

THE 5 PRACTICES *in Practice*

Successfully Orchestrating Mathematics Discussions in
Your Elementary Classroom

**Margaret (Peg) Smith • Victoria Bill
Miriam Gamoran Sherin • Foreword by Dan Meyer**

A JOINT PUBLICATION

CORWIN

Mathematics



NATIONAL COUNCIL OF
TEACHERS OF MATHEMATICS

For information:

Corwin
A SAGE Company
2455 Teller Road
Thousand Oaks, California 91320
(800) 233-9936
www.corwin.com

SAGE Publications Ltd.
1 Oliver's Yard
55 City Road
London, EC1Y 1SP
United Kingdom

SAGE Publications India Pvt. Ltd.
B 1/I 1 Mohan Cooperative Industrial Area
Mathura Road, New Delhi 110 044
India

SAGE Publications Asia-Pacific Pte. Ltd.
18 Cross Street #10-10/11/12
China Square Central
Singapore 048423

Executive Editor, Mathematics: Erin Null
Associate Content

Development Editor: Jessica Vidal

Production Editor: Tori Mirsadjadi

Copy Editor: Christina West

Typesetter: Integra

Proofreader: Scott Oney

Indexer: Will Ragsdale

Cover and Interior Designer: Gail Buschman

Marketing Manager: Margaret O'Connor

Copyright © 2020 by Corwin Press, Inc.

All rights reserved. Except as permitted by U.S. copyright law, no part of this work may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without permission in writing from the publisher.

When forms and sample documents appearing in this work are intended for reproduction, they will be marked as such. Reproduction of their use is authorized for educational use by educators, local school sites, and/or noncommercial or nonprofit entities that have purchased the book.

All third-party trademarks referenced or depicted herein are included solely for the purpose of illustration and are the property of their respective owners. Reference to these trademarks in no way indicates any relationship with, or endorsement by, the trademark owner.

ISBN: 978-1-5443-2113-4

Printed in the United States of America.

This book is printed on acid-free paper.

19 20 21 22 23 10 9 8 7 6 5 4 3 2 1

DISCLAIMER: This book may direct you to access third-party content via web links, QR codes, or other scannable technologies, which are provided for your reference by the author(s). Corwin makes no guarantee that such third-party content will be available for your use and encourages you to review the terms and conditions of such third-party content. Corwin takes no responsibility and assumes no liability for your use of any third-party content, nor does Corwin approve, sponsor, endorse, verify, or certify such third-party content.

Contents

List of Video Clips	xx
Foreword by Dan Meyer	xxi
Preface	xxiv
Acknowledgments	xxvii
About the Authors	xxix

CHAPTER 1 Introduction

The Five Practices in Practice: An Overview	3
Purpose and Content	5
Classroom Video Context	6
Meet the Teachers	8
Using This Book	10
Norms for Video Viewing	10
Getting Started!	11

CHAPTER 2 Setting Goals and Selecting Tasks

Part One: Unpacking the Practice: Setting Goals and Selecting Tasks	14
Specifying the Learning Goal	14
Identifying a High-Level Task That Aligns With the Goal	16
Tara Tyus's Attention to Key Questions: Setting Goals and Selecting Tasks	19
Part Two: Challenges Teachers Face: Setting Goals and Selecting Tasks	21
Identifying Learning Goals	21
Identifying a Doing-Mathematics Task	23
Adapting an Existing Task	23
Finding a Task in Another Resource	25
Creating a Task	27

Ensuring Alignment Between Task and Goals	29
Launching a Task to Ensure Student Access	30
Launching a Task—Analysis	32
Conclusion	33

CHAPTER 3 Anticipating Student Responses

Part One: Unpacking the Practice: Anticipating Student Responses	38
Getting Inside the Problem	39
Getting Inside a Problem—Analysis	39
Planning to Respond to Student Thinking	43
Planning to Notice Student Thinking	49
Tara Tyus’s Attention to Key Questions: Anticipating	50
Part Two: Challenges Teachers Face: Anticipating Student Responses	50
Moving Beyond the Way YOU Solved the Problem	51
Being Prepared to Help Students Who Cannot Get Started	59
Creating Questions That Move Students Toward the Mathematical Goal	61
Conclusion	64

CHAPTER 4 Monitoring Student Work

Part One: Unpacking the Practice: Monitoring Student Work	70
Tracking Student Thinking	71
Assessing Student Thinking	72
Exploring Student Problem-Solving Approaches—Analysis	74
Assessing Student Thinking—Analysis	77
Advancing Student Thinking	78
Advancing Student Thinking, Part One—Analysis	80
Advancing Student Thinking, Part Two—Analysis	83
Tara Tyus’s Attention to Key Questions: Monitoring	84
Part Two: Challenges Teachers Face: Monitoring Student Work	84
Trying to Understand What Students Are Thinking	85

Determining What Students Are Thinking, Part One—Analysis	87
Determining What Students Are Thinking, Part Two—Analysis	89
Keeping Track of Group Progress	91
Following Up With Students—Analysis	93
Involving All Members of a Group	95
Holding All Students Accountable—Analysis	97
Conclusion	98

CHAPTER 5

Selecting and Sequencing Student Solutions

Part One: Unpacking the Practice: Selecting and Sequencing Student Solutions	104
Identifying Student Work to Highlight	105
Selecting Student Solutions—Analysis	108
Purposefully Selecting Individual Presenters	110
Establishing a Coherent Storyline	112
Tara Tyus’s Attention to Key Questions: Selecting and Sequencing	115
Part Two: Challenges Teachers Face: Selecting and Sequencing Student Solutions	115
Selecting Only Solutions Relevant to Learning Goals	116
Selecting Solutions That Highlight Key Ideas—Analysis	124
Expanding Beyond the Usual Presenters	126
Deciding What Work to Share When the Majority of Students Were Not Able to Solve the Task and Your Initial Goal No Longer Seems Obtainable	131
Moving Forward When a Key Strategy Is Not Produced by Students	133
Determining How to Sequence Errors, Misconceptions, and/or Incomplete Solutions	134
Conclusion	136

CHAPTER 6

Connecting Student Solutions

Part One: Unpacking the Practice: Connecting Student Solutions	142
Connecting Student Work to the Goals of the Lesson	143
Connecting Student Work to the Goals of the Lesson, Part One—Analysis	145
Connecting Student Work to the Goals of the Lesson, Part Two—Analysis	147
Connecting Student Work to the Goals of the Lesson, Part Three—Analysis	148
Connecting Different Solutions to Each Other	150
Connecting Different Solutions to Each Other—Analysis	151
Tara Tyus’s Attention to Key Questions: Connecting	152
Part Two: Challenges Teachers Face: Connecting Student Responses	152
Keeping the Entire Class Engaged and Accountable During Individual Presentations	153
Holding Students Accountable—Analysis	158
Ensuring That Key Mathematical Ideas Are Made Public and Remain the Focus	162
Making Key Ideas Public—Analysis	164
Making Sure That You Do Not Take Over the Discussion and Do the Explaining	166
Running Out of Time	167
Conclusion	170

CHAPTER 7

Looking Back and Looking Ahead

Why Use the Five Practices Model	174
Getting Started With the Five Practices	177
Plan Lessons Collaboratively	177
Observe and Debrief Lessons	179
Reflect on Your Lesson	179
Video Clubs	180

Organize a Book Study	181
Explore Additional Resources	181
Frequency and Timing of Use of the Five Practices Model	182
Conclusion	183
Resources	
Appendix A—Web-Based Resources for Tasks and Lesson Plans	186
Appendix B—Monitoring Chart	187
Appendix C—Ms. Tyus’s Monitoring Chart	188
Appendix D—Resources for Holding Students Accountable	192
Appendix E—Lesson-Planning Template	193
References	195
Index	201



Visit the companion website at
<http://resources.corwin.com/5practices-elementary>
 for downloadable resources.

List of Video Clips

Chapter 1

Video Clip 1.1: A District Engages in the Five Practices

Chapter 2

Video Clip 2.1: Launching a Task

Video Clip 2.2: Setting Goals and Selecting Tasks

Chapter 3

Video Clip 3.1: Anticipating Student Responses

Chapter 4

Video Clip 4.1: Assessing Student Thinking

Video Clip 4.2: Advancing Student Thinking—Part One

Video Clip 4.3: Advancing Student Thinking—Part Two

Video Clip 4.4: Determining What Students Are Thinking—Part One

Video Clip 4.5: Determining What Students Are Thinking—Part Two

Video Clip 4.6: Following Up With Students

Video Clip 4.7: Holding All Students Accountable

Video Clip 4.8: Monitoring Student Work

Chapter 5

Video Clip 5.1: Selecting and Sequencing Student Solutions

Chapter 6

Video Clip 6.1: Connecting Student Work to the Goals of the Lesson—Part One

Video Clip 6.2: Connecting Student Work to the Goals of the Lesson—Part Two

Video Clip 6.3: Connecting Student Work to the Goals of the Lesson—Part Three

Video Clip 6.4: Connecting Different Solutions to Each Other

Video Clip 6.5: Holding Students Accountable

Video Clip 6.6: Making Key Ideas Public

Video Clip 6.7: Connecting Student Responses

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/5practices-elementary