

# Table of Contents

Contributors .....	vii
Preface .....	xi
Prologue .....	xv

## **Foundations and Methodologies of Mental Model Research .....1**

*Pablo Pirnay-Dummer and Dirk Ifenthaler*

1. The Fragmented Nature of Learning and Instruction .....	3
<i>Michael J. Spector</i>	
2. Using an Evidence-Based Approach to Assess Mental Models ...	23
<i>Valerie J. Shute and Diego Zapata-Rivera</i>	
3. Practical Solutions for the Diagnosis of Progressing Mental Models .....	43
<i>Dirk Ifenthaler</i>	
4. Constructing Mental Models during Learning from Science Text .....	63
<i>M. Mikkilä-Erdmann, M. Penttinen, E. Anto and E. Olkinuora</i>	
5. Progress in the Diagnostics of Mental Models .....	81
<i>Sabine Al-Diban</i>	

## **Model-Based Theories of Instruction .....103**

*Dirk Ifenthaler and Pablo Pirnay-Dummer*

6. Rendezvous with a Quantum of Learning .....	105
<i>Pablo Pirnay-Dummer</i>	
7. Externalizing Mental Models with Mindtools .....	145
<i>David Jonassen and Young Hoan Cho</i>	
8. Model-Centered Instruction, the Design and the Designer .....	161
<i>Andrew S. Gibbons</i>	

9. Realizing Model-Based Instruction .....	175
<i>Ulrike Hanke</i>	
<b>Engineering the Model Environment .....</b>	<b>187</b>
<i>Pablo Pirnay-Dummer and Dirk Ifenthaler</i>	
10. Developments in the Design of Instruction .....	189
<i>Sanne Dijkstra and Henny Leemkuil</i>	
11. Bridging a Gap between Psychology and Instructional Practice .....	211
<i>Andrei I. Podolskij</i>	
12. Model-Based Learning Environments .....	225
<i>Gerhard Weber</i>	
13. Model-Centered Learning and Instructional Design .....	247
<i>Patrick Blumschein</i>	
14. From Cognitive Theory to Instructional Practice: Technology and the Evolution of Anchored Instruction .....	277
<i>James W. Pellegrino and Sean Brophy</i>	
15. Complex Skills Development for Today's Workforce .....	305
<i>Tristan E. Johnson and Wen-hai D. Huang</i>	
<b>Index .....</b>	<b>327</b>

Understanding Models for Learning and Instruction:  
Essays in Honor of Norbert M. Seel  
Ifenthaler, D.; Pirnay-Dummer, P.; Spector, M. (Eds.)  
2008, XVIII, 330 p., Hardcover  
ISBN: 978-0-387-76897-7