Contents

	Preface	X1
	Acknowledgments	xiii
1.	The Need for Taxonomic Development in the Field	
	of Human Performance	1
	Problems in Human Performance Research	_
	and Application	2
	Usefulness of a Human Performance Taxonomy	5
	Objectives of the Book	9
	References	14
2.	Role of Taxonomies in Scientific Development	17
	The Science of Classification	17
	The Role of Taxonomies in the Biological Sciences	25
	The Role of Classification in Psychological Science	30
	References	38
3.	Conceptual Bases for Classifying Human Task	
	Performance	42
	Classification: Process and Product	43
	Purpose of Classification	44
	Bases of Classification	48
	References	59
4	Methodological Issues in Developing and Evaluating	
-7.	Classificatory Systems	64
	Procedures for Classification	64
	Defining the Descriptor Domain	65
	betining the bescriptor bolliani	03

i			Contents

	O continued D.C. W. or Oh. W. W. I.P. P. 1979	
	Operational Definitions, Objectivity, and Reliability Oualitative and Ouantitative Classification	66
	Criteria for Evaluating Classificatory Systems	67 82
	References	82 86
	References	80
5.	Classificatory Systems for Describing Human Tasks:	
	Behavior Description	90
	Berliner: Hierarchical Model—Behaviors, Activities, and Processes	93
	Willis: Input–Output Hierarchical Model	97
	Lumsdaine: Five Learning Categories	98
	Chambers: Error Performance Categories	99
	The "Meister Taxonomy"	100
	Bennett: Semantic Classificatory Approach	100
	Christal: Comprehensive Occupational Data Analysis	102
	Program (CODAP)	104
	McCormick: Position Analysis Questionnaire	106
	Fine: Functional Job Analysis	108
	Stone and Yoder: Job Information Matrix System	113
	Cunningham: Occupation Analysis Inventory	114
	Classificatory Systems for Supervisory and Managerial	
	Performance	117
	References	122
6	Classificatory Systems for Describing Human Tasks:	
υ.	Behavior Requirements	127
	R. B. Miller: Task Strategies Approach	127
	Folley: Human Activities Defining Training Needs	127
	E. E. Miller: Four-Category Classificatory System	127
	for Perceptual–Motor Tasks	131
	Alluisi: Seven Critical Functions Assessed by Multiple-Task	131
	Performance Battery	133
	Gagné: Categories of Learning Processes	135
	Primoff: Job Element Method	138
	Hunt: Cognitive Correlates Approach	140
	Carroll: Coding Scheme for Cognitive Tasks Appearing	
	in Psychometric Tests	141
	Sternberg: Componential Metatheory and Analysis	142
	Posner: Taxonomy of Information-Processing Tasks	146
	Levine and Teichner: Information-Theoretic Approach	148
	Teichner and Whitehead: Criterion Measures Approach	149
	References	150

Contents vii

7. Classificatory Systems for Describing Human Tasks:	
Abilities and Task Characteristics	153
Ability Requirements	153
Guilford: Structure of Intellect	154
French, Ekstrom, and Price: Kit	
of Reference Tests for Cognitive Factors	159
Harman: Cognitive and Temperament Factors	160
Fleishman: Ability Requirements Approach	162
McCormick: Position Analysis Questionnaire (PAQ)—	
Job Dimensions from PAQ Attribute Profile Data	167
Cunningham: Occupation Analysis Inventory (OAI)—	
Job Dimensions From OAI	167
Task Characteristics	169
Cotterman: Task Classificatory Scheme	
to Generalize Principles of Human Learning	169
Fitts: Two Classificatory Systems for Skilled Tasks	171
Stolurow: Task Characteristics and Learning Principles	172
Hackman and Oldham: Job Characteristics Model of Work	
Motivation and the Job Diagnostic Survey	172
Farina and Wheaton: Task Characteristics Approach	176
Implications for Future Taxonomic Development	177
References	180
8. Data Bases and Taxonomic Development Relevant Aspects of Information Science	183 184
Issues in Data Base Development	191
Development of Human Performance Data Bases	202
References	218
9. The Criterion Measures Approach	221
The Classificatory System	221
- ·	224
Evaluation of the System	241
References	241
10. The Information-Theoretic Approach	243
Definitions of Key Terminology in the Information-	
Theoretic Approach	243
Relationship of the Information-Theoretic Approach	
to Information-Processing Theory	254
Evaluation of the Information-Theoretic Model	255
Practical Applications of the Information-Theoretic	

	Relationships to Other Provisional Classificatory Systems	263
	References	266
11.	. The Task Strategies Approach	268
	Task Analysis versus Task Description	
	Behavioral Structure of a Task	268
	Evaluation of Miller's Preliminary Formulation	270
	of the Behavioral Structure of a Task	276
	A Transactional Definition of Task	276 277
	Dimensions for Categorizing Task Information	
	Task Functions: Development of a Systems Task	279
	Vocabulary	283
	Guidelines and Procedures for Invention or Adoption	
	of Functional Categories	284
	Work Strategies: Behavior and Task Strategies	290
	Practical Applications of the Task Strategies Approach	301
	Evaluation of the Task Strategies Approach	303
	References	304
12.	The Ability Requirements Approach	306
	Conceptual Background	306
	Derivation of Human Abilities	308
	Development of Ability Dimensions and Measurement	500
	Systems	312
	Recent Developments	327
	Evaluating the Utility of Ability Requirements	
	in Integrating Research Data	332
	Predicting Learning and Performance Levels	336
	Development of Laboratory Tasks Standardized by Ability	
	Measured	340
	Utility of the Abilities Classificatory System	344
	Summary Statement	346
	References	350
13.	The Task Characteristics Approach	354
	Development of the Task Characteristics System	355
	Reliability of the Measurement System	359
	Task Characteristic Correlates of Performance	365
	Correlates of Learning and Training Effectiveness	373
	Current Status	383
	References	383

Contents ix

14.	Taxonomic Developments in Related Areas	386
	Clinical Classification	386
	Personality Classification	389
	Classificatory Systems Based on Biographical Data	403
	Taxonomies of Environments and Situations	405
	Taxonomies in Education	407
	Taxonomies of Organizational Behavior	409
	Taxonomies of Work Motivation	411
	A Taxonomy of Team Functions	415
	Summary Comments	418
	References	418
15.	Conclusion	424
	Overview	424
	Linking Abilities and Task Requirements	430
	Concluding Statement	436
	References	436
	Appendix A: Miller's Terminology: Definitions for the 25 Task Functions Involved in a Generalized Information-Processing System	438
	Appendix B: Updated Definitions for the Ability Categories in Recent Forms of the Manual for the Ability Requirements Scales (MARS)	461
	Appendix C: Tasks Representing Different Ability Categories	465
	Appendix D: Task Characteristic Rating Scales	474
	Author Index	495
	Subject Index	503