Contents

List of Videos	ix
Acknowledgments	xi
About the Authors	xiii
Introduction	1
What Works Best	3
What Works Best When	8
The Path to Assessment-Capable Visible Learners	
in Mathematics	9
How This Book Works	13
Chapter 1. Teaching With Clarity in Mathematics	19
Components of Effective Mathematics Learning	24
Surface, Deep, and Transfer Learning	25
Moving Learners Through the Phases of Learning Surface Learning in the Intermediate Mathematics	30
Classroom	31
Deep Learning in the Intermediate Mathematics Classroom Transfer Learning in the Intermediate Mathematics	34
Classroom	35
Differentiating Tasks for Complexity and Difficulty	37
Approaches to Mathematics Instruction	39
Checks for Understanding	41

Profiles of Three Teachers	42
Beth Buchholz	42
Hollins Mills	43
Katy Campbell	44
Reflection	

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

Ms. Buchholz and the Relationship Between	
Multiplication and Division	48
What Ms. Buchholz Wants Her Students to Learn	50
Learning Intentions and Success Criteria	51
Activating Prior Knowledge	52
Scaffolding, Extending, and Assessing	
Student Thinking	56
Teaching for Clarity at the Close	57
Ms. Mills and Equivalent Fractions and Decimals	65
What Ms. Mills Wants Her Students to Learn	67
Learning Intentions and Success Criteria	67
Activating Prior Knowledge	69
Scaffolding, Extending, and Assessing Student	
Thinking	75
Teaching for Clarity at the Close	78
Ms. Campbell and the Packing Problem	85
What Ms. Campbell Wants Her Students to Learn	87
Learning Intentions and Success Criteria	87
Activating Prior Knowledge	88
Scaffolding, Extending, and Assessing Student	
Thinking	92
Teaching for Clarity at the Close	93
Reflection	98

Chapter 3. Teaching for Conceptual Understanding

Ms. Buchholz and the Meaning of Multiplication	102
What Ms. Buchholz Wants Her Students to Learn	104
Learning Intentions and Success Criteria	105

Activating Prior Knowledge	106
Scaffolding, Extending, and Assessing Student Thinking	112
Teaching for Clarity at the Close	116
Ms. Mills and Representing Division as Fractions	123
What Ms. Mills Wants Her Students to Learn	124
Learning Intentions and Success Criteria	125
Activating Prior Knowledge	126
Scaffolding, Extending, and Assessing Student Thinking	131
Teaching for Clarity at the Close	131
Ms. Campbell and the Volume of a Rectangular Prism	138
What Ms. Campbell Wants Her Students to Learn	1.39
Learning Intentions and Success Criteria	140
Activating Prior Knowledge	141
Scaffolding, Extending, and Assessing Student Thinking	146
Teaching for Clarity at the Close	149
Reflection	153

Chapter 4. Teaching for Procedural Knowledge and Fluency

155

Ms. Buchholz and Fluent Division Strategies	156
What Ms. Buchholz Wants Her Students to Learn	158
Learning Intentions and Success Criteria	159
Activating Prior Knowledge	160
Scaffolding, Extending, and Assessing Student Thinking	164
Teaching for Clarity at the Close	166
Ms. Mills and Comparing Fractions	173
What Ms. Mills Wants Her Students to Learn	174
Learning Intentions and Success Criteria	174
Activating Prior Knowledge	176
Scaffolding, Extending, and Assessing Student Thinking	180
Teaching for Clarity at the Close	181
Ms. Campbell and Computing Volume	188
What Ms. Campbell Wants Her Students to Learn	188
Learning Intentions and Success Criteria	189
Activating Prior Knowledge	190
Scaffolding, Extending, and Assessing Student Thinking	192
Teaching for Clarity at the Close	195
Reflection	200

Chapter 5. Knowing Your Impact:	
Evaluating for Mastery	201
What Is Mastery Learning? Using Learning Intentions to Define Mastery Learning Establishing the Expected Level of Mastery Collecting Evidence of Progress Toward Mastery	202 203 207 210
Ensuring Tasks Evaluate Mastery	217
Ensuring Tests Evaluate Mastery	218
Feedback for Mastery Task Feedback Process Feedback Self-Regulation Feedback	222 222 223 225
Conclusion	228
Final Reflection	231
Appendices	233
A. Effect Sizes	233
B. Planning for Clarity Guide	238
C. Learning Intentions and Success Criteria Template	243
D. A Selection of International Mathematical Practice or Process Standards	244
References	247
Index	251

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 Grades 3–5 Mathematics?

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

- Video 4 Using Self-Reflection to Make Learning Visible
- Video 5 Teaching Reflection Skills Starts With Clear Learning Intentions and Success Criteria
- Video 6 Consolidating Prior Learning Before Starting an Application Task

Chapter 3. Teaching for Conceptual Understanding

Video 7 Choosing a Conceptual Learning Task
Video 8 Making Thinking Visible and Addressing Roadblocks
Video 9 Learning Intentions and Success Criteria Throughout a Lesson
Video 10 Questioning and Discourse to Clarify and Deepen Understanding
Video 11 Practicing Evaluating and Giving Feedback

Chapter 4. Teaching for Procedural Knowledge and Fluency

- Video 12 Setting the Stage for Procedural Learning
- Video 13 Direct/Deliberate Instruction in a Procedural Task
- Video 14 Direct/Deliberate Instruction to Practice Mathematical Language and Precision
- Video 15 Consolidating Learning Through a Worked Example and Guided Practice

Chapter 5. Knowing Your Impact: Evaluating for Mastery

- Video 16 Setting the Stage for Transfer
- Video 17 Scaffolding Learning in a Transfer Lesson

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-3-5**