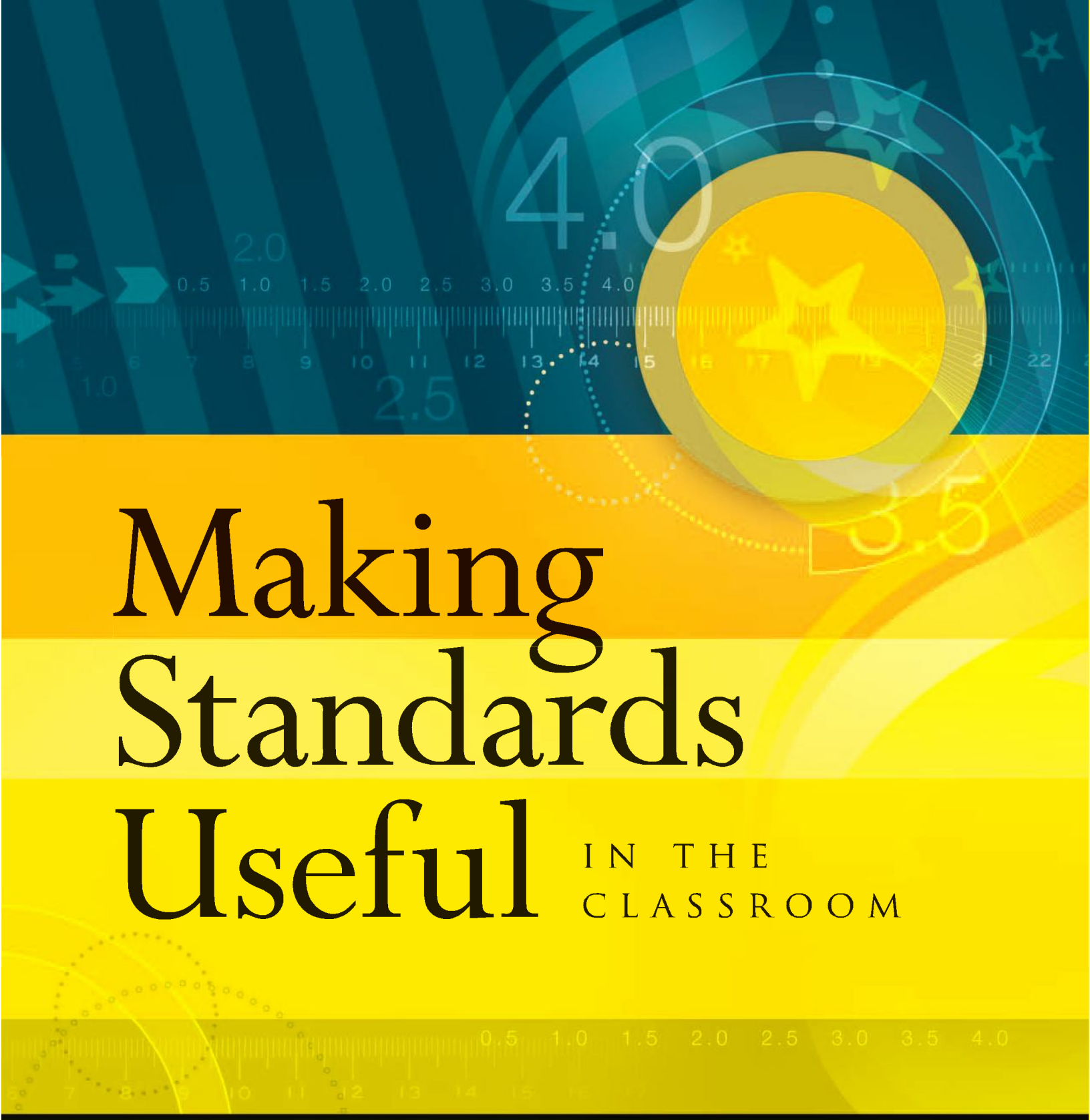

Making Standards Useful IN THE CLASSROOM

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To my family—Jana, Todd and Whitney, Christine and Mark, Carmen and Tomi, Ashley, Cecilia, Aida, and Jacob

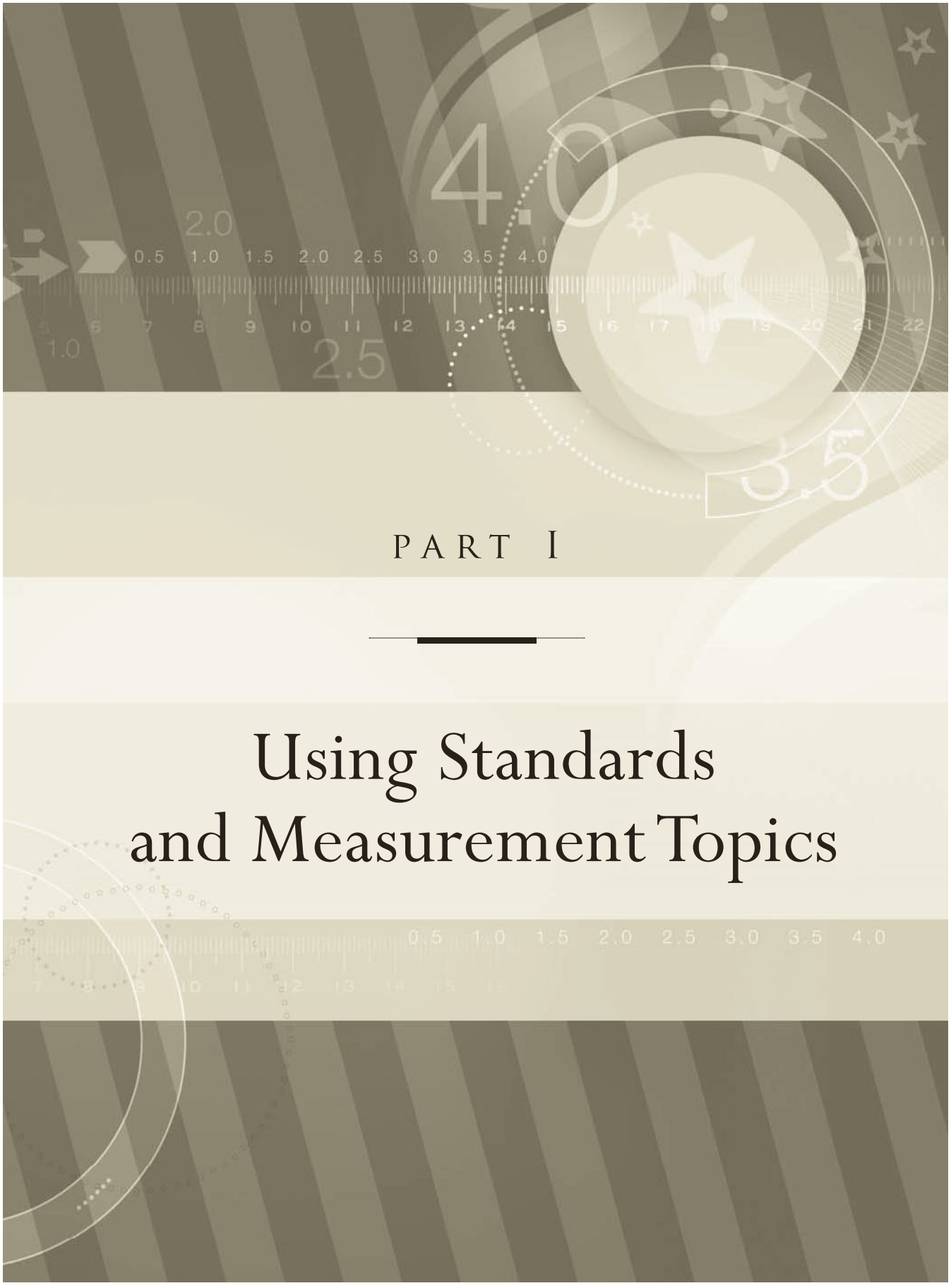
—Robert J. Marzano

To my family—Christine, my wife and best friend, you are truly the wind beneath my wings. Cecilia and Aida, I am so proud to be your dad; keep reaching for the stars.

—Mark W. Haystead

Making Standards Useful

IN THE CLASSROOM



PART I

Using Standards and Measurement Topics

1

Standards in Education

The standards movement in the United States has a long and interesting history. Many trace its genesis back to the publication of *A Nation at Risk*, which sounded the following alarm: "The education foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our very future as a nation and a people. . . . We have, in effect, been committing an act of unthinking, unilateral educational disarmament" (National Commission on Excellence in Education, 1983, p. 5). These ominous words sparked a flood of impassioned pleas to upgrade the K–12 educational system in the United States.

In September 1989, President George H. W. Bush convened the nation's governors at an Education Summit in Charlottesville, Virginia. The summit identified six broad national goals that were to be reached by the year 2000. In general terms, those goals called for U.S. students to master complex academic content in English, mathematics, science, history, and geography. The goals were showcased in the 1990 State of the Union address.

That same year, the National Education Goals Panel (NEGP) was established; the following year, the National Council on Education Standards and Testing (NCEST) was established. Together these two groups were to deal with such implementation issues as which standards would be addressed, the performance levels that would be expected for these standards, and the types of assessments that would be used. Subject matter organizations were called upon to identify the knowledge that all students would be expected to learn within their domains. The National Council of Teachers of Mathematics (NCTM) took the lead in these efforts by publishing its *Curriculum and Evaluation Standards for School Mathematics* in 1989. Other subject matter organizations followed suit. Figure 1.1 outlines the major events in the design of standards documents in the subject areas from 1989 through 2000, at which time the major national and state-level standards documents were in place.

Figure 1.1 Major Events in the Development of Subject Matter Standards, 1989–2000

Year	Event
1989	The 50 governors and President George H. W. Bush identify English, mathematics, science, history, and geography as subjects in need of challenging national achievement standards in National Education Goals for the year 2000.
1989	The National Council of Teachers of Mathematics publishes *Curriculum and Evaluation Standards for School Mathematics*.
1989	Project 2061 of the American Association for the Advancement of Science (AAAS) publishes *Science for All Americans*, outlining which "understandings and habits of mind are essential for all citizens of a scientifically literate society."
1990	President Bush announces the National Education Goals for the year 2000 and works with Congress to establish a National Education Goals Panel (NEGP).
1990	To determine the skills young people need for success in the working world, the U.S. secretary of labor appoints the Secretary's Commission on Achieving Necessary Skills (SCANS).
1990	The National Center on Education and the Economy and the Learning Research and Development Center create the New Standards Project to define standards for student achievement in a number of areas.
1991	The knowledge and skills essential for the working world are described in a SCANS document titled *What Work Requires of Schools*.
1992	The U.S. Department of Education teams up with the National Endowment for the Humanities to provide funding for the National History Standards Project.
1992	The National Association for Sport and Physical Education develops *Outcomes for Quality Physical Education Programs*, setting a foundation for physical education standards.
1992	The U.S. Department of Education teams up with the National Endowment for the Arts and the National Endowment for the Humanities to fund the writing of standards for the arts through the Consortium of National Arts Education Associations.
1992	Standards for civics and government are written by the Center for Civic Education with financial help from the U.S. Department of Education and the Pew Charitable Trusts.
1992	The Geography Standards Education Project writes the first standards for geography.
1992	The American Cancer Society funds the Committee for National Health Education.
1992	The federal government provides funds to the National Council of Teachers of English, the International Reading Association, and the Center for the Study of Reading at the University of Illinois to create English language arts standards.
1993	Foreign language standards are formed with federal funding through the National Standards in Foreign Language Project.
1993	AAAS's Project 2061 publishes *Benchmarks for Science Literacy*.
1993	"The Malcolm Report," also known as *Promises to Keep: Creating High Standards for American Students*, is released. The document is compiled by the NEGP and recommends creating a National Education Standards and Improvement Council (NESIC) whose presence would enable voluntary national standards to exist.
1993	Standards development, teaching, and assessment are overseen by the National Committee on Science Education Standards and Assessment (NCSESA) with funding from the U.S. Department of Education, the National Research Council, and the National Science Foundation.

Figure 1.1 (*continued*)

Year	Event
1994	The *Incomplete Work of the Task Forces of the Standards Project for English Language Arts* is published by the Center for the Study of Reading, the International Reading Association, and the National Council of Teachers of English.
1994	Foreign languages, the arts, economics, and civics and government are added to the list of areas for which students should demonstrate "competency over subject matters," bringing the total number of subjects covered to nine. Two new goals are added to the National Education Goals, and the National Education Standards and Improvement Council (NESIC) is created by President Clinton in his Goals 2000: Educate America Act for the purpose of certifying national and state content and performance standards, state assessments, and opportunity to learn standards.
1994	Funding for the Standards Project for the English Language Arts is cut by the U.S. Department of Education.
1994	Arts standards (dance, theater, visual arts, and music) are published through the Consortium of National Arts Education Associations. This effort is funded by the U.S. Department of Education, the National Endowment for the Arts, and the National Endowment for the Humanities.
1994	*Curriculum Standards for the Social Studies: Expectations for Excellence* is published by the National Council for the Social Studies.
1994	U.S. history standards, world history standards, and K–4 history standards are released.
1994	*Geography for Life: National Geography Standards* is published by the Geography Education Standards Project.
1994	Standards for civics and government education are published by the Center for Civic Education, a project funded by the U.S. Department of Education and the Pew Charitable Trusts.
1995	The U.S. Department of Education withdraws funding from a project by the National Council on Economic Education to create standards in economics.
1995	*National Health Education Standards: Achieving Health Literacy* is published by the Joint Committee on National Health Education Standards.
1995	*Moving into the Future: National Standards for Physical Education* is released, a product of the National Association for Sport and Physical Education.
1995	The National Council on Economic Education sets a goal of publishing standards in the winter of 1996.
1995	*Performance Standards* for English language arts, science, mathematics, and "applied learning" are released in three volumes, a product of the New Standards Project.
1995	*National Standards for Business Education: What America's Students Should Know and Be Able to Do in Business* is released, a product of the National Business Education Association.
1996	*Foreign Language Learning: Preparing for the 21st Century* is released, the product of the National Standards in Foreign Language Project.
1996	*National Science Education Standards* is released, a product of the National Research Council.
1996	Forty state governors and 45 business leaders attend the National Education Summit, pledging to support efforts toward creating academic standards in the core subject areas at both the state and local levels; business leaders recognize a need to consider these standards when opening or relocating facilities.

Figure 1.1 (*continued*)

Year	Event
1996	*Standards for the English Language Arts* is released, a product of the National Council of Teachers of English and the International Reading Association.
1996	A new draft of history standards is released.
1996	A document designed to help create technology standards is released by the International Technology Education Association, a project in cooperation with the National Science Foundation and the National Aeronautics and Space Administration.
1997	President Clinton declares a need for every state to adopt national standards and implement statewide testing for 4th graders in reading and 8th graders in math by 1999 in order to monitor progress.
1997	*Voluntary National Content Standards* is published by EconomicsAmerica. This document is also available on CD-ROM.
1997	*ESL Standards for Pre-K-12 Students* is released, a product of Teachers of English to Speakers of Other Languages.
1997	*Performance Standards: English Language Arts, Mathematics, Science, Applied Learning* is released by the National Center on Education and the Economy.
1998	*Competent Communicators: K–12 Speaking, Listening, and Media Literacy Standards and Competency Statements* is released, a product of the Council for Basic Education.
1998	Nine encompassing literacy standards are included in *Information Power: Building Partnerships for Learning*, a product of the American Library Association.
1999	Improving educator quality, helping all students reach high standards, and increasing accountability are named as three major areas in need of improvement by governors, educators, and business leaders at the National Education Summit. The meeting concludes with a goal of specifying how each state will accomplish the tasks.
1999	Specific standards for Chinese, classical languages, French, German, Italian, Japanese, Portuguese, Russian, and Spanish are added to the original standards and republished as *Standards for Foreign Language Learning in the 21st Century*, a product of the National Standards in Foreign Language Education Project.
2000	*Standards for Technological Literacy: Content for the Study of Technology* is published, a product of the International Technology Association.
2000	*National Educational Technology Standards for Students: Connecting Curriculum and Technology* is published, a product of the International Society for Technology in Education.
2000	*Principles and Standards for School Mathematics* is released, a product of the National Council of Teachers of Mathematics.

Figure 1.1 adds some detail to the rich history of the modern standards movement and attests to the prominence of the movement in the 1980s and 1990s. Discussing the movement's impact, Robert Glaser and Robert Linn (1993) explain:

> In the recounting of our nation's drive toward educational reform, the last decade of this century will undoubtedly be identified as the time when a

> concentrated press for national educational standards emerged. The press for standards was evidenced by the efforts of federal and state legislators, presidential and gubernatorial candidates, teachers and subject-matter specialists, councils, governmental agencies, and private foundations. (p. xiii)

Glaser and Linn made their comments at the end of the 20th century. There is no indication that the standards movement has lost any momentum at the beginning of the 21st century.

Flaws in the Standards

Given the power of the standards movement, one might assume that national standards and state standards have enhanced the daily practice of K–12 education. Although it is true that in many states teachers are aware of the content of their state standards because school districts have aligned grade-level curriculums with state and national standards, it is not necessarily true that the standards movement has enhanced the life of the classroom teacher. In fact, a case can be made that state and national standards, as currently designed, detract from a teacher's ability to teach effectively. At least two reasons account for this unfortunate situation: the standards articulate too much content, and they lack unidimensionality.

Too Much Content

State and national standards articulate far too much content. To illustrate, researchers at Mid-continent Research for Education and Learning (McREL) identified some 200 standards and 3,093 benchmarks in national and state-level documents across 14 subject areas (Kendall & Marzano, 2000). They then asked classroom teachers how long it would take to address the content in those standards and benchmarks. When the researchers compared the estimated amount of time it would take to teach the content in the standards documents with the amount of time that is available for classroom instruction, they found that addressing the mandated content would require 71 percent more instructional time than is now available (Marzano, Kendall, & Gaddy, 1999). Looking at this situation in another way, schooling, as currently configured, would have to be extended from kindergarten to grade 21 or 22 to accommodate all the standards and benchmarks in the national documents. Certainly this is not possible.

What, then, do busy classroom teachers do when asked to teach 71 percent more content than time allows for? Probably one of two things. They simply pick and choose from among the vast array of information and skills articulated in the standards, or they race through all the content in an attempt at complete "coverage." To dramatize this situation, Figure 1.2 contains 5 statements out of more than 120 similar statements related to content that 5th grade language arts teachers in one state are expected to teach in a single year of school. (To avoid denigrating any particular state standards document, we

Figure 1.2 Sample Competency Statements for 5th Grade Language Arts from a State Document

1. Apply prior knowledge and experience to make inferences and respond to new information presented in text.
2. Draw inferences and conclusions about text and support them with textual evidence and prior knowledge.
3. Describe elements of character development in written works (e.g., differences between main and minor characters; stereotypical characters as opposed to fully developed characters; changes that characters undergo; the importance of character's actions, motives, and appearance to plot and theme).
4. Make inferences or draw conclusions about characters' qualities and actions (e.g., based on knowledge of plot, setting, characters' motives, characters' appearances, other characters' responses to a character).
5. Participate in creative response to text (e.g., art, drama, and oral presentation).

have not identified the state. In fact, just about any state document could have been used to make the same point.)

Given that the state document has more than 120 statements like those in Figure 1.2 and that the school year comprises only 180 days, a teacher would have to teach and assess the content in one statement every one-and-one-half days to address all the statements in one year. This situation is troublesome for classroom teachers. Even though their schools or districts might have organized the content in the state standards into a set of learning objectives for students and perhaps even sequenced those objectives, teachers have little option other than to select the content they will actually teach, leaving the rest untaught; or they must attempt the impossible task of covering all the content while effectively teaching none of it.

Lack of Unidimensionality

Even if state and national standards did not have too much content, they still suffer from a major flaw as written: they typically mix multiple dimensions in a single statement. Multiple dimensions make it almost impossible to effectively assess the content in standards, particularly if teachers use formative assessment (we discuss formative assessment in more depth shortly).

A basic principle underlying measurement theory is that a single score on a test should represent a single dimension or trait that has been assessed; this is referred to as the principle of unidimensionality (Hattie, 1984, 1985; Lord, 1959). Unfortunately, standards documents are not written with unidimensionality or effective assessment in mind. To illustrate, consider the following benchmark statement from the mathematics standards document published by the National Council of Teachers of Mathematics (2000), which articulates what students should know and be able to do by the end of the 5th grade:

> • Develop fluency in adding, subtracting, multiplying, and dividing whole numbers. (p. 392)

The information and skills in the benchmark are certainly related—they all involve computation with whole numbers. However, the underlying processes are not the same and, in fact, might be quite different (Anderson, 1983). This single benchmark most probably addresses four separate dimensions:

- The process of adding whole numbers
- The process of subtracting whole numbers
- The process of multiplying whole numbers
- The process of dividing whole numbers

This "unpacking" is informative in itself because it demonstrates how much subject matter content might be embedded in standards documents. Specifically, the NCTM standards document contains only 241 benchmarks that span grades K through 12. One might assume that the NCTM document therefore addresses 241 dimensions. However, when the benchmarks in the document were unpacked as demonstrated here, more than 741 unique elements were revealed (Marzano, 2002).

In addition to making effective assessment difficult for the classroom teacher, the lack of unidimensionality of standards in state and national documents causes problems for classroom instruction. Consider again the single NCTM benchmark that includes addition, subtraction, multiplication, and division. Obviously these four operations are not to be taught simultaneously. In effect, districts, schools, or individual teachers must unpack this single benchmark statement to determine the scope and sequence of instruction for the content embedded within it.

In summary, national and state standards documents, as written, pose serious barriers to effective instruction and effective assessment for classroom teachers. This book provides a viable way of overcoming those barriers and rendering standards a vital, positive force in the work of classroom teachers. Although our recommended solution will positively affect instruction, our main emphasis in this book is a particular form of classroom assessment: formative assessment.

The Benefits of Formative Assessment

The benefits of formative assessment are becoming more and more obvious. In their meta-analysis of some 250 studies, Black and Wiliam (1998) concluded that formative assessment, when used properly, has the potential to dramatically enhance academic achievement in the United States and the United Kingdom (see page 61 of Black and Wiliam's article). In *Classroom Assessment and Grading That Work*, Marzano (2006) has identified some defining features of effective formative assessment and translated those characteristics into concrete application. *Classroom Assessment and Grading That Work* makes the point that the ultimate goal of a formative assessment system is to collect and

report data on every student for specific areas of knowledge and skill that are referred to as "measurement topics." Figure 1.3 depicts how data might be displayed for one measurement topic for a specific student.

Figure 1.3 displays six formative assessment scores for a student named Jana on a specific language arts measurement topic, Language Conventions. (In Chapter 4, we consider how these scores are obtained and used.) The benefits of a system like this are many. First, the visual display itself will most

Figure 1.3 Sample Display of Formative Assessment Scores

Keeping Track of My Learning

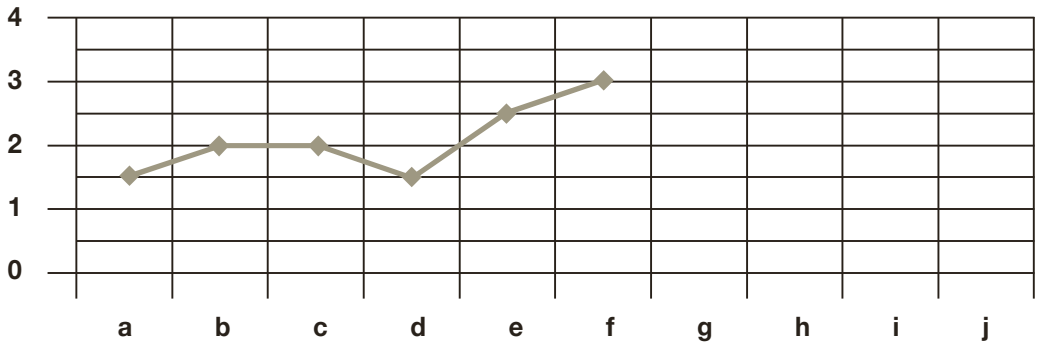
Name: Jana

Measurement Topic: Language Conventions

My score at the beginning: 1.5 My goal is to be at 3 by May 30

Specific things I am going to do to improve: Work 15 minutes three times a week

Measurement Topic: Language Conventions



a April 5

b April 12

c April 20

d April 30

e May 12

f May 26

g

h

i

j

likely enhance both the teacher's interpretation of formative data and the student's ability to see her progress (Fuchs & Fuchs, 1986). Second, a display like this allows for tracking and celebrating knowledge gain. That is, a student who has advanced from a score of 1.0 to a score of 2.5 on a measurement topic has gained 1.5 scale points. Likewise, a student who began with a score of 2.0 and advanced to a score of 3.5 has gained 1.5 scale points. We can celebrate knowledge gain for both students. This is not to say that we should not acknowledge and also celebrate "status." That is, we should recognize those students who have obtained high scores of 4.0 and 3.0 on a scale of 0 through 4.0. However, it is equally important to acknowledge those students who have demonstrated gains in knowledge regardless of where they began.

A system of classroom formative assessment like that described in *Classroom Assessment and Grading That Work* (and in Chapter 4 of this book) allows for a type of report card that provides specific information to parents and students regarding areas where students are progressing well versus areas where additional help must be provided. We discuss such report cards in Chapter 5.

Reconstituting Standards Documents

As formidable as these barriers to the usefulness of standards documents might seem, they can be overcome if a district or school is willing to reconstitute the knowledge in their standards documents. The need to reconstitute state standards and benchmarks has been addressed by many researchers, theorists, and consultants who work with districts and schools to implement standards-based education (see Ainsworth, 2003a, 2003b; Reeves, 2002; Wiggins & McTighe, 2005). In this book we present a system that translates standards documents into a format that is designed to make standards useful for formative assessment and to guide classroom instruction.

Summary

The standards movement has played an important role in K–12 education in the United States. Two major problems have emerged: standards documents identify more content than can actually be taught, and standards documents are not written in a way that enhances classroom instruction and assessment. The proposed solution to these problems is to reconstitute standards documents to make them more useful to classroom teachers.