

Chapter 5

Content Standards

Highlights of Findings

Teachers' reactions to content standards are mixed.

Some teachers appreciate the adoption of standards and the guidance they bring. Many teachers, however, believe that the new state standards are too ambitious—that some of them are developmentally inappropriate or that they focus on breadth at the expense of depth and cover more material than can be fit into a year. Eighth-grade teachers were particularly concerned about the requirement that all eighth-grade students take algebra.

Teachers' familiarity with content standards is highly variable.

Even within schools, some teachers were highly familiar with the standards, and others seemed barely to know about them at all. There was considerable confusion, and some frustration, about the existence of different sets of standards (e.g., district, state, national).

As of spring 1999, content standards had yet to make a consistent, significant impact at the classroom level.

Although teachers reported that local standards had influenced their teaching, interviews and observations suggested that the standards *per se* were not having a high level of meaningful impact on classroom mathematics instruction. The apparent lack of alignment between curriculum and standards may contribute to this problem. Alignment of content standards with curriculum and instruction is an ongoing process.

Background

Content standards—what students should know and be able to do—have been one of the hottest topics in education across the nation for the past several years. Of all of the subject areas, mathematics was one of the first in which standards were developed, and California was a leader in that effort, with the 1985 publication of the *Mathematics Framework for California Public Schools, Kindergarten Through Grade 12*. This document, which focused on the

importance of discerning mathematical relationships, logical reasoning, and effective use of mathematics techniques, stressed the importance of mathematical power and understanding for *all* students. It identified seven strands of mathematical content: number, measurement, geometry, patterns and functions, statistics and probability, logic, and algebra. The document was groundbreaking, laying the foundation for much of the national mathematics reform efforts of the 1980s and 1990s.

Nationally, the mathematics standards movement hit full stride in 1989, with the publication of the *Curriculum and Evaluation Standards for School Mathematics* by the National Council of Teachers of Mathematics (NCTM). Developed by consensus among NCTM members, the document set out standards for each of three grade-level spans (K–4, 5–8, and 9–12), including emphases on problem solving, mathematical communication, mathematical reasoning, and mathematical connections. Content areas were similar to the California *Framework's* strands. For example, the standards for grades K–4 included number sense and numeration, measurement, geometry and spatial sense, patterns and relationships, and statistics and probability. The content areas for the other grade-level spans were similar.¹

As the NCTM document took hold and began to spark national interest, California was working on an updated edition of its *Mathematics Framework*. The revised document, which came out in 1992, built on the concepts and recommendations contained in the 1985 version, in an effort to extend them into a more comprehensive vision for mathematics education and to reinforce the goal of mathematical power for all students. It kept the same basic strands of the 1985 edition (adding one more, discrete mathematics, and making changes to some of the others) and added “unifying ideas” for each grade span (K–5, 6–8, and 9–12). In general, the 1992 *Framework* was consistent with and aligned to the NCTM standards.

Neither the *Framework* nor the NCTM document, however, defined standards for individual grade levels. The 1994 reauthorization of the federal Elementary and Secondary Education Act (ESEA), Title I, called for states to articulate grade-level academic standards, and California began encouraging districts to develop local grade-level standards in mathematics (as well as in language arts) in 1996–97. Also in 1996, a “Mathematics Program Advisory” was distributed to superintendents and principals by the California Department of Education, the California Commission on Teacher Credentialing, and the California State Board of Education. This program advisory, a policy statement written in response to recommendations by a statewide Mathematics Task Force, emphasized the importance of a balanced mathematics program—one including basic skills in addition to conceptual understanding and problem solving.

The following year, in 1997, the California State Board of Education (SBE) adopted statewide grade-by-grade standards in mathematics, published as the *Mathematics Content Standards*

¹ In 2000, the NCTM published a revised standards document, entitled *Principles and Standards for School Mathematics*. Although this document had not yet been published at the time of the study's data collection activities, a discussion draft was circulated in 1998.

for California Public Schools: Kindergarten Through Grade Twelve. These new State-Board-adopted standards represented a departure from the *Framework* and NCTM documents. Although the standards within each grade level were organized around five strands similar to those from the earlier documents,² they emphasized fluency in basic computational skills to a much greater extent than the earlier documents had. Moreover, particular standards items were much more highly detailed, and placed significantly more emphasis on specific mathematical content, than those from the earlier documents.

The new state standards, *per se*, did not automatically replace the local standards that districts had been developing. Districts were, however, advised to align their local standards with the new state standards in order to ensure that the local standards were “at least as rigorous as” the state standards. The state’s definition of rigor included breadth, depth, pace of learning, and levels of performance (CDE, 1998).

Finally, in 1998, the State Board adopted yet another updated *Mathematics Framework for California Public Schools, Kindergarten Through Grade Twelve*. This new *Framework* was strongly aligned with 1997 *Mathematics Content Standards*, and thus differed substantially from the 1985 and 1992 *Frameworks*. A strong grade-by-grade focus and attention to particular content replaced the more conceptual and thematic approach of the earlier *Frameworks*. The publication of the new *Framework* was somewhat controversial, as some members of California’s professional mathematics education community felt that the document had not been developed in a sufficiently public and broad-based consensual process (Anderson, J., 1998; Becker & Jacob, 2000).

This chapter presents study findings about teachers’ reactions to mathematics standards—the concept of standards in general and in some cases particular standards documents. The chapter also examines the impact that mathematics standards have had on classroom instruction.

Reactions to Standards

Teachers’ reactions to standards are mixed. Some appreciate the adoption of standards and the guidance they bring, but many teachers also believe that the new standards are too ambitious.

In response to the survey question, “If there are any specific state, district, or school policies that have *helped* your mathematics teaching, please describe,” many teachers cited standards.³ In fact, at the fourth grade level, standards formed the most frequently cited

² Number sense; algebra and functions; measurement and geometry; statistics, data analysis, and probability; and mathematical reasoning.

³ See Figure E3 in Appendix E for a graph of responses to this survey question.

category of responses, mentioned by 28.2% of teachers. At the eighth-grade level, standards were mentioned by 28.8% of teachers, second only to professional development/teacher preparation, which was cited by 33.9% of the eighth-grade teachers.

Teachers said that the standards have helped guide their instruction and bring about much-needed uniformity. Sample remarks from the survey, each from a different district, include:

[from a fourth-grade teacher] Having knowledge of the district standards has helped me in terms of planning.

[from a fourth-grade teacher] Standards have really made my teaching more focused—I now know exactly what my students need to know instead of relying on a textbook.

[from an eighth-grade teacher] High district standards support high standards in classroom

[from an eighth-grade teacher] Standards—easier for transferring students, promotes some sort of unity

Some of the teachers who were interviewed also acknowledged the value and importance of standards, either in general or for them personally:

I've read the district and state standards. Our district ones are grade level expectancies. I want my kids to be where they need to be.

I think standards are good because it's hard to help kids learn without basics.

I am aware of the California Framework, the NCTM Standards, and the California Content Standards. I have seen the draft of the new NCTM Standards 2000. All of these have influenced my teaching for the better.

The district level standards are aligned with the state standards, so the district ones are what I pay attention to. I am aware of national tests and national comparisons are made. It is really important to me to know that what goes on in my classroom should be going on in all classrooms.

I believe standards are important. You have to know where you're going before you take off or you're going to just be everywhere. They've influenced me more since I've come to California. To me, "standard" is just a word that gets everybody to the same. If these are what are going to get all to the same page so we can be assessed in the same way, then good. It's important. They're not just a measure of what kids do, they're a measure of what we [teachers] do. I think standards have also helped us talk about what we do....The state standards have had the most impact on me. They give me direction. Also, the professional standards have helped me a lot. They keep me learning and relearning.

These types of remarks notwithstanding, a large number of teachers made less favorable comments about standards. In response to the survey question, “If there are specific state, district, or school policies that have *hindered* your mathematics instruction, please describe,” 12.2% of responding fourth-grade teachers and 18.8% of the eighth-grade teachers mentioned standards.

Teachers’ concerns about the standards were mainly that the standards, especially the state standards, are too ambitious—that some of them are developmentally inappropriate or that they focus on breadth at the expense of depth and cover more material than can be fit into a year. Representative survey comments along these lines included the following:

Each year the state is requiring more and more of the students and their foundation in math is becoming thinly spread. Let’s get the foundation stronger.

I believe the new content standards expect too much from 9–10 year olds. It’s difficult enough for them to understand current concepts within the parameter of our school year.

District policy that all students be exposed to grade level material, even though they may not have mastered previous skills.

There are too many topics that students are expected to learn. Need to eliminate some topics and allow for more conceptual development in a few key concepts.

Interviews revealed that eighth-grade teachers were particularly concerned about the requirement that all eighth-grade students take algebra.⁴ “I don’t understand the push,” said one teacher who was interviewed. “Cognitively, they [students] are not ready. They just don’t understand it.” A teacher in a different district stated, “The state standards say that algebra should be taught to all eighth graders, I’m against it. I think it’s a maturity issue. Not all kids are ready. It’s too abstract for some.” Another interviewed teacher mentioned being “skeptical” about eighth-grade algebra, and a principal remarked that many middle school teachers have never taught algebra before and “are nervous.”

Despite these concerns, however, the large number of comments made about eighth-grade algebra—both by principals and by teachers—made it clear that several districts were, in fact, preparing to implement it. As one principal put it, “I don’t believe all eighth graders, and definitely not all seventh graders, are developmentally ready for algebra. However, the district has required the change. We will offer support for students during the year in the form of math lab and study club.” As shown by Figure 4.1 in the chapter on curriculum

⁴ The State-Board-adopted content standards are grade-specific from kindergarten through grade seven, and then are organized by discipline headings, beginning with Algebra I. Although the standards document says that “the standards for grades eight through twelve do not mandate that a particular discipline be initiated and completed in a single grade,” the lack of other grade-eight-specific standards implies that at least some algebra must be taught in eighth grade. Many districts believe that the most appropriate way to address the standards is to require eighth-grade algebra.

materials, only 27.1% of the eighth-grade classes represented by the survey were algebra classes, so undoubtedly the transition to eighth-grade algebra for all students has been a major one.

Overall, these findings suggest that while most teachers like the *idea* of standards, they do not always think that the particular standards that have been adopted are the most appropriate ones. In other words, teachers support the theory behind standards, but may find themselves hindered by both the details and the realities of implementation.

Familiarity with Standards

Teachers' familiarity with content standards is highly variable. There is considerable confusion, and some frustration, about different sets of standards.

While the teachers who mentioned standards on the survey and in interviews (as represented by comments in the preceding section) seemed to be fairly familiar with standards, not all teachers necessarily shared this familiarity. Observations and interviews in the eight visited districts revealed that teachers' familiarity with standards was highly variable. This variability was across districts, across schools within a given district, and even across teachers within a given school.

For example, a teacher in one district claimed that her district's standards "are on the wall in every classroom" and said that "our jobs as teachers are linked to these standards." However, the other teacher interviewed *in the same school* said, "As for the district standards, I'm a new teacher and not aware of what they are exactly." A third teacher in this district (but at a different school) mentioned that teachers were required to provide evidence that they met standards. Yet another teacher in the district said that they hadn't even *received* the standards.

In another district, there seemed to be some confusion about whether the district even had adopted standards. One principal reported that the district had created mathematics standards, but that "they remain unadopted." But a principal at a different school in the same district said, "Of course, we adhere to what the district standards are and what they want us to teach." At the school of this second principal, one teacher stated that "The district is just beginning to develop standards," while a second teacher stated that district standards are "the most important" document/policy having an impact on his mathematics teaching.

Not every district yielded quite this level of contradictory information, but by and large, there was not a great deal of consistency in interviewees' remarks regarding standards. An additional complication was that different people used the term "standards" to refer to

different documents. For example, in discussing the “state standards,” some people were talking about the 1997 State-Board-adopted standards, whereas others were talking about, say, the 1992 Framework. Similarly, some people used “standards” to refer to the NCTM standards; others meant the state standards, and still others meant their district standards.

Indeed, several principals and teachers reported confusion and frustration about having different sets of standards (e.g., national, state, district) or about having standards constantly changing:

[From a teacher] At all three levels [national, state, district] we have been bombarded. When we, as the math department, were given the standards, the NCTM, state, and local standards all conflicted with each other. We adopted the NCTM standards, which used to be closely aligned with the state standards. The state standards are what we are tested on. The new state standards are very different...It seems like a moving target. Every couple of years the state comes out with a different strategy and we all change and then things change again.

[From a principal] I don't think teachers are very tuned to standards. There's confusion. Our people are lost. Our standards aren't exactly the same as the state's and there's confusion about why they would have different standards.

[From a teacher] I am very involved with NCTM math reform. I also liked the 1992 Framework. I am not up to date and am frustrated.

[From a principal] Teachers are confused by the standards and they ask for more specifics. They [teachers] have not seen the new standards. Also, parents have been very upset about the changes in standards.

[From a teacher] We have all these standards (state, district, school), but it doesn't meet student needs.

There also tended to be some confusion about the extent to which district standards are aligned with state standards. In one district, the teachers who were interviewed appeared to have widely disparate impressions of the relationship between their district standards and the state standards, as demonstrated by the following comments from two different teachers:

[The state has] given us the standards and guidelines and tells us what to teach....Same kind of effect from the district; they are more stringent and require more.

[from a fourth-grade teacher] The district standards are not as difficult as the state standards because the district standards do not have algebra, geometry, or integers.

One teacher in this district stated that “I am accountable to my district standards...there’s not really any state standard influence.” In contrast, another teacher—who had recently finished working on performance assessments in the district office and said that he was “very involved” in standards and frameworks—remarked that the district standards were based on the state standards. A second teacher at the same school said that she was “aware that the district is trying to align its standards to state standards.”

Impact of Standards on Instruction

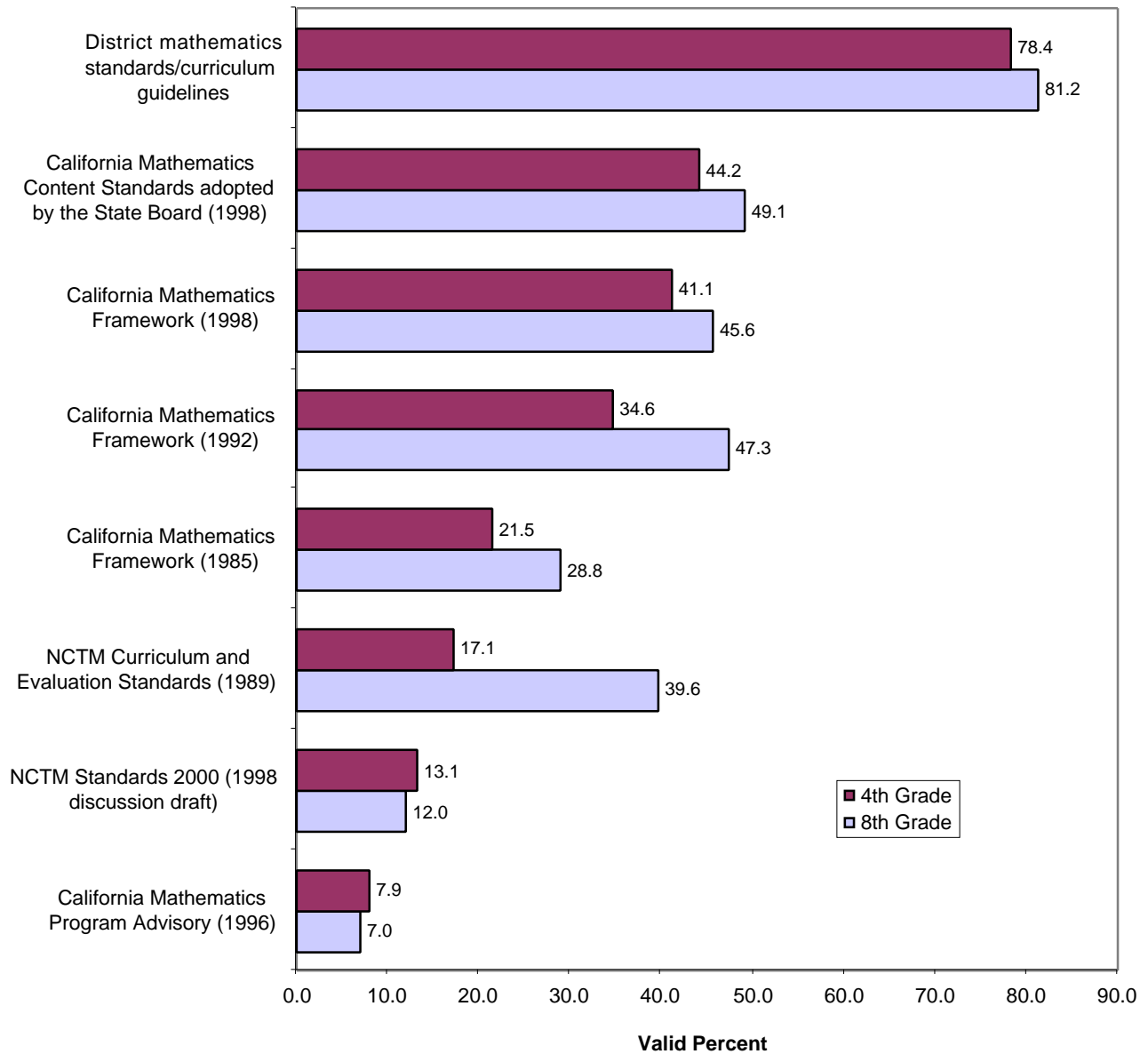
Although teachers report that standards—especially local standards—have influenced their teaching, other data suggested that the standards *per se* were not having a high level of meaningful impact on classroom mathematics instruction.

Despite teachers’ concerns about the nature of the standards and the high level of confusion surrounding them, a large percentage of teachers reported on the survey that standards, particularly their district standards, have influenced their teaching. One of the items on the questionnaire listed the titles of several standards/frameworks documents and asked teachers to rate how familiar they were with each document, from “have not heard of this” to “has influenced my teaching.” Figure 5.1 shows the percentage of teachers who marked “has influenced my teaching” for each of the documents.

As the figure illustrates, roughly 80% of teachers at both fourth-grade and eighth-grade levels said that their local district mathematics content standards/curriculum guidelines had influenced their teaching. On the other hand, very few teachers reported that their teaching had been influenced by the national (NCTM) standards, although more eighth-grade teachers (39.6%) reported being influenced by these standards than fourth-grade teachers (17.1%). About 45% of fourth-grade teachers and 25% of eighth-grade teachers said that they did not know whether their district mathematics standards were aligned with the NCTM standards. The RAND analysis found that these teachers were less likely to report instructional focuses on individual work, group work, and problem solving.

[text continues on page 62]

Figure 5.1
Percentage of Teachers Who Reported That Particular Documents
Have Influenced Their Teaching



Note: The total number of respondents (n) varied by item. For fourth grade, the range for n was 253 (for California Mathematics Program Advisory) to 278 (for district mathematics standards/curriculum guidelines). For eighth grade, the range for n was 108 (for NCTM Standards 2000) to 117 (for district mathematics standards/curriculum guidelines).

As for the state-level documents, only 21.5% of fourth-grade teachers and 28.8% of eighth-grade teachers reported that their teaching had been influenced by the 1985 California Mathematics Framework. However, this is not surprising, given that a majority of teachers at both grade levels reported having had 10 or fewer years of teaching experience. The 1992 and 1998 Frameworks appear to have exercised somewhat more influence on survey respondents, as shown by the figure. At the eighth-grade level, the percentage of teachers who said that 1992 Framework had influenced their teaching was slightly higher than the percentage reporting influence by the 1998 Framework. Since the 1998 Framework had only just been adopted when the survey was administered, this is perhaps to be expected, although more fourth-grade teachers reported influence of the 1998 document than of the 1992 document.

RAND's analysis found that teachers who said their teaching was influenced by the 1992 or 1998 California Mathematics Frameworks or the NCTM standards were more likely to report engaging in practices focusing on group work, applications, and problem solving. However, as discussed in Chapter 3, several other factors, such as student demographics, also were related to use of particular types of practices.

Very few teachers said that the 1996 California "Mathematics Program Advisory" had influenced their teaching. In fact, a majority of teachers (53.8% fourth grade; 66.7% eighth grade⁵) indicated that they had not even heard of this document. As this Program Advisory was addressed to superintendents and principals, rather than to teachers themselves, and was more a statement of policy and philosophy than a curriculum document, these figures are not surprising. Nearly all of the data collected by this study suggests that to maximize the influence of documents on instruction, the documents must be distributed to individual teachers. Moreover, this dissemination must be an ongoing process, as new teachers are constantly entering the profession.

Approximately 45% of fourth-grade teachers and 50% of eighth-grade teachers reported that their teaching had been influenced by the *California Mathematics Content Standards* recently adopted by the State Board. Of all of the documents listed on the survey, these standards were second only to district standards in terms of reported influence on teaching, at both grade levels. Given that these standards had been adopted only a little over a year prior to the survey administration, these figures, while still not even representing a majority of teachers, are higher than might be expected.

Other data, however, suggest a somewhat lower influence of the new state content standards on instruction. For example, one of the new state standards for fourth grade is, "Use concepts of negative numbers (e.g., on a number line, in counting, in temperature, in 'owing')." Yet of all of the fourth-grade teachers who reported that the new state standards

⁵ These figures are slightly different than the ones given in the RAND report in Appendix A. The figures presented here are the percentages of teachers who actually responded to the survey question, whereas RAND imputed values for the missing responses and included those in the percentages.

had influenced their teaching, fully half of them (59 of 118) indicated on the survey that they did *not* teach negative numbers in their class. Similarly, nearly one-third of these teachers (38 of 118) reported that they did not teach use of variables, even though another fourth-grade standard calls for students to “demonstrate an understanding and the use of the concept of a variable.”

Interviews and observations, too, suggested that the influence of standards (in general) might not be at the high level suggested by the responses to some of the standards-related survey items. Overall, direct impact of the standards on curriculum and instruction appeared to be relatively low, or at best, somewhat superficial in most of the districts visited. (See the “District Spotlight” for one exception.)

Although several of the teachers who were interviewed did say that they follow—or try to follow—standards in their teaching, many other teachers did not mention standards at all, or mentioned them only minimally.⁶ A few interviewed teachers suggested that the standards (district or state) “did not apply” to them or to their students, for one reason or another. As one teacher stated,

We have district standards for eighth-grade math which are algebra. But we’re not teaching algebra. Everyone is supposed to put the standard they are addressing on the board. So I just make them up with what I’m going to be teaching. But they’re not real standards, they’re goals. The district standards don’t even apply to my class.

Other teachers mentioned that they were aware that standards existed, but that they had not read them, or did not use them systematically:

I studied a little bit of the nationwide math standards in college last year. I wish I knew more. Being from out of state it’s a learn-as-I-go with regard to the state standards.

The state’s standards seem to be covered in almost anything that we do anyway. I don’t spend too much time matching individual standards with what I’m teaching.

I know we have new state standards and also district standards that are aligned with the state....I have the state standards but I don’t really refer to them.

I perused the state standards prior to the SAT-9 and was disappointed that we had only covered half of them.

⁶ Several teachers who did not mention district “standards” *per se* did mention other district curriculum guidelines such as scope-and-sequence documents, timelines, benchmarks, or checklists. (Such comments were particularly frequent in two of the eight districts.) To some extent, the documents mentioned may resemble or serve some of the same purposes as content standards; one teacher said that the district scope and sequence gave “expectations for each grade level.” Another teacher remarked that a district timeline essentially tells him “what to teach at what time to make it through the year, or what they expect to be covered by such-and-such a time throughout the year.”

I use standards. But after I get to know my kids I pick the ones that I think I'll get the most out of and do those. The ones I miss, I just miss, because I'd rather the kids know something that they can build on rather than a hodgepodge of everything.

The eighth-grade teacher who made this last remark later commented on the difficulty he has in helping students meet standards when the students lack sufficient preparation:

I use the standards. However, many of these kids come in here with limited reading skills and little or no computation skills. So I assess them. I spend one to nine weeks finding out what they know and compare it to what they should know when entering eighth grade. Then I must decide whether to give them what they should know or advance them. I base it on what the majority needs.

When asked “How do you decide what mathematics to teach?” the majority of teachers who were interviewed did not mention standards prominently in their responses. Several teachers spoke instead of following the curriculum established by their school or district. To the extent that the curriculum is aligned with standards, then, instruction may also be aligned with the standards. Alignment of standards with curriculum is discussed further in the following section.

District Spotlight: Mathematics Content Standards That Matter

In one of the eight districts visited, the district's content standards have clearly exercised a powerful effect on schools and teachers. Every teacher interviewed in this district (6 total) talked about the content standards and the impact of the standards on curriculum and instruction. For example, when asked, “How do you decide what mathematics to teach?” standards figured prominently in the answers of five of the six teachers, and the sixth teacher implied the same in the answers to other interview questions. Following are some of the remarks of teachers in this district about the influence of the district's content standards:

We have 8 district standards. What I like about them is that they simplify our curriculum and tell us exactly what we can focus on....The standards guide my teaching.

For planning purposes, I went through the district standards, month by month.... We are completely standards-based in our approach.

My approach is to combine various strategies and to cover the standards....I teach the standards.

The principals at the schools in this district also had a very high level of awareness of the standards. At one school, the principal said she thought that mathematics instruction was “clearly being driven by [district] standards” and mentioned that her school is piloting the new district report card, which focuses heavily on reading and mathematics standards. Another principal stated that curriculum is “absolutely dictated” by the district-developed standards, although teachers “have freedom” in how

to teach them. She also mentioned that she thought the standards had helped with student achievement by allowing teachers to clearly communicate to parents where their children were and where they needed to go.

A principal at a third school in the district also commented that she thought the standards had had a major positive impact and made a direct difference in the classroom. She indicated that standards help her “talk to teachers,” since she can better see what teachers are covering and what they should be covering, and she thinks that standards set up a positive atmosphere of peer pressure to produce good outcomes. She reported that all students have copies of the standards in their binders, and teachers link back to them during lessons. The classroom observer did not directly confirm this, although in a different school in the same district, the observer made the following note about a particular teacher’s class:

It was interesting how explicit the emphasis was on standards and teaching to them. These are at the forefront of the teacher’s plans; he referred to them when describing what he does and why he does what he does. Additionally, the teacher had all the standards printed and laminated. He has them hanging on the wall, covering at least an eighth of the wall space.

Alignment of Standards with Curriculum

Alignment of content standards with curriculum and instruction is an ongoing process.

Several principals and teachers who were interviewed discussed present efforts to align curriculum and/or instruction with standards. The following comments were made by interviewees in three different districts:

[From a principal] We’ve looked at district standards and SAT-9 to determine curriculum. Now we’re going to break it down by quarter.

[From a teacher] Curriculum decisions come from the state and are brought to our attention at a faculty meeting. Then it’s up to the teachers to write a pacing plan. Each grade level sets goals for each semester.

[From a teacher] I have modified some of my teaching style to fit what the standards are saying....There’s definitely standards that are being put in place and things of that nature that have influenced by teaching....They come straight from the district. Like, the principal goes to a district meeting. And she comes back, and she says, “Okay, here’s what’s going on.” Like for example, at the beginning of the school year, I’m a math teacher, and so I didn’t do a whole lot of writing in my class. Well, now I do tons of writing in my class, because that’s part of the standard now: “Students will be able to learn to read and write across the curriculum.”

The teacher of this last remark, however, was also one of the teachers who said that he decided what to teach by “following the book.” As mentioned in the previous chapter, many teachers reported that curriculum materials—namely, the textbook—play the primary role in determining the content of instruction. Thus, *to the extent that curriculum materials are aligned with the standards and instruction follows the curriculum materials, then instruction is aligned with the standards.* And some interviewees did indicate such alignment:

[From a principal] The state framework determines the curriculum. As for the text, the principal and teachers look at the state approved books to try and meet the standards which state that by a particular age, a student must have mastery of specific skills....The school has full discretion over pacing, but we need to meet the standards.

[From a teacher] The district standards are pretty much aligned with the book we use. They went through that whole process when they chose the book, back, like, two years ago. From what I understand—I wasn't here.... The curriculum is pretty well laid out. They tell you what concepts need to be done; you don't have to do it exactly the way it is in the book, but that's basically what you've gotta teach.

The principal at this teacher's school, however, did not take it as a given that following the district-adopted text ensured coverage of the standards. She stated:

The district is attempting to align the math standards with curriculum....Our major job next year is to align curriculum, see if we're achieving the standards, and understand what the assessments show about changes that need to be made....Our priorities are to align curriculum to standards and to do a quarterly assessment here so that the goals are set for each grade level in math.

Moreover, as demonstrated by some of the comments in the chapter on curriculum materials, it cannot always be assumed that curriculum materials are aligned with the standards. The ever-changing nature of standards, and the different sets of standards, only exacerbate this problem. An interviewed teacher in one district stated:

This year we made the transition to an algebra curriculum for eighth grade that is different than traditional algebra. This was supposed to be the transition year. Now, these books...have not been adopted by the district. They follow the old state standards and the NCTM standards, but they don't address the new state standards.

Another teacher who was interviewed lamented similarly, “Math standards keep changing and how can we get a curriculum to match when it's always changing?” Yet another teacher commented, “I think we need to align our curriculum with the state standards because they are aligned with the SAT-9.” This remark hints at the power of the SAT-9 in driving curriculum, to be discussed further in the following chapter. The extent to which the SAT-9 truly is aligned with the state standards also will be discussed.

District Spotlight: Aligning Mathematics Standards with Curriculum

School-level comments about alignment of mathematics curriculum with standards were particularly prominent in one of the eight districts visited (not, interestingly, the same district discussed above in which standards figured so prominently in interview responses). Principals and teachers at three out of the four schools visited in this district mentioned alignment efforts.

At the first school, the principal said that at the beginning of the year, the faculty had discussed the district mathematics standards and grade-level teams met to decide the goals and objectives for the year based upon the appropriate standards. They created a yearlong plan to address all of the standards, and teachers continue to work in grade level teams to plan how to meet the standards. A teacher at this school confirmed independently that the fourth-grade teachers had, indeed, met as a group to align their curriculum to the district standards.

At the second school in this district, the principal spoke of how “Standards are the basis now in the school and in the district” and stated that “the present school effort is to align curriculum to standards.” (She said that the school follows the direction of the district inasmuch as the district selects the text and adopts the standards, but the school itself develops the “course of study.”) A teacher at this school, meanwhile, discussed how the teachers had been “mapping” district standards to curriculum, resources, and practices. She implied that this had been a district-wide activity.

The principal at the third school discussed alignment between professional development efforts and the standards, explaining that the school has an outside consultant who comes in on a monthly basis to demonstrate how to use materials and “how the materials correspond to the district standards.” The relationship between the consultant and the content standards was not mentioned by the teachers at this school, but one of the teachers did discuss how, using the district and state standards as a guide, the mathematics teachers had met and “made a list of priorities” for teaching mathematics. She said that this had been a “useful discussion” and that they had “shared methods.”

In the Next Chapter

If content standards are not being taught, their impact on students is likely to be minimal. One way to promote classroom implementation of content standards is to align high-stakes assessments with the content standards. When such assessments exist, schools and teachers may have more motivation to help students master the standards. Assessment is the subject of the next chapter.

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