

Preface

In 2008, we saw an increase in attention to formative assessment yielding interesting work: excellent books being published, such as those by Black and Wiliam, Lee, and Bright and Joyner; informative articles such as those by Wylie and Heritage for the Council of Chief State School Officers (CCSSO); and district and statewide initiatives being built, such as those in Iowa and Syracuse, New York. At the same time, with only a few exceptions (such as Bright and Joyner's, 2004, *Dynamic Classroom Assessment*), these materials and initiatives cut across school content, using examples from science, language arts, and social studies as well as mathematics. Our experiences with professional development for teachers led us to believe that while these cross-content descriptions are invaluable to the field, a focus on what formative assessment looks like in the mathematics classroom is needed for teachers of math. We often hear frustration from cross-content professional development, as teachers say, "I see how this works in the example subject, but I don't see how it fits in mine." (This is true whether, for example, the teacher's subject is math and the example is language arts, or *vice versa*.) As you'll see in this book, effective implementation of formative assessment is deeply tied to the subject content, so providing examples and suggestions specifically for mathematics teachers is paramount.

To respond to this need, we have written this book for middle grades (5–8) teachers of mathematics, including special education teachers. While much of the information within is transferable to other grades, and even to other content, we maintain our focus on mathematics at the Grade 5–8 level to make this book as relevant to this audience as possible.

This book provides

- an extensive description of formative assessment, including examples from middle grades mathematics classes to focus support for math teachers in implementing formative assessment in ways that a subject-general book cannot, and
- concrete tools, strategies, and resources, informed by research and field-tested by teachers, to
 - support your implementation of various formative assessment practices: setting and using learning goals and criteria for success, eliciting and interpreting evidence, and acting on the information; and

- make explicit to students their role in the formative assessment process: understanding the learning goal; self-monitoring, self-assessment and reflection; and using peers as resources to provide and act on feedback.

Through the professional development work and associated research that helped us to produce this book (see “Our Work”), the ideas in this book have been tested. We are proud to have included voices of teachers throughout the book, as we have learned much from the teachers who have participated in and helped to improve and refine our work by using in it their classrooms. We hope that hearing from them helps you to bring the ideas into practice.

This book is rich with information and resources that you will find useful for many years. We hope you will not read it once and put it back down—rather, we hope that you will return to it again and again, as you deepen your understanding and move forward to integrate formative assessment into your daily practices.

■ OUR WORK

With a grant from the National Science Foundation (Grant # DRL-0918438), we began work to develop *Formative Assessment in the Mathematics Classroom: Engaging Teachers and Students* (or FACETS), a program and resources to introduce middle school mathematics teachers to formative assessment and to support them as they began to implement formative assessment practices in their classrooms. We based our initial work on that of many educational researchers and teacher educators and on our own prior work in teacher professional development, formative assessment, and mathematics curriculum development and teacher training. After a year of initial development, we worked with one group of teachers for 2 years, learning about how they made sense of the information we were providing.

As we implemented our initial program with our first cohort of teachers, the FACETS research team gathered and interpreted data to study teacher’s learning of formative assessment. We worked with a second cohort of teachers for another 2 years, again learning even more about what worked and what didn’t.

The researchers provided significant input to help us shape the program, guided by the questions:

- How do middle grades teachers make sense of and learn to implement formative assessment practices?
- What barriers and challenges do they face in implementing formative assessment?
- What are supports that can help them move through these challenges?

For example, we learned that

- envisioning students as the primary consumers of formative assessment information in teacher’s conception of the formative assessment process early made even the initial work more meaningful and powerful.

- teacher learning of formative assessment takes time. As you'll see, formative assessment has many pieces to it; teachers need time to get to know each piece individually and then more time to put those pieces together.

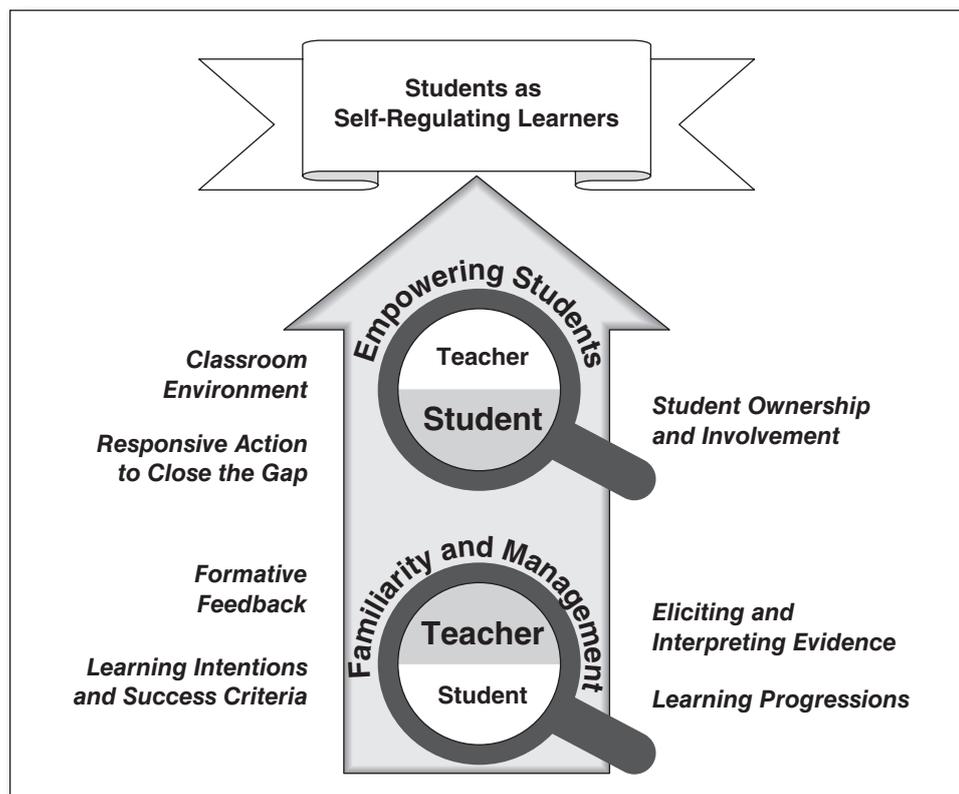
Figure 0.1 illustrates, in a simplified way, how teachers were able to approach learning about formative assessment. As they were becoming familiar with formative assessment and considering how to manage the different pieces, they were mostly focused on their own actions, though the student role in formative assessment did get some attention. Later, they were able to switch their focus to be more on the student, as they worked toward full integration of the pieces within their teaching practices.

This book, and the companion resource website (Resources.Corwin.com/CreightonMathFormativeAssessment), are the results of that work.

HOW TO USE THIS BOOK

We've written this book to be read through from beginning to end, though we recognize that different people will want different things from a resource like this. If you decide not to read each chapter in order, we highly recommend at least reading Chapters 1 and 2 first. (Depending on how you plan to bring this information into your classroom, Chapter 8 might also be a good one to read after that—see the last paragraph in this

Figure 0.1 A Simplified View of Teacher Learning of Formative Assessment



section.) Given our emphasis on student involvement and self-regulation, Chapter 5 may seem like an important chapter to read early, however, we believe it will make most sense *after* you have read Chapters 1 through 4. Those chapters include some previews of what you will read in Chapter 5, so you will still be getting some idea of the student role in the formative assessment process throughout the early chapters.

Resources, available at Resources.Corwin.com/CreightonMathFormativeAssessment, are highlighted throughout the book. When you see a reference to a resource, you may want to stop reading to look—we support that desire, but with a few exceptions, this isn’t expected. For those exceptions, such as a couple of places in Chapter 1, we explicitly request that you take a moment to look over or work with a particular resource before continuing. In those cases, we are trying to re-create some popular and effective professional development activities that we think will help you develop some initial understanding of formative assessment. Of course, you may choose to continue reading rather than stop. You know how you learn better than we do!

Two of the following icons accompany each resource, both in this book and on the companion resource website. One icon represents what type of resource it is (interactive, poster, etc.), and the other represents how it’s meant to be used.

Usage Icons		Type Icons	
	Reference Resource: Information that you, the teacher, may want to come back to.		Summary Card: Reference cards that summarize important information. We recommend printing these on sturdy paper or laminating and punching a hole in one corner so you can put them on a key ring to keep them together.
	Learning Resource: Intended to be used by you, the teacher, as part of your own learning about formative assessment.		Interactive: Web-based interactive pages, accessible through the companion resource website.
	Planning Resource: Intended to be used by you, the teacher, to help you in your lesson planning process. You may want to use these on an ongoing basis.		Poster: Large format PDF files that you can print, or have printed at a commercial office printer, to be hung in your classroom and used to help students with their part in formative assessment practices.
	Classroom Resource: Lesson plans and strategies for you to use with your students.		Video: Video that provides greater insight into teachers’ thoughts and practices in the classroom.
	Classroom Material: Intended to be used primarily by the students.		PDF: Resources that can be printed on letter- or legal-sized paper.

Finally, most chapters include several recommendations to help you integrate formative assessment into your classroom practices; we suggest you give yourself time to integrate them gradually—choose a few to focus on until they become familiar, and then you can choose another small group when you're ready to move on. Chapter 8 provides some specific recommendations on how to do this gradual implementation, so if you prefer to begin implementing before you've completed the whole book, we recommend looking at that chapter—and then return to Chapter 8 often as you progress.