

How can teachers effectively use curriculum based assessment in their classroom?



Based on Jim Wright (www.interventioncentral.org)

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- **I. Overview of curriculum-based measurement**

- **What is curriculum-based measurement?**

- Allows teachers to monitor student educational progress
- Uses direct assessment of academic skills
- Is an assessment of common areas including basic skills in math, spelling, written expression
- Uses timed samples called **probes**

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- Uses standardized directions
- Yields **fluency scores**
 - fluency = accuracy + rate (number of words, letters, numbers over a given time period usually 1-5 minutes often twice a week)
- Uses charts and graphs

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- **Why use CBM?**

- Is related to the curriculum
- Is quick and easy
- Can be used often
- Is sensitive to small changes
- Can be motivating
- Provides good visual data for parents, supervisors, & teachers

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- **Reading**

- have student reads aloud for 1 minute across 3 separate randomly selected reading passages from reading book
- provide only one passage if standardized
 - Monitoring Basic Skills Program (Fuchs & Fuchs)
- chart the median score

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- **Math**

- can be used with single skill worksheets
 - (all 2 digits plus 2 digits with regrouping)
- can be used with multiple skill worksheets
 - (various skills)
- give credit for each individual correct digit for example...
 - $13 + 9 = 19$
 - given credit for two digits

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– for example...

- $46 - 18 = 27$
- given credit for one digit

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- **Spelling**

- TALK
- 5 possible correct- letter sequences
- there are two place holders (beginning and end)
 - T
 - TA
 - AL
 - LK
 - K

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- **Writing**

- provide students with a lined composition sheet with a story starter sentence at the top
- allow 1 minute for student to think
- allow 3 minutes to write the story
- for scoring...
 - total number of words or
 - total number of correctly spelled words

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- II. Scoring and administering CBM

- Overview

- uses standardized procedures
 - materials
 - directions for administration
 - time limit
 - scoring rules
- provides replicable results
- starts with the selection of one or more areas of basic skills the teacher wants to measure

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- requires the use of a **measurement pool**

- a measurement pool is the specific range of instructional materials that the teacher will take the content of the CBM probes from. For example:
 - reading passages from one basal reading textbook
 - math problems with one specific skills
 - spelling words from an appropriate spelling textbook
 - writing story-starters at a specific grade level

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- **READING**

- 1. Overview of the process

- A. Administer 1 minute of orally reading 3 passages (total of 3 minutes)
- B. Note errors
- C. Calculate a reading rate

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- 2. How to make a measurement pool of reading-fluency probes.

- randomly select passages from a given source that are at a common grade level (approximately)
 - basal readers
 - novels
- might consider using a Fry Readability Index to ensure readability is appropriate if materials are not from a grade-leveled basal reader
 - Microsoft Word has readability tools
 - Fry information is also online

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- is best if the passages are from the last half of the source
- make copies for examiner and student once passages have been selected
- use acetate (overhead sheets) on examiner passages and mark with water-based marker if you plan on using again

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- 3. What materials will be needed.

- numbered and unnumbered copies of reading probes
- stopwatch
- pen or pencil

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- 4. How to administer the probe.

- Provide consistent directions
 - “When I say, “begin,” start reading out loud from the top of the page. (Examiner points where to start reading & motions reading right to left). Try to read all the words. If you come to a word you don’t know, I’ll tell you the word. Try to read your best. Do you have any questions?”
 - {Wait}
 - “Begin”
 - Stop the student after one minute

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- While the student is reading...

- mark errors with a slash
- provide word if student waits for 3 seconds
- draw a bracket (|) where the student stops reading after one minute of reading
- allow student to keep reading if they insist but don’t grade after a minute

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- 5. How to score passages.

- fluency:
 - total words attempted minus total words read incorrectly

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- Words counted as correct
 - self-corrections
 - repetitions
 - dialectical speech are ignored
 - inserted words are ignored

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- Words counted as errors
 - mispronunciations
 - substitutions
 - omissions
 - omissions of entire line counts as 1 error
 - transpositions (1 error)

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- 6. How to compute reading fluency for one passage
 - A. Determine how many words were attempted in 1 minute.
 - B. Count the number of errors.
 - C. Deduct errors from attempted words.
 - Your answer is the number of correctly read words in 1 minute

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- 7. How to create a median reading fluency rate.
 - A. select 3 passages to derive a single estimation of student's reading fluency
 - B. administer probes
 - C. rank order the words read correctly from lowest to highest scores

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- D. Discard highest and lowest scores: use the median (middle) score
- E. Rank order errors.
- F. Discard highest and lowest scores: use the median (middle) score

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- G. To calculate percent accuracy
 - divide words read correctly by total words attempted and multiply by 100%
 - for example: 45 words read correctly and 50 words attempted...
 - $45/50 = .90 \times 100\% = 90\%$

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- MATH

- 1. Overview of the process
 - A. Identify the type of probe desired
 - single-skill worksheet (common skills)
 - multiple-skill worksheets (mix operations)
 - B. Note errors
 - C. Administer probe for 2 minutes
 - D. Calculate a math digit rate

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- 2. How to make a measurement pool of math fluency probes.
 - Use scope and sequences from textbooks or district materials
 - often probes are based on a single skill

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- 3. How to prepare a CBM math probe
 - A. Making single skill math probe
 - determine skill to be assessed
 - develop a worksheet of similar problems that take longer than a minute to complete
 - make 80- 200 problems depending on student

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- B. Making multiple skill probes
 - determine range of skills
 - examine district math curricula or scope and sequences for suggestions on range of skills
 - select mastered skills and/or instructional skills

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- 4. What materials will be needed.
 - numbered and unnumbered copies of probes
 - stopwatch
 - pen or pencil

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- 5. How to administer the probe.
 - “When I say, “begin,” start answering the math problems from the top of the page. (Examiner points where to start the problems & motions from right to left). These problems involve (fill in this blank with the type of problems.) Try to answer all the problems. If you come to a problem you don’t know, put an “X” on it and go to the next one. Try to do your best. Do you have any questions?”
 - {Wait}
 - “Begin”
 - Stop the student after two minutes

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- 6. How to score probes.
 - A. Give credit for each individual correct digit
 - don't count reversed or rotated digits as errors
 - give credit for all digits below the line
 - don't count digits above the line
 - B. Count the number of errors
 - wrong place value is counted as an error

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- 7. How to compute math fluency
 - digits attempted minus errors = correct digits
 - To calculate percent accuracy
 - divide correct digits by total digits attempted and multiply by 100%
 - for example: 45 correct digits and 50 digits attempted...
 - $45/50 = 90 \times 100\% = 90\%$

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- WRITTEN EXPRESSION
- 1. Overview of the process
 - Uses story starters
 - Student thinks for 1 minute
 - Student writes for 3 minutes
 - Teacher scores according to prescribed checklist

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- 2. How to make a measurement pool of writing fluency probes.
 - requires minimal advanced preparation
 - use writing texts as sources of story starters or create your own

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- 3. How to prepare a CBM writing probe
 - place story starter at top of line paper
 - use open and starters not ones that lead to brief writing
 - For example,
 - "One day, I was in the park playing with friends. All of a sudden it began to storm. _____"
 - _____

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- 4. What materials will be needed.
 - story starters on lined composition paper
 - stopwatch
 - pencils for student

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- 5. How to administer the probe.

- “I want you to write a story. I am going to read a sentence to you. After I read the sentence, you can think for a minute about what you are going to write about. Then, I want you to write for three minutes. If you don’t know how to spell a word, you should guess the spelling. Do your best work. Do you have any questions?”

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- 6. How to score probes

- Scoring options

- A. Number of words written
- B. Number of letters written
- C. Number of correctly spelled words
- D. Number of writing units placed in correct sequence

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- A. Number of words written

- count up and record total words written in 3 minutes
- count misspelled words but not numbers (i.e., 7, 18, etc.)
- offers a rough estimate of fluency

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classroom?

- B. Number of letters written

- count number of letters
- misspelled words are included
- provides a rough estimate of fluency

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How can teachers effectively use curriculum-based assessment in their classroom?

- C. Number of correctly spelled words

- count only correctly spelled words
- count words separately, not contextually
- is quick
- does not take into consider the size of the words used

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- D. Number of writing units placed in correct sequence

- examine the relationship between words
- look at successive pairs of writing units (sequences)
- count words that make sense
- don’t count grammatically or syntactically incorrect words
- don’t count misspelled words
- count place holders before, between, and after words
- count all necessary punctuation except commas
- count titles
- don’t count dates and numbers in numeral form (1776)
- can be time consuming though best method

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• SPELLING

- 1. Overview of the process
 - use 12 to 17 spelling words
 - read successively with a predetermined number of seconds between words
 - spelling is done in allotted time

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- 2. How to make a measurement pool of spelling fluency probes.
 - Options for spelling words pool
 - A. use school district, grade level wordlists
 - B. use commercial spelling programs
 - C. use new vocabulary from

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How can teachers effectively use curriculum-based assessment in their classroom?

- 3. How to prepare a CBM spelling probe
 - Choose words randomly
 - Select approximately 12 words for grades 1–3
 - pause 10 seconds between words
 - Select approximately 17 words for grades 4–8
 - pause 7 seconds between words

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- 4. What materials will be needed.
 - student answer sheets with numbered lines
 - wordlist with numbered spelling words
 - stopwatch
 - pencil for student

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- 5. How to administer the probe.
 - “I’m will read some words to you. Write each word next to the number of the word. I will give you (7 or 10) seconds to write each word. If you have not written the word within that amount of time, write down what you can. You will get credit for each letter you write correctly. Do you have any questions?”
 - {Wait}
 - “Let’s begin”
 - Start reading each word.
 - Read each word twice.
 - Homonyms are used in a sentence
 - Check to make sure they are on the correct line if needed.

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- 6. How to score probes
 - give credit for letter sequences (letters plus 1)
 - take into consideration the following errors
 - omitted letters
 - inserted letters
 - double letters
 - lack of capitalization
 - improper internal punctuation

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- Charting and interpreting CBM Data
- Why chart CBM data?
 - Provides a motivating visual for students
 - Assists the teacher in deciding the quality of instruction
 - Provides parents, supervisors, and others with quality information

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- How to set up the CBM chart
 - 1. Determine what behaviors you want to measure.
 - 2. Use a graph with vertical and horizontal axis's or a computer program like EXCEL
 - 3. Determine the characteristics of axis's.
 - Number of data points
 - Weeks or days of instruction
 - 4. Determine how long you want to collect data.

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- How to chart baseline data
 - 1. Collect baseline initial data based on previously discussed data collection procedures
 - 2. Take at least three points of data over at least one week.
 - 3. Determine the middle score. Use this as your baseline.

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- **How to set a performance goal (i.e., long-term CBM goal)**
 - 1. Ask yourself, "What is the expected rate of increase in skills for the student?"
 - 2. Estimate the weekly fluency increase.
 - 3. Determine the number of instructional weeks.
 - 4. Multiply estimated weekly fluency increase times the number of instructional weeks.
 - 5. Add baseline to the product in #4. The result is the performance goal.

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- How to chart an aimline (i.e., a visual reminder of expected student growth)
 - 1. Locate the baseline.
 - 2. Put an "X" on the performance goal.
 - 3. Connect the baseline and the performance goal with a line.

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- How to informally evaluate student progress.
 - 1. Examine the level of change in the data points.
 - Minimal movement v. significant movement
 - 2. Examine data point overlap.
 - Does the same scores continue to reappear?

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- How to formally evaluate student progress
 - 1. Determine which type of decision rules you will use.
 - 2. Use either the 3 data point decision rule or the Tukey method

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– 3 data point decision rule

- A. 3 data-point decision rule:
 - 1. If three data points are below the aimline, boost instruction.
 - 2. If three data points are near the aimline, maintain instruction.
 - 3. If three data points are above the aimline, adjust the aimline upward.

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– Tukey method

- 1. Collect 8- 16 data points.
- 2. Divide the data-points into 3 equal sections. Draw two vertical lines representing the divisions.
- 3. Locate the median data-point in sections 1 & 2.
- 4. Place an "X" on the median points.
- 5. Draw a line from one "X" to the other "X."
- 6. Compare the tukey line to your original aimline.
- 7. Determine if an instructional change is necessary
 - A. If the tukey line is below the aimline, boost instruction.
 - B. If the tukey line is near the aimline, maintain instruction.
 - 3. If the tukey line is above the aimline, adjust the aimline upward.

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