

CONTENTS

Preface	vii
About the Authors	xi

CHAPTER ONE

Introduction to the Instructional Design Process **xxvi**

Getting Started	xxvi
Questions to Consider	1
Why Instructional Design?	2
Why Do Instructional Design?	3
What Are the Benefits of Instructional Design?	3
Applying the Process to Both Academic Education and Training Programs	4
What is Instructional Design?	6
Education versus Training	7
Instructional Design and Human Performance Technology	8
Contexts for Instructional Design	8
Premises Underlying the Instructional Design Process	10
Overview of Our Design Model	14
Instructional Problems	15
Learner and Context	15
Task Analysis	15
Instructional Objectives	16
Content Sequencing	16
Instructional Strategies	16
Designing the Message	16
Development of the Instruction	16
Evaluation Instruments	17
Ongoing Processes	17
Who's Who in the Instructional Design Process	18
Instructional Designer	18
Subject-Matter Expert (SME)	18
Evaluator	18
Answering The Critics	21
Questions . . . Questions . . . Questions	23
Summary	24
The ID Process	24
Application	25
Answers	25
References	25

CHAPTER TWO**Identifying the Need for Instruction 28**

Getting Started	28
Questions to Consider	29
Is Instruction the Answer?	30
Needs Assessment	32
Types of Needs and Data Sources	33
Conducting a Needs Assessment	37
Example Needs Assessment Plan	40
Goal Analysis	41
Six Steps of Goal Analysis	42
Comparing Goal Analysis and Needs Assessment	44
Performance Assessment	45
Summary	46
The ID Process	47
Applications	48
Answers	49
Quality Management	50
Instructional Design: Decisions and Choices	50
References	51

CHAPTER THREE**Learner and Contextual Analysis 54**

Getting Started	54
Questions to Consider	55
Types of Learner Characteristics	57
General Characteristics	57
Specific Entry Characteristics	58
Learning Styles	58
Academic Information	59
Personal and Social Characteristics	60
Culturally Diverse Learners	61
Learners with Disabilities	62
Adult Learners	63
Contextual Analysis	65
Types of Context	65
Conducting a Contextual Analysis	68
Summary	69
The ID Process	70

Application	70
Answers	71
Quality Management	71
Instructional Design: Decisions and Choices	71
References	73

CHAPTER FOUR

Task Analysis **76**

Getting Started	76
Questions to Consider	77
Task Analysis	78
Preparing to Conduct a Task Analysis	79
Topic Analysis	79
Content Structures	80
Analyzing a Topic	82
Procedural Analysis	84
Going Beyond Procedural Analysis	88
The Critical Incident Method	91
Conducting a Task Analysis	94
Serving as Your Own SME	95
Techniques for Gathering Data	95
Recording Methods	96
Summary	97
The ID Process	97
Application	98
Answer	98
Quality Management	101
Instructional Design: Decisions and Choices	101
References	104

CHAPTER FIVE

Instructional Objectives **106**

Getting Started	106
Questions to Consider	107
Function of Objectives	108
Three Objective Domains	108
Cognitive Domain	109
Psychomotor Domain	110

Affective Domain	111
Interrelation of Domains	111
Developing Instructional Objectives	112
The Basis for Objectives	113
Approaches to Objectives	113
Writing Objectives in the Cognitive Domain	113
Behavioral Objectives	114
Optional Parts	114
Cognitive Objectives	117
Writing Objectives for the Psychomotor Domain	121
Writing Objectives for the Affective Domain	122
Classifying Objectives	124
Mager and Beach's Model	124
Expanded Performance-Content Matrix Model	125
Difficulties in Writing Objectives	127
Pros and Cons of Writing Objectives	127
Summary	128
The ID Process	129
Application	129
Answers	130
Quality Management	130
Instructional Design: Decisions and Choices	131
References	133

CHAPTER SIX

Designing the Instruction: Sequencing 134

Getting Started	134
Questions to Consider	135
The Posner and Strike Sequencing Schemes	136
Learning-Related Sequencing	137
World-Related Sequencing	138
Concept-Related Sequencing	140
Elaboration Theory Sequencing	143
Content Expertise Sequencing	143
Task Expertise Sequencing	143
From Objectives to Sequencing	143
Summary	144
The ID Process	144
Application	144
Answers	145

Quality Management	145
Instructional Design: Decisions and Choices	145
References	147

CHAPTER SEVEN

Designing the Instruction: Strategies **148**

Getting Started	148
Questions to Consider	149
Why Instructional Strategies?	150
Designing an Instructional Strategy	150
Foundations for the Prescriptions	151
Generative Strategies	152
Prescriptions for Instructional Strategies	152
Prescriptions for Teaching Facts	155
Prescriptions for Teaching Concepts	157
Prescriptions for Teaching Principles and Rules	159
Prescriptions for Teaching Procedures	160
Prescriptions for Teaching Interpersonal Skills	163
Prescriptions for Teaching Attitudes	165
Summary	165
The ID Process	166
Applications	167
Answers	167
Quality Management	168
Instructional Design: Decisions and Choices	168
References	171

CHAPTER EIGHT

Designing the Instructional Message **174**

Getting Started	174
Questions to Consider	175
Preinstructional Strategies	176
Pretests	177
Objectives	178
Overviews	179
Advance Organizers	179
Message Design for Text	180
Signaling the Text's Schema	181
Explicit Signals	182

Typographical Signals	182
Pictures and Graphics in Instruction	187
Effectiveness	187
The Function of Pictures	188
Using Pictures in Instruction	190
Summary	194
The ID Process	194
Applications	195
Answers	195
Quality Management	196
Instructional Design: Decisions and Choices	196
References	198

CHAPTER NINE

Developing Instructional Materials **202**

Getting Started	202
Questions to Consider	203
Starting the Development of the Instruction	204
Staying Focused	204
Heuristics for Developing Instruction	206
Make It Concrete	206
Control the Step Size	207
Use Appropriate Pacing	208
Maintain Consistency	209
Use Cues	209
Putting Pen to Paper or Fingers to Keyboard	209
Preinstructional Strategy	210
Initial Presentation	210
Generative Strategy	210
Transitions	211
Cognitive Load	211
Group Presentations	220
Strengths	221
Limitations	221
Applications	222
Guidelines for Effective Lecturing	222
Distance Education	224
Self-Paced Learning	226
Strengths	227
Limitations	228
Guidelines for Effective Learning	228

Design Checklist	229
Changing Roles	230
Small-Group Formats	230
Strengths	230
Limitations	231
Formats	231
Summary	234
The ID Process	235
Application	235
Answer	236
Quality Management	236
Instructional Design: Decisions and Choices	236
References	237

CHAPTER TEN

Design Considerations for Technology-Based Instruction 240

Getting Started	240
Questions to Consider	241
Affordances of Technology-Based Instruction	242
Individualized Computer- and Web-Based Instruction	243
Drill-and-Practice	243
Tutorials	244
Simulations	244
Games	245
Hypermedia	245
Design Considerations for Individualized Computer and Web-Based Instruction	246
Interface Design	246
Learner Control	247
Feedback	249
Remediation	251
Designing Interactions	252
Using Multimedia	256
Design Considerations for Group-Based Distance Instruction	260
An Individualized Approach to Distance Instruction	260
A Group Approach to Distance Instruction	261
Avoiding the Shovelware Trap	261
Summary	263
The ID Process	263
Application	263
Answer	263

Quality Management	264
Instructional Design: Decisions and Choices	264
References	266

CHAPTER ELEVEN

The Many Faces of Evaluation **270**

Getting Started	270
Questions to Consider	271
Purposes of Evaluation	272
Formative Evaluation	272
Summative Evaluation	275
Confirmative Evaluation	276
Relationship Among Formative, Summative, and Confirmative Evaluations	277
The Role of Instructional Objectives	277
Multiple Data Sources Equal Increased Information	277
Processes and Products	278
Time of Testing	278
When to Evaluate	278
Relationship Between Evaluation and Instructional Objectives	279
Matching Measures to Objectives	279
Suggested Measures for Alternative Outcomes	280
Validity and Reliability of Tests	280
Validity	280
Reliability	284
Relationship Between Validity and Reliability	285
Standards of Achievement	286
Relative Standards	286
Absolute Standards	287
Measurement Issues	288
Standards Versus Conventional Measurement	289
Student Self-Evaluation	291
Pretesting	291
Testing for Prerequisites	291
Testing for Improvement in Performance	292
Benefits of Pretesting	293
Whether or Not to Pretest	294
Summary	294
The ID Process	295
Applications	296
Answers	297

Instructional Design: Decisions and Choices	297
References	299

CHAPTER TWELVE

Developing Evaluation Instruments 300

Getting Started	300
Questions to Consider	301
Testing Knowledge	302
The Relationship between Evaluation and Instructional Objectives	302
Objective Tests	303
Constructed-Response Tests	309
Testing Skills and Behavior	315
Preliminary Considerations	318
Types of Skill/Behavior Assessments	319
Attitudes	330
Two Uses of Attitude Assessment	330
Observation/Anecdotal Records	331
Assessment of Behavior	332
Questionnaire/Survey	332
Interview	334
Summary	335
The ID Process	336
Applications	337
Answers	337
Instructional Design: Decisions and Choices	338
References	340

CHAPTER THIRTEEN

Using Evaluation to Enhance Programs: Conducting Formative and Summative Evaluations 342

Getting Started	342
Questions to Consider	343
A Basic Model for Formative Evaluation	344
Purposes	344
Audience	345
Issues	345
Resources	346
Evidence	346

Data-Gathering Techniques	346
Analysis	347
Reporting	349
Types of Formative Evaluation	350
Connoisseur-Based Studies	350
Decision-Oriented Studies	352
Objectives-Based Studies	352
Public Relations-Inspired Studies	352
Constructivist-Oriented Process	353
Stages of Formative Evaluation	353
Summative Evaluation: Determining Program Outcomes	354
Evaluation Versus Research	355
Program Effectiveness	356
Summative Evaluation Methods	358
Program Efficiency	359
Learner Time Required	360
Faculty and Staff Required	360
Use of Facilities	361
Program Costs	361
Developmental Costs	362
Operational Costs	363
Instructional Cost Index	364
Confirmative Evaluation: Determining Outcomes Over Time	366
Approaches to Confirmative Evaluation	367
Educational Programs	368
Training Programs	369
Reporting Results of Summative and Confirmative Evaluations	371
Summary	371
The ID Process	373
Applications	374
Answers	374
Instructional Design: Decisions and Choices	374
References	376

CHAPTER FOURTEEN

Learning Theory and Instructional Theory

378

Getting Started	378
Questions to Consider	379
Introduction	380

Learning Theory	381
Instructional Theory	382
Instructional Design Model	382
Applications of Instructional Theories and Models	383
Types of Learning Theory	384
Cognitive Theory	388
Summary	397
The ID Process	397
Application	398
Answers	399
Instructional Design: Decisions and Choices	399
References	400

CHAPTER FIFTEEN

Planning for Instructional Implementation **404**

Getting Started	404
Questions to Consider	405
Planned Change	406
Innovation	406
Communication	408
Time	408
Social System	408
The CLER Model	409
Configuration	409
Linkages	410
Environment	410
Resources	411
Planning The Implementation with The CLER Model	413
Configuration	414
Linkages	414
Environment	414
Resources	414
Analysis of the Situation	415
Implementation Plan	415
Developmental Stages and Information Decision Process Models	416
Implementation Decisions	417
Program Promotion	417
Instructional Delivery	417
Materials	418

Instructors	419
Scheduling	420
Instructor Training	420
Role of Supervisors	420
Summary	420
The ID Process	421
Applications	421
Answers	422
Instructional Design: Decisions and Choices	422
References	423

CHAPTER SIXTEEN

Instructional Design Project Management 424

Getting Started	424
Questions to Consider	425
Project Management	426
Project Planning	426
Management Activities	431
Completing the Project	433
Project Agreement and Proposal Preparation	433
Instructional Design Shortcuts	438
Flexibility of the Instructional Design Process	439
Instructional Design in Organizations	439
Purposes and Role	439
Placement within the Organization	440
Budgetary Support	440
Working with the Subject-Matter Expert and Consultants	441
The Subject-Matter Expert in Different Roles	442
Working with Other Consultants and Team Members	443
Legal Considerations in ID Project Management	444
Contracts	444
State and Federal Mandates	444
Common Legal Problems in Training	445
Summary	446
The ID Process	447
Applications	447
Answers	448
Instructional Design: Decisions and Choices	448
References	449

APPENDIX A Sample Instructional Design Documentation	451
APPENDIX B A Sample Instructional Unit	463
Glossary	473
Index	477