REVIEWER

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The Design of Computer-Based Instruction by Eleanor L. Criswell, New York, NY: Macmillan Publishing Company, 1989. ISBN o-02-325603-6 (CDN $35.95)

Reviewed by John O. Mitterer

The first-time reader of a book like The ***Design of Computer-Based Instruction*** by Eleanor L. Criswell might be tempted to believe that it will constitute a general overview of the applications of computers in education. Indeed, Criswell herself contributes to this impression when she opens Chapter 1 with this definition: "The term computer-based instruction (CBI) refers to any use of a computer to present instructional material, provide for active participation of the student, and respond to student action." Another suggestion that this book might be very general derives from the liberal sprinkling throughout of references to cognitive psychology, human-computer interface design, cognitive science, artificial intelligence, knowledge engineering, and even cognitive development.

A closer examination will reveal, however, that this book has a much narrower focus. The term "CBI" (and "CBT", a synonymous term meaning "Computer-Based Training") turns out to be a code acronym for software derived from a behaviorist, or Skinnerian, perspective on learning. The producers of CBI software tend to work for the military or for large companies and to place emphasis on the precise definition and efficient mastery of objectives and on a comparison of costs with other methods. It is because of this narrow focus that this book is weak and yet is still worthwhile.

The major weakness is that there is so much that is left out. For example, although more cognitive approaches to designing instruction, including older approaches such as that of Gagne, are mentioned throughout the text, and while the second chapter does discuss a "structural" perspective in ways which make it sound like a cognitive approach, in the end the book does not make much use of the cognitive psychology perspective on the design of computer applications in education. The same can be said for developmental psychology, artificial intelligence, human-computer interface design, and expert systems. All are mentioned but are, in the end, not really discussed; at best they can be said to be given a behaviorist interpretation.

Another, perhaps related, weakness is the peculiarly dated feel of the

book, which is already two years old and refers mainly to work from the early 1980's. Very little is said about recent advances in hardware and software technology. Direct-manipulation interfaces, mouse-selectable icons, pull-down menus, multiple windows, and bit-mapped graphics are scarcely discussed. Nor is much said about multimedia or the educational applications of such current multimedia technologies like digitized sound, interactive animation, synthesized speech, LaserDiscs, or CD-ROMS.

The evolution of newer approaches to creating education applications, such as the use of hypertext or hypermedia authoring environments is also not discussed. Alternative educational theories, especially the discovery-oriented approaches of Bruner and Piaget are similarly neglected. So is Papert and the educational applications of LOGO. Leading-edge topics like the application of artificial reality work in education are, of course, totally absent. In short, one is left with an image of the "good old days" when text-based mainframes were the standard, when bit-mapped graphic microcomputers were still just gleams in hacker's eyes and when Skinnerian programmed learning and PLATO were king.

In spite of such weaknesses, however, this book ought not to be neglected For all of its limitations, CBI is a well-understood and theoretically well-grounded approach. Anyone interested in the applications of computer technology in education should aspire to master CBI, if only to serve as a solid core around which to organize an understanding of the more recent advances in the general area. It is in this way that the endemic problem of rampant faddism can be avoided. Unfortunately, it is all too easy to be carried away by the promise (or hype) of new technologies without appreciating the deep educational issues involved. This is what "The Design of Computer-Based Instruction" by Eleanor L. Criswell does offer: a solid, fairly standard, step-by-step approach to designing, creating, and evaluating computer-based instruction. CBI produced by following the advice offered in this book will likely do what it was designed to do, and this is more than can be said for some of the more recent approaches to applying computers in education. As such, this book is a useful addition to the library of everyone interested in applying computer technology in education.

REVIEWER

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