

Contents

List of Figures	page ix
List of Tables	xiii
List of Contributors	xv
Preface	xvii
Acknowledgments	xx

PART I BACKGROUND

1 Introduction to Multimedia Learning	3
Richard E. Mayer and Logan Fiorella	
2 Foundations of Multimedia Learning	17
Gino Camp, Tim Surma, and Paul A. Kirschner	
3 Fifteen Common but Questionable Principles of Multimedia Learning	25
David F. Feldon, Soojeong Jeong, and Richard E. Clark	
4 Research Methods in Multimedia Learning	41
Halszka Jarodzka	

PART II THEORETICAL FOUNDATIONS

5 Cognitive Theory of Multimedia Learning.....	57
Richard E. Mayer	
6 Implications of Cognitive Load Theory for Multimedia Learning	73
Fred Paas and John Sweller	
7 Integrated Model of Text and Picture Comprehension	82
Wolfgang Schnotz	
8 Implications of the Four Component Instructional Design Model for Multimedia Learning	100
Liesbeth Kester and Jeroen J. G. van Merriënboer	
9 Motivation and Affect in Multimedia Learning	121
Claudia Schrader, Slava Kalyuga, and Jan L. Plass	
10 Metacognition in Multimedia Learning	132
Roger Azevedo and Daryn Dever	

PART III BASIC PRINCIPLES OF MULTIMEDIA LEARNING

11	The Multimedia Principle	145
	Richard E. Mayer	
12	The Multiple Representations Principle in Multimedia Learning	158
	Shaaron Ainsworth	
13	The Expertise Reversal Principle in Multimedia Learning	171
	Slava Kalyuga	

PART IV PRINCIPLES FOR REDUCING EXTRANEOUS PROCESSING IN MULTIMEDIA LEARNING

14	Principles for Reducing Extraneous Processing in Multimedia Learning: Coherence, Signaling, Redundancy, Spatial Contiguity, and Temporal Contiguity Principles	185
	Logan Fiorella and Richard E. Mayer	
15	The Split-Attention Principle in Multimedia Learning	199
	Paul Ayres and John Sweller	
16	The Redundancy Principle in Multimedia Learning	212
	Slava Kalyuga and John Sweller	
17	The Signaling (or Cueing) Principle in Multimedia Learning	221
	Tamara van Gog	
18	The Worked Example Principle in Multimedia Learning	231
	Alexander Renkl	

PART V PRINCIPLES FOR MANAGING ESSENTIAL PROCESSING IN MULTIMEDIA LEARNING

19	Principles for Managing Essential Processing in Multimedia Learning: Segmenting, Pre-training, and Modality Principles	243
	Richard E. Mayer and Logan Fiorella	
20	The Modality Principle in Multimedia Learning	261
	Juan Cristobal Castro-Alonso and John Sweller	
21	The Transient Information Principle in Multimedia Learning	268
	Dayu Jiang and John Sweller	

PART VI PRINCIPLES BASED ON SOCIAL AND AFFECTIVE FEATURES OF MULTIMEDIA LEARNING

22	Principles Based on Social Cues in Multimedia Learning: Personalization, Voice, Image, and Embodiment Principles	277
	Logan Fiorella and Richard E. Mayer	
23	The Embodiment Principle in Multimedia Learning	286
	Logan Fiorella	
24	The Immersion Principle in Multimedia Learning	296
	Guido Makransky	
25	The Collaboration Principle in Multimedia Learning	304
	Jeroen Janssen, Femke Kirschner, and Paul A. Kirschner	

26	The Animation Composition Principle in Multimedia Learning	313
	Richard K. Lowe, Wolfgang Schnotz, and Jean-Michel Boucheix	
27	The Emotional Design Principle in Multimedia Learning	324
	Jan L. Plass and Chris Hovey	

PART VII PRINCIPLES BASED ON GENERATIVE ACTIVITY IN MULTIMEDIA LEARNING

28	The Generative Activity Principle in Multimedia Learning.....	339
	Logan Fiorella and Richard E. Mayer	
29	The Mapping Principle in Multimedia Learning.....	351
	Olusola O. Adesope, John C. Nesbit, and NarayanKripa Sundararajan	
30	The Drawing Principle in Multimedia Learning	360
	Detlev Leutner and Annett Schmeck	
31	The Imagination Principle in Multimedia Learning	370
	Claudia Leopold	
32	The Self-Explanation Principle in Multimedia Learning	381
	Micheline T. H. Chi	
33	The Guided Inquiry Principle in Multimedia Learning	394
	Ton de Jong	
34	The Feedback Principle in Multimedia Learning	403
	Cheryl I. Johnson and Matthew D. Marraffino	
35	The Learner Control Principle in Multimedia Learning	418
	Katharina Scheiter	
36	The Cognitive Load Self-Management Principle in Multimedia Learning	430
	Shirong Zhang, Bjorn de Koning, Shirley Agostinho, Sharon Tindall-Ford, Paul Chandler, and Fred Paas	

PART VIII MULTIMEDIA LEARNING WITH MEDIA

37	Multimedia Learning with Cognitive Tutors.....	439
	Kenneth Koedinger and Vincent Aleven	
38	Multimedia Learning with Animated Pedagogical Agents.....	450
	Fuxing Wang, Wenjing Li, and Tingting Zhao	
39	Multimedia Learning with Simulations.....	461
	Susanne P. Lajoie	
40	Multimedia Learning with Computer Games.....	472
	Richard E. Mayer	
41	Multimedia Learning with Instructional Video	487
	Logan Fiorella	
42	Multimedia Learning in Virtual and Mixed Reality	498
	Jocelyn Parong	
43	Multimedia Learning with Visual Displays	510
	Matthew T. McCrudden and Peggy N. Van Meter	

44	Multimedia Learning from Multiple Documents	521
	Jean-François Rouet and Anne Britt	
45	Multimedia Learning in e-Courses	537
	Ruth Colvin Clark	
46	Principles for Educational Assessment with Multimedia.....	552
	Marlit Annalena Lindner	
	Author Index	566
	Subject Index	583