Table of Contents

Foreword ........................................................................................................................................... xviii

Preface ................................................................................................................................................ xx

Section I
Defining the Context

Chapter I
A Simulation Primer ............................................................................................................................... 1
Katrin Becker, University of Calgary, Canada
James R. Parker, University of Calgary, Canada

Chapter II
Digital Simulation in Teaching and Learning .................................................................................... 25
Youngkyun Baek, Korea National University of Education, Republic of Korea

Chapter III
Virtual Spaces for Teaching and Learning ............................................................................................ 52
Peter R. Albion, University of Southern Queensland, Australia

Chapter IV
Computers and the End of Progressive Education ............................................................................. 68
David Williamson Shaffer, University of Wisconsin-Madison, USA

Section II
Design Considerations

Chapter V
Combining Instructional Design and Game Design ........................................................................... 87
Celina Byers, Bloomsburg University of Pennsylvania, USA
Chapter VI
The Narrative Event Diagram: A Tool for Designing Professional Simulations ......................................... 101
  Helyn Gould, University of Strathclyde, UK
  Michael Hughes, University of Strathclyde, UK
  Paul Maharg, University of Strathclyde, UK
  Emma Nicol, University of Strathclyde, UK

Chapter VII
Modeling Classroom Behaviors in Software Agents ...................................................................................... 119
  David Gibson, CurveShift, Inc., USA

Chapter VIII
Design Principles for Interactive Learning Environments with Embedded Formative Assessments ........................ 157
  Sara Dexter, University of Virginia, USA

Chapter IX
Hybrid 2D/3D Development of Interactive Simulations ............................................................................... 171
  Penny deByl, University of Applied Sciences, The Netherlands

Chapter X
Using Case Studies as the Narrative to Game Design and Development ...................................................... 188
  Len Annetta, North Carolina State University, USA
  James Minogue, North Carolina State University, USA
  Shawn Holmes, North Carolina State University, USA
  Meng-Tzu Cheng, North Carolina State University, USA
  Elizabeth Folta, North Carolina State University, USA
  Marta Klesath, North Carolina State University, USA

Section III
  Case Studies Focused on Improving Teaching

Chapter XI
Exploring Teacher Problem Solving Using Simulation ................................................................................. 208
  Mark Girod, University of Western Oregon, USA

Chapter XII
A Simulation for Improving Teachers’ Motivational Skills ........................................................................ 227
  Donguk Cheong, Korea National University of Education, Republic of Korea
  Bokyeong Kim, University of Virginia, USA
Chapter XIII
Designing Commercial Simulations for Teachers ................................................................. 249
  Damión Piccolo, AndenSolutions.com, USA
  Anna Oskorus, TiER1 Performance Solutions, USA

Chapter XIV
Simulating Teaching Experience with Role-Play ............................................................... 273
  Scott J. Warren, University of North Texas, USA
  Richard A. Stein, Indiana University-Bloomington, USA

Chapter XV
simClass: Simulate Your Class Before You Teach ........................................................... 289
  Bokyeong Kim, University of Virginia, USA
  Donguk Cheong, Korea National University of Education, Republic of Korea

Chapter XVI
Using Digital Games to Develop Ethical Teachers ......................................................... 308
  Karen Schrier, Columbia University, USA
  Charles K. Kinzer, Columbia University, USA

Chapter XVII
Modeling in the Classroom Using Squeak Etoys .......................................................... 334
  Shelby P. Morge, University of North Carolina Wilmington, USA

Section IV
Case Studies Focused on Learning

Chapter XVIII
Alternate Reality Games as Simulations ................................................................. 351
  Mary Jo Dondlinger, Richland College, USA
  Scott Joseph Warren, University of North Texas, USA

Chapter XIX
Supporting Open-Ended Assignments ........................................................................ 368
  Caitlin Kelleher, Washington University, USA

Chapter XX
Cognitive Apprenticeship Inspired Simulations ......................................................... 381
  Kay Kyeongju Seo, University of Cincinnati, USA
  Aimee Byk, University of Cincinnati, USA
  Chris Collins, University of Cincinnati, USA
Chapter XXI
Learning by Doing via Game Making ................................................................. 394
   Jae Yeob Jung, Korea National University of Education, Republic of Korea
   Hyung Sung Park, Korea National University of Education, Republic of Korea

Section V
Engaging Graduate Students in Development

Chapter XXII
Modding Neverwinter Nights Into Serious Games.............................................. 408
   Christian Sebastian Loh, Southern Illinois University Carbondale, USA
   Jae Hwan Byun, Southern Illinois University Carbondale, USA

Chapter XXIII
Changing Middle School Science through STEAM......................................... 427
   Teresa Franklin, Ohio University, USA
   David Chelberg, Ohio University, USA
   Chang Liu, Ohio University, USA

Section VI
Epilogue

Chapter XXIV
Complex Systems Concepts in Simulations ..................................................... 452
   David Gibson, CurveShift, Inc., USA

Compilation of References .............................................................................. 462

About the Contributors .................................................................................... 502

Index............................................................................................................... 510