Book Reviews

Mary Kennedy, Editor

The Design, Development and Evaluation of Instructional Software by Michael J. Hannafin and Kyle L. Peck. New York: Macmillan Publishing Co., 1988.

Reviewed by L.F. (Len) Proctor

Purpose of the Book

This book suggests that the quantity and quality of software must be improved if computers are to have a positive impact on the field of education. In Hannafin's and Peck's view, it is the teacher's skill, knowledge of design and commitment to quality that are the most important factors in the creation of high-quality, computer-based instruction. As a result, they have emphasized the instructional design process and not the hardware or software used in lesson creation. Novice authors who use the recommendations and suggestions outlined in this publication to guide their software development will avoid many of the pitfalls often associated with low-quality computer-baaed instruction.

Structure of the Book

This book contains seven sections which have been subdivided into twenty two chapters. Each chapter contains a list of objectives, an extensive reference list, suggestions for related reading and review exercises. The review exercises have been designed to reinforce the concepts and principles presented in the body of each chapter.

The first three sections provide a pedagogical basis for the development of computer-based instruction. Section One contains a brief overview of CAI and a description of the characteristics ofeffective CAI. Section Two presents a discussion of how to combine the strengths of teachers and computers to produce powerful teaching systems. Next is a description of a generic instruc-

tional design model which in turn serves as a general organizer for the remainder of the text. A good ID model is important because the success or failure of any CAI lesson depends more on the design of the lesson than on any other single element in the authoring process. Section Three completes the treatment of the pedagogical basis for the development of CBI by providing a structure for assessing the viability of CAI as a solution to an educational problem, a method of task analysis, and a strategy for the construction of learning objectives.

The mechanics of developing and producing computer-based instruction begins in Section Four. Section Four covers the topics of flowcharting, branching, mode selection (e.g., tutorial), frame layout, emphasis options (e.g., type size), interactivity, and student response management. Section Five focusses on the differences between print-based lessons and computer-based lessons. This section describes some of the languages available for CBI lesson creation, lesson organization and how to collect learner response data. Section Six completes the description of the instructional design model by detailing how to carry out the evaluation and revision of each component of the development process. This section is particularly valuable because the evaluation criteria presented here apply equally well to internally and externally developed CAI instruction.

The last section of the book considers both the present and possible future status of computer-based instruction. Section Seven describes peripherals that may be added to the system, interactive multi-media, intelligent CAI, and the emergence of computer networks. The book concludes with a discussion of factors currently influencing the role of CAI, a glossary of terms, author and subject indexes, and a list of recommended readings to guide authors in extending their study of the topics presented.

Critique

For the beginning author, the planning, organizing and production of CAI resources can become a very complex task. The mere act of trying to decide where to begin can often lead to confusion. Hannafin's and Peck's book succeeds in reducing the complexity of the authoring process to manageable limits. It is well organized, clearly written and substantially referenced. While the instructional design model presented is not as extensive as models found in other sources, the essential elements of the design process have been extracted and customized in order to accommodate the needs of a beginning author. The book provides a good framework for making lesson design decisions. Hannafin and Peck assume that novice CBI authors are competent teachers and knowledgeable, experienced computer users. For those authors who do not have these entry level skills, they offer an alternative. They suggest that the user who has little or no programming expertise or design experience could use prestructured templates to create computer-based instruction.

For the novice author who is willing to adopt a linear "programmed" learning approach to CAI development this would probably be all right. But,

for authors who wish to use more complex interactions or make use of student tracking capabilities to control lesson presentation elements, there is no substitute for knowing about variables, functions and program control structures. Second, a basic knowledge of the instructional design process would be of help to any author who finds it pedagogically desirable to deviate from the lesson plan presented in a prestructured template.

The suggestions and recommendations made by Hannafin and Peck for implementing learner control, the use of navigation aids, screen design, and the management of student responses are well defined and presented. Howaver, the guidelines given for presenting feedback to students are minimal. They only mention that "feedback frames are used to provide students with the correctness, incorrectness or quality of their responses," Only one example of incorrect response feedback was given. Confirmation, correct response, explanatory and bug-related examples of feedback could have also been given. This is one topic the authors could have treated in greater depth.

One of the most useful chapters in the book is the chapter on evaluating CAI lessons. Hannafin and Peck define evaluation as an ". . .ongoing process used to determine whether lesson objectives have been met, to identify the reasons for the observed performance, and to identify those portions of a lesson where modifications are required." They have chosen not to stress elaborate statistical methods for gathering empirical evidence. Instead, they have developed a series of checklists which serve as systematic guides to gathering informal, anecdotal types of data. Each checklist highlights a series of key points to be considered in the evaluation of the lesson. For example, in the area of instructional adequacy Hannafm and Peck ask: "Are the directions for lesson control clearly stated?" In this case, while the directions are not numerically quantified, it is easy to see that if students have trouble navigating through the lesson they may become easily discouraged or frustrated with the lesson.

This example highlights one problem inherent in summarizing data from this type of evaluation procedure. Even though the lesson may crash in certain circumstances, it may still 'pass" its evaluation. The problem here is that highly rated assessment, despite a fatal flaw such as "crashing," may mislead the evaluator into drawing positive conclusions about the lesson. To avoid this potentially disastrous outcome, Hannafin and Peck recommend the use of a combination of assessment criteria and fatal flaw criteria for anecdotal methods of CAI lesson evaluation. When both these components are considered concurrently, evaluators are less likely to become the victims of their own evaluation system.

In conclusion, I suggest that this book would be a good starting point for anyone who is seriously considering the development of computer-based instruction. It is not an authoring system specific handbook; it is a generic lesson authoring guide. It does not deal extensively with topics such as intelligent CAI systems, but it does offer a masterful introduction to frame-based approaches to CBI. Perhaps other topics such as adaptive instructional

designs, expert systems and artificial intelligence will be included in a revised edition or a future companion publication.

REVIEWER

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Evaluating Open and Distance Learning by Mary Thorpe. Mississauga, ON: Copp, Clark, Pitman, 1988. ISBN O-582-90119-7 (CDN $29.95)

Reviewed by Mary F. Kennedy

According to the author, this book is written for the practitioner — not the evaluation practitioner, but the practitioner in the field of open/distance learning. Unlike most books on evaluation, it does not include an historical overview of evaluation theory and design. Rather it goes to the heart of the matter — evaluation as a practice.

Evaluating Open and Distance Learning is divided into three sections. Part One: ***Open Learning and Distance Education*** presents two brief chapters on evaluation, defining the term and setting the focus on who uses and/or ultimately benefits from evaluation. Thorpe makes a case for learner collaboration and a team approach. A really nice feature of Chapter Two is the inclusion of five case studies, all selected on the basis of interest and application to the potential audience.

Part ***Two: Evaluation in Practice*** contains four chapters on learner self-evaluation, tuition or tutoring, counselling, and course or learning materials. Each chapter provides an overview of evaluation activity in relation to that specific component of open and distance learning. The activities, and Thorpe's suggestions regarding implementing evaluation, draw on data from past completed evaluations. There appears to be, on cursory reading, an over-reliance on Open University data, but, as Thorpe explains, there is little evidence that evaluation is being implemented elsewhere in open and distance education settings. Numerous samples of evaluation checklists, survey instruments, and interview guides are included in these chapters, providing the reader with a flavour of the type of evaluation activity undertaken.

Part Three: ***The Process of Data Collection*** includes two chapters and a conclusion. As the author indicates, the purpose of this section is not to provide a how-to manual, but to focus on the application of these methods to open and distance learning. Thorpe reiterates the view that learners and practitioners should define the type of evaluation they want, since evaluation should be