

The Gamification of Learning and Instruction:  
Game Based Methods and Strategies for Training and Education

Author Karl M. Kapp

TABLE OF CONTENTS

**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