the convenience of knowing that you are on the right track.

Raising Achievement in Design and Technology: Resistant Materials
 Reviewed by Roman M. Gawel, King's School

'A bargain!' At least, that's what some of my non-specialist colleagues said when they saw a book of some 30 photocopiable worksheets for £25.00. But is it? The book is very closely focused on an aspect of design and technology teaching which is of considerable current interest – that of trying to enable a particular group of students to cross the threshold from grade D to grade C, and in many ways it succeeds in this objective.

There is general guidance on use covering the book as a whole, as one would expect, together with detailed Teacher's Notes on each and every worksheet under headings such as 'Aims', 'Classroom Management' and 'Extension Activities'. What promise to be most useful are the notes on grade differentiation that accompany each worksheet – these give a clear guide for the teacher to identify work that falls within the A–C band. This will be useful to even the most experienced practitioner, whilst the main body of the work will be reassuringly familiar. The general guidelines make the suggestion that the Teacher's Notes could form the basis of preparatory INSET, and I do think that colleagues in their first years of teaching would indeed find them useful.

The worksheets are grouped in seven sections, plus a couple of extra pages in the appendices. The so-called generic pages cover presentational skills, together with work on evaluation and questionnaires. The remaining six sections follow the usual six coursework areas, but only approximately. Teachers may also find that the order in which the authors present these sheets needs to be modified – not really a problem – or that they would wish to omit some. It should be noted that this grouping will not be apparent to the students unless the teacher

Raising Achievement in Design and Technology: Resistant Materials
 Glen Blair-Ford, Jenny Patrick and Rob Taylor, The Chalkface Project: £25.00
 ISBN: 1 86025 247 8
 Orders: 01908 340340 Fax: 01908 340341

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

PARTS EXPLOSION

1 A component is a ready-made part that can be used with others to make a complete product. Write a list of the main component parts used to make a bicycle.

2 Exploded diagrams are drawings of the component parts that make up the complete product. All parts need to be drawn in line, as if the object has 'floated apart' and is 'exploding' in slow motion. Using the clock illustration below, label each component part with a letter.

3 Make up a chart, similar to the one in the picture, to show a 'Parts List Of Requirements' and fill it in.

Parts List of Requirements

	PART	MATERIAL	SIZE	QUANTITY	PICTURE
A	Minute hand	Nylon	55mm	1	
B	Hour hand	Nylon	40mm	1	
C	Nut	Brass	No. 8	1	

EXPLODED DIAGRAMS GUIDE

- Start by drawing the main body of the product.
- Ensure every component part is seen.
- Keep the spacing between components the same size.
- Leave enough space for the Parts List to be included on the same A3 design sheet.

4 Having completed the tasks above, apply the same method to your own project. Following the bullet points in the box on the left will help you.

emphasises it: there is nothing on the worksheet to identify it as being, say, part of the research section. More flexibility is imparted as a result.

The main strength of the booklet lies in enabling the students (and teacher) to identify the qualities needed to raise work to the standard of C+, and of helping students in the very difficult area of checking that they have enough of the correct type of work in each section of their coursework. The choice of work for most of the sheets manages this task competently enough, but there are aspects of the work that this reviewer found confusing.

My main worry is that the visual aspect of the sheets is remarkably old-fashioned. There is something about the linework and, especially, the drawing of human figures that irresistibly brings to mind a workbook of the 1980s. On some sheets individual diagrams are misaligned, while other sheets are unnecessarily cluttered. I fear that some of my candidates would find the appearance a definite turn-off. The content of most of the sheets, in contrast, should be both accessible and useful. The language, bearing in mind that the target audience is the C/D borderline, is appropriate but I think that the volume of information on one or two of the worksheets is just too dense and

that the same work would be better split between two sheets.

There are worksheets that I'd be happy to use just as they are; there are others that provide invaluable prompts, but which I would prefer to rewrite and redesign; there are even approaches that are new to me but overall I think *Raising Achievement in Design and Technology: Resistant Materials* is something of a curate's egg. I'm pleased to have a copy to dip into as an additional resource, but I don't think that I would base work exclusively on this. It's not a bad way to spend £25.00 to augment what you already have.

- PRESENTING INFORMATION -

1 Research information can be presented in many different ways. One way is to present it in written form. Another way is to use graphs. What advantages do graphs have over written presentation?

2 Different types of graph are used to display different types of information. Look at the picture on the right. Join the correct labels to the different types of graphs.

3 The picture below shows a variety of information which could be displayed in graph form. Decide which information is best suited to which graph display and then draw up and complete each graph.

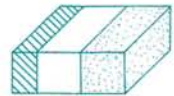
Block Graph



Pie Chart



Line graph



Bar chart

Fifty people were asked about their favourite colour. The results were as follows: Red (9); Blue (14); Green (6); Orange (2); Yellow (2); White (3); Black (4); Other (4).

The monthly sales of 'Gordon's Gloves' for 1997 were as follows:

Jan	2,000
Feb	1,500
Mar	1,000
Apr	600
May	400
Jun	200
Jul	300
Aug	200
Sep	500
Oct	300
Nov	1,700
Dec	2,100

Fifty people were asked what material they would prefer a pencil case to be made of. The results were as follows: Fabric (12); Soft PVC (3); Acrylic (20); Tin Plate (10); Plywood (2); Other (3).

4 Study the graphs you have just completed. For each one, explain exactly what information the managing director of the company would get from each graph.

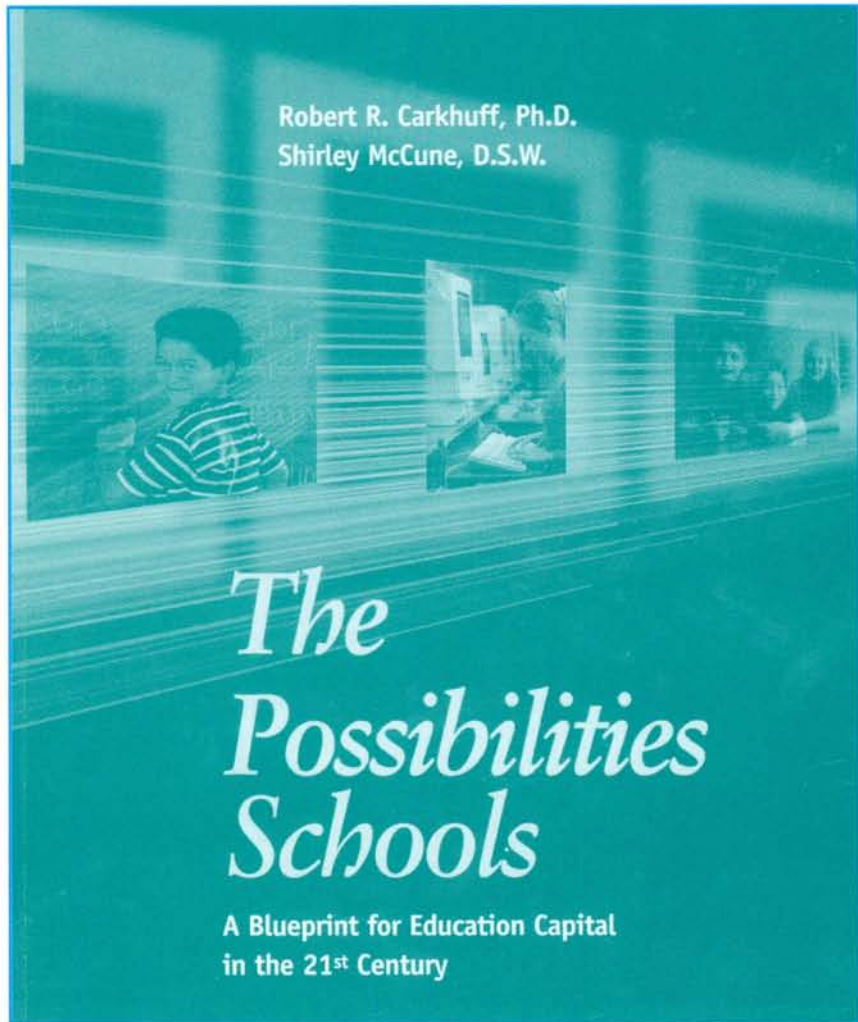
The Possibilities Schools – A Blueprint for Education Capital in the 21st Century

Reviewed by Andy Breckon, Chief Executive, DATA

Books are usually submitted by publishers for review in this section. This book was given to me to read by Peter Rayson Vice President Europe of PTC following his attendance at a conference in New York. The book is only 120 pages long with on average less than 80 words per page and is full of US educational jargon in terms of the language and diagrammatic representation. So why draw it to DATA members' attention? Because it is one of the few books that has attempted to address education in the 21st Century and because it challenges current educational methodology as inappropriate for the needs of our young people in the 21st Century.

The book defines that the mission of education is to develop the resources of learners and prepare them for their future roles of living, learning and working – education is human capital development. They define education in the 20th Century as based on beliefs and perceptions of students' probable economic and social roles based on race, ethnicity, sex and socio-economic status. They conclude that these limit learning for many students. In addition the current system of what they define as probability schools are characterised by a narrow system where inputs are gauged by the ability to assess the output that conforms to the inputs, in other words, a closed loop educational system.

The book puts forward the view that the 21st Century needs to move from the narrowly focused probability schools to the opportunities of possibilities schools. Its mission for possibilities schools is to develop the highest potential for learners and to prepare them for life-long learning. To achieve this it seeks to develop learning that empowers learners in human



processes focusing on conditioned responding, discriminative learning and generative processing, these form the basis of thinking in the view of the authors.

The authors' view is that nearly two-thirds of the workforce require high level reasoning skills and this will grow over the coming years – brainpower will be the defining capability in the knowledge driven society. The book states that the possibilities school will enrich the current curriculum with the new 3Rs – relating, representing and reasoning. The new 3Rs transform information outputs into higher-order processing response outputs, they make thinkers out of learners. This will prepare learners for a world of spiralling change, with a need to generate new responses to changing conditions, where the need to think interdependently and collaboratively will be essential to maintain and develop the 21st Century.

This book is not the answer to education in the 21st Century and despite its few words it is not an easy read. Some of the

analysis is not well justified, but it is a challenging read and it may well be part of the reason that the government has recently brought thinking skills into the debate in this country. This may be of interest to those studying for higher degrees or future gazers.

The Possibilities Schools

Robert R Carkhuff and Shirley McCune
Possibilities Publishing
22 Amherst Road, Amherst, MA 01002
www.possibilitiespublisher.com

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

Kites Resource Pack: Key Stage 3 Design and Technology

Reviewed by Mark Hudson, Director of Technology, Thomas Telford School, Shropshire

This resource pack is presented in an A4 ring binder and contains some 71 single side printed pages of materials covering this activity very fully. The document commences, as all such packs should, by introducing the teacher to the assignment and explaining its contribution towards the National Curriculum programmes of study. This aspect is fully audited and the pages where these are met listed for reference, these references are regrettably to the old Order.

The pack takes you through a series of FPTs and DMAs, materials and resources are listed and advice given for teaching sessions. This project is a rich source of cross-curricular linking and this too is fully noted and experiments for science, maths and ICT within design and technology are included on pre prepared worksheets. A range of websites for students and staff are noted. Assessment issues are not addressed in depth.

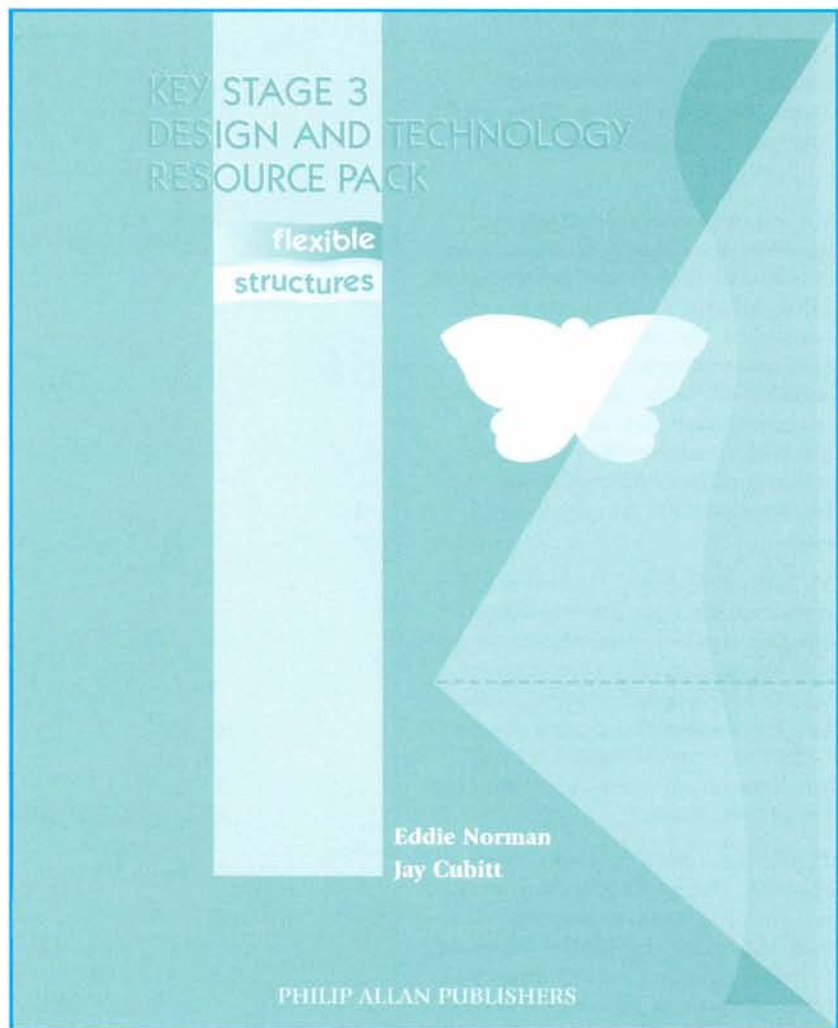
Much of the pack is designed for photocopy purposes and copyright is granted within the purchasing institution. The layout is crisp and will copy well, it is good to see a heavy paper has been used to improve the durability of the resource pack. The pack is targeted at Key Stage 3 but I see lots here that would fit Key Stage 2 and provide a strong design and technology theme for colleagues in this phase, I would recommend primary colleagues explore this resource.

The materials within the pack provide a progressive route through the project enabling teachers to stop at any point, be it the FPT or measuring deflection in beams or CAD/CAM. The traditional

Kites Resource Pack: Key Stage 3 Design and Technology

Eddie Norman and Jay Cubitt
 Philip Allan Publishers: £29.95 plus £5 p&p
 ISBN: 0 86003 229 9
 Orders: 01869 338652

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



forms of kite are explained and the function of all kite elements justified from a functional view.

There are a number of opportunities for students to develop their creative abilities through the DMAs. The potential for construction materials and textiles to combine is evident and the specification for the design of the kite is built up through practical activity and is well explained with illustrated sheets. I feel sure that many art and design departments would also feel quite at home with this project.

Sheets are provided to assist teachers in monitoring their student progress through the range of tasks. All the key elements of development, modelling and evaluation are included, it is also good to see that team manufacture is encouraged and the associated planning issues addressed. A range of extension tasks and differentiated materials are also available making the resource more flexible for mixed ability groups. The language used is of a good

standard and level with technical terms explained and illustrated.

Teachers are constantly looking for new and interesting vehicles to enable design and technology to be understood and inspiring. Whilst this project is rich and clearly capable of covering many of the programmes of study I am unsure how inspiring it would be for all Key Stage 3 students. Pitched at the right level and with the right group and given a following wind (sorry!) I am sure many students will find this a suitable challenge and be enthused. Teachers will need to judge this for themselves. If the product is to your taste and you feel your students will enjoy, then you will not need to look further for a very comprehensive and well presented resource pack.

ICT and the Learning Revolution

Reviewed by Les Porter, Course Director for Industrial Design and Technology at the Design Department of Brunel University, Egham Surrey.

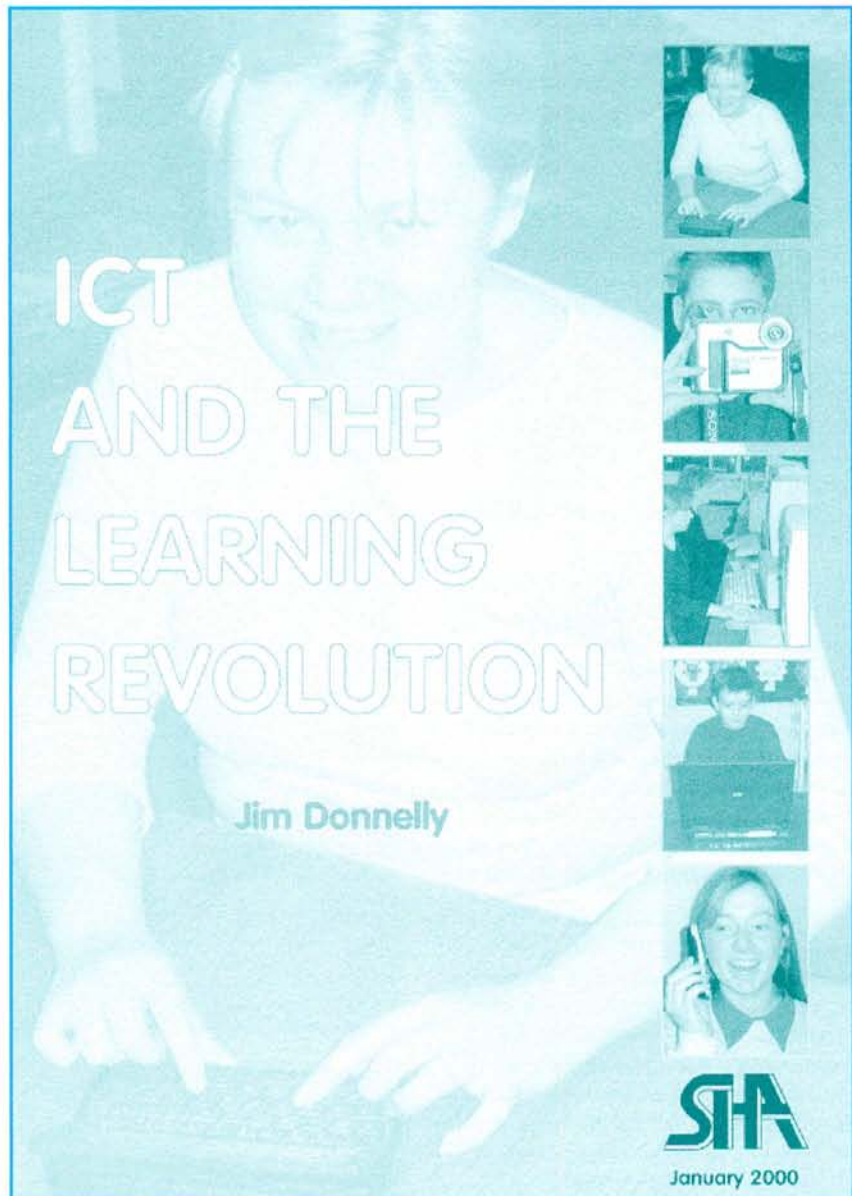
ICT and the Learning Revolution is written by Jim Donnelly the head teacher of Litherland High School on Merseyside and is published by the Secondary Heads Association. The book is written to help busy senior managers reflect on the impact of ICT in the curriculum and the nature of changes that result from this. The book aims to provide school and college managers with the help and practicalities of ICT on a day-to-day basis.

Mr Donnelly is clearly an expert in ICT and his writing is perceptive and clear. The book provides managers, who do not have his expertise, with a tool to enable them to look at problems that may effect their own institutions. He points out that "...the future is problematic [but I am] sure that ICT will have a major role in the school of the future."

This is a book that should not be read chapter by chapter. Chapter one is about general management issues and should be read first, but the chapters that follow can be read in isolation from each other. This is not a book solely for head teachers, but should sit in the staff resource library to be drawn on as the need arises. For example a senior manager dealing with staff development may wish to pay particular attention to Chapter three, whilst the ICT co-ordinator may be interested in Chapter five.

The issues that each of the chapters deals with are:

- How to manage IT and ICT development.
- Managing the school or college with ICT.



- Staff training.
- ICT in the National Curriculum.
- Purchasing ICT equipment.
- New tools for learning.
- Schooling in the future.

Chapter one provides a really good overview of ICT in our schools. The chapter assumes no knowledge from the reader and is written in a style that will appeal to readers who approach the book from a wide range of backgrounds. Later the chapter provides some very sensible advice about undertaking an ICT audit and developing an ICT committee and the way that groups should be established. It discusses the real costs of the ICT manager and about a number of teaching and learning issues that are involved with

this post. Here Mr Donnelly obviously discusses the issues from his vast experience and gives some invaluable insights to heads who might not have this experience.

Chapter two examines management systems and looks at the way that databases, spreadsheets and specialist software may be used to assist academic issues such as student progress and preparing records of achievement as well as the management of the institution. The chapter is informative and presents a wide range of ideas regarding how such systems could be used in a school or a college. I feel that the chapter lacks examples of the good practice that Mr Donnelly has used himself in his career in ICT and would have been better if it had commented on specific software on how

ICT and the Learning Revolution

Jim Donnelly
SHA Publications: £9.50
ISBN: 0 906916 53 4
Orders: 0116 299 1122

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

certain establishments had benefited by using such management tools.

I found Chapter three particularly interesting! It gives an insight into the New Opportunities Fund (NOF) and how teachers may use this fund both to enhance their own ICT knowledge, and better use ICT in the classroom. The chapter gives guidance to senior managers who are responsible for ICT INSET programmes and finishes with some very sound advice regarding the need for staff to be fully involved in identifying their own training needs and for developing a strategy for working toward these objectives.

Chapter four gives an overview of ICT in two formats. Firstly as a cross-curricular tool and secondly as a National Curriculum subject in its own right. In addition the chapter looks at challenges that teachers and students might face at Key Stages 3 and 4 and gives advice about accessing a student's ICT capability.

Chapter five looks at the issues of purchasing ICT equipment, about monitoring it and about developing strategies to replace outdated equipment. The advice given here regarding BECTa's support scheme for educational institutions should prove particularly helpful.

Chapters seven and eight are written in a different style to the other chapters. These chapters introduce new technologies that could enhance teaching and learning using ICT. Technologies like 'Interactive Whiteboards', 'Digital Cameras', 'WAP', 'The Internet', and 'Data Projectors' are all discussed. Some fascinating ideas about the digital world in which we live are explored in this chapter. In the final chapter Mr Donnelly gives his views regarding schools of the future and makes some interesting points regarding the place of the school of the future in society. For me I wish that these two chapters had been at the start of the book, I found their style refreshing and the ideas expressed thought provoking.

I feel that there are two slight negatives about the book. I feel that the graphics used on the cover are a lost opportunity. The facial expressions of the students tell a lovely story about motivation and excitement, but this impact is lost by the washed-out colours of the cover and I feel that many teachers will 'leave the book on the shelf'. Secondly, I comment in my opening remarks that "this is a book that needs to be dipped into...", the fact that the book has no contents page or an index makes this difficult to do. For me, an ICT buff, I find this a helpful book which I have enjoyed reading. I think that further opportunities have also been lost by not including classroom photographs to illustrate points made in text. I understand the difficulties regarding endorsing specific products from certain manufacturers, but I feel that a reader of the book just starting on the ICT trail would have gained a great deal from Mr Donnelly's experience if he had made some comment about his own educational gains from working with particular products. The websites that are cited in the book are well worth a visit. I end with Mr Donnelly's words saying "The vision for the future of an ICT-enabled learning revolution is there for the taking. Ultimately it is the vision which will matter not the tools of technology." Armed with this splendid little book go out and head that revolution!

Guidelines for contributors

The Journal of Design and Technology Education is the professional journal of the Design and Technology Association. DATA is the recognised professional association which represents all those involved in design and technology education. The journal provides a forum for the exchange of views on design and technology education and welcomes contributions to all sections. Published papers become the copyright of the Design and Technology Association, unless otherwise agreed.

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The journal has three sections:

- Research
- Curriculum development
- Reviews

The research papers published will emphasise the provision of a better understanding of design and technology and the improvement of the quality of design and technology education in schools, colleges and universities. Papers for the research section should usually be between 3,000-5,000 words though in exceptional circumstances papers of a maximum of 8,000 words will be considered. The curriculum development section has a number of sub-sections focusing on particular areas (primary, secondary, initial teacher education, special needs, etc). This section may contain reports of a less formal kind (but still analytical) on aspects of interest to those involved in design and technology. Papers for the curriculum development section should be 1,000-3,000 words long.

Refereeing policy

Both the research and curriculum development sections of the journal are refereed and the normal academic criteria will apply. Each submission is read by the section editor and at least two other members of the editorial board, which meets three times a year. Contributors should note that there is likely to be a delay of several weeks between the acknowledgement of receipt of their work and notification of the decision of the editorial board.

Each article must be accompanied by an abstract of 100-150 words, as well as six key words for indexing. The author's name, title, current post and contact details, as well as the section for which the article is intended, should be stated on a separate sheet so that the article is suitable for double-blind reviewing. Please note that the editor-in-chief may, at his discretion, place the article in a different section from that suggested by the author.

Footnotes to the text should be avoided where possible but, if essential, should be placed at the end of the paper. Full references must be supplied for all articles in the following standard forms:

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ROBERTS, T. (1991). 'Gender and the influence of evaluation on self-assessments in achievement settings', *Psychological Bulletin*, 109, 2, 297-308.

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All contributions should be supplied as word-processed text on disk, in an Apple Mac or IBM-compatible PC format (Microsoft Word), with 2 typescript copies, double spaced, typed on one side of the paper. Pages should be numbered consecutively. Figures, tables and other illustrations should also be supplied on disk. Where typescript copies only can be supplied, tables and figures should be placed on separate sheets and not included within the text. Please include photographs (with captions) where possible. Any illustrations (planning sheets, pupils' work, etc) should be on separate sheets, clearly labelled, and should be as clear as possible to assist reproduction. Please have your name and contact details on a separate sheet of paper. Typescripts and disks will not normally be returned to contributors unless sufficient postage has been sent.

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The Editor
Design and Technology Association
16 Wellesbourne House, Walton Road,
Wellsbourne, Warwickshire CV35 9JB
Tel: 01789 470007
Fax: 01789 841955
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Reviews

The reviews section reviews books, software (including CD-ROMs) and teaching resources which are relevant to design and technology. Material for review should be sent to the reviews editor at the above address.