Contents

List of Figures and Tables xii

Contents on the Web xv

Foreword by Kevin Kruse xvii

Preface xxi

Acknowledgments xxvii

About the Author xxix

Contributors xxxi

Chapter 1 What Is Gamification? 1

Chapter Questions 1

Introduction 2

Gamification in Action 2

What Is a Game? 6

What Is Gamification? 9

What Gamification Is Not 12

Gamification Versus Serious Games 15

Growth of Gamification 18

Who Is Using Gamification 19

Implications and Importance to the Future of Learning 22

Key Takeaways 23

Chapter 2 It's in the Game: Understanding Game Elements 25

Chapter Questions 25

Introduction 26

Abstractions of Concepts and Reality 26

Goals 28

Rules 29

Conflict, Competition, or Cooperation 31

Time 32

Reward Structures 33

Feedback 35

Levels 37

Storytelling 41

Curve of Interest 45

Aesthetics 46

Replay or Do Over 48

Implications and Importance to the Future of Learning 49

Key Takeaways 50

Chapter 3 Theories Behind Gamification of Learning and Instruction 51

Chapter Questions 51

Introduction 51

Motivation 52
The Taxonomy of Intrinsic Motivation 58
Self-Determination Theory 63
Distributed Practice 65
Scaffolding 66
Episodic Memory 67
Cognitive Apprenticeship 69
Social Learning Theory 70
Flow 71
Key Takeaways 74

Chapter 4 Research Says . . . Games Are Effective for Learning 75

Chapter Questions 75
Introduction 76
Game Research 76
Randel's Meta-Analysis 77
Wolfe's Meta-Analysis 80
Hays' Meta-Analysis 80
Vogel's Meta-Analysis 82
Ke's Qualitative Meta-Analysis 83
Sitzmann's Meta-Analysis 85
Elements of Games 88
Key Takeaways 101

Chapter 5 Leveling Up: What Gamification Can Do 105

Chapter Questions 105
Introduction 106
Improving Surgeon Hand-Eye Coordination 106

Solving Problems 108
Teaching Higher Order Skills 110
Thinking the Unthinkable 112
Thinking Like Your Opponent 113
Engaging Learners in a Live Classroom 115
Helping People Lose Weight 116
Making Physical Therapy More Enjoyable 119
Influencing Pro-Social Behavior 119
Testing Knowledge and Performance 123
Good for Young and Old 125
Key Takeaways 126

Chapter 6 Achiever or Killer? Player Types and Game Patterns 127

Chapter Questions 127
Introduction 128
Types of Play 128
Player Skill Levels 131
Bartle's Player Types 132
Caillois' Patterns of Play 137
Game Interactions 141
Key Takeaways 142

Chapter 7 Applying Gamification to Problem Solving 143

Chapter Questions 143
Introduction 144
Differences Between Novices and Experts 145
Turning Novices into Experts 147
Preparing Firefighters 158

Gamification of Problem Solving 161

Key Takeaways 164

Chapter 8 Applying Gamification to Learning Domains 165

Chapter Questions 165

Introduction 166

Declarative Knowledge 167

Conceptual Knowledge 171

Rules-Based Knowledge 177

Procedural Knowledge 181

Soft Skills 185

Affective Domain 185

Psychomotor Domain 187

Key Takeaways 190

Chapter 9 Managing the Gamification Design Process 193

Chapter Questions 193

Introduction 194

Development Process: ADDIE vs. Scrum 195

Team 202

Design Document 205

Paper Prototyping 216

Key Takeaways 217

Chapter 10 Congratulations! Selecting the Right In-Game Achievements, by Lucas Blair 219

Chapter Questions 219

Introduction 220

Measurement vs. Completion Achievements 220
Boring vs. Interesting Tasks 222
Achievement Difficulty 223
Goal Orientation 224
Expected vs. Unexpected Achievements 225
When Achievement Notification Occurs 227
Achievement Permanence 228
Who Can See Earned Achievements? 229
Negative Achievements 230
Achievements as Currency 231
Incremental and Meta Achievements 232
Competitive Achievements 233
Non-Competitive Cooperative Achievements 235
Key Takeaways 236

Chapter 11 Perspective of a Gamer, by Nathan Kapp 239

Chapter Questions 239
Introduction 240
Gamer Generation 240
Mario Kart: Thinking Outside the Box 240
Madden Football: Analyzing Problems 241
RuneScape: The Art of the Deal 243
Civilization Revolution: Balancing Resources 244
Games vs. School 245
Key Takeaways 246

Chapter 12 Casual Game Site: DAU Case Study, by Alicia Sanchez 247

Chapter Questions 247

Introduction 248

Games and Simulations in the Curriculum 248

DAU Casual Games Initiative 249

Games Portal 254

Key Takeaways 255

Chapter 13 Alternate Reality Games for Corporate Learning, by Koreen Olbrish 257

Chapter Questions 257

Introduction 258

Zombie Apocalypse 258

What Is an ARG? 259

ARG Terminology 260

Design Principles for ARGs 261

Potential of ARGs 263

Key Takeaways 264

Chapter 14 If You Want to Learn More, Play Games 265

Chapter Questions 265

Introduction 266

Pick a Card, Any Card—A Game of Phones 266

Survival Master 271

The Virtue of Gamification 274

Next Steps 275

Key Takeaways 276

Glossary 277

Notes 285

Index 297