

# CONTENTS

*Foreword*, ROBERT M. GAGNÉ, xi

*Preface*, xiii

*part one:*  
**FUNDAMENTALS OF INSTRUCTIONAL DESIGN, 1**

Introduction, 1

Definition of Instructional Design, 5

*The Nature of Instruction*, STEPHEN M. COREY, 5

*The Design of Instruction*, ROBERT GLASER, 18

Models for Instructional Design, 38

*A Systems Approach to Instruction*, LAWRENCE M. STOLUROW, 38

*Components of a Cybernetic Instructional System*,

M. DAVID MERRILL, 48

Instructional Design in Teacher Training, 55

*Instructional Design: A New Emphasis in Teacher Training*,

M. DAVID MERRILL, 55

*part two:*  
**ANALYZING THE CHARACTERISTICS OF  
SUBJECT MATTER COMPETENCE, 67**

Introduction, 67

Instructional Objectives, 72

|   |                      |
|---|----------------------|
| <i>The Use of Objectives in Instruction,</i>                    |                      |
| HARRY L. AMMERMAN AND WILLIAM H. MELCHING,                      | 72                   |
| <i>The Reasons for Specifying Objectives,</i>                   | ROBERT M. GAGNÉ, 81  |
| <i>Identifying Objectives: Task Description,</i>                |                      |
| ROBERT M. GAGNÉ,  | 86                   |
| <i>Some Persistent Questions on the Defining of Objectives,</i> |                      |
| RALPH W. TYLER,   | 89                   |
| <i>Instructional and Expressive Educational Objectives,</i>     |                      |
| ELLIOT W. EISNER,   | 97                   |
| <br>The Analysis of Instructional Objectives,                   | 102                  |
| <i>The Design of Optimal Conditions of Instruction,</i>         |                      |
| ROBERT M. GAGNÉ,  | 102                  |
| <i>Learning Hierarchies,</i>                                    | ROBERT M. GAGNÉ, 118 |
| <i>Testing the Effectiveness of Curricula,</i>                  | ROBERT M. GAGNÉ, 133 |

*part three:*

**DIAGNOSING PREINSTRUCTIONAL  
BEHAVIOR, 137**

|  |     |
|--|-----|
| Introduction,  | 137 |
| <br>Individualization of Instruction,                                | 139 |
| <i>How Can Instruction be Adapted to Individual Differences?</i>     |     |
| LEE J. CRONBACH,   | 139 |
| <i>Instructional Methods and Individual Differences,</i>             |     |
| JOHN B. CARROLL,   | 153 |
| <i>Two Phases of Instruction: Pretutorial and Tutorial,</i>          |     |
| LAWRENCE M. STOLUROW,  | 156 |
| <i>A Cybernetic Modification Scheme for an Instructional System,</i> |     |
| MICHAEL C. CLARK AND M. DAVID MERRILL,                               | 164 |

*part four:*

**CARRYING OUT THE INSTRUCTIONAL  
PROCESS, 171**

|  |     |
|--|-----|
| Introduction,                          | 171 |
| <br>Classes of Instructional Outcomes, | 173 |

|  |  |
|--|--|
| <i>Necessary Psychological Conditions for Defining Instructional Outcomes,</i> |  |
|  | M. DAVID MERRILL, 173                        |
| Emotional Behavior, 185  |  |
| <i>A Behavior Technology Exists—Here and Now,</i>                              |  |
|  | LLOYD HOMME, 185                             |
| Psychomotor and Memorization Behavior, 196                                     |  |
| <i>Paradigms for Psychomotor Instruction,</i>                                  |  |
|  | M. DAVID MERRILL, 196                        |
| <i>Mathetics: The Technology of Education,</i>                                 |  |
|  | THOMAS F. GILBERT, 214                       |
| Complex Cognitive Behavior, 264  |  |
| <i>The Teaching of Concepts and Chains,</i>                                    |  |
|  | FRANCIS MECHNER, 264 ✓                       |
| <i>Conceptual Learning and Instructional Design,</i>                           |  |
|  | SUSAN M. MARKLE AND PHILIP W. TIEMANN, 284 ✓ |
| <i>The Learning of Concepts,</i>   | ROBERT M. GAGNÉ, 296                         |
| <i>The Learning of Principles,</i>   | ROBERT M. GAGNÉ, 303 ✓                       |
| <i>Human Problem Solving: Internal and External Events,</i>                    |  |
|  | ROBERT M. GAGNÉ, 315                         |

*part five:*

**MEASURING LEARNING OUTCOMES, 327**

|   |
|---|
| Introduction, 327   |
| Criterion Referenced Measurement, 331   |
| <i>Proficiency Measurement: Assessing Human Performance,</i><br>ROBERT GLASER AND DAVID J. KLAUS, 331 |
| Measurement Conditions and Criteria, 357  |
| <i>Instructional Variables and Learning Outcomes,</i><br>ROBERT M. GAGNÉ, 357                         |