Curriculum-Based Measurement for Reading, Spelling, and Math: How to Do It and Why

MICHELLE K. HOSP AND JOHN L. HOSP

ABSTRACT: The purpose of this article is to provide a rationale for collecting and using curriculum-based measurement (CBM) data as well as providing specific guidelines for how to collect CBM data in reading, spelling, and math. Relying on the research conducted on CBM over the past 25 years, we define what CBM is and how it is different from curriculum-based assessment (CBA). We describe in detail how to monitor student growth within an instructional program using CBM data in reading, spelling, and math. Last, we discuss reasons teachers should collect and use CBM data.

Key words: assessment, curriculum-based measurement, progress monitoring

Identifying appropriate ways for teachers to assess students’ skills in the critical areas of reading, spelling, and math is important in helping all students succeed in school. Some assessments that teachers typically use (e.g., informal inventories, teacher-made tests) lack reliability and validity (Spear-Swerling & Sternberg, 1998), and most (e.g., norm-referenced tests) lack treatment validity (Reschly & Grimes, 2002). Treatment validity is important because it indicates that the results of a test can be used to guide instruction and improve student performance (Witt & Gresham, 1985). In addition, these assessments are consuming to administer and score, and lack multiple forms that are needed in order to monitor student progress (cf. Fuchs, Fuchs, & Maxwell, 1988). Among the options is curriculum-based measurement (CBM) which is easy to administer and score, has good treatment validity (Fuchs & Fuchs, 1998), as well as good reliability and validity (Marston, 1989; Shinn, Good, Knutson, Tilly, & Collins, 1992).

CBM was developed in the late ’70s by Deno and his colleagues at the University of Minnesota Institute for Research on Learning Disabilities. Since the development of CBM, there have been a plethora of articles and books written describing how to implement CBM, use it to inform instruction, screen students who are at risk, use it for referral decisions, and reintegrate students into general education programs. There have been numerous studies on its technical adequacy as well. Even with the availability of this information, educators typically are not trained to or do not use CBM to systematically monitor the
progress of their students (Allinder & Oats, 1997; Yell, Deno, & Marston, 1992). However, we anticipate that recent legislation may prompt greater attention to CBM. An increased focus on accountability has been manifested in requirements that educators monitor student progress toward meeting goals and objectives and to regularly inform parents of their child’s progress (IDEA, 1997; 1999). CBM stands out as one of the best measures to efficiently accomplish these requirements.

To better inform school personnel who have limited knowledge of CBM we have compiled the research and resources over the past 25 years on CBM and offer an overview of why CBM data should be collected on students. In this article, we will describe CBM, differentiate CBM from curriculum-based assessment (CBA), describe how to monitor student growth within an instructional program using CBM data in reading, spelling, and math, and finally, discuss reasons teachers should use CBM. Although each of these topics has been reviewed elsewhere, our intent is to provide a succinct reference or overview of CBM which focuses on how to collect CBM data in reading, spelling, and math to monitor student growth within an instructional program.

What Is CBM?

CBM is a set of standardized procedures used to assess student performance on long-term goals in reading, spelling, written expression, and math curriculum. CBM is designed to be an objective, ongoing measurement system of student outcomes, which facilitates enhanced instructional planning (Deno, 1985). Therefore, CBM is used to “create a data base for each student to allow the teacher to evaluate the effectiveness of an individual student’s educational program” (Deno, 1992, p. 5).

In order to accomplish that goal, the teacher first identifies what curriculum material he or she expects a student to master over the school year. Second, the teacher uses the identified material, from the end of the year, and develops or selects CBM tests, often referred to as probes. Third, the teacher tests the student one to two times a week using the CBM probes. Fourth, the teacher records the student’s score on a graph and uses this information to make instructional decisions. These instructional decisions may include: (a) monitoring student growth within an instructional program (Fuchs & Fuchs, 1991; Fuchs, Fuchs, & Hamlett, 1990; Marston, Diment, Allen, & Allen, 1992); (b) creating instructional groups (Fuchs, Fuchs, Bishop, & Hamlett, 1992; Wesson, 1992; Wesson, Viertuhler, & Haubrich, 1989); (c) identifying skill deficits (Fuchs, Fuchs, Hamlett, & Allinder, 1991; Fuchs, Fuchs, Hamlett, & Stecker, 1990; Whinnery & Stecker, 1992); (d) screening students who are at risk for school failure (Sel, Benning, Marston, & Magnusson, 1991; Speece & Case, 2001); (e) aiding in eligibility decisions for students (Fuchs & Fuchs, 1997; Shinn & Hadedank, 1992; Shinn & Hubbard, 1992); and (f) evaluating placement in special education and reintegration of students into regular education programs (Fuchs, Fernstrom, Reeder, Bowers, & Gilman, 1992; Marston, 1987-1988; Shinn, Powell-Smith, Good, & Baker, 1997).

Due to the nature of this special issue on collecting and using data in the classroom, our focus is on using CBM data to monitor student growth within an instructional program. CBM is appropriate for this purpose because it provides descriptions of academic behaviors (i.e., reading, spelling, writing, and math) that are observable and measurable, which allows educators to use the data to help inform instructional decisions.

How Is CBM Different From CBA?

CBM can be thought of as one type of CBA. CBA is defined by three features: test stimuli are taken from the curriculum the student is being taught; the student is tested repeatedly over time; and the information from the tests is used to inform instruction (Tucker, 1987).

Based on these three features of CBA, Fuchs and Deno (1991) have identified two major measurement models: mastery measurement and general outcome measurement. They define mastery measurement as breaking down global skills into a set of subskills, which are then used as short-term instructional objectives. These subskills are then taught and measured in sequence identifying short-term progress. Fuchs and Deno (1991) define general outcome measurement as using standardized procedures and long-term goals, in which the testing procedures remain constant over a long period of time (typically 1 year).

Based on these distinctions, most CBA models fall under mastery measurement because they include teacher-made tests that incorporate task analysis which requires that different items and tests be developed for each skill that is taught (Deno, 1992). On the other hand, CBM falls under general outcome measurement because it uses repeated measures of global skills. These measures use different but equivalent forms (i.e., similar items are included on each measure) which provide a representation of the subskills embedded in the global skills (Fuchs, Fuchs, Hamlett, & Stecker, 1990). In addition, CBM is a standardized process which allows for reliable and valid information to be obtained as well as providing guidelines and specific procedures on how to select testing material (i.e., the probes; Deno, 1992). In contrast, the reliability and validity data for mastery measurement types of CBA are unknown because they are not standardized; rather, they are designed by individual teachers for specific students. Other characteristics that distinguish CBM from other models of CBA are that it is tied to the student’s curriculum, takes little time to administer and score, is suitable for multiple forms necessary for monitoring progress, is inexpensive to make and produce, and is sensitive to student improvement over time (Jenkins, Deno, & Mirkin, 1979).

How to Conduct CBM in Reading

CBM in reading includes two types of measures. One is based on a maze task in which the student reads a passage (aloud or silently) for 2.5 minutes with approximately every seventh word deleted. The student must select one of three words to replace the missing word so that it restores meaning to the text and the number of correct replacements is used as the index for CBM maze passages (Deno, Fuchs, Marston, & Shin, 2001). The second type of measure is based on having a student read a passage aloud for 1 minute and the number of words read correctly is
used as the index for CBM passage reading. This task (often referred to as oral reading fluency or ORF) tends to be used more often than the maze task.

The first step in conducting CBM for reading (ORF) is to obtain the appropriate materials. These materials include:

1. Different but equivalent reading passages (probes)
2. A stopwatch or timer that displays seconds (a count-down timer is preferable because the timer indicates the end of 60 seconds, freeing the examiner to concentrate on the student’s reading)
3. A writing utensil
4. An equal interval graph to plot the data
5. Directions for administering and scoring the passages.

The passages should be different but equivalent in grade level and consist of at least 200 words each (Wesson, 1992). Passages can be taken from the student’s current curriculum, but should not include passages the student has previously read. Generic passages can also be used which have been taken from other curriculums or developed specifically for CBM passages, provided they are at the same grade level. An advantage of generic passages is that it ensures that the student has not previously read the passage. Two copies of each passage will be needed, one copy for the student to read and one copy for the teacher/examiner to write on. The teacher/examiner copy should include the number of words added cumulatively for each line to aid in scoring (see Figure 1).

It is also helpful to laminate the passages to increase their longevity and to allow the examiner to mark on a passage (using wet erase markers) and then wipe it off for use with another student. If the passage needs to be kept for record purposes, a photocopy can be made which still allows the passage to be cleaned off and used with additional students.

### TABLE 1. Determining Placement Level in Reading Material

<table>
<thead>
<tr>
<th>Grade level</th>
<th>Placement level</th>
<th>Correct words per minute (CWPM)</th>
<th>Errors per minute</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–2</td>
<td>Frustration</td>
<td>&lt; 40</td>
<td>&gt; 4</td>
</tr>
<tr>
<td></td>
<td>Instructional</td>
<td>40–60</td>
<td>4 or less</td>
</tr>
<tr>
<td></td>
<td>Mastery</td>
<td>&gt; 60</td>
<td>4 or less</td>
</tr>
<tr>
<td>3–6</td>
<td>Frustration</td>
<td>&lt; 70</td>
<td>&gt; 6</td>
</tr>
<tr>
<td></td>
<td>Instructional</td>
<td>70–100</td>
<td>6 or less</td>
</tr>
<tr>
<td></td>
<td>Mastery</td>
<td>&gt; 100</td>
<td>6 or less</td>
</tr>
</tbody>
</table>


The passages will be used for two different purposes. First, three equivalent passages will be used to determine the student’s instructional level. The teacher/examiner administers three passages at what is thought to be the student’s instructional level. These three passages can be administered during one testing session, one right after the other, or across consecutive days. The median score from these passages is compared to the criteria found in Table 1 for determining instructional level. If the score does not match the criteria in Table 1, the student is given three additional passages either below or above the grade level from the original passages depending on whether the student’s median score was below or above the instructional level. The median score taken from the three new passages is then compared to the criteria in Table 1. This process of testing backward or forward is repeated until the student’s instructional level has met the criteria in Table 1.

While determining the student’s instructional level, it is important to note the number of errors that the student has made. If the errors exceed four (for Grades 1 and 2) or six (for Grades 3–6), the student is considered to be at the frustrational and not instructional level (Fuchs & Deno, 1982). Once the student’s instructional level is identified, 30 equivalent passages will be used to monitor student progress throughout the year. These passages should be at the student’s goal level.

The goal level is based on determining what skills and level of curriculum the student is expected to be successful at in approximately one year (Shinn, Gleason, & Tindal, 1989). This is typically defined as one year above the student’s instructional level. However, for the 30 passages used to monitor progress, Hintze, Daly, and Shapiro (1998) recommend using the student’s instructional level for students in Grades 1 and 2, and goal level material (i.e., one year above instructional level) for students in Grades 3 and 4.

The reason is that instructional level material may be more sensitive to growth allowing for frequent instructional changes in the early grades when reading development is critical. On the other hand, they argue for using goal level material for Grades 3 and 4 because instructional level material would not provide any additional diagnostic information as it could for Grades 1 and 2. We encourage the use of instructional level material for students in Grades 1 and 2, and goal level material for students in Grades 3 and above.

The directions and scoring criteria should be the same whether the passages are being used to find the student’s instructional level or for monitoring progress. The student should have the unnumbered copy of the passage in front of him or her and the teacher/examiner

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If this were the CBM passage, the words in the passage would be added up cumulatively until the end of the text. This is helpful when scoring the passage so that you do not have to count each word every time a student reads a passage.

FIGURE 1. An example of a teacher/examiner passage.
should have the copy that is numbered, along with the timer and something to mark the passage with.

**Directions for Reading CBM**

Shinn (1989) uses the following:

Say to the student “When I say ‘start,’ begin reading aloud at the top of this page. Read across the page (demonstrate by pointing). Try to read each word. If you come to a word you don’t know, I’ll tell it to you. Be sure to do your best reading. Are there any questions?”

Say “Start.”

Follow along on your copy of the story, marking the words that are read incorrectly. If a student stops or struggles with a word for 3 seconds, tell the student the word and mark it as incorrect.

Place a vertical line after the last word read and thank the student.

Count the number of words read correctly (WRC) and incorrectly. (p. 239)

**Scoring Reading CBM**

Words that are read correctly in accordance with the text are scored as correct. Words that are mispronounced, omitted, substituted, or reversed are scored as errors, while repetitions and insertions are ignored. If the student self-correction in 3 seconds the word is counted correct, but if the student hesitates on a word for more than 3 seconds they are supplied the word and it is counted as an error (Shinn, 1989).

**How Much Progress Can We Expect in Reading**

Once the instructional level is determined, the next step is to determine how much progress should be made on a weekly basis. Realistic and ambitious growth rates of words read correctly per week are indicated by Fuchs, Fuchs, Hamlett, Walz, and Germann (1993) along with growth rates reported by Deno et al. (2001) in Table 2.

Deno et al. (2001) examined the growth rates for students with disabilities who received instruction in typical special education programs as well as students with disabilities who were instructed using effective reading practices. They found that students with disabilities in typical special education programs showed a growth rate of 1 word per week in Grade 1 and 0.6 words per week in Grades 2 through 6. In comparison, students with disabilities who received reading instruction based on effective practices increased 1.39 words per week across Grades 2 through 6 (they did not include Grade 1), which was similar to the growth rates reported for typically developing students. They concluded that it would be appropriate to use typical growth rates for students with disabilities. Because these students are already behind, it is critical that educators not lower expectations, given that students should be able to achieve near typical growth rates if given appropriate instruction (Deno et al., 2001).

Once the instructional level is identified, the next step is to determine the goal for WRC (words read correctly). The goal is determined by using the median score of the three passages at the student’s instructional level and the expected growth for the student’s grade level of functioning (Fuchs et al., 1993). The grade level of functioning is typically thought of as the goal level. Therefore the passages used to monitor growth (i.e., instructional level for Grades 1 and 2, one year above instructional level for Grades 3 and above) will correspond with the expected growth for that grade. For example, if a student in the fifth grade is found to be reading at a third grade instructional level, the expected growth used would correspond to fourth grade (i.e., goal level material used to monitor progress). So too, if the student’s median score on third grade material was 30 WRC and we wanted to monitor his progress over 34 weeks, the expected rate of growth for fourth grade material (i.e., 1.1 ambitious) would be multiplied by the 34 weeks (1.1 x 34 = 37.4). This is added to the original score (30 WRC + 37.4 = 67.4) which determines the goal (67.4 WRC).

These scores are then transferred onto an equal interval graph. The vertical axis of the graph indicates the number of words read correct. The increments should be sized so that student growth can be accurately observed. Increments that are either too large or too small may under- or overstate the student’s growth. The horizontal axis is used to indicate the number of weeks the student will be monitored, allowing for data to be entered one to two times per week. A goal line is then drawn from the original score of 30 WRC at week 1 to the score of 67.4 WRC at week 34 (see Figure 2).

**TABLE 2. Growth Rates for Reading**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Realistic growth rate</th>
<th>Ambitious growth rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>1.5</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>4</td>
<td>.85</td>
<td>1.1</td>
</tr>
<tr>
<td>5</td>
<td>.5</td>
<td>.8</td>
</tr>
<tr>
<td>6</td>
<td>.3</td>
<td>.65</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Growth rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.80</td>
</tr>
<tr>
<td>2</td>
<td>1.66</td>
</tr>
<tr>
<td>3</td>
<td>1.18</td>
</tr>
<tr>
<td>4</td>
<td>1.01</td>
</tr>
<tr>
<td>5</td>
<td>.58</td>
</tr>
<tr>
<td>6</td>
<td>.66</td>
</tr>
</tbody>
</table>

The goal line is then used as a reference point in regard to the effectiveness of instruction (Marston et al., 1992). There are two ways this can be accomplished: trend line analysis, or data point analysis (for an explanation of trend line analysis, see Marston et al., 1992). To use data point analysis, the data points on the graph for each week are examined. If at any time four consecutive scores fall below the goal line, a change in instruction is recommended. Similarly, the goal is raised whenever the student consistently achieves above the goal line (see Fuchs, Fuchs, & Hamlett, 1989). Using the data in this way allows the teacher to determine if the student is making appropriate progress or if a change in instruction is warranted.

**How to Conduct CBM in Spelling**

Spelling CBM is conducted by having the student spell words from dictation for 2 minutes. The teacher/examiner then counts the number of correctly written letter sequences. The first step in conducting CBM for spelling is to obtain the appropriate materials. These materials include the following:

1. Different but equivalent spelling lists (probes)
2. A stopwatch or timer that displays seconds
3. An answer sheet for the student to write on (a blank sheet of lined paper)
4. An equal interval graph to plot the data
5. Directions for administering and scoring spelling CBM

The spelling probes should be different but equivalent in grade level and should include at least 12 to 13 words for Grades 1 through 3, and 17 to 18 words for Grades 4 through 8 (Shinn, 1989). The spelling words should represent the skills the student is expected to master by the end of the school year. This is accomplished by examining the school spelling curriculum or basal reading series for the year-long curriculum.

One copy of each spelling probe will be needed. The teacher/examiner copy should include the number of correct letter sequences (CLS) for each word. A CLS is the right letter in the correct order or sequence. For example, the word happy consists of six CLS and is scored by placing a caret to indicate each CLS (see Figure 3).

The link between two consecutive letters is counted as a correct letter sequence if they are both correct. In addition, the spaces prior to the first letter and after the last letter are also counted as a CLS if the first and last letters are correct. If only one of the letters in the two letter sequence is correct, no credit is given. Similarly if the first or last letter is incorrect no credit is given for that sequence.

The first time, three equivalent spelling probes are administered to the students. As with the reading probes, these three spelling probes can be administered in one testing session or across consecutive days. The median score is used to provide

FIGURE 2. Example of graph and goal line for reading curriculum-based measurement (CBM).

the first data point on the student’s graph. After that, 30 different but equivalent spelling probes will be used to monitor student progress in spelling throughout the year. Unlike the reading passages that must be given individually, the spelling probes can be administered individually or in group settings. The student(s) should have an answer sheet to write on and the teacher/examiner should have the scored probe, along with the timer, and the directions.

**Directions for Spelling CBM**

Shinn (1989) uses the following:

Say to the student “I am going to read some words to you. I want you to write the words on the sheet in front of you. Write the first word on the first line, the second word on the second line, and so on. I’ll give you 10 seconds to spell each word [or 7 seconds for grade 4-8]. When I say the next word, try to write it, even if you haven’t finished the last one. Are there any questions?”

Say the first word and start timing.

Say each word twice. Use homonyms in a sentence.

Say a new word every 10 [or 7] seconds.

Dictate words for 2 minutes. About 12–13 words should be presented if words are dictated every 10 seconds for Grades 1 through 3. About 17–18 words should be presented if words are dictated every 7 seconds. Do not dictate a new word in the last 3 seconds and allow the student to finish the last word. (p. 241)

**Scoring Spelling CBM**

For each spelling word, the number of CLS is counted and then added together to get the total number of CLS. Fuchs et al. (1993) indicated that because spelling entire words correctly and not solely CLS is what is valued, it seems appropriate to monitor the number of words spelled correctly periodically (e.g., monthly).

**How Much Progress Can We Expect in Spelling**

The next step is to determine how much progress should be made on a weekly basis. Table 3 provides information on expected growth for CBM spelling for Grades 2 through 6. Once the amount of progress is determined, the goal can also be determined and drawn on the student’s graph.

The goal for spelling is determined by using the median score from the first three administrations and the expected growth for the student’s grade level of functioning (i.e., goal level; Fuchs et al., 1993). For example, if we want to monitor a student receiving third grade spelling instruction over 34 weeks we would take their original median score (say 25 CLS) and use the ambitious goal of one CLS growth per week (for Grade 3). This score is then added to the original score (25 CLS + 34 = 59) which determines the goal (59 CLS).

Following the procedures outlined under reading, these scores would be transferred onto an equal interval graph. The vertical axis would indicate the number of CLS and the horizontal axis would indicate the number of weeks the student will be monitored. A goal line is then drawn from the original score of 25 CLS at Week 1 to the score of 59 CLS at Week 34. As with reading, the goal line is used as a reference point. If at any time four consecutive scores fall below the goal line a change in instruction is recommended. Similarly, if the student consistently achieves above the goal line, the goal is raised (Fuchs, Fuchs, & Hamlett, 1989).

**How to Conduct CBM in Math**

Math CBM is conducted by having the student answer computational problems for 2 minutes. The teacher/examiner then counts the number of correct digits (CD). The first step in conducting CBM for math is to obtain the appropriate materials. These materials include:

1. Different but equivalent math sheets (Probes)
2. A stopwatch or timer that displays seconds
3. An equal interval graph to plot the data
4. Directions for administering and scoring math CBM

The math probes should be different but equivalent in grade level and should include at least 25 problems per probe (Fuchs & Fuchs, 1991). The math problems should represent the skills the student is expected to master by the end of the school year. This is accomplished by examining the year-long math curriculum and determining the emphasis on the skills covered during the year. Based on what skills will be taught and how much time is spent teaching each skill, math problems are developed for each probe. Although the problems on each probe should have different numerals (i.e., problems testing the same skill should contain different numbers), the same number of problems representing each skill taught should be the same on every probe. Therefore, each probe is equivalent and represents the curriculum from the entire year (Fuchs & Fuchs, 1991).

Two copies of each math probe will be needed. One copy will be for the student to write on and one copy for the teacher/examiner that contains the correct answers and indicates the correct number of digits for each problem. A correct digit is the right numeral in the right place (see Figure 4). The first time, three equivalent math probes are administered to the student(s).
Just as with reading and spelling, this can be accomplished in one testing session or across consecutive days. The median score will be used to provide the first data point on the student’s graph. After that, 30 different but equivalent math probes will be used to monitor student progress in math throughout the year. Similar to the spelling probes, the math probes can be administered individually or in group settings. The student(s) should have a copy of the math probe in front of them and the teacher/examiner should have a timer and the directions.

**Directions for Math CBM**

Shinn (1989) uses the following:

Say to the student “The sheets on your desk are math facts.”

For single-skill probes say: “All of the problems are [addition or subtraction or multiplication or division] facts.”

For multiple-skill probes say: “There are several types of problems on the sheet. Some are addition, some are subtraction, some are multiplication, and some are division [as appropriate]. Look at each problem carefully before you answer it.”

“When I say ‘start,’ turn them over and begin answering the problems. Start on the first problem on the left of the top row [point]. Work across and then go to the next row. If you can’t answer the problem make an ‘X’ on it and go to the next one. If you finish one side, go to the back. Are there any questions?”

Say “Start.”

After 2 minutes, say “Stop.” (pp. 241-242)

**Scoring Math CBM**

For each math problem, the number of correct digits is counted and then added together to get the total number of CLS. For the student to get credit for a CD it must be in the right place value. If the student does not show his or her work but has the correct answer, he or she is given credit for the longest method used to solve the problem (Shinn, 1989).

**How Much Progress Can We Expect in Math**

Once the CD for each problem has been added up, the next step is to determine how much progress should be made on a weekly basis. Table 4 provides information on expected growth for CBM math for Grades 1 through 6. Once the amount of progress is determined, the goal can also be determined and drawn on the student’s graph.

Similar to reading and spelling, the goal in math is determined by using the median score from the first three administrations and the expected growth for the student’s grade level of functioning (i.e., goal level; Fuchs et al., 1993). For example, if we want to monitor a student receiving fourth grade math instruction over 34 weeks we would take his or her original median score (say 40 CD) use the ambitious goal of 1.15 CD growth per week (for Grade 4), and multiply that by 34 weeks (1.15 x 34 = 39.1). This score is then added to the original score (40 CD + 39.1 = 79.1) which determines the goal (79.1 CD).

Following the procedures outlined under reading, teachers would then transfer these scores onto an equal interval graph with the vertical axis indicating the number of CD and the horizontal axis indicating the number of weeks the student will be monitored. A goal line is then drawn from the original score of 40 CD at Week 1 to the score of 79.1 CD at Week 34. As described under reading and spelling, the goal line is used as a reference point. If at any time four consecutive scores fall below the goal line a change in instruction is recommended. Similarly, if the student consistently achieves above the goal line, the goal is raised (Fuchs, Fuchs, Hamlett, 1989).

**Why Use CBM?**

So why should educators use CBM? One reason is that it creates a database for each student. This database allows educators to determine if the student is making appropriate progress given the instruction they are receiving. Since the focus of CBM is on long-term objectives (i.e., typically end of school year) it allows educators to index the student’s overall skills across time. Therefore, educators can adjust what and how they teach to specifically meet the needs of each student. This has been demonstrated in studies that have shown that students of teachers who use CBM to inform instruction achieve higher grades than students whose teachers do not use CBM data (Fuchs & Fuchs, 1986; Fuchs, Butterworth, & Fuchs, 1989).

In addition, graphing CBM data allows educators to easily track how each student is achieving. This information is helpful for communicating progress to students and parents. Students who are aware of their own CBM data appear to be more knowledgeable of their own learning (Fuchs, Butterworth, & Fuchs, 1989) as well as see themselves as more responsi-

**TABLE 4. Rates for Math**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Realistic growth rates</th>
<th>Ambitious growth rate</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>.3</td>
<td>.5</td>
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<tr>
<td>2</td>
<td>.3</td>
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<td>3</td>
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<tr>
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</tbody>
</table>

able for their own learning (Davis, Fuchs, Fuchs, & Whinnery, 1995). Moreover, Marston et al. (1992) found that parents who received CBM data reported better communication with the teacher and more involvement in their child’s reading program. Another compelling reason to use CBM data is that it is easy to administer and score and requires little time (e.g., 1 to 3 minutes) one to two times a week. By limiting the amount of time required to collect student performance data, teachers have more time for instruction. Finally, because each student takes the same assessments, comparisons can be made across students, classrooms, and schools (Fuchs & Fuchs, 1991).

**Conclusion**

Today, teachers face the challenge of managing a daunting number of instructional and non-instructional responsibilities with regard to academic assessment. Teachers must balance their time and schedule between collecting data on students and providing meaningful instruction on academic and behavior skills. CBM is one example of how collecting data on students can be used to improve student outcomes on academic skills. However, in order for educators to consistently collect data, it must be efficient and simple to collect; but above all else, it should provide formative information that can be used to guide instruction and improve student performance. This is why tools like CBM that allow educators to monitor student progress and make curriculum adjustments accordingly are important. Moreover, with the increased focus on accountability and monitoring progress toward meeting goals and objectives, CBM appears to be a logical choice to accomplish these requirements.

**REFERENCES**


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