Contents

List of Videos ix

Acknowledgments xi

About the Authors xiii

Introduction 1

What Works Best 2

What Works Best When 7

The Path to Assessment-Capable Visible Learners in Mathematics 8

How This Book Works 11

Chapter 1. Teaching With Clarity in Mathematics 17

Components of Effective Mathematics Learning 21

Surface, Deep, and Transfer Learning 21

Moving Learners Through the Phases of Learning 26

Surface Learning in the Middle School Mathematics Classroom 27

Deep Learning in the Middle School Mathematics Classroom 29

Transfer Learning in the Middle School Mathematics Classroom 31

Differentiating Tasks for Complexity and Difficulty 32

Checks for Understanding 36

Profiles of Three Teachers 37
Joanna Halstrom 37
Luciana Fernandez 38
Jasvinder Singh 38
Reflection 40

Chapter 2. Teaching for the Application of Concepts and Thinking Skills 43

Ms. Halstrom and Circles and Cylinders 45
What Ms. Halstrom Wants Her Students to Learn 46
Learning Intentions and Success Criteria 47
Guiding and Scaffolding Student Thinking 49
Teaching for Clarity at the Close 53
Ms. Fernandez and Systems of Linear Equations 59
What Ms. Fernandez Wants Her Students to Learn 62
Learning Intentions and Success Criteria 64
Guiding and Scaffolding Student Thinking 65
Teaching for Clarity at the Close 69
Mr. Singh and Integers 78
What Mr. Singh Wants His Students to Learn 79
Learning Intentions and Success Criteria 80
Guiding and Scaffolding Student Thinking 81
Teaching for Clarity at the Close 85
Reflection 91

Chapter 3. Teaching for Conceptual Understanding 93

Ms. Halstrom and Circles and Cylinders 94
What Ms. Halstrom Wants Her Students to Learn 95
Learning Intentions and Success Criteria 97
Guiding and Scaffolding Student Thinking 99
Instructional Approaches That Promote Conceptual Understanding 102
Teaching for Clarity at the Close 104

Ms. Fernandez and Systems of Linear Equations 110
What Ms. Fernandez Wants Her Students to Learn 111
Learning Intentions and Success Criteria 112
Instructional Approaches That Promote Conceptual Understanding 115
Modeling Strategies and Skills 118
Teaching for Clarity at the Close 122

Mr. Singh and Integers 126
What Mr. Singh Wants His Students to Learn 127
Learning Intentions and Success Criteria 127
Guiding and Scaffolding Student Thinking 128
Instructional Approaches That Promote Conceptual Understanding 131
Teaching for Clarity at the Close 133

Reflection 138

Chapter 4. Teaching for Procedural Knowledge and Fluency 139

Ms. Halstrom and Circles and Cylinders 140
What Ms. Halstrom Wants Her Students to Learn 141
Learning Intentions and Success Criteria 142
Guiding and Scaffolding Student Thinking 143
Instructional Approaches That Promote Procedural Fluency 145
Teaching for Clarity at the Close 150

Ms. Fernandez and Systems of Linear Equations 155
What Ms. Fernandez Wants Her Students to Learn 155
Learning Intentions and Success Criteria 156
Modeling Strategies and Skills 158
Guiding and Scaffolding Student Thinking 161
Instructional Approaches That Promote Procedural Fluency 163
Teaching for Clarity at the Close 169

Mr. Singh and Integers 173
What Mr. Singh Wants His Students to Learn 173
Learning Intentions and Success Criteria 174

Modeling Strategies and Skills 175
Instructional Approaches That Promote Procedural Fluency 177
Teaching for Clarity at the Close 179
Reflection 185

Chapter 5. Knowing Your Impact: Evaluating for Mastery 187

What Is Mastery Learning? 188
Using Learning Intentions to Define Mastery Learning 189
Establishing the Expected Level of Mastery 190
Collecting Evidence of Progress Toward Mastery 194
Ensuring Tasks Evaluate Mastery 201
Ensuring Tests Evaluate Mastery 203
Feedback for Mastery 205
Task Feedback 207
Process Feedback 209
Self-Regulation Feedback 212
Conclusion 213
Final Reflection 216

Appendices

A. Effect Sizes 217
B. Teaching for Clarity Planning Guide 222
C. Learning Intentions and Success Criteria Template 227
D. A Selection of International Mathematical Practice or Process Standards 228

References 231

Index 233

List of Videos

Introduction

Video 1: What Is Visible Learning for Mathematics?

Video 2: Creating Assessment-Capable Visible Learners

Chapter 1. Teaching With Clarity in Mathematics

Video 3: What Does Teacher Clarity Mean in Middle School Mathematics?

Chapter 2. Teaching for the Application of Concepts and Thinking Skills

Video 4: Learning Intentions in an Application Lesson

Video 5: Finding the Right Application Task

Video 6: Differentiating in an Application Lesson

Video 7: Facilitating and Evaluating Learning in an Application Lesson

Video 8: Consolidating Deep and Transfer Learning in an Application Lesson

Chapter 3. Teaching for Conceptual Understanding

Video 9: Aligning a Conceptual Task to the Learning Intention

Chapter 4. Teaching for Procedural Knowledge and Fluency

Video 10: Differentiating Instruction to Support Surface, Deep, and Transfer Learning

Video 11: Supporting Surface Learning Needs With a Peer Tutor

Video 12: Checking for Understanding as Procedural Knowledge Deepens

Video 13: Supporting Learners' Extension to Transfer

Chapter 5. Knowing Your Impact: Evaluating for Mastery

Video 14: Evaluating for Mastery

Video 15: Feedback Through Peer-Assisted Reflection

Note From the Publisher: The authors have provided video and web content throughout the book that is available to you through QR (quick response) codes. To read a QR code, you must have a smartphone or tablet with a camera. We recommend that you download a QR code reader app that is made specifically for your phone or tablet brand.

Videos may also be accessed at resources.corwin.com/vlmathematics-6-8