Contents

Preface xxi
Acknowledgments xxv
About the Authors xxvii

PART I Creating a Road Map: Big Ideas of Coaching, Teaching, and Learning

Chapter 1
COACHING FOR MATHEMATICAL PROFICIENCY 3

Leading for Mathematical Proficiency (LMP) Framework 3
Coaching Cycle 11
Getting Started 13

Chapter 2
IMPLEMENTING EFFECTIVE TEACHING 15

COACH'S DIGEST 15
Overview of Implementing Effective Teaching 16
Coaching Considerations for Professional Learning 19
Coaching Lessons From the Field 19
Coaching Questions for Discussion 21
Where to Learn More 23

COACH'S TOOLKIT 25
2.1 *Shifts in Classroom Practice* Self-Assessment 26
2.2 Essential Planning Questions for Effective Teaching 28
2.3 Practices, *Shifts*, and Zones (Oh My) 29
2.4 Mathematical Practices by Design 30
2.5 Lesson Plan Template 32
2.6 Mathematical Practice Look Fors 34
2.7 *Shifts in Classroom Practice* 36
2.8 Effective Teaching Look Fors 38
2.9 Noticing Mathematical Practices 40
2.10 Mapping Teaching Moves to *Shifts in Classroom Practice* 41
2.11 Effective Teaching of Mathematics 42

PART II Exploring Zones on the Journey: Professional Learning Focus Areas

Chapter 3
CONTENT KNOWLEDGE AND WORTHWHILE TASKS 45

COACH'S DIGEST 45
Overview of Content Knowledge and Worthwhile Tasks 46
Coaching Considerations for Professional Learning 50
Coaching Lessons From the Field 51

Connecting to the Leading for Mathematical Proficiency (LMP) Framework 51
Coaching Questions for Discussion 55
Where to Learn More 57
COACH'S TOOLKIT 59
3.1 Connecting *Shifts* to Content and Worthwhile Tasks Self-Assessment 60
3.2 Connecting *Shifts* to Content and Tasks 62
3.3 Focus on Fluency 63
3.4 P.I.C.S. Page 64
3.5 Analyzing Level of Cognitive Demand 65
3.6 Worthwhile Task Analysis 66
3.7 Developing Mathematical Proficiency 67
3.8 Implementing Cognitively Demanding Tasks 68
3.9 Impact on Students' Emerging Fluency 69
3.10 Reflecting on Task Implementation 70

Chapter 4
ENGAGING STUDENTS 71
COACH'S DIGEST 71
Overview of Engaging Students 72
Coaching Considerations for Professional Learning 74
Coaching Lessons From the Field 75
Connecting to the Leading for Mathematical Proficiency (LMP) Framework 75
Coaching Questions for Discussion 79
Where to Learn More 80
COACH'S TOOLKIT 83
4.1 Connecting *Shifts* to Engaging Students Self-Assessment 84
4.2 Total Participation Technique (TPT) Planning 86
4.3 Planning for Cooperative Groups 87
4.4 Engagement Techniques 88
4.5 Cooperative Groups Data Gathering 89
4.6 Engagement Techniques Discussion Prompts 90
4.7 Reflecting on Cooperative Groups 91
4.8 Analyzing Learning in Cooperative Groups 92

Chapter 5
QUESTIONING AND DISCOURSE 93
COACH'S DIGEST 93
Overview of Questioning and Discourse 94
Coaching Considerations for Professional Learning 97
Coaching Lessons From the Field 98
Connecting to the Leading for Mathematical Proficiency (LMP) Framework 99
Coaching Questions for Discussion 103
Where to Learn More 105
COACH'S TOOLKIT 107
5.1 Connecting *Shifts* to Questioning and Discourse Self-Assessment 108
5.2 High-Level Thinking Questions 109
5.3 Questioning Across Lesson Phases 110
5.4 Questioning Across Lesson Phases (Focus on Productive Struggle) 112
5.5 Bloom's Taxonomy (Revised) and Mathematical Knowledge 113
5.6 Questioning Patterns 114
5.7 Wait Time 115
5.8 Productive Discussions and Talk Moves 116
5.9 Question and Discourse Discussion Prompts 117
5.10 Reflecting on Bloom's Taxonomy (Revised) and Mathematical Knowledge 118

Chapter 6

FORMATIVE ASSESSMENT 119

COACH'S DIGEST 119

Overview of Formative Assessment 120

Coaching Considerations for Professional Learning 122

Coaching Lessons From the Field 123

Connecting to the Leading for Mathematical Proficiency (LMP) Framework 124

Coaching Questions for Discussion 128

Where to Learn More 130

COACH'S TOOLKIT 133

6.1 Connecting *Shifts* to Formative Assessment Self-Assessment 134

6.2 Planning for Five "Key Strategies" for Formative Assessment 135

6.3 Developing Questions to Target Misconceptions 136

6.4 Using Rubrics for Formative Assessment 137

6.5 Observing and Providing Feedback 138

6.6 Observing Students' Thinking 139

6.7 Observing Students' Representations 140

6.8 Brief Formative Assessment Interview 141

6.9 Five "Key Strategies" for Formative Assessment Data Collection 142

6.10 Using Rubrics for Formative Assessment 143

6.11 Analyzing Formative Assessment Key Strategies 144

Chapter 7

ANALYZING STUDENT WORK 145

COACH'S DIGEST 145

Overview of Analyzing Student Work 146

Coaching Considerations for Professional Learning 149

Coaching Lessons From the Field 149

Connecting to the Leading for Mathematical Proficiency (LMP) Framework 150

Coaching Questions for Discussion 153

Where to Learn More 154

COACH'S TOOLKIT 155

7.1 Connecting *Shifts* to Analyzing Student Work Self-Assessment 156

7.2 One Day/Many Artifacts Planning 158

7.3 Planning Task Implementation 159

7.4 Understanding Student Thinking 160

7.5 Analyzing One Student's Work 161

7.6 Analysis of Students' Misconceptions 162

7.7 Collaborative Analysis Protocol 163

Chapter 8

DIFFERENTIATING INSTRUCTION FOR ALL LEARNERS 165

COACH'S DIGEST 165

Overview of Differentiating Instruction 166

Coaching Considerations for Professional Learning 169

Coaching Lessons From the Field 170

Connecting to the Leading for Mathematical Proficiency (LMP) Framework 170

Coaching Questions for Discussion 173

Where to Learn More 174

COACH'S TOOLKIT 177

8.1. Connecting *Shifts* to Differentiated Instruction Self-Assessment 178

8.2 Student Diversity 180

8.3 Meeting Individual Needs 181

8.4 Different Ways to Differentiate a Lesson 182

8.5 Opening Closed Tasks 183

8.6 Focus on Five 184

8.7 Differentiating Instruction 185

8.8 Learning From Focus on Five 186

8.9 Impact of Open/Tiered/ Parallel Tasks 187

Chapter 9

SUPPORTING EMERGENT MULTILINGUAL STUDENTS 189

COACH'S DIGEST 189

Overview of Supporting Emergent Multilingual Students 190

Coaching Considerations for Professional Learning 193

Coaching Lessons From the Field 194

Connecting to the Leading for Mathematical Proficiency (LMP) Framework 195

Coaching Questions for Discussion 199

Where to Learn More 200

COACH'S TOOLKIT 203

9.1 Connecting *Shifts* to Supporting Emerging Multilingual Students Self-Assessment 204

9.2 Culturally Responsive Mathematics Instruction (CRMI) 206

9.3 Planning Strategies to Support Emergent Multilingual Students 207

9.4 Diagnostic Interview 208

9.5 Focus on Culturally Responsive Mathematics Instruction (CRMI) 209

9.6 Teaching to Support Emergent Multilingual Students 210

9.7 Reflecting on Support for Emergent Multilingual Students 211

9.8 Reflecting on Using a Diagnostic Interview 212

Chapter 10

SUPPORTING STUDENTS WITH SPECIAL NEEDS 213

COACH'S DIGEST 213

Overview of Supporting Students With Special Needs 214

Coaching Considerations for Professional Learning 216

Coaching Lessons From the Field 217

Connecting to the Leading for Mathematical Proficiency (LMP) Framework 217

Coaching Questions for Discussion 221

Where to Learn More 223

COACH'S TOOLKIT 225

10.1 Connecting *Shifts* to Supporting Students With Special Needs Self-Assessment 226

10.2 Challenges and Support Structures 228

10.3 Structuring a Lesson to Support Students With Special Needs 229

10.4 Effective Teaching for Students With Special Needs 230

10.5 Implementing Support Structures for Students With Special Needs 231

10.6 Reflecting on Effective Teaching for Students With Special Needs 232

10.7 Reflecting on Structuring a Lesson for Built-In Success 233

Part III Navigating a Successful Journey: Strategies and Tools for You, the Coach

Chapter 11

INTERACTING WITH COLLEAGUES 237

COACH'S DIGEST 237

Overview of Interacting With Colleagues 238

Building Trust 239

Coaching Lessons From the Field: Building Trust 240

Establishing Rapport 240

Coaching Lessons From the Field: Building Rapport 241

Listening 242

Coaching Lesson From the Field: Listening—Vignette 1 243
Coaching Lesson From the Field: Listening—Vignette 2 243
Coaching Lesson From the Field: Listening—Vignette 3 244
Paraphrasing 244
Coaching Lessons From the Field: Paraphrasing 245
Posing Questions 246
Coaching Lessons From the Field: Posing Questions 247
Where to Learn More 248

Chapter 12
PRESENTING PROFESSIONAL DEVELOPMENT 249

COACH'S DIGEST 249
Overview of Presenting Professional Development 250
Tips for Presenting Professional Development 251
Coaching Lessons From the Field 252
Where to Learn More 253
COACH'S TOOLKIT 255
12.1 Professional Development Overview Planning 256
12.2 Professional Development Planning Checklist 257
12.3 Professional Development Planning Template 258
12.4 Differentiating Professional Development 259
12.5 Evaluating Professional Development 260
12.6 Sample Professional Development Activity: Grouping Strategy (P.I.C.S. Page) 262
12.7 Sample Professional Development Activity: Grouping Strategy (Shape Partners) 263
12.8 Sample Professional Development Activity: Mathematical Practices Mini-Vignettes 265
12.9 Sample Professional Development Activity: Mathematical Practices Playing Cards 268
12.10 Sample Professional Development Activity: Questioning and the Mathematical Practices 271
12.11 Sample Professional Development Activity: Effective Teaching Practices 275

Chapter 13
FACILITATING PROFESSIONAL LEARNING COMMUNITIES 277

COACH'S DIGEST 277
Overview of Facilitating Professional Learning Communities 278
Tips for Facilitating Professional Learning Communities 279
Coaching Lessons From the Field 281
Where to Learn More 282
COACH'S TOOLKIT 285
13.1 Meeting Standards Self-Assessment and Reflection 286
13.2 Facilitator Proficiency Scale 287
13.3 Sample Facilitation Activity: Appreciative Inquiry Protocol 290
13.4 Sample Facilitation Activity: Paraphrasing 292
13.5 Sample Facilitation Activity: Inclusion Strategies 294
13.6 Sample Facilitation Activity: Task Talk Protocol 295

Appendix:
Bookmarks 301

Teaching Practices & *Shifts in Classroom Practice* Look Fors 302
Mathematical Practices & Student Look Fors 303
Glossary 305
References 309
Index 313