

**Graphics with Materials Technology**  
 Reviewed by George Asquith, Head of Technology, Greenhead School, Keighly, West Yorkshire

The book is a very comprehensive 329-page paperback specifically directed at advanced design and technology (both at AS and A2 Levels). It follows the Edexcel specification for graphics with materials technology. The book is divided into sections, rather than chapters, which address the units and optional units of the Edexcel specification. A preliminary section is devoted to the course and how it is intended the book should be used. Quite some emphasis is placed on the students managing their own learning. In each of the sections related to the units the assessment criteria is displayed leaving the reader in no doubt what is required of them. Not only is there a description of how the assessment works, but also a description of what will be assessed and its value. Following most units of work are tasks for students to be involved in. I have tried some of these, as I teach to the Edexcel specification, and, like all teaching material, it needs adapting to your own situation but the concepts are very sound.

The layout of the book gives the impression of being very full and the pages look busy with a great deal of written material interspersed with photographs, drawings, charts and tables. The whole book is black and white and at today's cost some items would have benefited from the use of colour printing. The content layout is in double column throughout. Following the units is a very good glossary much of which could be used all through design and technology. This is followed by a detailed index, in my view the most important part of any textbook.

Unit 1 is aimed at AS and industrial and commercial products and practices. The section takes a reader through the

processes involved in the development of a range of manufactured products, investigating the role of the designer, establishing what a graphic product is, the product design cycle and the development of design, an area generally not well done by many students. The need for a specification, the need for candidates to study form and function and to consider alternative ideas, creation of mock-up and prototypes and the consideration of designing for manufacture are all well covered.

Materials for graphic products are dealt with, as is industrial and commercial practice. Good descriptions are given for quantity production such as batch production, this is information which is sadly lacking in many other publications and teachers of GCSE could find this useful. Stages in production, stock control and planning production are also covered. These items are followed by information about manufacturing methods, legal requirements, the energy required by industry and the use of ICT in design and manufacture. Quality assurance and quality control are dealt with but this is probably the only place in section one that I was left wanting. The section concludes with work on aesthetic qualities and the developing of product analysis skills. A practice exam question is supplied together with marks. A marks scheme would have been useful.

Unit 2 in the book reflects Unit 2 of the specification and is about product development. The Unit again starts out with a summary of what to expect, acting as a good focus for students and, right from the start, students have an assessment grid with marks. Evidence is given about choosing a project and the organisation of the folder. Each of the assessment criteria is then developed comprehensively and, at short intervals, the students are set tasks. The third assessment criteria, developing and communicating design proposals, is probably one of the clearest interpretations of this area of our work that I have seen. This is an area, in my experience, that is weak throughout Key Stage 3, Key Stage 4 and post-16. Many teachers would find this section very useful. Tasks are again set at various intervals as the unit continues through planning manufacture, product manufacture and testing and evaluating.

Section 3A is a unit on materials. Components and systems are given 69

pages, in which materials such as card and paper, timber, metals, plastics, ceramics, glass and rubber are covered. Timber and metals are covered thoroughly, possibly reflecting our background, whereas card, paper, glass, ceramics and rubber are not covered in the detail they deserve. I was also a little surprised that the components section covered things like pencils and marker pens, whereas I could find no information on die cutting and the use of forms. Screwthread forms are covered as are cams and gears. Printing is included and again, as in other publications, letterpress is dealt with even though little use of this process is now made in industry. Not only do we need to keep up with industry and understand the new materials and processes, but we also need to be prepared to drop things that are very out-of-date, for example, letterpress and oblique projection. The very detailed section continues with the testing of materials and hand and commercial processes.

Sections 3B1 and 3B2 are the optional units in the specification and deal with design and technology in society (G302) and CAD/CAM (G303). Both sections are comprehensive but I feel the CAD/CAM section would be difficult for someone with a non-information and communications technology (ICT) background.

Sections 4A, 4B1, 4B2, 5 and 6 are devoted to the A2 section of the specification and are just as comprehensive as the AS sections and they indicate to staff just how far design and technology has progressed in only a matter of years. Some of the content found here is light years away from what we did only a short time ago.

The book has its faults, most are very minor, worst is that it contains no colour. This is such a leap from the current full-colour textbooks for GCSE that the lower ability AS students will be put off by the extent of the written word. However, that said, I think this book is a must buy for all AS and A' Level students, regardless of the examination board being followed and a top priority for all design and technology staff, even if they don't teach post-16 students. A wonderful reference book and not out of place at £18.25.

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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