Reviews

Computers and Typography edited by Rosemary Sassoon, Oxford, Intellect, 1993. ISBN: 1-871516-23-4.

The term *typography* refers to the style, arrangement, appearance, and design of typefaces and typeset material. In this book, Sassoon rightly assumes that typography now extends way beyond words printed on paper, and in particular to the world of computers, where alphanumeric information displayed on a screen is often as important as printed output. Both forms of typography are dealt with here. The book consists of eleven chapters, written by a variety of different authors, and grouped together into five main sections, each one covering a different aspect of typography.

Section 1 (*Spacing and layout*) contains three contributions. The first of these provides an introduction to 'text massage', basically summarizing half a dozen guidelines for improving textual presentation by means of various massaging techniques. The chapter is simple and brief, though unfortunately its brevity also means that the guidelines described are not supported by any references to relevant research in the field. The second contribution in this section addresses the concept of layout. This is achieved by illustrating two versions of a questionnaire, each making use of a slightly different spatial arrangement. The importance of white space in the design of textual information is discussed in the context of information highlighting and the provision of structural cues. The final chapter in the section looks primarily at rules of composition. It discusses the effects of inter-character and inter-sentence spacing. Rules based on the use of various character shapes and punctuation marks are also presented - there for determining optimal sizes for the spacing used in presenting text.

The second section (*Typographic choices - Latin and other alphabets*) contains two papers (as do all the remaining sections). The first paper describes some of the problems of using alphabets other than Latin, with major consideration given over to handling Hebrew on a computer. The problems involved in creating multilingual documents are also considered. The second paper discusses the flexibility provided by computers with respect to typography in general, the variety provided by font types and the control of inter-letter spacing. There is also a discussion of the costs involved in fine-tuning computer-based text.

The third section is entitled *Technical issues in type design*. The first paper here describes various aspects of the effects of technology on type design, one of the principal effects being found in screen or printing resolutions. Low resolutions can result in a syndrome known as 'the jaggies': low-quality text with jagged edges. The chapter concludes with a description of the development of type design and font production tools. The second paper deals with character description techniques in type manufacture. Four techniques are described, two used in the production of metal type, and two relating to bitmap font production and mathematically specified contours (both used in the manufacture of digital type).

The two papers making up the fourth section of the book (*Lessons to be learned from the history of typography*) each relate to the complications of computerisation. The first deals with education in the context of writing. Problems relating to the use of computers in the development of writing skills are discussed, and arguments for the importance of handwriting are presented. The second paper discusses the impact of computerization (particularly, in the form of

desktop publishing) on traditional typesetting, and the implications of the 'democratisation' of typesetting, through the wide availability of desktop-publishing software, are debated.

The two papers in the final section of the book come under the heading *Research and the perception of type*. The first deals with research into typography and reading, with particular reference to the lack of research into the effects of the typographic features of text on children. The chapter includes both a survey of teacher attitudes towards type suitable for children and a description of research into the effects various type forms can have on children's ability to read and write. The final paper of the book is devoted to the visual analysis of text. Obviously, since the human visual system is fixed, it is essential that the features of textual material are designed to match its inherent limitations. The paper presents a method for the computational analysis of textual layouts which might be useful in analysing the potential of various changes to typesetting parameters.

This book is aimed not only at those interested in typography for its own sake but also at anyone who wants to produce professional-looking documents with a computer. In its latter aim, in my view it is only partially successful. Much of the work attempts to convince the reader that typography is essential to creating quality computer-generated documents, but although guidelines for good typographic practice are offered, these are not generally brought out clearly enough.

Furthermore, as is often the case in multi-author works, the different writing styles of the various authors result in some chapters being easy to read, and others less so. The work would also have benefited from some form of conclusion drawing together the major findings of the papers.

Stephen Richards, University of Teesside

Active Library on Corrosion by W.F. Bogaerts and K.S. Agema, a CD-ROM published by Elsevier Science Publishers (Amsterdam) and the National Association of Corrosion Engineers (Houston, Texas), 1992. ISBN: 0-444-89607-4.

For a variety of reasons, electronic books published on CD-ROM are valuable learning resources, and publishers are increasingly realizing the many attractive advantages they offer. The *Active Library on Corrosion* (ALC) is just one of many publications Elsevier intends to produce as part of its new Active Library series. The ALC runs under Windows on an IBM PC or compatible fitted with an internal or external CD-ROM drive accessible via the Microsoft CD extensions (MSCDEX). The software is fairly easy to install from the CD-ROM it is supplied on, and requires about 3.5 Mb of hard-disk space.

The Active Library concept is essentially a generic hypermedia shell into which can be plugged a range of different specialized subject-orientated materials. The shell is written in GUIDE, the hypermedia authoring tool marketed by Office Workstations Limited (OWL) and widely used in many British universities for developing interactive teaching material. Two of the reasons why GUIDE was chosen for this project are (a) the ease with which hypertext links can be created, and (b) its ability to handle SGML (Standard Generalized Markup Language). SGML was used to mark up many of the electronic documents prior to importing them into GUIDE for interlinking using a special tool called GUIDE Writer. A good range of electronic tools is available within the system. Functions include specific searches (searching and consulting for information relating to a specific query), highlighting and annotating documents or parts of documents, browsing (associations based on links, with back-tracking fully supported, and current awareness (providing

up-to-date information on a specific field of interest through a user-profile). Two other important facilities (based on path functionality) are Hitlists and Trails. Hitlists are system-generated collections of related documents, and Trails are user-defined sequences of interesting documents held within the knowledge corpus.

The ALC contains 6,000 documents covering a broad range of topics in the subject-area of corrosion engineering. It is made up of eight previously published reference works and 1,200 newly created documents written by leading corrosion experts. It also contains over 2,000 images (mostly full-colour), 600 formatted tables, and numerous mathematical and chemical formulae. The system, then, has a very large amount of information in it, and in order to give readers a sense of where they are in the publication, the information is organized around the use of a library metaphor designed to provide a mental reference map.

After the ALC is started by clicking on its Windows icon, one of the initial top-level screens is used to show readers the Library Map. This indicates all the available library sections that can be accessed by clicking on appropriate buttons. Within the individual sections themselves, other maps are provided to aid navigation and to prevent readers from getting lost. The main Library Map provides eight basic access mechanisms into the ALC system. These are the Reference Cube, Case Histories, Corrosion Control, Quick Reference, Books, Databases, Dictionary and Help.

The Reference Cube is an innovative three-dimensional table of contents in which the reader can specify a combination of corrosion type and/or material and/or environment. Using the specifications entered by a particular reader, the Reference Cube can consult its underlying database and provide that reader with relevant information, which may be a single document or a collection of documents.

The Case Histories section contains a database of 400 cases of corrosion damage taken from During's *Corrosion Atlas*.

The Corrosion Control section is a collection of documents which give an overview of general corrosion control measures and typical measures against different corrosion types. It also presents discussions on individual techniques of corrosion prevention.

The Quick Reference section is based on the National Association of Corrosion Engineers' (NACE) reference book. It embeds an extensive set of look-up tables containing corrosion and materials background information, and it includes a glossary for readers who are not familiar with corrosion engineering.

The Books section contains the four books now regarded as standard works in the field of corrosion engineering and corrosion prevention. Each has been converted to hypertext form, and so are integrated into the main body of documents stored in the ALC.

The Database section contains two standard NACE databases (COR-SUR and COR-SUR2) which together document the performance of 25 metals and alloys (in more than 1,000 chemicals and corrosive environments) and 36 non-metals (in more than 850 chemicals and corrosive environments). For non-expert users, the Dictionary section provides alphabetical access to a comprehensive selection of corrosion terminology. Similarly, for new users of the ALC the Help section contains online help information on each of the other library sections, along with a series of tips on the basic use of the system.

ALC is aimed primarily at corrosion engineers, and is intended to serve as a reference work for day-to-day use as well as a source of information on less common corrosion problems, but it will be an extremely useful asset in many an academic library or laboratory. It is produced to a very high standard both in terms of its content and its usability.

Indeed, it sets a standard for electronic publication that many other publishers will find difficult to exceed.

Philip Barker, University of Teesside

A Handbook of Computer-based Training by Christopher Dean and Quentin Whitlock, 3rd edition, 1993, London, Kogan Page. ISBN: 0-88415-088-7.

The title *A Handbook of Computer-based Training* is somewhat misleading. Two thirds of the book deal directly with the subject, but one third is a general description of different aspects of computer systems covering, for example, the difference between microprocessors, minicomputers, and mainframes; what functions operating systems perform; descriptions of a number of input devices, and so on. The authors might rightly argue, however, that this information is useful for part of the intended readership. A training department, for example, might use computers for word-processing and spreadsheets and not really appreciate the computing details of those systems. If they were thinking of adopting Computer-Based Training (CBT) for much of their central work, this basic computing information would be valuable. And indeed, for anyone who secretly wants to be initiated into the world of computers, this book presents a balanced overview to a reasonable depth. I have a few niggles. For instance, the lower-case m used in megabytes (a very common error in newspapers, but not one that should appear in a technical book), or the description of a light emanating from a lightpen which leads the reader to assume that the light plays a part in the detection mechanism, when in fact it only provides feedback to determine where the pen is pointing. But these are the niggles of a pedant.

So what about the major part of the book that covers CBT? One of its pleasing aspects is the emphasis it gives to professional production: it dispels any thought that the job should be given solely to a junior programmer in the computing applications group as a spare-time pursuit. The production of CBT requires the same detailed planning as does any software project, but the personnel involved must have knowledge of the topic being conveyed, the authoring software, the techniques for teaching, the artistic skills to design material that has the necessary impact on the trainee, and an awareness of the skills and experience of the typical trainee. Thus CBT material is often prepared by a team rather than one individual, and no team member is likely to be particularly skilled in writing conventional software (although in some cases such a team member may be necessary).

Other key points raised in the book are that CBT is rarely used alone, but is usually combined with other media such as videotape and paper booklets.

The authors emphasize the need to pre-test and post-test to determine how much students have really learnt using the CBT system, and that the body of the lesson should not be conveyed merely by 'page turning'. Instead, trainees should be regularly active, with their responses determining their path through the material. A number of situations are described, illustrating how CBT has been employed. The authors point out that not all situations demand a CBT solution (for example a video might be preferable).

The book is oriented towards the front-end of CBT development. Is CBT really needed in this case? What is needed? Have the prospective trainees been consulted as to what they require? What are the arguments for the various strategies for CBT provision? What are the financial implications for the strategy? What are the computer resource implications for the strategy? And so on. All well answered for the prospective CBT organizer to use in discussion with higher management.

The book describes how the outline plan is broken down into constituent elements and how this is organized, planned, managed, and executed. It includes descriptions of the tools that may be available for specifying the paths through the material and the instruments that might be used to document the design. It also describes the tools that manage the training sessions, including trainee records and progress, and methods for directing students through the course. However, how teaching skills are exploited in the user-interface, and how the perceptual workings of the human are exploited are not covered except at a very superficial level. Again, the authors might argue that what they do cover is all that is necessary for the CBT material currently produced. However, with computer systems increasingly being more graphically interactive, and CBT designers intent on exploiting that fact, further guidance is needed to ensure that the user-interface does not confuse the trainee. The authors do describe a system which fails to pick up the fact that the supporting material the trainee is meant to have while using the computer is absent, despite the trainee identifying the problem to the computer. This was a failure in the interface, but little guidance is given as to how to avoid the problem. Tips from experienced designers would have been valuable.

This is nevertheless a useful book for the training manager's bookshelf. It is particularly aimed at the manager who is to introduce CBT, and that person will be made aware of the computing resources needed, the skills needed of those who will be involved in its production and maintenance, and the stages involved in producing CBT material. It briefly describes the functionality that can be expected in software such as course-authoring tools, computer-managed learning tools, and flowchart tools. It does not (nor should it) go into how these tools achieve their results. Perhaps the fourth edition might include more detail of screen design, particularly those aspects that must be foremost in the designer's mind while deciding the best way of conveying specific material.

I.D. Benest, University of York

Learning Conversations by S. Harri-Augstein and L. Thomas, London, Routledge, 1991. ISBN: 0-415-02867-1.

In reviewing the development of courseware, it is rare to read of the educational or psychological reasons driving that development. All too often, computational, technical or economic issues dominate. Perhaps in the avoidance of this 'why' question, it is inevitable that a book should appear that challenges almost all the conventional wisdoms at once, which fires harmonious cannons at practical experience and offers a new model on which all resources for learners should be built.

In their book, Sheila Harri-Augstein and Laurie Thomas review 40 years of action research to draw out a unifying theory of behavioural and experiential psychology, and Eastern and Western philosophy. The fundamental premiss of the thesis is that conversation is priori, and learning is a skill which itself can be learnt.

The book is divided into three main parts. The first looks at learning and how cultural and historical precedents have acquired a language to describe the process of learning which might be generalized as modelling meaning. Five types of meaning are identified, ranging from 'rote' to 'creative' - an increasing awareness of the learning process being seen as the key to moving from one to the other.

The second part looks at the role of the 'learning conversation' in helping this transition occur. The 'life', 'task' and 'learning to learn' phases are identified, which can be thought to map learners' purposes, experiences and interpretation of records in computerized systems. The

'monitor, analyse, record, reflect, reconstruct' heuristic is described and exemplified by tools used to structure learning conversations and make the learning process explicit. Traditional measures of ability are shown to reflect a learner's ability to internalize learning conversations and become more self-organized.

The third part looks at how self-organization can be encouraged. In passing, many anecdotal findings of others are explained: for example, why, when the effectiveness of a computer-based resource is compared with its paper-based equivalent, no significant 'size effect' can be measured. The learner's ability to converse is shown to encapsulate his/her potential to learn. A radical challenge is made to the current educational establishment to improve the quality of the conversations they manage and remove what are revealed to be barriers to learning competence.

The expansive appendices and postscript illustrate the authors' ideas with remarkable clarity and give plenty of scope for further reading. One of particular interest focuses on the requirement for computer-based resources that support self-organized learning. They give a reasoned explanation for the common finding that as objectives become more experimental, computer-based reflexive tools are more effective than rubrics. Indeed, gaining a language to talk about learner's experiences and environments is one of the main benefits to be gained from this book. The omission of a bibliography does not detract from the work as a whole; references can be obtained from the authors.

In the light of previous reviewers' remarks, any further comment seems superfluous:

'I commend [...] *Learning Conversations* as an important work to be widely read'. Professor Gordon Pask (founder of Cybernetic theory).

'I believe *Learning Conversations* is a book no psychologist or teacher should be without'. Dr David Fontana (Editor of the *Psychology for* ... series).

'The S-O-L system has enabled [...] progress towards higher productivity'. Sir Bryan Nicholson (CBI Educational Training Affairs Committee).

Martin Reynolds, University of Manchester

Collins Electronic English Dictionary and Thesaurus, San Francisco CA, Reference Software International, 1992.

The Collins Electronic Dictionary is just one example of what is becoming an increasingly popular type of reference work for use with a personal computer system. This particular publication was originally produced by Reference Software International but is now distributed and maintained by the WordPerfect Corporation.

The IBM PC version of the product is supplied as a set of seven 3.5 inch disks that have to be installed in a separate directory on the PC's hard-disk drive. The system takes about 15 to 20 minutes to install, and requires about 9 Mb of hard-disk space for full installation. The software itself is made up of four basic modules: the dictionary (which requires 5.7 Mb), the thesaurus (1.02 Mb), the pronunciation guide (0.54 Mb), and the etymology module (1.1 Mb). The only module that *must* be installed is the dictionary.

The dictionary is based on the 3rd edition (1991) of the paper-based version of the *Collins English Dictionary* and the *Collins Thesaurus* (1984). Together, these make available 190,000 definitions (comprising 3.5 million words of text) and over 275,000 alternatives for 16,000 main-entry words. Entries in the dictionary contain pronunciation details as well as etymological information. A relatively simple manual is provided, giving details of how to install the product and how to use it. It is quite easy to read yet

fairly comprehensive in its treatment. Unfortunately, however, in some places it is inaccurate - for example, the telephone number for hotline support is incorrect, as are some of the instructions for running the system.

Once installed, the dictionary can be invoked in either of two ways: as a free-standing conventional program, or as a Terminate and Stay Resident (TSR) system. Each of these modes of operation is available within DOS and Windows. The TSR version requires the use of hotkeys, and has to be unloaded when it is no longer needed. Once the program has been invoked, the system provides the same basic user-interface and facilities no matter which mode is being used.

The user-interface is in three parts: a horizontal menu bar running across the top of the program's display window, a central display area for presenting word definitions (and other information), and a second horizontal menu bar running across the bottom of the display window. There are seven entries in the topmost menu bar: Dictionary, Thesaurus, Search, History, Options, Quit and Help.

Quit simply terminates the dictionary and passes control back to the program that called it - either DOS (or Windows) or an application (such as a word-processing package or a text editor).

Help provides access to a pop-down menu that offers a number of different choices such as Pronunciation, Glossary and so on. The range of help facilities available depends on whether the Windows or the DOS version is being used.

The Options entry allows users to customize the dictionary to individual needs - by changing the colour scheme for display windows, case sensitivity (in searching), matching criteria, and so on.

The History option can be used to obtain a list of the last 16 items retrieved from the dictionary or thesaurus.

The Dictionary and Thesaurus options create dialogue boxes allowing the entry of words to be looked up in the dictionary and thesaurus respectively.

The Search menu option provides three different word-search options within the dictionary: definition search, anagram and wildcard. The most powerful of the three is the definition search. This searches every definition in the dictionary in order to find entries that contain selected keywords, according to criteria that have been established using a special Search command. Such commands contain keywords connected by the logical operators AND, OR and NOT. The results retrieved in any particular search will depend on whether or not case sensitivity has been selected, and also upon the exactness level specified. Wildcard searches use the two symbols ? and * within a search string to represent, respectively, a single unspecified letter and multiple unspecified letters. The anagram search can be used to find all words that can be made from a given string of letters.

The horizontal menu bar at the bottom of the dictionary's display window provides access to a range of tools which can be accessed by mouse selection or by function keys. The facilities these tools provide include browsing, switching between dictionary and thesaurus, and copying a marked block of text from the dictionary and pasting it into an application. There is also a Replace facility for use in conjunction with the thesaurus.

Although I found this program useful, I was disappointed to find a number of bugs in it. The three major bugs I found were:

(a) the TSR version of the program would not unload properly when I wanted to remove it from memory (I had to re-boot my machine);

(b) the Copy and Paste facilities would not work correctly; and

(c) using the TSR version with Windows led

to an accumulation of undeleted work files within the directory holding the software (I had to delete these manually).

However, despite the bugs and the inaccuracies in the documentation, I still think that at £64-63 (including VAT, packing and delivery), this fascinating educational product is good value for money.

Philip Barker, University of Teesside

Key Terms and Issues in Open and Distance Learning by Barbara Hodgson, London, Kogan Page, 1993. ISBN: 0-7494-07107.

This book began for me promisingly. First, the title itself, coming from an author at an institute highly active in both traditional and innovative design and delivery of distance education, suggested an up-to-date book that would reflect issues central to the field and also the considerable work going on in distance and open learning in Europe overall. Then, the author's introduction, giving an overview of different perspectives on open and distance learning, their shared as well as their distinct characteristics, was well written and conceptually helpful. I hoped the book could become a useful resource.

However, two warning signs soon arose. The first was the lack of an index or any kind of overview of the content, no indication of the descriptors used for entries, and no sort of conceptual grouping of the entries. Only alphabetical order (and bold-faced terms within entries, for cross-referencing) were there to guide me. The first term was *access devices* followed by a page and a half of discussion with cross-indexed terms: *content lists*, *summary*, *overview*, *objectives*, *index*, *glossary*, *headings*, *cross-references*, *advance organizers*, *pre-tests*, and *concept structure diagram*. Once I read the entry, I could see the logic of calling these *access devices*, but I never would have thought to go to an entry entitled *access devices* if I had wished to find out more about key issues with, say, concept structure diagrams being used in open learning.

The second warning sign came when I then tried to look up, via alphabetical order, various key issues that appear frequently in discussions about distance and open learning, issues such as (among many) how to facilitate co-operative work among learners at a distance or how to design just-in-time open learning and the implications of this kind of flexibility for traditional distance education. I could find nothing that seemed to relate to these and a number of other key issues.

Perhaps it was the lack of an index or overview that was preventing me from finding what was in the book. I decided to read it from cover to cover, and coded the content. I found four major orientations that together left me disappointed and frustrated.

My general impressions, after my analysis, were that (a) this book was most focused on the design of highly structured print materials for distance delivery where the assumption was that learners would generally work in isolation; (b) the little of what I see and hear as key issues in open and distance learning in Europe circa 1993 are not represented in this book; (c) most of the entries for communication and information technologies as tools and channels of distance and open learning are unsatisfying; and (d) the book is unbalanced in its choice of topics.

The first point is the most far-reaching. The book appears to be written primarily from the perspective of the designer of structured print materials for distance delivery, where it is assumed that the designer, not the learner, is in essential control - that is, 'activities [...] are things you ask the learner to do ...' (p. 19); 'an overview thus tells the learners where they have been, where they are now, and not only where they are going but why they are going there' (p. 88); and so on. Although this approach is certainly relevant

for some learning situations, it reflects nothing of the major discussion now occurring about constructivist approaches to learning or learner control. Also, the book seems frequently to assume a model of the learner working in isolation, generally only with the print materials ('since learners usually have no one to turn to for clarification', p. 22). The awareness of the importance of human interaction within the distance and open-learning paradigm, and the many strategies being used to include interaction as a key part of the distance-learning situation, does not seem to be a key issue relative to this book, while I think it is one in practice and research.

The coverage of key terms and issues with respect to the use of and impact of communications and information technologies in distance and open learning is particularly unsatisfying. Sometimes what is included is rather odd in its expression compared to general practice. For example, teleconferencing is described in a two-line entry as 'a system for linking individuals to telephones. Very useful for telephone tutorials' (p. 118). Audio conferencing, for which the above definition would be more accurate although still strange, and audiographic conferencing, have no entries at all, although they are important channels for adding interaction to distance learning in countries throughout the world. Instead of audio conferencing or audiographic conferencing there are two strange entries, *audio letter* and *audiovision*, that describe techniques I have not seen in current practice, nor certainly would call key issues. Similarly, video conferencing does not merit an entry although something called *radiovision* does.

In addition to somewhat odd definitions, others relating to communication and information technologies seem not only out of date but uninformed. Computer drill and practice is described as 'seldom giving feedback to learners who make mistakes' (p. 26). Computer-marked assignments are introduced by saying: 'all that is needed is a template that can be placed over a standardized answer form to reveal whether the learner's coded responses are in the right place' (p. 28).

Icons are described with an explanation that makes little sense: 'they [...] can signal, at a glance, the necessity for having to hand your audio-cassette player or that you will be expected to write something before the end of this particular section' (p. 59). Television is dismissed in 10 lines as an 'expensive medium' (p. 119), despite its strategic and extensive use in distance education in many countries, for example China and Turkey.

And it is not only media-related terminology that sometimes surprised me. How many people would look up the terms *reflective action guide*, *student stoppers* or *transformers*? *Agro-botany evaluation* is a highlighted term - who is going to look for that as a key issue, especially when genuinely key issues such as criteria for cost-effectiveness evaluation are not mentioned? Without an index, how will the reader know that *people with disabilities* has been chosen as a heading?

The impression of imbalance I obtained related not only to content but also to implicit frames of reference. While some key issues are represented minimally or not at all, others are over-represented. For example, entries relating to learner evaluation predominate, with major headings that include: *assessment*, *assignments*, *competence*, *computer-marked testing*, *evaluation*, *examinations*, *formative evaluation*, *in-text questions*, *marking*, *norm-referenced assessment*, *objective tests*, *post-tests*, *pre-tests*, *self-assessment*, and *summative evaluation*. Most of these are written in a introductory way, such as one would expect in a reader for general pre-service teacher training.

With regard to frames of reference, those of many actors in the overall distance and open-learning setting are not represented at all. For instance, key issues facing administrators

in distance teaching organizations are not represented, neither are issues such as those relating to broadening access while maintaining quality or transferability of experience and accreditation, nor issues relating to the training of instructors to support the addition of distance and open-learning options to their teaching. Some specifically British references occur (for example, National Vocational Qualifications), but no hint is given of the extensive experiences relating to open and flexible learning that are happening at the European or other international level, such as the DELTA Project, nor the issues being discussed relative to those experiences.

On reflection, if the book had been titled differently, clearly indicating its orientation, and if it had provided an index or overview, my reaction would have been less negative. The book could more accurately be described as 'An Introduction to the Design and Validation of (Predominately) Print Materials for Structured Lesson Sequences Offered Via Distance Education Institutions' than by its actual title. With this forewarning, I would have looked for different things and at a different level than the current title required of me. Then I could have appreciated the detail about the construction of such print materials. The three pages, for example, under the heading *in-text questions* include very useful guidelines if one is not waiting for key issues to emerge somewhere. The discussions about learner characteristics and learner profiles are good, if one is not expecting also to find something about key issues relating to group interaction at a distance.

In summary, and in my opinion, the writing in this book about the instructional design aspects of (predominately) print materials for structured lessons delivered at a distance is clear and good and helpful. In contrast, again in my opinion, the overall coverage of key terms and issues in open and distance learning is weak and unbalanced in selection. I would suggest an editing to take out the generally poor entries relating to media and communications and information technologies, a revision of the title, the addition of an index, and a re-presentation of the book as a reference text for print-materials design for structured lessons delivered at a distance. This latter topic is important, and the many entries related to it in this book are relevant and helpful.

Betty Collis, University of Twente, The Netherlands

Rethinking University Teaching - a Framework for the Effective Use of Educational Technology by Diana Laurillard, London and New York, Routledge, 1993. ISBN: 0-41509288-4 (hardback), 0-41509289-2 (paperback).

Diana Laurillard begins her book with an account of her attendance at her very first lecture as a student, one which will ring familiar bells for many of us:

'With 199 other students I counted myself lucky that I was in the main lecture theatre and not in the overspill room receiving closed circuit television. The lecturer was talking formulae as he came in, and for fifty minutes he scribbled them on the board as he talked and we all scribbled more in a desperate attempt to keep up with his dictation.'

She then goes on to recount what happened in the first lecture she herself gave as a teacher: more or less the same thing. But this time, a student asked a question at the end of the lecture which showed that nothing of it had really been understood, either by that student or, it soon emerged, by any of the others listening and scribbling furiously. Laurillard says that she learned a great deal more from that lecture than did the students. Thus she came to believe that university teachers must take the main responsibility for what and how students learn. Now, given what I say in partial defence of the tradi-

tional lecture in my editorial in this issue of *ALT-J*, one might assume that I would not be in entire agreement with the further conclusions Laurillard comes to as a result of her early experiences, in particular that the lecture form as generally practised in universities is a kind of insanity. 'It is truly a miracle,' she insists, 'and a tribute to human ingenuity that any student ever learns anything worthwhile in such a system.' But, throughout this book, Laurillard talks a great deal of sense about the failings of current academic practice, and she and I are not as far apart as it may at first appear even when it comes to the traditional lecture, which she too sees as a usable medium if well handled.

Laurillard's main thesis is that the academic system must be made to change, and not by new guidelines being issued on how to teach but by universities reorganizing their teaching infrastructure. Thus her book is essentially a discussion of how to think about teaching, and the final chapter, towards which the book steadily builds up, is an attempt to define the kind of infrastructure in which university teachers can be as efficient in their teaching as they try to be in their research. So well executed is this discussion, and so clear, consistent and convincing the direction throughout, that I have absolutely no hesitation in recommending the book.

Space does not allow me to give the details of all the strands of argument which Laurillard weaves together with the utmost clarity and intelligence, and in plain but literate English.

Briefly, however, Part I consists of a lucid treatment of what the aim of teaching should be and of the complexity of the learning process, a study of student attitudes, and a clear-headed discussion of ways in which an effective teaching strategy can be created.

Part II is an evaluation of the educational tools available to teachers, from print to interactive media. It is a straightforward but penetrating evaluation - not surprisingly, given Laurillard's own respected work on evaluation - based on key research studies about how students react to such tools and how they use them. This is of very great interest to those of us (which, of course, should be all of us) who wish to be as sure as we can be about which tools are best for which jobs.

Part III is concerned with design methodology in educational technology. There is a wealth of literature - some good, some mediocre, some awful - on design issues in this area. Laurillard talks (her usual) eminent sense about general design considerations, about the ways in which design relates to content, about sensible approaches to combining different media, and about what it means in practice to use educational technology as an integral part of academic life.

This, then, is a work - the result of many years of professional experience and active campaigning for better teaching, and in particular the effective use of educational technology - which puts into the clearest possible perspective the issues involved, and cogently argues for a rational approach to them. Few readers of the book could fail to be convinced that educational technology, if used wisely, is the right way forward for academic institutions.

It is therefore a book which all those involved in the use of educational technology, or those considering its use, should read. In fact, a copy of it should be sent to the vice-chancellor of every university with an exhortation to take some time to read it carefully. Its ideas might then filter down to those working at the coalface who are hardly aware of the technological tools available for teaching, or who are as yet unconvinced of their value.

Gabriel Jacobs, University College of Swansea