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Teaching Tutorial 4: Curriculum-based Measurement in Reading: Oral Fluency



***By Dr. Erica Lembke, University of Missouri &
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1. What is Curriculum-Based Measurement in Reading?

Curriculum-Based Measurement (CBM) is a progress monitoring system that you can use in basic skills areas like reading, math, spelling, and written expression. Specifically, CBM in reading is a progress monitoring system for overall reading proficiency. It consists of counting the number of words read correctly by a student from connected text in one minute.

Oral reading CBM is useful for monitoring the progress of students in either general or special education classrooms. It serves as an overall indicator of student performance in basic reading skills. Data from CBM measures are analogous to degrees on a thermometer when taking someone's temperature. A temperature is an indicator of a person's overall health. If a person's temperature is above what is expected, she may need to make changes to improve her health. CBM is used to monitor a student's educational health. If the CBM data are below what is expected, a teacher may need to make changes to improve a student's educational performance.

To use CBM in reading, the teacher first administers three probes to find out how the student is currently performing. Based on these data, the teacher sets a goal for the student and continues to administer probes on a frequent basis throughout instruction. The teacher graphs the results of each probe following administration. The teacher uses the graph to make decisions about instruction. If the student is making progress toward his goal, the teacher continues with current instruction. If the student is not making progress toward his goal, the teacher should change instruction.

CBM in reading is useful to teachers because:

1. **CBM is easy to learn and implement.**
2. CBM is **time efficient**. In reading, CBM takes about 5 to 10 minutes per week for the student and about 10-15 minute per week for the teacher.
3. CBM is **standardized**. Administration of the CBM probes remains consistent each time the teacher tests the student.
4. CBM measures are **reliable and valid**. The measures are reliable because the probes measure similar skills over time. The measures are valid because they have been well researched.
5. CBM measures are **sensitive to growth**. Small gains in performance can be seen on the graph on a daily and weekly basis.
6. CBM measures are **collected frequently and used formatively**.



Probes are short passages given to students to read for one minute on a frequent basis.

2. How do we know that Curriculum-Based Measurement in Reading is effective?

A large body of research supports the effectiveness of using CBM to monitor student performance in reading, particularly at the elementary level. Oral reading CBM measures are highly related to students' performance on other standardized reading measures, but they have also been shown to be more sensitive to small changes in student growth than traditional standardized tests. Therefore, CBM allows a teacher to adjust her instruction more quickly to better meet the needs of an individual student than if she relied on summative standardized tests. Further, students whose teachers use CBM to monitor reading achievement perform better than students whose teachers do not use CBM.

Caveat: Generally, research indicates using oral reading CBM measures has been effective with elementary students. The results have been mixed at the middle and secondary levels. In some cases, the use of maze as a measure of reading performance has been more reliable and valid for secondary students. Look for more information about maze CBM measures in a future tutorial.

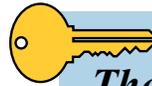
Table 1: Selected studies of oral reading curriculum-based measurement

Study	Subjects (gender, age, grade level, disability)	Findings
Shinn (1992): Curriculum-Based Measurement of Oral Reading Fluency: A Confirmatory Analysis of Its Relation to Reading	114 3 rd grade students and 124 5 th grade students	Examined relation of CBM oral reading fluency to reading process from theoretical perspective. CBM oral reading fluency provided a good index of reading proficiency, including comprehension.
Deno, Mirkin, & Chiang, (1982): Identifying Valid Measures of Reading	Study 1—18 general education students and 15 special education students. Study 2—27 general education students and 18 special education students. Study 3—43 general education students and 23 special education students.	Three concurrent validity studies were conducted to determine the relationship between performance on formative measure of reading and standardized achievement test measures of reading. Correlational analyses for five formative measure and three standardized measures supported the validity of Words in Isolation, Words in Context, and Oral Reading as indices of reading achievement.
Hamilton & Shinn (2003): Characteristics of Word Callers: An Investigation of the Accuracy of Teachers' Judgments of Reading Comprehension and Oral Reading Skills	66 third grade students	This study examined the oral reading and comprehension skills of teacher-identified word callers to test whether they read fluently, but lacked comprehension. Results disconfirmed that word callers and their similarly fluent peers read aloud equally well. Implications for addressing resistance in using CBM as a measure of general reading achievement are discussed.
Baker & Good (1995): Curriculum-Based Measurement of English Reading with Bilingual Hispanic Students: A Validation Study with Second-Grade Students	76 Bilingual Hispanic students without disabilities	Investigates the reliability, validity, and sensitivity of curriculum-based measurement (CBM) reading in English with bilingual Hispanic students. Results indicate that CBM reading in English is as reliable and valid for bilingual students as it is for English-only students. Supports construct validity of CBM reading as a measure of general reading proficiency in English.
Fuchs, Fuchs, & Maxwell (1988): The Validity of Informal Reading Comprehension Measures.	35 students with high incidence special needs	Correlations between oral reading and the Stanford Achievement Test Reading Comprehension subtest were .91, with the SAT word study subtest, .80, and with written and oral recall measures, a mean correlation of .75. These correlations support the validity of CBM oral reading.

3. When should one use Curriculum-Based Measurement in Reading?

CBM in reading should be used whenever a teacher needs more reading data to support decision-making. There are four basic uses of CBM in reading:

- 1. To monitor progress.** The most common use of CBM is as a tool for monitoring the progress of students who are struggling in reading. In general education classrooms, the teacher might be monitoring some of her lowest readers to document their progress. In special education classrooms, the teacher might use CBM data to track student performance toward IEP goals and objectives and to provide documentation of progress to parents and administrators. Each student's progress is compared to his own goal and previous performance or to the performance of average-achieving peers. Because data is taken frequently, a teacher knows how a child is performing at any given time. In addition, ongoing data collection can support a teacher's documentation toward meeting state or federal standards such as Adequate Yearly Progress as part of the No Child Left Behind Act.
- 2. To document prereferral interventions.** Teachers can use CBM measures to monitor the effectiveness of prereferral interventions. If a teacher uses CBM, she can present the results of her attempts in a data-based format. The use of CBM in the prereferral process is a very systematic way to look at the effects of each intervention.
- 3. To document performance for special education evaluation.** Once a referral for evaluation has been made, teachers can gather CBM data to evaluate how well the student is performing in the curriculum. An individual student's scores can be compared with his peers or grade level performance.
- 4. To inform instructional change.** One of the best uses of CBM data is for use in making instructional decisions. The teacher examines a student's data and then makes decisions based on how the student is performing. For instance, if a student's data indicate that he is not on track to meet his long-range goal, the teacher may implement an intervention. If the data indicate that the student is on track to meet his goal, the teacher can continue the current instruction.



The oral reading measure provides an indicator of how the student is doing overall in reading. When graphed and compared to previous performance, the number of words read in one minute gives the teacher an indication of how effective the instruction is.

4. What does one need to prepare to use Curriculum-Based Measurement in reading?

Materials needed:

- Reading Probes
- A stopwatch or other timing device
- Graph Paper or a computer graphing program

Reading Probes

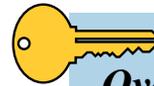
The first step in preparing for CBM is to create the reading passages that will be used to monitor the student's progress. Developing appropriate reading probes for a student is described in step two of the next section, "How Does One Implement Curriculum-Based Measurement in Reading."

Stopwatch or Other Timing Device

An accurate stopwatch or other timing device is needed for reliable administration of the reading probes. You must be sure that you are only giving the student one minute to read each probe. It is a good idea to have a back-up timing device nearby, just in case.

Graph Paper

You will need to use graph paper or a computerized graphing program to chart student data over time. By graphing a student's data, you can quickly refer to the graph to see how a student is progressing. It also offers a nice visual aid when discussing a student's reading progress with parents.



Overall, you will spend 10-15 minutes per week implementing the oral reading CBM probes and graphing results.

How long does it take to prepare to use CBM?

Once the reading probes have been developed, the amount of classroom time to implement the read aloud CBM probes is minimal. It takes one minute to administer a reading probe, and approximately two minutes to score the probe and graph the student's results. Overall, you will spend 10-15 minutes per week implementing the oral reading CBM probes and graphing results.

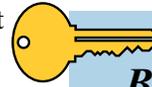
5. How does one implement Curriculum-Based Measurement in reading?

The basic steps to CBM implementation follow. Appendix A includes a case study of Sam with examples of each step.

Step 1—Determine what material you will use for your reading probes.

- Options include using content from a basal reader that the student is no longer reading or getting pre-made probes from a website. Sources for probes on-line are listed in the section "Where to get more information about CBM".¹
- The text used for the probes should not be from texts the student has read.
- You want to choose text that is at a level the student will encounter throughout the time you are monitoring that student. For example, if you have a second grade student that is reading at an early first grade level and you would like that student to be reading at a late first grade level by the end of your monitoring time, then randomly select passages from an entire first

grade text. If you would like to have this same student reading at an early second grade level by the end of the monitoring period, randomly select passages from the first grade text and the beginning of the 2nd grade text.



Baseline data show how a student is performing on CBM reading measures before instruction or intervention begins.

¹Research has determined that selecting reading passages from the local curriculum is not essential to meeting the measurement or instructional goals of CBM (Fuchs & Deno, 1994).

Step 2—Develop probes.

- For each probe, you will develop a student and a teacher copy. The student copy will be unnumbered and the teacher copy will have the cumulative number of words in the passage at the end of each line of text down the right-hand side of the page (see Appendix B for an example.)
- If you are using your own material, go through the basal reader or other material that you are using and randomly select pages of text.
- Choose pages that do not have pictures on them and try not to pick passages that have many difficult pronouns.
- Each probe should be approximately 250 words in length, or long enough so that the student will not be able to finish the passage in one minute.
- Initially, develop 25 to 30 probes. You may need to develop more depending on how long you decide to monitor the student.

Step 3—Collect baseline data.

- Randomly select three passages to use as your baseline passages.
- Collect baseline data on a student by administering the three passages and recording the number of words read correctly in one minute. The three passages can be administered consecutively, during one session.
- The student should be reading at his instructional level (examples below).

Grade Level	Word Rate	Accuracy
1-2	40-60	At least 90%
3-6	70-100	At least 90%

- If the student is not reading at these levels, choose successively lower grade-level passages until the student's instructional level is determined. See an example of graphed baseline data in the case study for Sam (Appendix A).

Step 4—Decide on short-term objective or end criteria.

- After determining the baseline level of performance, you need to decide on a weekly growth rate (short-term objective) or end criteria for each student. (taken from Deno et al., 2002)

Grade Level	Modest Weekly Growth	Reasonable Weekly Growth	Ambitious Weekly Growth
1-2	1 wpm	1.5 wpm	2 wpm
3-6	.5 wpm	1 wpm	1.5 wpm

- Alternately, you can decide on what you want your end criteria to be for the student. You may have school, district, or national norms that you are striving towards, and so you use a benchmark as your ending criterion. For example, if there is a goal in your school to have every child reading 120 words per minute by the end of 3rd grade, and you have a student that is reading at a 3rd grade level, then you may want to set your end criteria at 120 words read correctly in one minute.

Step 5—Set long-range goal.

- Once you have determined what your short-term objective or end criterion will be, you can set a long-range goal for your student. To set your long-range goal, you need:
 - The end date of your goal
 - The number of weeks until your end date
 - The weekly growth rate or end criterion
 - The median baseline score.
- When you decide on a weekly growth rate,
 1. Multiply this growth rate by the number of weeks until the end date.
 2. Add this to your median baseline data point to get your end goal.

For example, a student had the following three baseline scores: 50, 55, and 60. The teacher set a weekly growth rate of one more word read correctly per week. The end date for the instruction was 20 weeks later. To set the long-range goal, the teacher took the growth rate of one more word per week and multiplied it by the number of weeks ($20 \times 1 = 20$.) The teacher then added this score to the median baseline score of 55 ($55 + 20 = 75$). Therefore, the long-range goal for the student is 75 words read correctly per minute.
- To place this long-range goal on a graph,
 1. Draw a vertical line to separate your baseline data from what will become your weekly data.
 2. On this vertical line, make an X on your median baseline score.
 3. Make another X on the final day of data collection based on your long-range goal.
 4. Connect these two X's to create your goal line. If we graphed the above example, the teacher would place an "X" on the number 55 on the vertical line that separates the baseline data from the intervention data. This is the starting point of the long-range goal. The teacher would then place an "X" on the number 75 at the end of 20 weeks. This is the end of the long-range goal. The teacher would then connect the two "X's" using a line. This is the long-range goal line. See Appendix E for a long-range goal setting worksheet. See Sam's case study in Appendix A for an example of how to set the long-range goal.

Step 6—Decide how often to monitor.

- It is recommended that you collect data two to three times per week. This will help you detect small changes in growth that the student is making. At a minimum, data should be collected once per week.

Step 7—Begin monitoring.

- Two to three times per week, randomly select one of the passages you constructed. Appendices C and D contain detailed administration and scoring directions.



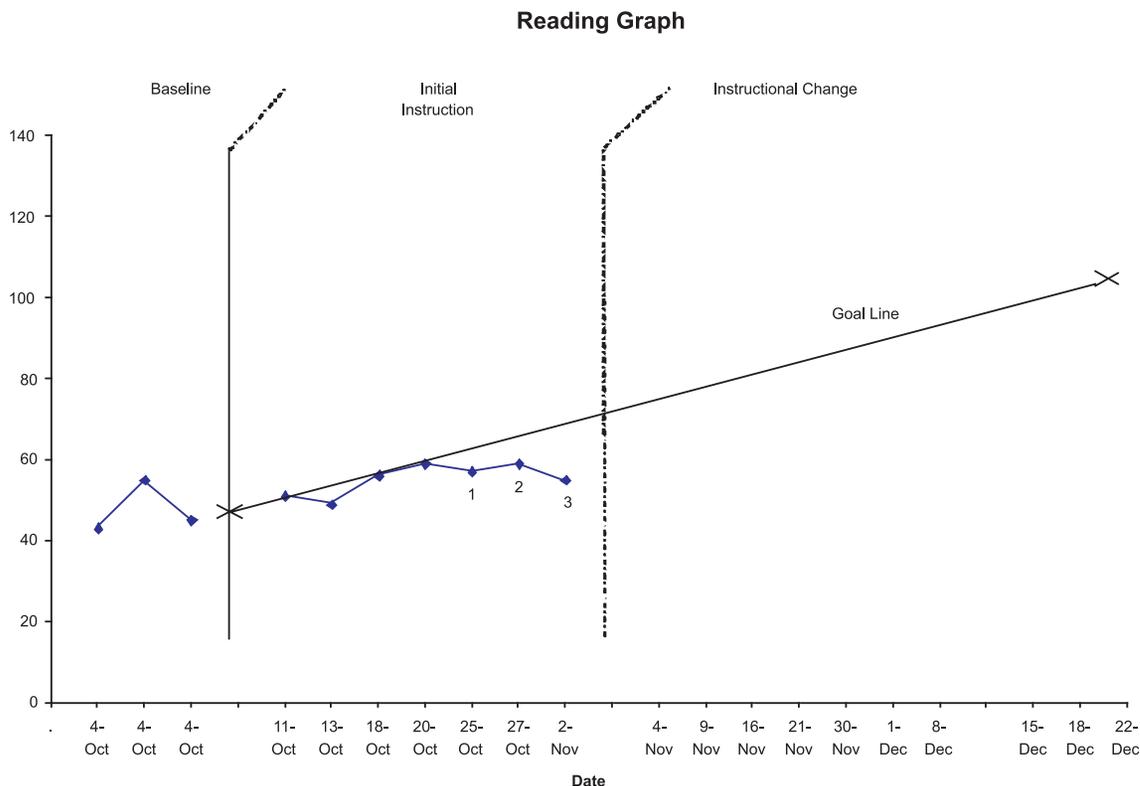
The more often you collect data on a student, the more information you will have to aid in decision-making.

Step 8—Graph data.

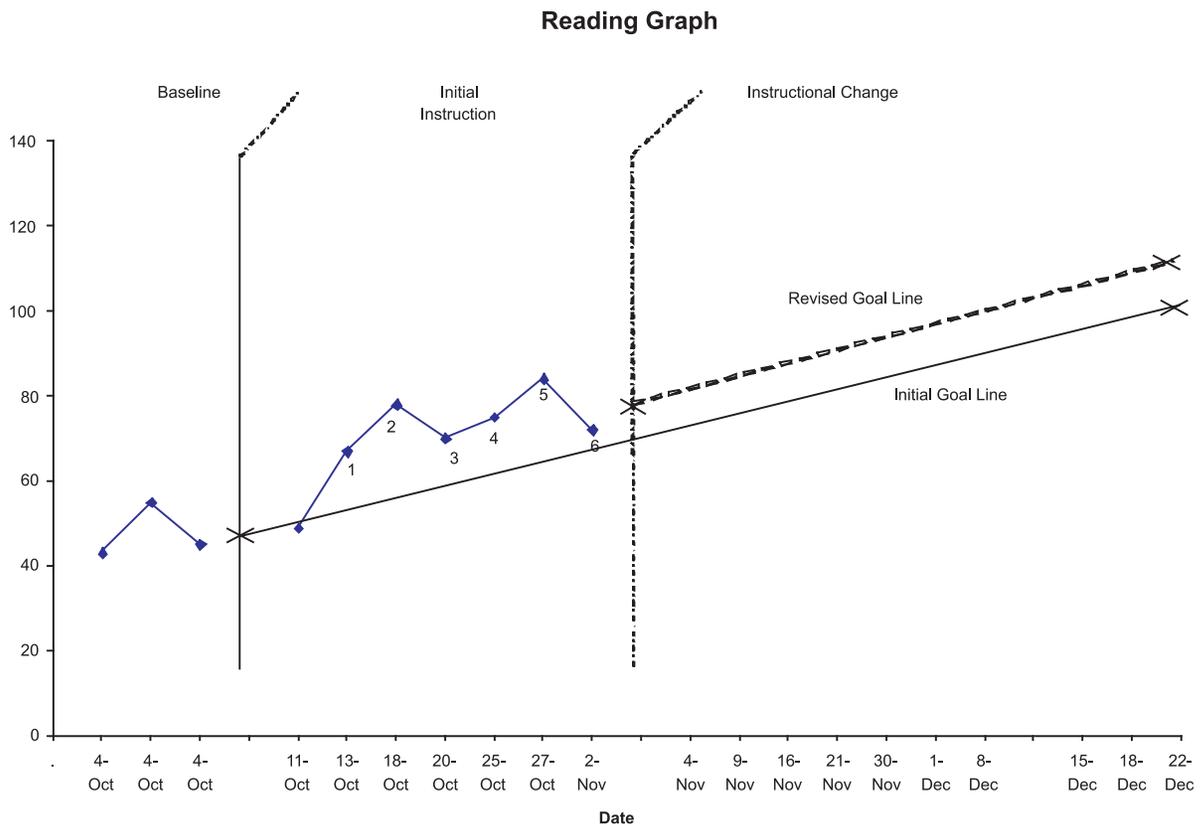
- Each time that you administer a reading probe to the student, immediately score the probe and graph the student’s score for that day. Examine the data to see how the student is performing relative to his goal line.

Step 9—Make instructional changes using decision-making rules.

- As you collect and graph your student’s reading data, compare the student’s data to his long-range goal line.
- *If the student earns three consecutive scores (data points) that fall below the long-range goal line, he is not making adequate progress towards the goal. It is time to make an instructional change to attempt to increase the student’s progress towards the goal.*
 - Draw a new vertical line on the student’s graph whenever an instructional change is made. The following graph is an example of how to note an instructional change.



- If the student is making steady progress towards his goal line, you will continue your current instruction.
 - If the student earns six consecutive scores above the long-range goal line, he is making considerable progress and will surpass the currently set long-range goal. You need to raise the student's goal to a more appropriate level. To raise the long-range goal:
 1. Calculate a new baseline from the last three data points that you collected.
 2. Draw a vertical line to indicate where the new goal will begin.
 3. Follow the procedures in the "Setting the long-range goal section" above.
- The following graph is an example of raising a student's goal.



See Sam's case study in Appendix A for further examples of instructional changes.

Step 10—Continue monitoring.

- Continue collecting weekly reading data with your student, graphing this data, and making decisions regarding instructional changes that need to be made.

Important points to remember

- Don't practice the reading passages with the student before he does the timed reading. This should be a "cold" reading.
- Remember that the oral reading measure provides an indicator of how the student is doing

overall in reading. When graphed and compared to previous performance, the number of words read in one minute gives the teacher an indication of how instruction is benefiting the student. The student’s reading performance will increase as the teacher implements effective research-based interventions. A teacher shouldn’t practice reading faster with the student, but reading better!

6. How does one know whether Curriculum-Based Measurement in reading is working?

CBM is not a curriculum. It is a formative evaluation system that helps a teacher make decisions about student performance and instruction. Therefore, the question is not, “Is CBM working for this student?” rather, the question is, “Based on the student’s CBM data, is my reading instruction helping this student achieve in reading?”

Examining the student’s scores on the reading probes and comparing them to the long-range goal that the teacher sets for the student answers this question. If the student has three consecutive data points below the long-range goal line, the current instruction is not as effective as hoped and an instructional change is warranted. If the student has six consecutive data points above the long-range goal line, then the instruction is highly effective, and the long-range goal line for the student should be raised.

Sometimes teachers do have some difficulties when implementing CBM procedures. Table 2 lists some of the most common problems and solutions.

Table 2: Common problems when implementing CBM

If this is happening...	Try This
Student scores 3 consecutive data points below the long-range goal line.	Change your instruction.
Student scores 6 consecutive data points above the long-range goal line.	Raise the student’s long-range goal
Student refuses to read the passages.	Ensure that the curriculum and passages developed are written at an instructional level for the student. The student should be able to independently read approximately 80% of the words correctly before any intervention. If the student cannot read 80% of the words independently, the instructional level of the materials may be too hard and a lower reading level should be used.
Student’s performance on the reading passages is highly variable (the data “bounces around” on the graph).	Continue to graph the data. A student’s performance is often variable and is to be expected.

7. Where can one get additional information about Curriculum-Based Measurement?

National Center on Progress Monitoring—<http://www.studentprogress.org/>

- Website that provides information and technical assistance on progress monitoring for elementary students.
- Watch for conference notices, as the technical assistance center offers training in progress monitoring.

Division for Learning Disabilities (DLD) Research to Practice conference—<http://www.teachingld.org/conferences/default.htm>

- Annual conference sponsored by DLD to provide information and training to teachers on research-based strategies and how teachers can implement these strategies in their classrooms. Check the conference schedule for sessions on progress monitoring, as many of these sessions have been included in the past.

EdCheckup—www.edcheckup.com

- A website where individuals can access CBM probes and can graph students' data on the computer (fee-based).

Intervention central—www.interventioncentral.org

- A website developed by Jim Wright, a school psychologist from Syracuse, NY. This site contains numerous tools for creation, administration, and graphing of CBM measures, and includes ideas for research-based interventions (free).

Aimsweb, from Edformation—www.aimsweb.com

- Provides an online progress monitoring and graphing program, including measures to download (fee-based).

Yearly Progress Pro from McGraw-Hill Digital Learning—www.mhdigitalllearning.com

- Provides assessment tools, instructional feedback, and data reports and analysis in math (fee-based).

Monitoring Basic Skills Progress—<http://www.glue.umd.edu/%7Edlspeece/cbmreading/index.html>

- Link to the Pro-Ed site where you can purchase this computerized CBM administration and scoring program

University of Maryland's Project AIM's (Alternative Identification Models)—http://www.proedinc.com/store/index.php?mode=product_detail&id=0840

- Provides passages for grades K-4, information on CBM, and administration directions (free).

Dynamic Indicators of Basic Early Literacy Skills—<http://dibels.uoregon.edu/>

- Research, benchmarks, administration directions, and probes for grades K-3 (free).

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Appendix A: CBM case study (Sam)

Background

Sam is a third grade student in Mr. Collin's general education classroom at Eagleview Elementary School. School just started at Eagleview a few weeks ago and Mr. Collins can already see that Sam is struggling in reading. After looking at Sam's test scores from the previous year and talking with his 2nd grade teacher, Mr. Collins' suspicions are validated. Sam's 2nd grade teacher tells Mr. Collins that Sam was one of the lowest achieving readers in the classroom, and that it had been recommended that Sam be tested to determine if he qualifies for special education services. Sam's parents wanted to wait a while longer before having him assessed and, instead, requested that Sam receive some tutoring services outside the school. This went on until the end of the year, but Sam's performance in reading has remained poor. It appears that the tutoring was ineffective.

Mr. Collins knows that if he wants to determine what instructional strategies Sam needs in the area of reading, he is going to have to collect data on what instruction is effective for Sam. Mr. Collins also wants to have data to back up the observations he has made about Sam's reading performance. Mr. Collins hopes he can help Sam enough in reading so that special education is not an option, but he wants data on Sam's reading in the event that Sam is recommended for special education evaluation. Mr. Collins also knows that Sam's parents will appreciate having data and a "picture of performance" (CBM graph) to track Sam's reading performance. Mr. Collins has learned about CBM and knows that this would be a good method to monitor Sam's performance in reading. He contacts Sam's parents to let them know what he would like to do. They are excited and tell Mr. Collins that they will be interested to see the graph at conferences in November.

Step 1—Determine what material you will use for your reading probes.

Because Mr. Collins has 20 other students in his classroom, he does not have a lot of time to develop reading probes to use with Sam. He decides to go to one of the on-line sources to get some probes for free (see the section "Where to get more information").

Step 2—Develop probes.

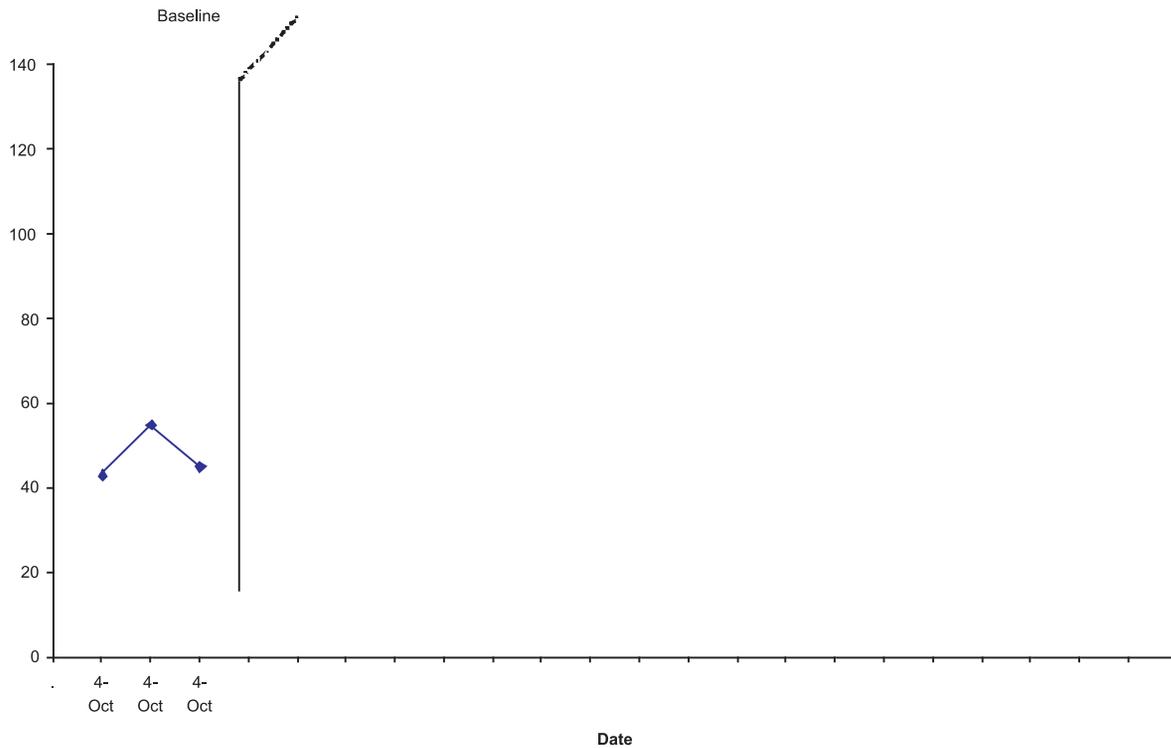
Based on Sam's most recent test scores, Mr. Collins knows that Sam is reading at a mid-second grade level. Mr. Collins wants to see Sam reading at a mid-third grade level (as a minimum) by the end of the school year. Mr. Collins downloads and prints probes from the 2nd and 3rd grade levels. See Appendix B for an example of student and teacher copies for a reading passage.

Step 3—Collect baseline data.

Each week, Mr. Collins has peer helpers from 6th grade come to his class to read one-on-one with his students. Mr. Collins thinks that this would be a good time to for him to work with Sam. Mr. Collins randomly selects 3 passages from his stack of 2nd and 3rd grade probes. He administers the passages to Sam (see administration directions in Appendix C). Because the passages are only 1 minute each, Mr. Collins administers all three passages to Sam in one session.

When Mr. Collins scores the passages, he sees that Sam only read 20, 30, and 23 words respectively on the three passages and that accuracy was below 90%. He knows that this is probably not Sam’s instructional level (see “Collecting baseline data” under question 5), so he decides to successively work backwards on probe levels until he can find Sam’s instructional level. Mr. Collins again chooses three probes, this time only using probes at the 2nd grade level. Sam scores 43, 55, and 45 on the three probes, and this time accuracy is above 90%. Mr. Collins decides that he will continue monitoring Sam at the second grade level and graphs his baseline data.

Reading Graph for Sam



Step 4—Decide on short-term objective or end criteria.

Mr. Collins would really like to see Sam reading at least 100 words per minute by the end of the semester, because this is a district goal for third grade students. Mr. Collins knows that Sam will not be reading 100 words per minute out of 3rd grade material. He hopes that if things go well, Sam may be able to reach the 100wpm goal before the end of the year in 2nd grade material and begin working in 3rd grade material.

Step 5—Set long range goal.

Mr. Collins uses the CBM long range goal worksheet (Appendix E) to calculate Sam’s LRG. Because Sam’s baseline data points were 43, 55, and 45, Mr. Collins puts them in order by value (43, 45, 55) and then picks out the middle point to get the median. He draws a vertical line on his graph to separate Sam’s baseline data from Sam’s weekly progress-monitoring data. On this line, Mr. Collins places an X at the median score, 45.

Sam’s Median baseline point	45
Criterion (expected rate of growth per week or end criterion)	100
Number of weeks until the end of progress monitoring	10

Next, Mr. Collins places an X on the last date of data collection (during the last week of the semester) on Sam’s end criterion which is 100 wpm. He connects the two lines to make Sam’s goal line.

Calculate LRG:

Multiply number of weeks by criterion: $\underline{\quad\quad} \times \underline{\quad\quad} = \underline{\quad\quad}$

Add answer to median baseline: $\underline{\quad\quad} + \underline{\quad\quad} = \underline{\quad\quad}$

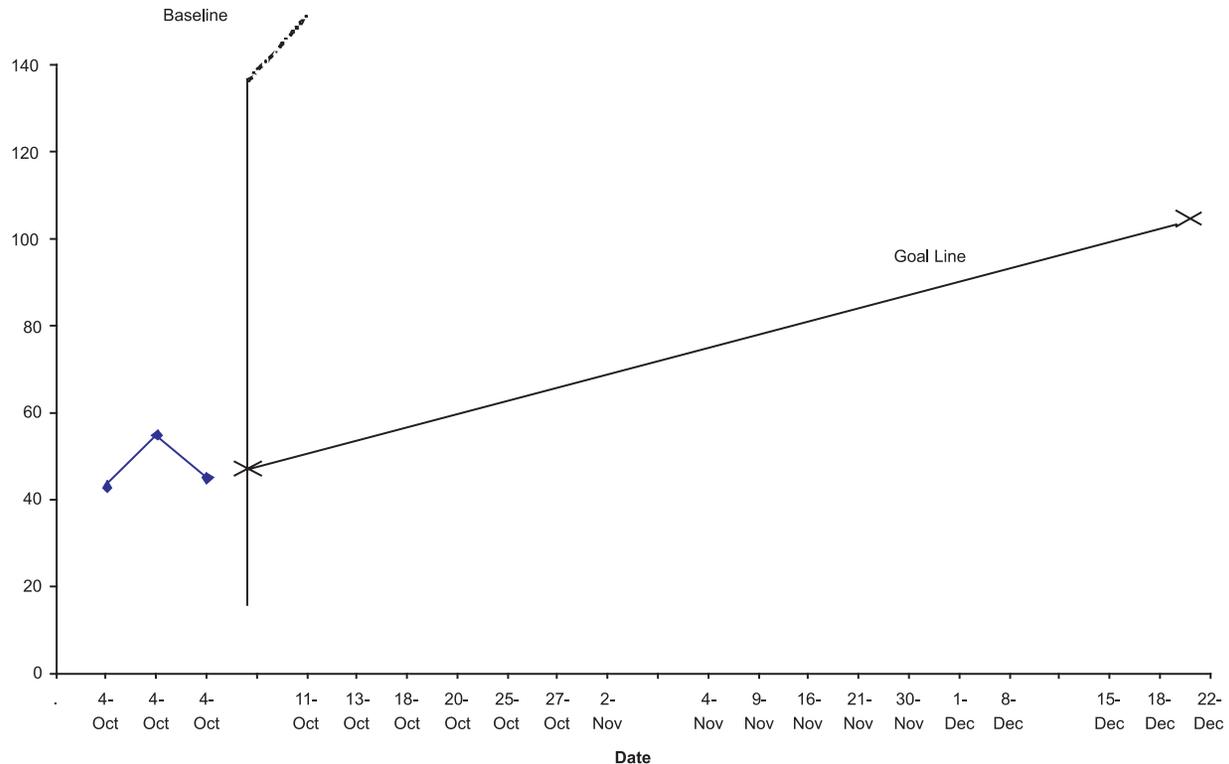
OR

Write in end criterion: $\underline{\quad 100 \quad}$

- Place an “X” on graph to signify LRG.
- Place an “X” on graph to signify the median baseline point.
- Connect the two X’s to make the goal line.

Step 6—Decide how often to monitor.

Reading Graph for Sam



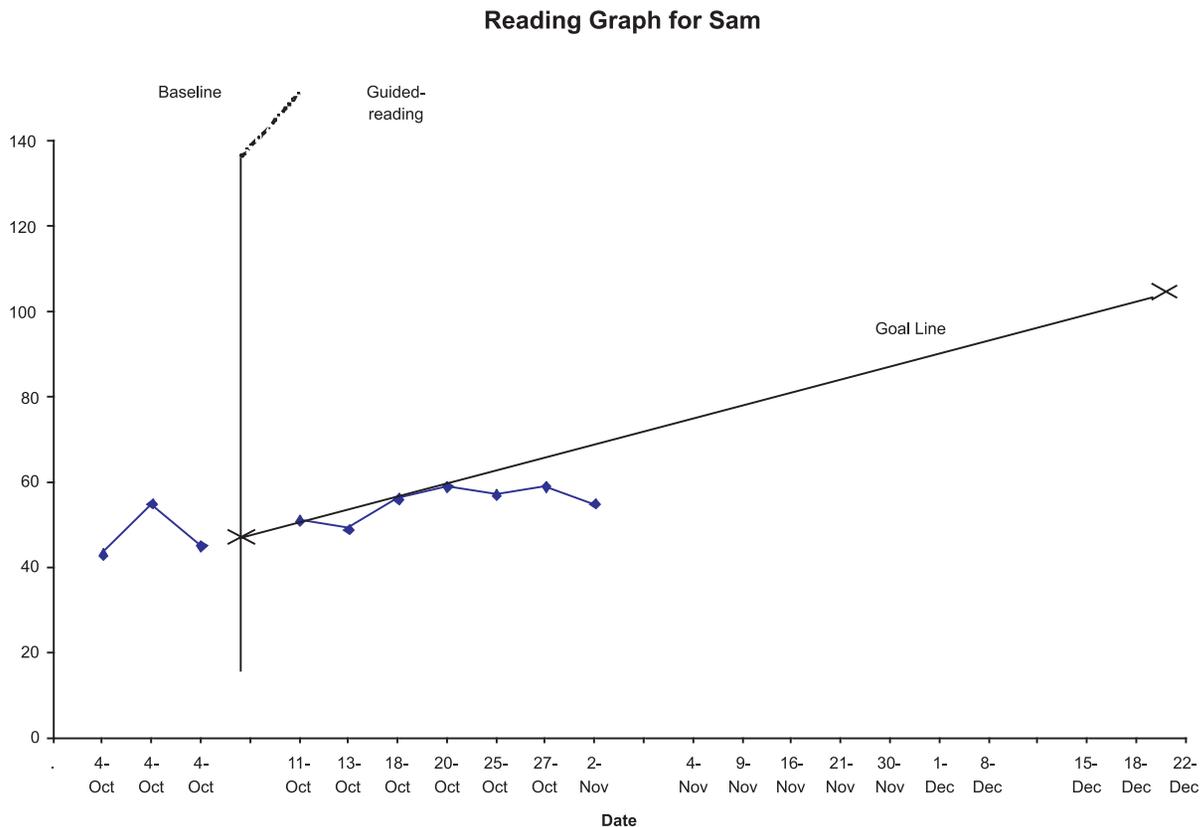
Mr. Collins decides to administer an oral reading passage to Sam twice each week. Mr. Collins has the peer helpers in the classroom once during the week, so he knows he can use that time to work with Sam. The class also has D.E.A.R (Drop Everything and Read) each day after lunch. This is another time that Mr. Collins can take Sam to read with him. Mr. Collins knows that some weeks he will only be able to administer one reading probe to Sam, but he promises himself that he will always give at least one probe to Sam each week.

Step 7—Begin monitoring.

Mr. Collins talks with Sam about working with him on the reading probes two times per week. Sam is excited to be able to work with Mr. Collins one-on-one, as it seems like a special “treat” to Sam. Mr. Collins begins collecting data on Sam’s reading performance by administering reading probes to him and calculating the number of words that Sam reads correctly.

Step 8—Graph data.

After each reading session, Mr. Collins graphs Sam’s data from that day. At this point, he does not show Sam the graph, because he does not want Sam to be confused by any highs and lows in the data. Mr. Collins knows that there may be fluctuations in the data from week to week, but he knows that, overall, he will be able to see whether Sam is making progress. However, Sam might not understand these score fluctuations. Below you can see an example of what Sam’s data look like for the first few weeks of data collection.

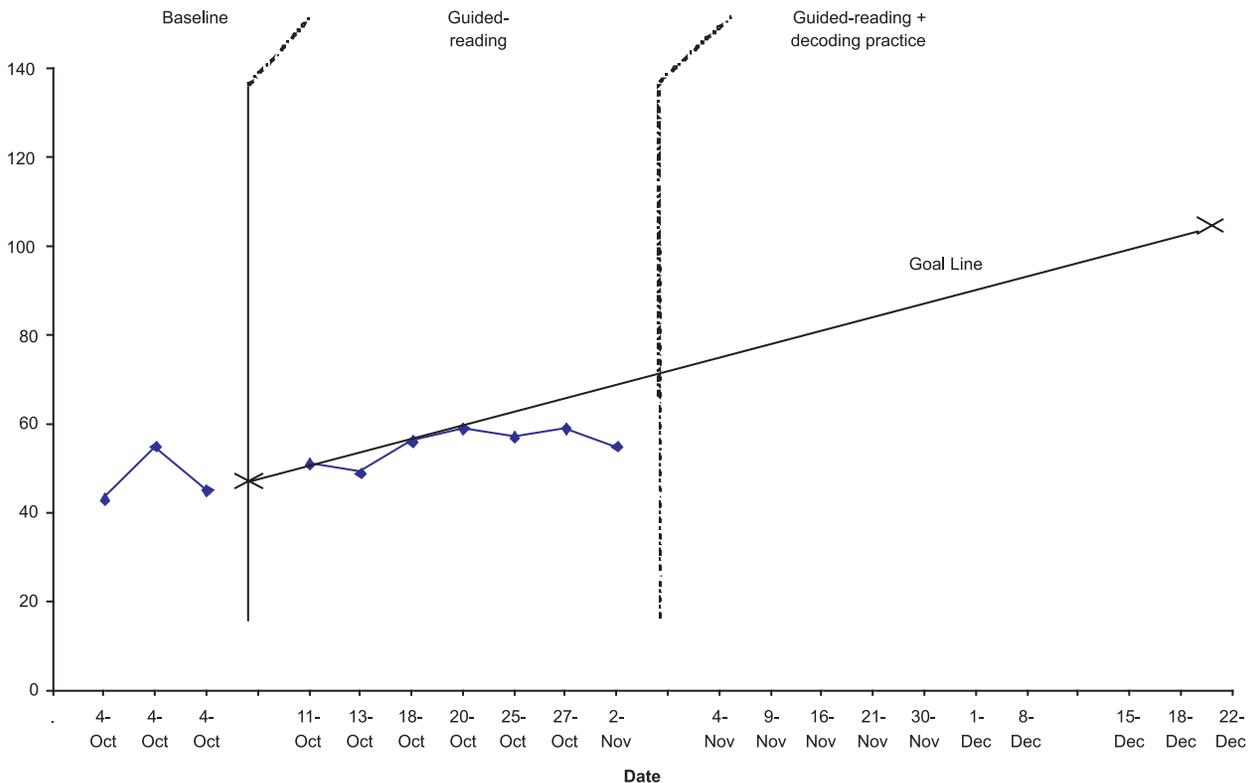


Step 9—Make instructional changes using decision-making rules.

Mr. Collins decides to use these decision-making rules for Sam: if Sam gets three consecutive points below the goal line, Mr. Collins will implement an intervention. If Sam gets six consecutive points above the goal line, Mr. Collins will raise Sam’s goal.

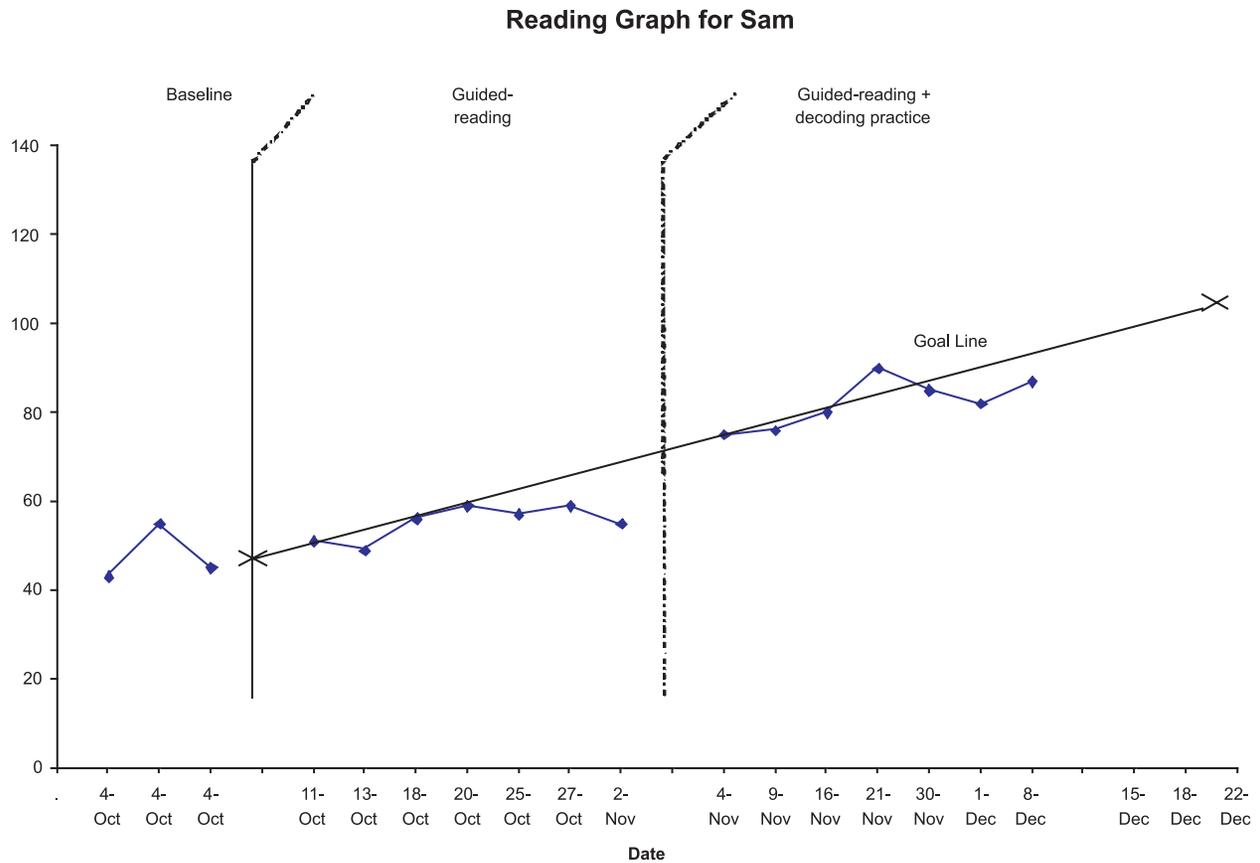
After collecting and graphing data on November 2nd, Mr. Collins can see that it is time to implement an intervention or instructional change for Sam. So far, he has been using the district reading curriculum with Sam. This is a literature-based program that uses leveled books and small guided-reading groups. It seems that Sam needs some work on basic reading skills to improve his decoding. Mr. Collins decides that during D.E.A.R. time each day, he will work with Sam on some basic phonics skills. They will practice decoding words that are difficult for Sam in the material that they are reading in class, and Mr. Collins will give Sam strategies for decoding. Sam usually just looks through the pictures in books during D.E.A.R. time, so Mr. Collins thinks it will be okay to make this reading time more intensive for Sam. Mr. Collins also lets Sam’s parents know about the change in instruction. They are happy that Mr. Collins is giving Sam extra help.

Reading Graph for Sam



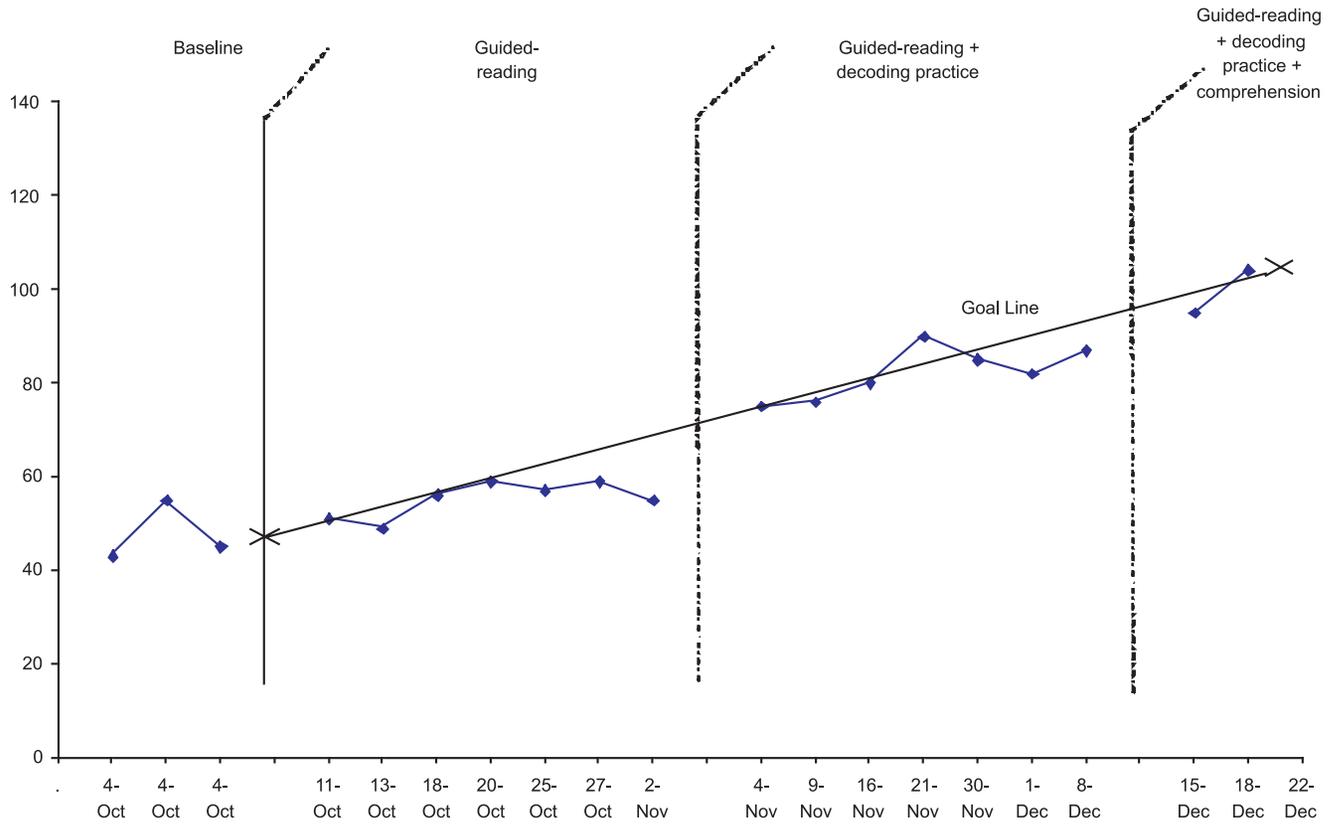
Step 10—Continue monitoring.

After implementing the instructional change for Sam, Mr. Collins continues to collect data. Things seem to be going well because Sam’s data is reflecting improvement in his reading performance after implementation of the intervention. However, on December 8th, Mr. Collins notices that Sam has gotten three consecutive data points below his goal line again. Mr. Collins wants Sam to continue increasing his reading performance because Sam is getting closer and closer to his goal.



Mr. Collins feels like the skills practice has been helpful to Sam, but he has also noticed that Sam struggles to understand what he has read. Mr. Collins thinks that a comprehension intervention might be helpful. Mr. Collins wants to keep practicing the phonetic skills, too, and he decides to work on comprehension strategies two days per week, and phonetic skills three days a week. This will still be during D.E.A.R. time. After implementation of the 2nd intervention, Sam's data is looking like he is on track to meet his goal. However, Mr. Collins will need to collect a few more data points before making a final decision about whether he feels that Sam is consistently able to read at about 100 words.

Reading Graph for Sam



Appendix B: Example of student and teacher copies of a reading passage (partial passages)

Student copy:

One morning, Jimmy and his mother decided to go to the grocery	12
store. Jimmy went into his bedroom and got some money out of his piggy	26
bank. He was excited to get himself a treat! Jimmy’s mother walked and	39
Jimmy rode his bike. When he would ride too far ahead, Jimmy’s mother	52
would call to him “Slow down!” They finally got to the store. Jimmy	65
locked his bike to the bike rack and he and his mother went inside.	79

Teacher copy:

One morning, Jimmy and his mother decided to go to the grocery store. Jimmy went into his bedroom and got some money out of his piggy bank. He was excited to get himself a treat! Jimmy’s mother walked and Jimmy rode his bike. When he would ride too far ahead, Jimmy’s mother would call to him “Slow down!” They finally got to the store. Jimmy locked his bike to the bike rack and he and his mother went inside.

Appendix C: Administration directions for reading aloud

Materials:

- Teacher copy (numbered) of the passage on a clipboard
- Pencil
- Student copy (unnumbered) of the passage
- Stopwatch

Directions:

1. Place the unnumbered copy in front of the student.
2. Place the clipboard with the numbered copy in front of you, but shielded so that the student cannot see what you record.
3. Say to the student: **“When I say begin, I want you to read this story out loud to me. Start here** (point to the first word in the passage) **and read across the page** (demonstrate by moving finger along the first line of text) **trying to read each word. If you come to a word that you don’t know, I will help you. Be sure to do your best reading. Do you have any questions?** (pause). **Ready, begin.** (start your stopwatch.)
4. If the student does not say the first word within 3 seconds, supply the word, mark it as incorrect, and continue scoring.
5. Mark any words that the student reads incorrectly on your teacher copy. For more information on what constitutes an error, see Appendix D on Scoring Rules.
6. If a student cannot pronounce a word within 3 seconds, supply the word and mark it as incorrect on your teacher copy.
7. At the end of 1 minute, place a bracket after the last word read and say to the student **“Stop. Thank you.”**
8. Immediately calculate the number of words that the student read correctly and write this at the top of the page.

Appendix D: Scoring rules for reading aloud

Scored as correct:

1. Words read correctly-must be pronounced correctly within the context of the sentence.
2. Repetitions-words said over again
3. Self-corrections-words misread, but corrected within 3 seconds
4. Insertions-words added to a passage
5. Dialectical difference-variations in pronunciation that conform to local language norms

Scored as incorrect:

1. Word substitutions
2. Omitted words
3. Hesitations-words not pronounced within 3 seconds
4. Reversals-two or more words transposed

Special cases:

1. Numerals are counted as words
2. Hyphenated words-if the parts of the words on each side of the hyphen can stand on their own, then each of those parts is counted as one word (e.g., curriculum-based). If the word parts cannot stand on their own, then the hyphenated word is counted as one word (e.g., re-enter.)
3. Abbreviations are counted as words and must be read correctly in the context of the sentence.

Appendix E: Long range goal worksheet

Gather information

Median baseline point _____
Criterion (expected rate of growth per week or end criterion) _____
Number of weeks until the end of progress monitoring _____

Calculate LRG

Multiply number of weeks by criterion: _____ X _____ = _____

OR

Write in end criterion: _____
Add answer to median baseline: _____ + _____ = _____

Place an "X" on graph to signify LRG

Place an "X" on graph to signify the median baseline point.

Connect the two X's to make the goal line