Reviews

edited by Philip Barker

Apology

There were two copy-editing blunders in Clive Betts's review, in *ALT-J* 5 (3), of Shirley Fletcher's *Designing Competence-Based Training*, one in paragraph 2 line 1, the other in paragraph 3 line 8. The errors (the result of the Editor, Gabriel Jacobs, trying to perform a final proof of the journal at lightning speed in order to meet the printing deadline, and not of any mistake on the part of either Philip Barker or the University of Wales Press) hardly affected meaning, but the fact that they appeared in a review of a book on competence makes the embarrassment all the more telling. The Editor apologizes, and thanks eagle-eyed readers. He has decided to read the book in the hope that such errors will not recur.

C. Faulkner, *The Essence of Human-Computer Interaction*, London: Prentice Hall, 1998. ISBN: 0-13-751975-3. Paperback, 196 pages. £14.95.

Those who have ever been involved in developing CAL materials and/or resources to support electronic course delivery will realize the important role that end-user interfaces play within the systems they develop. It is through the end-user interface sub-system that users develop their understanding of a software product and are able to utilize the skills/knowledge embedded within it. The design of 'quality' end-user interfaces requires an understanding of relevant human-computer interaction (HCI) issues, such as mental models and the ways in which individuals process and react to computer-based information. This new monograph by Christine Faulkner offers a useful introduction to this area.

The book is organized into nine chapters and a glossary. Each chapter is written in a standard format in that each concludes with a useful summary section, a set of references (both to source material that exists in paper-based publications and electronic items available on the Web), and a set of exercises that reinforce the concepts presented. Throughout the book, diagrams are used in an effective way to illustrate important issues.

The opening chapter gives an overview of HCI and its multidisciplinary nature. It examines the background to the subject and discusses its role as a discipline worthy of study. In Chapter 2 the author discusses the user's physical capabilities – cognition, vision, sound, touch, taste and smell – and how these influence end-user interface design. Chapter 3 goes on to consider the user's mental capabilities. This is quite an interesting chapter in that it introduces many self-tests to enable readers to explore their own memory abilities, although I was somewhat disappointed that it did not contain any reference to the more detailed seminal work by Card, Moran and Newell (on the human information processor model) and their classic book on this subject.

In Chapter 4 the author gets into a detailed discussion of the principles of interface design. Here she presents a useful classification of

interaction styles, then discusses the important differences between direct and linguistic manipulation within the context of designing end-user interfaces. Design issues are further considered in Chapter 5 where there is a discussion of the different types of user likely to be encountered in a HCI system, and how their needs should be accommodated through various design processes such as task analysis, data collection and rapid prototyping.

As is the case with all computer-systems development work, evaluation and testing are of paramount importance. Various issues associated with this topic are addressed in Chapter 6. Naturally, because of the restricted size and 'overview' nature of this monograph, these issues are addressed only in a cursory way. Nevertheless, the book does cover most of the important topics that need to be considered, such as hypothesis formation, experimental design and the use of questionnaires, interviews and evaluation experiments.

The evaluation techniques described in Chapter 6 are often used to measure the 'usability' of a computer system and its associated set of end-user interfaces. The content of Chapter 7 ('Making Systems that People Can Use') therefore follows on quite naturally from the previous one. Its main thrust is a discussion of usability engineering; this is followed by a section on socio-technical design issues – that is, fitting the process of design into the framework of the needs of the organization involved. Sadly, the early part of this chapter makes no mention of the important (and well-known) work on usability that has been undertaken by Shackel's human factors group at Loughborough. Still, the treatment presented suffices as a modest introduction to this important area.

Fundamental to good HCI design are considerations of relevant ergonomic, health and safety issues. The relevance of these topics is discussed in Chapter 8, while the final chapter looks to the future. It discusses the problems of introducing computers into the workplace and the home; there is also a section on computers and the law (which deals mainly with copyright issues). Bearing in mind the impact of the World Wide Web (which is discussed in a section called 'Hypertext and the Web'), I was disappointed that this chapter made no mention of the future potential impact of HCI (and computers in general) on the ways in which we learn, study and communicate. Another major omission from this chapter, in my view, is any mention of virtual reality and the requirements that this technique places on end-user interface design.

Overall, despite the limitations that I have alluded to, I enjoyed reading this book. It would form a valuable 'taster' for those wishing to find out more about HCI and its many applications, particularly future CAL developers whose aims should be to produce effective, efficient and usable CAL software.

Philip Barker, University of Teesside

***International Encyclopedia of Educational Technology*, edited by Tjeerd Plomp and Donald P. Ely (2nd edition), Oxford: Pergamon (Elsevier Science Ltd), 1996. ISBN: 0-08-042307-8. Hardback, 692 pages. Dutch Florins 356.**

The nature of educational technology is currently undergoing a period of rapid change and development. This is largely being driven by developments in Communication and Information Technology, but is by no means limited to it. The changing technology is also modifying our understanding of many aspects of educational theory. This encyclopaedia is designed as a 'reference source for researchers, faculty members, teacher educators, government officials, educational administrators, and policy-makers'; and it would certainly provide any of those with a useful point of departure for approaching any of the range of issues touched upon by developments in educational technology.

It is part of a series of one-volume encyclopaedias drawing upon articles from the *International Encyclopaedia of Education*. This volume contains some 123 articles of which 19 were especially commissioned for it. They cover the whole range of educational technology issues from theoretical discussions of instructional psychology (Lowyck and Elen) and constructivism (Cobb), to the practical design of learning spaces (Knirk) and the production of various media (various contributors).

The entries are organized into five broad categories: (i) Education Technology: Definition and Conceptual Background; (ii) Design Functions, Tools and Resources; (iii) Delivery Options; (iv) Applications and Institutional Settings; and finally, (v) Emerging Issues. Each of these sections is then further divided into a number of sub-sections that make their contents more accessible. However, the editors are at

pains to point out that the sections are inevitably somewhat arbitrary and that entries might well have appeared in more than one category. In general, they have done a good job of cross-referencing materials throughout. Accordingly, pursuing an inquiry is likely to lead the reader to cover a range of related issues. Indeed, the accessibility of information within this encyclopaedia of is one of its greatest strengths. And accessibility is further enhanced by a useful subject index and an index of all the names referred to throughout the text. Finally, each article contains a substantial bibliography of further reading that extends the reach of the encyclopaedia beyond its covers.

A brief examination of each of the five sections will help to give a better idea of the nature and scope of the collection. The first, Education Technology: Definition and Background, sets out a view of educational technology '. . . as a problem-solving process, concerning most aspects of teaching and learning through media and technology, in the context of education and training'. This section then considers some of the various fields that contribute to aspects of educational technology, including such theoretical ones as those mentioned above and areas like ergonomics (Oborne) and Artificial Intelligence (Elsom-Cook). Again at a practical level this section also sets out detailed lists of journals and organizations that treat issues associated with educational technology.

The second and one of the two longest sections, Design Functions, Tools and Resources, covers those issues that arise in the design, development and production of learning resources. It includes sections on Needs Assessment, Design, Media Production, Evaluation, Diffusion and Implementation, Management, and Resources. The last section touches upon resources such as Libraries (Woolls) and Information Systems (Brandhorst). The Media Production section is particularly valuable, containing as it does specific entries for each of range of media including text, still images, audio and computer programs. However, it does have one odd lacuna: video. Although the use of television as a dissemination medium is touched upon elsewhere (e.g. by Tiene, and by Grabowski), there is no entry on the issues involved in the production of televisual materials. Given the ever-increasing importance of video and other animated images within multimedia learning resources, this does seem a rather serious omission.

The third section, Delivery Options, is the other major section of the encyclopaedia and it is divided into sections that cover Strategies, Techniques, Materials, and Devices. There is considerable overlap between this section and the previous one, but with the very important difference that while the second section deals with issues concerned in the production and development of resources, this section deals explicitly with issues that arise in the delivery of those resources. Thus, while the second section contains entries about the production of various media, this contains entries about the 'role' of such media (e.g. Denning and Read, or Russell and Molenda). The section also deals with various strategic issues like the exploitation of modular curricula (Warwick) or the use of discovery learning (Tamir) or open learning (Lewis).

The fourth section, Applications and Institutional Settings, discusses Educational Sectors, Subject Matter Domains, and what are described as Other Applications. As one would suppose, the first of these sub-sections provides entries on such things as the role of technology in primary and secondary education (Molenda), special-needs education (Thorkildsen), vocational education (Roth), distance education (Bates) and teacher education (Collis). Interestingly, there is no entry for Higher Education. The sub-section on subject matter domains covers maths (Olive), science (Voogt) and languages (Ng), as well as more general articles on the curriculum. Under the heading of Other Applications, this fourth touches upon issues like planning (Colletta and Kwong) and research (Schliecher).

The last section looks forward to a range of 'Emerging Issues', and these include among others: the impact of broadcasting (Comstock), visual literacy (Petterson) and gender (Janssen, Reinen and Plomp) The final entry also deserves a special mention. It is on Copyright (Sinofsky): the impact of this issue on the economics of education is something that no educator or education manager can afford to ignore.

Although this encyclopaedia appropriately ends with a section on emerging issues, it is the emergent nature of the technology that generates the book's greatest weakness. It is inevitable that much of what is contained within any such compendium will be out of date almost before it is published, and this is certainly true for a number of entries here. An examination of the

suggestions for further reading indicates that, overall, the entries are up-to-date up to and including 1995. After that, references become somewhat thin. But this is of course inevitable. The encyclopaedia is a snapshot of the state of the art in about 1995, and as such provides a useful point of departure for researchers in the field. However, the field is rapidly developing. The clearest example of this is with reference to the Internet. There are several hundred index entries for computers, computing, software, courseware etc., but there are fewer than 20 references to the Internet or the World Wide Web, and none whatsoever for 'intranet'. Furthermore, none of these references is substantial, most merely indicating that this will be an important development in the future. The prediction was right, and a 1998 edition of such an encyclopaedia would tell a very different story.

Of course, this is less of a problem for entries dealing with more theoretical or general issues. The discourse of education theory has moved on in the last three years, but probably less radically than some of the technologies. Further, it is probably still more clearly in touch with its roots. References to Piaget or Vygotsky are likely to remain of interest for sometime. As such, it is still possible to recommend the second edition of *The International Encyclopedia of Educational Technology*, perhaps not for purchase by individuals, but certainly as a valuable reference tool in libraries until it is time for the third edition.

Bruce Ingraham, University of Teesside

Amanda Scott, *Learning Centres: A Step-By-Step Guide to Planning, Managing and Evaluating an Organizational Resource Centre*, London: Kogan Page, 1997. ISBN: 0-7494-2293-9. Hardback, 216 pages. £27.50.

This book provides a set of guidelines on how to initiate, promote, establish and run a learning resource centre within a business organization. My initial reaction was positive: someone was going to tell me all the pitfalls in establishing a learning centre and how to avoid them. But it quickly became apparent that the emphasis was on business organizations rather than educational ones. Obviously, there are differences between these organizations with respect to the way in which staff can be motivated to adopt new skills and practices.

There are 13 snappy chapters, most of which are fewer than eight pages, and they provide a helpful compendium of tips and checklists. Timescales and costs, issues to do with starting, resourcing and marketing a centre within organizations are all quickly dealt with. The bulk of the book is devoted to chapters on Administration and Logistics, and to case studies.

In the opening chapter, the author extols the virtues of self-development through resource-based learning, but concludes that it is not a 'natural process'; in other words, that it is not something in which most staff indulge unless encouraged to do so. Thus the premise of much of what follows is that while it may be in an organization's interest for staff to develop their expertise, it is also that organization's responsibility to provide the facilities, time and the motivation for them to do so. Transferring this idea to the management of teachers in Higher Education would be a major leap forward!

The chapters which follow examine the early tasks of the learning-centre manager – establishing the need for the centre, getting support from senior management, overcoming resistance, funding, and so on. All these tasks are treated with an industrial eye. There are many lessons to be learned in higher education from this approach, but they may run contrary to the image of universities as the home of independent, free-thinking scholars. Offering gifts, holding competitions to name the centre, providing games, involving families, and giving monetary rewards for learning are all suggestions to build interest and support.

The author then moves on to starting the project. This involves setting up a working party, making crucial decisions like opening hours, security, assessing training needs, marketing the centre and organizing a launch. Following this, the author discusses what to put into the centre by reviewing resources and evaluating their use. There is a chapter on multimedia which concentrates on technical issues, as though all teaching materials were available in all formats and that there really is a choice between CD-I and CD-ROM other than one based on the availability of software.

The most stark contrast between the industrial approach and that in higher education is contained in Chapter 9 with a debate on the need for non-vocational materials to induce staff to use the centre (programmes on home furnishing, planning a wedding, cookery, foreign-language

training, setting up your own business, etc.). A small section on the Internet ('Does it have a place in the learning centre?') again betrays the non-academic provenance of the work.

The heart of the book is the administration and logistics of running a centre. Bitter experience has shown many of us that it is the lack of continuing time, resources and commitment which results in the initial enthusiasm fading and the number of return visits to such a centre declining. Students are good in this respect. Everything is new to them all the time, and they are motivated by assessment. Staff, however, are more difficult. The book proposes addressing the problem of continuing interest by deploying incentives to keep staff coming back. Learning-related pay, establishing a learning club, rewarding performance (1/2 hour = 10 points – 100 points and you get a prize or air miles). It would be interesting to see the reaction to these suggestions from the cynics with whom I work!

The case studies make interesting reading. Some motivation behind forming a centre in the first place can be the difficulty of releasing staff for formal courses. As the move towards the formal training of university staff to teach gathers momentum, this is an aspect of such courses which will become increasingly important especially for split-site institutions. The larger centres have full-time managers whose responsibility it is to man the centre, run induction sessions, purchase and maintain hardware and software, etc. Others have systems in which this responsibility is shared between individuals who also have other responsibilities. The implication of the case studies is that permanent manning is the most effective way of promoting the use of a centre.

The appendices contain forms for evaluating materials and evaluating the centre itself, a reading list, and some screen dumps from a number of common computer-based teaching programs.

Is this book going to be of interest to ALT members who mostly work in higher education? It is difficult to read from front to back, but it does contain some excellent ideas which might be adapted for use in, say, a launch of a centre or in those desperate moments when a centre manager has sat all day in an empty room. It also provides some interesting insights into what is possible in the workplace when profits depend on a highly motivated and trained workforce. So, as a work of reference, I am glad to have it on my bookshelf. I am sure that I will be using it when the University decides that day release for teaching staff doing the Postgraduate Certificate in Undergraduate Teaching is no longer possible, and that self-development through a learning centre is the most cost-effective way forward.

Tony Cook, University of Ulster

Pat Hedges, *Increasing Profitability by the Effective Use of Learning*, London: Kogan Page, 1997. ISBN: 0-7494-2082-0, Hardback, 248 pages. £25.

In scope and range this is an ambitious book. Its explicit focus is on 'outputs':

'[. . .] the quantifiable results of learning, the manifestation of the personal experience of growing and improving performance on a continuous basis. It demonstrates the accrual of advantage to be gained in producing a system of self-perpetuating growth in performance improvement which, both individually and with the benefit of synergy of productive teams, positively increases the finances of business.' (page 1)

The introduction goes further to identify that the book:

'[. . .] has been written with learners, trainers, training providers, managers, team leaders evaluators and HRD specialists in mind. People in organisations who may be contemplating standards-based performance systems, or who are already involved in them. Above all, the book is for individuals who wish to improve their performance, whatever job they do. They will receive advice, guidance and hopefully the motivation to fully realise their potential and help their organisation towards productivity.' (page 2)

Ambitious indeed!

There are 12 chapters with supporting appendices, references, suggestions for further reading, and a comprehensive index.

Chapter 1 offers a whirlwind account of the distinctions between training and learning. There is an assured matter-of-factness about much of this chapter that may limit its use to educators and trainers. Chapters 2 to 5 offer an introductory review of organizational structures, organizational culture, and leadership. Much of this will be familiar to readers of Handy or similar subject-authors. Both checklists and questionnaires are used extensively in these chapters. Chapter 6 explores 'Your influence on your performance'. This seems to be, at one level, a pivotal chapter,

given the stated focus of the text to promote self-awareness and self-help. At another level, it sits uneasily in content and style in a text predominately written to this point, and subsequently, for a more professional or managerial audience. This illustrates my primary concern with this book: specifically, that in attempting to be comprehensive and of value to everyone, it is insufficiently focused on either the individual seeking to explore her/his own training needs, or the organization assessing the value of specific approaches to training in a turbulent environment.

This tension caused by a commendable desire to be comprehensive underpins the remaining chapters of the book. Chapter 7 briefly considers the trainers' influence on performance. Chapter 8 is a more substantial consideration of the rationale for training decisions. The identification of poor performance and developing means of improving performance are the focus of Chapters 9 and 10. Chapter 11, at 49 pages the longest by far, explores the complex field of validating and evaluating performance improvement interventions. In a change of style, three case studies are used to demonstrate the use of a range of performance indicators. Both the case studies and the summary points made by the author may be of interest to both practising managers and Human Resource professionals. I am less confident that those who earn a living through evaluative practice will learn much they did not already know. Indeed, there are many in the field of academic evaluation who might question the view that 'the job of the evaluator is to [. . .] turn subjective evidence into objective evidence [. . . and] feedback results with conclusions and recommendations.' (173–4).

The final chapter follows an approach often found in Kogan Page publications: a short action-focused advocacy of the author's case. In 'The Employer's Dream', Hedges offers an articulate and impassioned rebuttal of a set of objections to standards-based performance systems. She concludes with an equally clear set of assertions regarding the organizational and individual benefits to be realized by achieving competence through performance standards. It is questionable whether the earlier text justifies these assertions, or indeed the earlier rebuttals. However, the polemic is powerful and makes interesting reading.

This book explicitly seeks to address a significant range of issues and engage a wide audience. It offers advice and practical checklists which will be largely familiar to teachers of business organizations, to organizational trainers and those familiar with NVQ and other competence-based training programmes. To a large extent it is a self-help book with a strong practical focus and a commendable clarity of style. Nonetheless, the reader would be advised to look elsewhere for an analysis which problematizes the contribution of competence-based learning or explores the methodological complexities of evaluating such a contribution. Rather, the text offers models of perceived good practice to inform and guide the practitioner based on the author's considerable experience in the field.

Overall, I found the book rather like a hastily arranged dinner party for people who are not quite friends – excellent in parts, less than that in other parts, and inconclusive at the end. Clearly the author knows the field. But in attempting to address the widest possible readership, I sense that the opportunity to produce a far better book has been missed. Maybe the title is a little misleading. This is a book that advocates, in a relatively uncritical way, a particular approach to, and rationale for, training. As such it has genuine value. But I am not convinced that it offers sufficient new insights in areas such as learning theory and the individual's motivation to learn to fully engage the wide-ranging audience it seeks, or to justify the largely unproblematic relationship between learning and profitability it presents.

Peter Funnell, University College Suffolk

Jane Hart and Kirk Martinez, *Glacial Analysis – An Interactive Introduction*, London: Routledge, 1997. ISBN: 0-415-15971-7. Interactive CD-ROM (runs on both Macintosh and Windows 3.1 platforms). £39.99.

This is the first of several interactive products planned by Routledge for geography, and is the first teaching software on glaciers to be developed for undergraduates. The package consists of a CD-ROM and an accompanying booklet. The two complement each other well. The booklet is a good place to start, describing the functionality of the interface and providing a guide to the contents of the software. The CD-ROM delivers a number of multimedia resources including pictures, animations and video. Students interact with the package by answering questions and completing exercises.

The aims of the package are to teach students the techniques used for the analysis of glacial sediments. It covers methods used in the field for data collection and the analysis of the results of

data collection. The authors see the package being used in first- and second-year undergraduate courses in glacial geomorphology/geology and in more general courses training for fieldwork. They also expect final-year undergraduates to use the package for revision purposes. The package is suitable to run on a Windows PC or Macintosh system, and was very easy to install on a Windows PC.

Section 1 of the CD-ROM introduces students to the glacial environment. Topics that are required for the later stages of the package are dealt with in more depth in this section. There is a large amount of information that is well illustrated with case-study photographs, videos, explanatory graphics and animations. The animations are excellent, assisting understanding of some of the more complex concepts of debris movement within a glacier.

The second section of the package details what is required from fieldwork to produce a correct analysis. Information and the techniques used for data collection are given for each aspect of a glacial sample. The material is well illustrated with photographic examples from the field. Knowledge gained is reinforced by questions.

Till fabric is first introduced in Section 2, which looks at the method for collecting data on till fabric in the field. A video clip demonstrates the process from start to finish. Once the results have been collected, there are four different methods for plotting the data. The first two methods are simpler, and students have an opportunity to practise the skill on-screen. The latter two methods are more complex: students are expected to analyse the results of these within the package. This section equips students with the ability to collect data in the field and decide on a suitable analysis of their results.

Folds and faults are also first introduced in Section 2. An introduction to the cause of these features is provided. Animations show exactly how the features arise, knowledge that is required in the measuring of folds and faults. Brief instructions are given for measuring these features in the field. Unfortunately, unlike the till-fabric section, there is no explicit illustration from the field on how to take measurements. Students are also given an exercise to explore methods of analysis of the results.

The next section provides summary information on the different till types that students may encounter in the field. Further information is provided in table form to help decide which environment these originate from. This section is useful for students as a guide when returning from fieldwork with results.

In order to review and improve on knowledge gained from the package, the final section presents a number of exercises. These involve answering questions that vary in style and include multiple choice, clicking on an image and free-text entry. The questions require detailed analysis rather than simply repeating facts. Expanded feedback as to why answers are correct or incorrect would have been useful further to improve understanding.

Other sections of the CD-ROM act as additional references. A glossary gives definitions for a number of terms used in the package. These definitions can also be accessed in the main text of the software by clicking on highlighted words. All the references used in the package are collected in a bibliography for ease of access. The glossary and bibliography are also reproduced in full in the package booklet.

Additional functionality is provided by the search and edit tools. The Search function allows searching on a keyword. The results will show all the screens in which the word is mentioned and allow navigation to any of them. The Edit facility allows text from the package to be pasted into the editor window and modified as required before being printed or saved.

Despite its usefulness, I do have a few complaints about this package. The size of the text makes it difficult to read; having to hold the mouse button down while reading definitions of words becomes tiring after a while; and I could not get the Web link to work.

But, in general, this is a very attractive, well-designed package with many excellent photographs, animations and videos used wisely to illustrate concepts. It does what its title suggests, and gives an interactive introduction to glacial analysis, and in particular the collection and analysis of glacial sediments.

Robert Sherratt, University of Leicester

Shirley Fletcher, *Competence-Based Assessment Techniques* (2nd edition), London: Kogan Page, 1997. ISBN: 0-7494-2197-5, Paperback, 96 pages. £15.99.

Competence-based assessment CBA) is now a technique in widespread use within commercial

organizations to support their training programmes. This book seeks to guide a newcomer through the concepts that underlie competence-based systems, and to highlight implementation issues. The author claims to cover in detail the What, Why, Where When, How and Who of CBA. This review details the structure of the book, and its strengths and its weaknesses in the light of its challenging remit.

It comprises two parts, namely: Foundations of Competence-Based Assessment and Practical Application. Each of the eight chapters is prefaced by a summary and finished by a review, with frequent diagrams intended to aid the reader. The first three chapters deal with the foundations of CBA. Chapter 1 differentiates between the different competence-based systems, in particular comparing the American and British models. A brief comparison is made with the 'traditional' model. The traditional model seems to be based on school rather college or university systems as the assessment is stated to be norm-based rather than criterion-referenced/ validated. I am pleased to say the book makes this terminology clear to the newcomer to this area. A more thorough explanation of CBA follows in chapter two. This chapter draws a clear line between the purpose of traditional and CBA. In addition, it outlines the implications of taking a CBA approach. Chapter 3 concludes Part 1 of the book with a description of the purposes and uses of CBA.

Part 2 covers the practical application of CBA. This begins in Chapter 4 by considering what is being assessed, the criteria used and the reason for performing an assessment. The chapter finishes by looking at some of the human factors that affect assessment. Chapter 5 concentrates on how evidence is collected. The various forms of evidence are discussed and issues relating to the ability of assessors to do the task properly are covered. Once the evidence is collected, it clearly must be related to some form of standard. Concepts relating to standards such as transparency, validity, reliability, authenticity, currency and sufficiency are described in Chapter 6. Chapter 7 deals with what happens after the assessment is finished. People who do not meet the standard must be dealt with, the results must be recorded and new training needs identified and catered for. As the chapter is only four pages long, a limited amount of material is covered. The final chapter, which deals with quality assurance, is again rather short.

From the above description of the book it would appear that all possible contingencies are covered, but the book is only 96 pages long. The review section is two sentences long, and the figures are often effectively bullet points with boxes drawn around them rather than being true figures. The author concentrates on defining all the terms and identifying all the issues involved. Very little critical analysis of CBA is provided. For example, CBA has only two outcomes: competent or not competent. Different degrees of competence are described as demoralizing, and unnecessary if a worker is competent at a task. However, a manager may wish to know the degree of competence exhibited by different workers when attempting to allocate tasks to a team. The argument for a simple decision, competent or not competent, is clear, but no attempt is made to deal with the counter argument. Line managers are identified as assessors in the workplace: what do you do if the line manager is not willing or competent to perform the assessment? Can you always risk finding out that somebody is incompetent by observing them doing the job?

The reader is likely to be somebody who is interested in introducing CBA to a company. Consequently, issues such as how to justify the resource implications should be covered. Methods of costing the training of assessors, designing of courses, and changing the corporate culture are not given. The detailed case studies would have been invaluable if they had included such costing and shown that identifiable benefits, that outweighed the costs, accrued to the companies within a two-year period.

I can nevertheless recommend this book to the newcomer to CBA. Despite my criticisms, it describes the terminology and issues very well. I found that having read a chapter, I had a very clear idea of the difficulties I would face in designing a CBA course. If, however, you already know the issues and are looking for solutions to the thorny practicalities of convincing management and implementing courses, you need to look elsewhere.

Brian Turton, University of Wales College, Cardiff

Shirley Fletcher, *Analysing Competence: Tools and Techniques for Analysing Jobs, Roles and Functions*, London: Kogan Page, 1997. ISBN: 0-7494-2195-9. Paperback, 118 pages. £15.99.

This book is one of the Practical Trainer series published by Kogan Page, which, as the name

suggests, aim to give concise practical advice on a particular topic. *Analysing Competence* is no exception. It is a brief outline of the main principles involved in an analysis of performance at work. In the brief introduction, the author emphasizes the importance of defining the problem and considering the actual and potential users of the analysis results at the beginning of the exercise. Competence is related to the structure of work, the expectations of work and human performance, all of which should be considered in any analysis. The author suggests that completing an analysis of these relationships would form the basis of a valuable and accepted vehicle for improving business performance. There is a widespread interest in competence and frameworks, in particular relating to training and education. Learning outcomes, for example, are measured as competences in NVQ documentation. The book consists of only three chapters, the last of which forms the bulk of the text.

The first chapter discusses the concept of competence, though the difference between 'competences' and 'competencies' does not at first become clear. Also, the concept of a 'competence framework' is not explained in detail. However, the author does explain that competence analysis and the resulting competence framework will only define the competencies, and to be of use in solving performance problems they need to form the basis of further analysis. This chapter aims to help with defining the analysis and development project, taking account of all influencing factors, and ends with a clear checklist for the reader to use. There is also a useful table of definitions (although its label and reference have been omitted from the text).

The second chapter begins with an outline for the reader to complete as a key reference document to the purposes of the study. The reader is then directed to the three steps of an analysis: identify components, examine relationships between components, restructure components. The author suggests that no single tool or technique will cover all three steps of the analysis, but a tool should be selected that will give the right kind of information for each step. There are two summary tables: one gives lists of tools and techniques for each of the three steps, the other lists uses of the competence framework in terms of the actual work being done. The chapter ends with an example proforma on which the reader can record the scope of the analysis and development project, including: overview, agreed definition of competence, goal of project, objectives of project, resources, management, products/outcomes, evaluation, tools and techniques.

The third chapter is the longest. Here, the tools and techniques applicable to a study of competences are described. There is a good summary of each tool and which of the three steps it could be applied to. For quick reference, the chapter is separated into three sections corresponding to these three steps. The space devoted to serves only to give a brief outline, but a wide variety of tools and techniques are suggested, ranging from functional analysis and card-sort through to flow-chart, critical-path analysis and repertory grids. The reader is directed as to when and how to use each tool, together with advantages and disadvantages of its use. From the range of tools and techniques presented, the analyst should be able to select something suitable for a particular study. It would have been useful if the author had suggested references to find more details about each one, though a reader who has experience of using problem-solving techniques would be able to attempt to use these tools from the outlines given.

The references section at the end of the book appears to be fairly comprehensive, though with no recent publications cited. This is surprising in view of the statement in Chapter 1 that there is 'increasing interest in the subject [...] demonstrated by the wide range of publications devoted solely to [it]'. Within the text, some terms are mentioned, but not defined, and no reference is given for explanation of the terms. The text would have been improved by citing references and providing an index.

The book claims to 'help you to think innovatively to create a tailored solution for specific performance problems', and the various techniques presented would certainly provoke innovative thought in the reader. This book would be useful for someone wanting a brief outline of a variety of techniques for analysing competence at work, and the tables etc. would provide useful aide-memoirs for someone carrying out such an exercise.

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***The Challenge of Problem-Based Learning*, edited by David Boud and Graham E. Feletti (2nd edition), London: Kogan Page, 1997. ISBN 0-7494-2291-2, 1997, Hardback, 344 pages. £35.**

In reviewing this book, I have to confess at the outset to a bias in favour of the general cause

that it seeks to promote. Higher education is less effective and efficient than it could be, largely because of the persistence of educational methods based on the oral tradition of communication. Methods which encourage a move away from the lecture room towards a greater degree of engagement by students (with the correlative shift away from dependence towards independence) are, in my view, to be nourished – provided that they show potential for increasing educational effectiveness (and, as a secondary consideration, efficiency). This book makes a positive contribution in this respect.

Problem-based learning (PBL) inverts the standard type of curriculum in higher education. Instead of providing units of study which can be used as building-blocks in multidimensional 'capstone' activities such as projects and dissertations, it faces students from the start with situations that can only be resolved through their active involvement in searching out relevant material from a variety of sources, only one of which is the tutor. In that sense, PBL is very much in the tradition of resource-based learning – a mode which is on the threshold of a new lease of life because of the increasing availability of information in electronic form. However, PBL is far wider in its range than the acquisition and transformation of information: problems in the world outside academe are 'messy', often lacking clear boundaries, and requiring the solver(s) to exhibit the wide range of intellectual, practical and social skills that is embodied in the notion of 'capability" (Stephenson and Weil, 1992).

The book comprises 33 chapters which are distributed between six parts. Part I deals with the nature of PBL; Part II with getting started; Part III with design and implementation; and Part V with the assessment of students and the evaluation of programmes. Part IV provides a number of examples from different professions; and Part VI seeks to address the issue of how PBL might develop.

The book (wittingly/wittily?) requires readers to pursue a PBL strategy if they are to work towards the development of PBL in their own institutions: there is no standard recipe on offer – rather, the bulk of the book consists of a series of experiences and ideas that have been written down by practitioners. Some have basically adopted models from elsewhere; others have gone in for more adaptation and redesign in order to satisfy their own institution's needs. If readers are seriously considering PBL, they will need to read the whole book in order to extract the necessary ideas and experiences. Here the large number of short chapters is a disadvantage: I found myself wanting much more detail than some chapters were able (allowed?) to provide, yet some details were repeated in different chapters. Those who are interested in particular angles on PBL will probably need to consult the original (and fuller) sources quoted in the chapters' bibliographies.

In deciding whether or not to opt for PBL, the potential user has to bear in mind the characteristics of the entering students. Those who have little or no experience of PBL may find a PBL-based programme of study to be disconcerting. The medical students at McMaster University, whose PBL-based programme is well-established and has clearly influenced many of the contributors, have at least a bachelor's degree (and many have more advanced degrees), and so could be expected to have acquired beforehand the skills of searching out and processing information relevant to the problems being set. School leavers, on the other hand, will almost certainly have had much less opportunity to develop the requisite skills.

Likewise, the skills of staff may need to be developed if a PBL-based curriculum is to be soundly underpinned. Chapter 16 outlines the multiplicity of roles that fall to the tutor on a PBL-based programme, and is likely to provoke thought in those who teach on more conventional programmes. The shift in perspective from traditional teaching approaches is profound, and requires that hearts and minds be positively engaged well before any change to PBL is set in train (whether for whole programmes or part-programmes). Academic leadership and management are of vital importance here. One should not overlook institutional politics: an innovation not supported as fully as it might have been may find difficulty in succeeding, as the case study of the introduction of the BInf at Griffith University (Chapter 9) suggests.

Part VI is the least strong component of the book: 'Beyond problem-based learning' hints to the reader that, after the long journey through the preceding 307 pages, there is a further peak to be scaled, a new and greater truth to be revealed. The reader is likely to be disappointed, for the three chapters seem to be taking steps backward, dealing with matters that could easily

have been incorporated into a critical discussion at the beginning of the book of what PBL can and cannot reasonably be expected to achieve. I would have preferred the editors to have been bolder here, and to have speculated on the ways in which PBL might be developed for curricula that are much less professionally oriented in character than is typical of the genre. If, as I believe, the precepts of PBL are consistent with the notion of 'capability', there is scope for considering – in a time in which higher education is increasingly being expected to develop in students skills appropriate to the world outside academia – the contribution that PBL can make across the full span of programmes running in higher education.

Boud and Feletti's book is a rewarding read, though its structure does require a measure of determination on the part of the reader if he or she is fully to benefit from what is on offer. I would have preferred fewer, but deeper, chapters with the institutional exemplars as exhibits rather than as full chapters, since that would have made the 'messages' easier for hard-pressed academics to extract – a matter of importance, if the aim of the book is to encourage the greater use of PBL.

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Reference

Stephenson J. and Weil S. (eds) (1992), *Quality in Learning: A Capability Approach in Higher Education*, London: Kogan Page.