**Objectives**

1. What is CBA?
2. How does it meet our assessment needs?
3. How do you do the CBM basics? In reading, math, and writing
4. How good is it? Validity and Reliability

**Rationale for CBM:**
Nearly all Current Testing Procedures are:

- Too long
- Too complicated
- Too expensive
- Too infrequent
- Too hard to interpret
- Too insensitive to small but significant changes
- Too different from curriculum materials
- Too vague for recommendations
- and --likely out of touch with IDEA 97

**What is CBA?**

**Curriculum Based Assessment**

A *rate measurement* that uses *direct observation* and recording of a student’s performance in the *local curriculum* as a basis for gathering *information to make instructional decisions.*

**Top 10 reasons to use CBA**

1. QUICK!
2. CHEAP!
3. RELIABLE!
4. VALID!
5. EASY TO DO AND EXPLAIN
6. A DYNAMIC INDICATOR
7. SENSITIVE to growth in a short period of time
8. evaluating variables in CHILD’S ENVIRONMENT
9. Linking us to WHAT WORKS!
10. IDIOGRAPHIC (Compare child’s growth to own baseline)

**Realistically, we need a strategy that is...**

1. QUICK!
2. CHEAP!
3. RELIABLE!
4. VALID!
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6. A DYNAMIC INDICATOR
7. SENSITIVE to growth in a short period of time
8. evaluating variables in CHILD’S ENVIRONMENT
9. Linking us to WHAT WORKS!
10. IDIOGRAPHIC (Compare child’s growth to own baseline)
**Advantages of Fluency or Rate measures:**

- It is 10 to 100 more times more sensitive to changes than accuracy measures.
- It measures if the students knows the skill and how efficiently a student knows the skill.
- It is a product of retention, endurance, stability, and application.
- It changes the brain.
- Slow reading rates hinders comprehension.
- Slow math computation rates hinders advance math ability.

**Let’s try a quick test...**

It’s Monday and you have to get up early to learn another standardized test. The alarm rings and as you reach over to hit the snooze button, you hear a strange sound outside your window. So you start to get up to look at the window and see an amazing thing. The leaves on the great oak tree outside of the window had somehow turned into 100 dollar bills.

Write story about your day.

**What information did we get after one probe?**

- Number of words
- Number of correct word sequences
  
  (2 adjacent spelled words that are correct within the context of the sentence according to a native speaker of the English language)

- Correct minus incorrect word sequences
  
  (best for above 5th grade)
- Spelling errors
- Punctuation
- Peer comparison
- Tool skill

**A math fluency demo.....**

Group 1 and group 2
**SUMMARY**

<table>
<thead>
<tr>
<th>BASIC SKILL AREA</th>
<th>WHAT THE STUDENT WILL DO</th>
<th>HOW TO SCORE THE WORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>Read a reading passage out loud for one minute. Tells about story for one minute</td>
<td>Number of words read correctly and/or number of errors. Number of words</td>
</tr>
<tr>
<td>Writing</td>
<td>Write a story for three minutes</td>
<td>Grades 1-6: Number of words written that are readable. (Do not count punctuation, spelling, or capitalization.) Grades &gt;6: correct minus incorrect word sequence</td>
</tr>
<tr>
<td>Math</td>
<td>Write answers to computational problems for one to five minutes.</td>
<td>Number of digits written correctly.</td>
</tr>
</tbody>
</table>

**USEFUL INTERNET SITES**

- **Reading probes K-6:**
  [http://dibels.uoregon.edu/benchmark.php](http://dibels.uoregon.edu/benchmark.php)
  click on Measures and download user: dibelsuser ID: 980679
  (Tutor: click measures, ORF, Next arrow)

- **Math probes:**
  Click on math worksheet generator

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### Part 1: Reading Fluency

1. Give one probe to student & keep one to record errors.
2. When I say "start" begin reading aloud at the top of the page in pencil. Read across the page. The student must 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?
3. Set timer for 1 minute and say "Start".
4. Underline words as errors if child:
   - omits a word
   - mispronounces a word
   - substitutes a word
   Do not count as an error if:
   - repeats word, self-corrects
   - hesitates for 3 sec., say the word.
5. If a child hesitates for 3 sec., say the word.
6. When the timer rings, place a vertical line after the last word read.

### Part 2: Retell Fluency

Say, **Please tell me all about what you just read. Try to tell me everything you can.**

Set timer at one minute and say "Begin".

When a student does not say anything for 3 seconds, say, "**Try to tell me everything you can.**" This prompt can be used only once.

After the first prompt, if the student does not say anything or gets off track for 5 seconds, circle the total number of words in the student's retell and say, "**Stop.**"

Count the number of words the child produces in his or her retell by moving your pen through the numbers as the student is responding. Circle the total number of words after one minute.

After 1 minute, circle the total number of words and say, **"Stop.**"
Estimating “good” or “poor” performance?

Suggested norms in the literature for Reading, Math, and Writing

<table>
<thead>
<tr>
<th>Subject</th>
<th>Grade Level</th>
<th>Performing at frustrational level</th>
<th>Performing at instructional level</th>
<th>Performing at mastery level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>1st and above</td>
<td>below 40</td>
<td>40 to 60</td>
<td>above 60</td>
</tr>
<tr>
<td>Math</td>
<td>4th and above</td>
<td>below 20</td>
<td>20 to 40</td>
<td>above 40</td>
</tr>
<tr>
<td>Writing</td>
<td>1 minute</td>
<td>5</td>
<td>15</td>
<td>53</td>
</tr>
</tbody>
</table>

My mother always likes to go home. She was born on a nice ______ in a valley. Her father started ______ farm before ______ was a little girl they lived in a very old log house on ______ farm.

Delete every 7th word
Replace it with three multiple choice answers
Time for three to five minutes

My mother always likes to go home. She was born on a nice ______ in a valley. Her father started ______ farm before ______ was a little girl they lived in a very old log house on ______ farm.

Estimating “good” or “poor” performance?

DIBELS Early literacy skills

Letters naming: Students will read letters out loud for one minute. Scored as number of letters correctly named/minute.

Initial sounds: Students will point to or say the name of the picture that begins with the sound produced orally by the examiner. Scored as the number of initial sounds correct/minute.

Phoneme segmentation: The examiner says “sat,” and the student says “/s/ /a/ /t/” to receive three possible points for the word. Scored as the number of correct phonemes/minute

Nonsense Words: Students will read words such as “lib” out loud for one minute. Scored as the number of correct sounds/minute
Using with other populations

**CBA with Visually impaired**

Shinn’s method modified: *Braille takes about 2.5 times longer to read* Reading: 2-minute sample instead of 1 minute with 6 seconds to correct Reliability and validity highly similar with this procedure

**CBA with Hearing impaired**

Reading: 3-minute sample instead of 1 minute

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### CBA’s can tell you....

- where you are
- where you want to be
- what course to follow to get to where you want to be when you are off course

**IT IS NOT**

A sole tool to be used for decision making
Empirically Valid only for all subjects
Only for reading, math, writing, spelling

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**Assessing instructional placement that predicts learning at a fast pace**

### MEASURES INTERVENTION PROGRESS

Here a child was far below her class, has a can't do problem because she did not perform better when offered an incentive, and an intervention was put into place. Here her problem did respond to intervention.

### GRADE: 4

<table>
<thead>
<tr>
<th>Probe 1</th>
<th>correct</th>
<th>errors</th>
<th>percent correct questions</th>
<th>level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probe 2</td>
<td>15</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEDIAN</td>
<td>15.5</td>
<td>19</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**GRADING:** 4 (70 to 100)

**Correct errors:**

**Level:**

---

### GRADE: 3 (70 to 100)

<table>
<thead>
<tr>
<th>Probe 1</th>
<th>correct</th>
<th>errors</th>
<th>percent correct questions</th>
<th>level</th>
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<tr>
<td>Probe 2</td>
<td>15</td>
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<tr>
<td>MEDIAN</td>
<td>15.5</td>
<td>19</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**GRADING:** 3 (40 to 60)

**Correct errors:**

**Level:**

---

### GRADE: 2 (40-60)

<table>
<thead>
<tr>
<th>Probe 1</th>
<th>correct</th>
<th>errors</th>
<th>percent correct questions</th>
<th>level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probe 2</td>
<td>20</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Probe 3</td>
<td>19</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEDIAN</td>
<td>19.5</td>
<td>13</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**GRADING:** 2 (40-60)

**Correct errors:**

**Level:**

---

### GRADE: 1 (40-100)

<table>
<thead>
<tr>
<th>Probe 1</th>
<th>correct</th>
<th>errors</th>
<th>percent correct questions</th>
<th>level</th>
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<tbody>
<tr>
<td>Probe 2</td>
<td>15</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Probe 3</td>
<td>19</td>
<td>14</td>
<td></td>
<td></td>
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<tr>
<td>MEDIAN</td>
<td>19.5</td>
<td>13</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**GRADING:** 1 (40-100)

**Correct errors:**

**Level:**

---

*Instruct here*
**HOW GOOD IS CBM?**

**READING**

**Reliability:**
- Interjudge: 97% for reading words aloud and cloze mazes.
- 94% between adult children scored
- Test-retest: 93 to 96%

**Validity:**
- Content validity: assumed to be sufficient since developed from curriculum
- Construct validity: compared to Stanford achievement test: .92
- Criterion validity: with Woodcock reading test = .73 to .91
  - with comprehension tests .78
  - with Metropolitan Achievement Test = .80
- More valid with 60 minute timings
- AND with grade level controlled verses literature based

**MATH**

**Reliability:**
- Interscorer: 98%
- Test-retest: .8 to .9
- Parallel forms: .5 to .7
- Internal consistency: .8 to .9

**Validity:**
- Lowest of all 4 areas
- Criterion validity: better with mixed (.55 to .91) than single type of problem (.27 to .67) probes when compared to standardized tests

**WRITING**

**Reliability:**
- Interscorer: 97%
- Test-retest: 91 for one day but .46 after 10 weeks
- Parallel form: .95 same day but .6 for 10 forms 1 week apart
- Split half: .99

- Weaker (.73 to .79) when examining interscore reliability for story idea, organization and cohesion and writing conventions.

**Validity:**
- Content validity: assumed to be sufficient since directly measuring skill addressed.
- Criterion validity: compared to Test of written language: .41
  - Developmental Scoring Sentence = .86
  - Teacher holistic rating ranged between .26 -.61
Additional Research Findings:

• Discriminated those with LD from non-LD
• Systematic progress monitoring with CBA with rules have raised typical achievement outcome .9 standard deviation unit on average.
• When teachers were required to use data driven rules, effect size were higher than when data was evaluated by teacher judgement.
• Used to effectively identify potential candidates for reintegration into regular education classroom
• Effectively used for IEP goals and measuring outcomes
• Evidence that problem behaviors decrease.