
Contents

Contributors by Chapter	xi
Preface	xv

Part I: Issues

1	Technological Trends and Implications for Learning in Tertiary Institutions	3
	<i>Raj Reddy and Paul S. Goodman</i>	
	FIG. 1.1. Exponential Growth Trends in Computer Performance	5
	FIG. 1.2. Power	6
	FIG. 1.3. Memory	6
	FIG. 1.4. Price	7
	FIG. 1.5. Components per Chip	8
2	Edu-Tech: What's a President to Do?	21
	<i>Richard C. Larson and Glenn P. Strehle</i>	
	FIG. 2.1. Cave Drawings that are 30,000 Years Old (The Chauvet—Pont—d'Arc Cave)	26
	FIG. 2.2. Stage Coaches Attached to Steam Engine (Mohawk and Hudson's De Witt Clinton, 1987)	27

3	Cooperation Between Educational Technology and Learning Theory to Advance Higher Education <i>Herbert A. Simon</i>	61
4	The Art and Science of IT Infrastructure <i>José-Marie Griffiths and Alan McCord</i>	75
	FIG. 4.1. Michigan Model of Information Technology Services 81	
5	The Disquieting Dilemmas of Digital Libraries <i>Sara Lou Whildin, Susan Ware, and Gloriana St. Clair</i>	123
6	Creating Organizational and Technological Change <i>Paul S. Goodman</i>	153
	Table 6.1. Framing Organizational Change 158	
	Table 6.2. Summary of Change Process 166	
	FIG. 6.1. Learning Environments by Space and Time 160	
	FIG. 6.2. Forms of Knowledge Conversions 161	
	FIG. 6.3. Forms of Change 164	
	FIG. 6.4. A Sociotechnical System 168	

Part II: Applications

7	The Virtual University: Customized Education in a Nutshell <i>Carlos Cruz Limón</i>	183
	Table 7.1. Ten Lessons Learned from the Virtual University 189	
	Appendix Product Lines of the Virtual University 200	
8	The FAST Program: A Computer-based Training Environment <i>Sanjay Srivastava</i>	203

Table 8.1. Basic Dimensions of FAST Components	209
Table 8.2. Learning Features in the FAST Environment	215
FIG. 8.1. Sample Bond Tutor Calculations	214
FIG. 8.2. The Simulated Market	215

Appendix A: Summary of Trading Case B04 219

FIG. A8.1. Cash Flows from Securities	219
FIG. A8.2. Sample Trading Screen	220

Appendix B: Trading Case RE1 221

FIG. B8.1. Independent Events and Paid Dividends— Period 1	222
FIG. B8.2. Details of Case RE1	222
FIG. B8.3. Sample Trading Screen	223

Appendix C: Sample Tutorial 224

FIG. C8.1. Excel Spreadsheet	224
FIG. C8.2. CAPM Tutor Contents Screen	224
FIG. C8.3. Historical Data Module Interface	225
FIG. C8.4. Historical Data Module Interface	226
FIG. C8.5. Sample Historical Data	227
FIG. C8.6. Excel Data Link Example	228
FIG. C8.7. CAPM Tutor Data Analysis Interface	229
FIG. C8.8. CAPM Tutor Display: Portfolio Return Histogram	230
FIG. C8.9. CAPM Tutor Display: Volatility Analysis	231
FIG. C8.10. CAPM Tutor: Contents Menu	232
FIG. C8.11. CAPM Tutor Display: Efficient Portfolios	233
FIG. C8.12. CAPM Tutor Display: Portfolio Selection	233
FIG. C8.13. CAPM Tutor Display: Portfolio Selection	234

9 Cognitive Tutors: From the Research Classroom 235 to All Classrooms

Albert T. Corbett, Kenneth Koedinger, and William S. Hadley

Table 9.1.	Year-End Assessments of Cognitive Tutor Algebra I	250
FIG. 9.1.	The Algebra I Cognitive Tutor Screen Near the End of a Problem	238
FIG. 9.2.	Example Student-Tutor Interactions	240
FIG. 9.3.	Average Lisp Programming Problem Completion Times Across Five Lessons for Student Using the Lisp Tutor and Students Working in a Conventional Programming Environment	243
FIG. 9.4.	Impact of Cognitive Tutor Technology on the Classroom	244
FIG. 9.5.	The ANGLE Geometry Tutor	245
FIG. 9.6.	Algebra I Final Exam Question	248
FIG. 9.7.	Dissemination of the Cognitive Tutor Algebra I Course	252
FIG. 9.8.	Excerpts from Letters Describing the Cognitive Tutor Algebra I Classroom	259

10 The Development of the Studio Classroom 265

Jack M. Wilson

Table 10.1.	Some Features of the Studio and Traditional Courses	279
-------------	---	-----

11 Concluding Thoughts 289

Paul S. Goodman

Author Index	295
--------------	-----

Subject Index	299
---------------	-----