Advanced Applications of CBM in Reading: Instructional Decision-Making Strategies Manual

National Center on Student Progress Monitoring
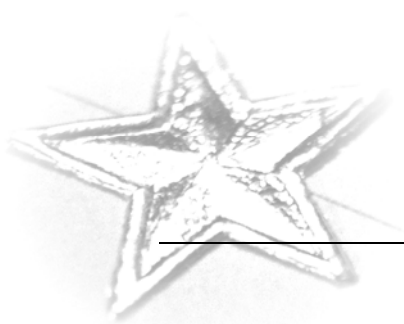
Pamela M. Stecker, Ph.D.
Erica S. Lembke, Ph.D.
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Advanced Applications of CBM in Reading (K-6): Instructional Decision-Making Strategies

Progress Monitoring—What Is It and Why Is It Important?

Progress monitoring refers to a system of ongoing data collection on academic skills of interest. Short samples of student performance are collected on a regular basis, and the scores from these short samples of performance are graphed to create a picture of student progress. Teachers can use the graphed student performance as they make instructional decisions.

Research has demonstrated that, when teachers use progress monitoring for instructional decision-making purposes, students achieve more, teacher decision-making improves, and students tend to be more aware of their performance (Fuchs & Fuchs, 1997). Additional benefits include: (a) student performance data on important, grade-level skills/content can be gathered quickly and easily; (b) student progress can be analyzed in order to modify instructional programs when needed and/or adjust student goals upward; and (c) individual student data can be compared to data of other students in the classroom, in the child's school, or in the school district.

Curriculum-Based Measurement—A Research-Validated Form of Progress Monitoring

The advanced reading workshop focuses specifically on a type of progress monitoring known as curriculum-based measurement (CBM; Deno, 1985, 1992, 2003). CBM is a scientifically validated form of student progress monitoring that incorporates standard methods for test development, administration, scoring, and data utilization. CBM enjoys nearly 30 years of research to support its effectiveness. The mathematics manual for this Center's Summer Institute provides a detailed list of CBM references, including several annotated references. Key features of CBM that make it useful for progress monitoring include:

1. Tests sample year-long curriculum

2. Tests are relatively brief and easy to administer

3. Tests are given frequently (e.g., from twice weekly to every month) to judge student progress

4. Each alternate form samples the same types of skills at the same level of difficulty

5. Student performance is used to set long-term goals

6. Scores are graphed, and teachers use a decision-making framework to judge adequacy of student progress. See Appendix A for a sample graph.

7. Data are used to compare/contrast effectiveness of different instructional methods

8. CBM has documented reliability and validity

In addition, several computerized or Web-based versions of progress monitoring are based on CBM principles.

Progress Monitoring: Levels of Implementation

Progress monitoring may be implemented at several levels within the school and/or district. The level of implementation will depend primarily upon the resources available and the needs found within the school or district. Progress monitoring can be implemented schoolwide, within a grade-level, or within a classroom. Progress monitoring is useful for identifying students at-risk who may need additional services, helping general educators plan more effective instruction, or aiding special educators design more effective instructional programs for students who do not respond to general education.

When considering how progress monitoring can be implemented in a particular school, several considerations should be made. These aspects include the efforts already made toward implementation of progress monitoring, short-term goals for implementation, long-term goals for implementation, and resources and personnel available to support implementation.

General Approaches for Conducting Progress Monitoring

Two general approaches for identifying measures or indicators to use when conducting progress monitoring using CBM involve using general outcome measures of achievement or using skills-based measures of achievement (Fuchs, 2004). General outcome measures are robust indicators of overall achievement in reading. Two examples of general outcome measures that have a significant amount of research to support their use in reading are oral reading fluency (Deno, Mirkin, & Chiang, 1982; Shinn, 1992) and maze (Deno & Espin, 1989; Fuchs & Fuchs, 1992; Fuchs, Fuchs, Hamlett, & Ferguson, 1992). General outcome measures of achievement, or overall measures of reading proficiency, correlate well with other measures of component skills that constitute reading, like phonological awareness, decoding, and comprehension. General outcome measures also correlate better with global measures of reading competence, such as high-stakes test performance, performance on standardized tests, and teacher-made tests, than other reading tasks do.

The second general approach for identifying measures or indicators to use when conducting progress monitoring is the use of skills-based measures of achievement (i.e., systematic sampling of curricular skills). Using skills-based measures usually involves selecting a mixed set of items representing systematic sampling of skills from the annual curriculum (e.g., mixed set of problems in mathematics). For example, a mixed set of items representing important skills from the annual curriculum or state standards in reading/language arts might include: selecting a misspelled word, identifying the main idea for a paragraph or passage, locating a verb within the sentence, and choosing the correct punctuation for a date. These skills would be sampled proportionately according to curriculum standards and then would be administered to students in a timed format. Skills-based measures may be valuable because scores and slopes from the measures correlate well with other global measures of academic competence (see L. S. Fuchs, Fuchs, Hamlett, & Stecker, 1990, 1991), and using skills-based measures allows for the possibility of providing analysis of level of mastery of component skills. Analysis of errors can

aid teachers in developing interventions and is something not always possible with general outcome measures.

Both general outcome and skills-based measures have technological applications, including oral reading fluency measures that can be scored using electronic tools on the Web or data from measures that can be managed via the Web. Hand-held computers can be used for scoring of oral reading fluency and early literacy measures and results can be "beamed" to desktop computers for data management (i.e., wirelessgeneration.com). Maze measures can be independently completed by students on the computer, and some Web-based reading/language arts programs provide feedback with respect to specific skills.

As one considers which progress monitoring system to select, one should keep in mind the type of information yielded by the individual measure as well as the approach used for progress monitoring; the scope of implementation--selected classes, particular grade levels, whole school; the resources available, including time, financial, personnel, and technological resources; and the resources available or needed for teaching training and ongoing support.

Print-Based Progress Monitoring Measures in Reading

Common print-based progress monitoring reading measures include letter-naming fluency, letter-sound fluency, nonsense word fluency, word identification fluency, oral reading fluency, and maze fluency. Examples of these measures can be seen in Appendix B. Letter-naming, letter-sounds, and nonsense word fluency are all single skill measures (Fuchs, 2004), in that they focus on assessing one type of skill. Static scores correlate well with some criterion measures; however, the instructional utility of single-skill measures may be overly narrow across the long term, and few studies have documented the use of single-skill measures for modeling global learning over time. Consequently, growth over time on single-skill measures may not correspond well with overall learning of the broader domain.

In contrast, word identification fluency embeds several skills, such as decoding, sight-word recognition, and vocabulary knowledge. Oral reading fluency and maze fluency are considered multidimensional, in that students must integrate many reading skills in order to perform well on the tasks. Scores and slopes on the oral reading and maze tasks correlate well with multiple global measures of reading competence, including teacher ratings of student performance, standardized reading assessments, and teacher-made tests. Because these measures are multidimensional, their instructional utility is also broad-based (Fuchs, 2004). Practitioners may use results from assessments to make instructional decisions in an effort to improve overall student achievement.

When considering the measure or measures to use in reading, one should consider the type of information that would be yielded by each, the relative benefits of using each measure with particular student populations, and the resources that are needed to support implementation of the various measures. Will time, financial constraints, personnel limitations, or technological considerations have an impact on the measure or measures that are selected? When choosing a Web-based system, one must also keep in mind that the types of measures available, time necessary for administration, and the type of data-based feedback provided will vary by particular system, perhaps even when the same type of measure is used.

General Procedures for Data-Based Decision Making

Material Selection

When implementing a system of progress monitoring, several steps need to be followed. First, one must select the material that will be used for progress monitoring. In reading, this usually consists of reading passages that are at the students' instructional level. The material should be at a level that is not extremely challenging, so the student does not struggle with every word. However, some students may be reading at significantly lower levels than their same-aged peers. The best general guideline for material selection is to start with reading material that the teacher expects the student to read competently by the end of the school year. The following guidelines also aid teachers in selecting an appropriate reading level for assessing struggling readers, that is, a level that most likely will capture student growth over time.

1. Begin by giving the student three passages at the grade level that the student is expected to be reading competently by the end of the year. If, after administering three passages at this level, the student reads aloud less than 10 correct words in 1 minute, the word identification fluency task may need to be used instead of oral reading fluency or the maze fluency measures.

2. If the student reads aloud between 10 and 50 words correct in 1 minute but is less than 85-90% correct, the teacher should move to the next lower level and administer another set of three passages.

3. If the student reads more than 50 correct words in 1 minute, the teacher can move to the highest level of text where the student reads between 10 and 50 words correct in 1 minute and with at least 85-90% accuracy (but not higher than the student's grade-appropriate text.)

Goal Setting

After material selection, the next step in progress monitoring is to collect three or four baseline data points. These points can be collected on consecutive days or can be collected on one day, depending on the student's ability to attend. The median baseline point will serve as the starting point for the goal line. Goals can be either realistic or ambitious, but the use of ambitious goals is always recommended, as students often rise to meet the expectations that are set for them. Methods of goal setting include the use of universal benchmarks, use of growth rates that reflect typical increases in performance by grade-level peers, or use of an intra-individual framework that accounts for the baseline rate of improvement and multiplies that rate by 1.5. If using a Web-based progress monitoring system, the goal setting method may vary according to the system used. Universal reading benchmarks are detailed in the table below:

CBM Reading Benchmarks	
K	40 letter sounds per min.
1	50 words correct per min. on word list
2	75 words correct from text per min.
3	100 words correct from text per min.
4	20 replacements in text per 2.5 min.

CBM Reading Benchmarks	
5	25 replacements in text per 2.5 min.
6	30 replacements in text per 2.5 min.

Typical weekly growth rates are reflected in the following table and can aid teachers in determining reasonable rates of student improvement across the year. For example, students who are struggling significantly with grade-appropriate text may not be able to reach the universal benchmark in 1 year. However, ambitious growth rates may enable the teacher to set appropriately high expectations for these readers.

Realistic and Ambitious Growth Rates for Oral Reading Fluency		
Grade	**Realistic**	**Ambitious**
1	2.0	3.0
2	1.5	2.0
3	1.0	1.5
4	0.85	1.1
5	0.5	0.8
6	0.3	0.65
Maze Fluency		
Grades	**Realistic**	**Ambitious**
1-6	0.4	.85

Goal Writing

To write legally correct and educationally meaningful IEP goals, teachers should consider using the following formats. These formats include condition(s), behavior, and criteria for an individual learner and are stated in concrete and measurable terms (see Yell & Stecker, 2003).

Current Level of Performance

> **Given passages sampled randomly from Grade 3 reading curriculum, Jasmine currently reads 50 words correct per minute (i.e., median baseline information).**

This statement reflects the median score Jasmine obtained during baseline data collection. From this current level of performance, a long-term goal easily can be established.

End-of-Year Goal

> **In 34 weeks, when given a grade 3 passage, Jasmine will read aloud 101 words in one minute.**

If the teacher calculates a 1.5-word increase across 34 weeks left in school year and adds this figure to the current baseline, Jasmine's goal will be set at 101 words read correctly per minute: $(1.5 \times 34) + 50 = 101$.
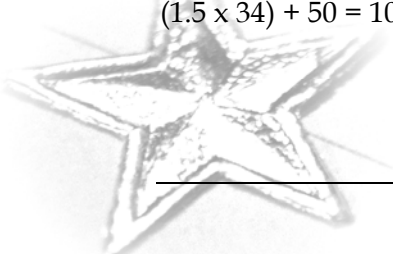
Weekly Data Collection

After the student's goal is set, timed measures are administered (usually once or twice weekly) to the student. These measures should be alternate forms but should be drawn from the same source. Using generic measures is recommended, rather than using measures that come from the student's curriculum. Because CBM activities provide assessment information, the passages should reflect student reading performance in unfamiliar text. Measures can be administered one or more times per week. For students in general education, measurement every week, every 2 weeks, or even once monthly may be sufficient for gauging class progress. However, for students with disabilities or who are at-risk of developing disabilities, twice weekly measurement is recommended.

Data-Based Decision Making

After 3-4 weeks of data collection, the teacher should examine the students' graph to determine if an intervention needs to be implemented. Using the data provided for instructional decision making is the most important part of progress monitoring. Additionally, the scored probes can be analyzed to determine whether patterns of errors are exhibited and can be used to develop instructional procedures that may assist students in strengthening their reading skills.

The teacher may use two methods for data-based decision making. The teacher can compare the student's current rate of progress (figuring a trend line) with the projected rate of progress (i.e., goal line) in order to judge whether the instructional program needs to be modified to better meet student needs or to determine that the goal should be raised. If the trend of student performance is less steep than the projected rate of progress (i.e., the goal line), then the teacher should make an instructional modification in the program for this student in an effort to boost student performance. On the other hand, if the trend of student performance is steeper than the goal line, the teacher should raise the goal to keep expectations appropriately high. Under some conditions, comparing the level of some of the data points in the current instructional condition against the goal line may yield the same data-based decision as using the trend line. These rules within a decision-making framework are summarized below.
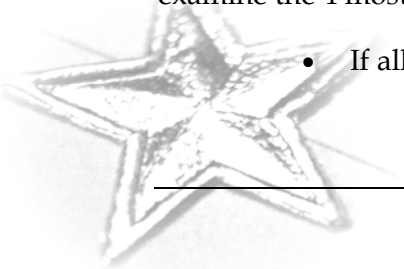
Trend-Line Rule

If at least 4 weeks of instruction have occurred AND at least 8 data points have been collected, figure trend of current performance and compare to the goal line.

- If trend of student progress is steeper than goal line, raise the goal.
- If trend of student progress is less steep than goal line, make a teaching change.

4-Point Rule (supersedes the trend-line rule)

If at least 3 weeks of instruction have occurred AND at least 6 points have been collected, examine the 4 most recent data points.

- If all 4 points fall above the goal line, increase the goal.

- If all 4 points fall below the goal line, make a teaching change.
- If the 4 data points fall both above and below the goal line, keep collecting data until the 4-point rule or trend-line rule can be applied.

Instructional Interventions

When the data indicate that an intervention needs to be implemented, teachers must decide what type of intervention might be most effective. Several instructional elements may be altered to enhance student performance, including:

- Instructional strategies
- Size of instructional group
- Time allocated for instruction
- Materials used
- Reinforcement

Initial instruction and instructional changes can be documented on a grid such as the one shown in Appendix C. These instructional elements give teachers a first place to start when thinking about what instructional interventions to implement. Altering any one or several of these instructional elements may constitute a powerful enough modification that student learning is enhanced significantly. However, changing only a minor component is not likely to change the rate of student learning enough to be generalized to overall improvement in CBM performance.

When going through the basic steps of implementing a system of progress monitoring like CBM, several considerations must be addressed, including:

- How does one determine what goals to use? Universal goals? Use of slope data? Goals from a particular system?
- How often does one collect data? With whom? Schoolwide? With individual students?
- How will the teacher be prompted to apply decision-making rules and how often?
- How will instructional interventions be determined, and how will their implementation be monitored?

Web-Based Tools in Reading

AIMSweb

http://www.aimsweb.com (or www.edformation.com)

AIMSweb is a Web-based system of progress monitoring published by Edformation that can be used at the district, school, grade, classroom, or individual levels. Benchmark measures are available to administer to elementary students three times per year. Progress monitoring

measures are available to administer to individual students on a weekly basis. Reading measures include oral reading, maze, and early literacy measures. A 3-tiered intervention model is used to identify students that are performing above average, average, or below average. Data are entered into the Web-based system, and reports are provided that track students' progress with respect to their level and are compared to benchmark norms, local norms, or class and grade averages. A response-to-intervention component is also available through AIMSweb.

Dynamic Indicators of Basic Early Literacy Skills (DIBELS)

http://dibels.uoregon.edu

DIBELS is a system of progress monitoring with Web-based data management. Benchmark goals, which represent *minimal* levels of satisfactory progress for the *lowest achieving* students are provided, and student performance is charted and described compared to these benchmarks. The following designations are used to indicate whether the student performance is being compared to a final benchmark goal or to a progressive benchmark.

- <u>Established, Emerging, or Deficit</u>—if the benchmark goal is to be completed at the time the measure is administered

- <u>Low Risk, Some Risk, or At-Risk</u>—determining likelihood of the benchmark goal to be met at the targeted point in the future

DIBELS Class Reports may contain the following features:

1. Scores—raw scores

2. Percentiles—percent of students that scored the same as or lower than the student

3. Status—what type of instruction it appears the student needs (benchmark, strategic, or intensive)

4. Instructional recommendations

   - **<u>Benchmark</u>** (Tier I)—goal has been met or student is on track to meet subsequent goals; <u>no additional intervention</u> is recommended at this time

   - **<u>Strategic</u>** (Tier II)—no clear prediction regarding subsequent goals and <u>additional intervention</u> is recommended

   - **<u>Intensive</u>** (Tier III)—odds are against student achieving subsequent goals without <u>substantial intervention</u>

Edcheckup

http://www.edcheckup.com

Edcheckup provides the following types of measures that can be downloaded and printed.

- Edcheckup Letter Sounds
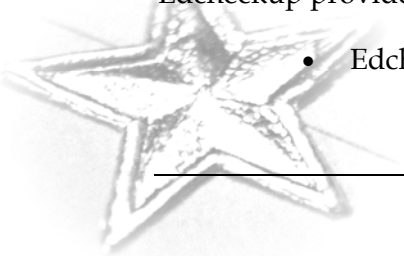
- Edcheckup Isolated Words

- Edcheckup Oral Reading

- Edcheckup Maze Reading

Additionally, Edcheckup provides writing measures. Rather than scoring by hand, an electronic scoring feature enables the teacher to mark student choices at the computer while the student is reading aloud. The program, then, automatically scores the responses and saves the student data. Edcheckup automatically calculates the median performance when screening measures are used. Alternate forms provide measures for progress monitoring, and student graphs show progress against a goal line. By comparing student performance against built-in benchmarks, class reports also provide instructional recommendations and categorize each student according to the following scheme:

- At or above benchmark

- On-track with "modest" rate

- Intervention recommended

- Intervention necessary

Yearly Progress Pro™

http://www.mhdigitallearning.com

Yearly Progress Pro provides reading maze and language arts measures for grades 2-8. The reading maze is a multidimensional, general outcomes measure that is given for 2 ½ minutes. Teachers may view a graph of student performance as well as instructional recommendations based on student performance compared to grade-level benchmarks, or targets. The instructional recommendations report details which students might benefit from assistance in decoding, fluency, or comprehension. The report also indicates which students are significantly discrepant from peers in both level and growth rate. This dual discrepancy feature highlights the importance of intervention with these students.

The language arts measure is a skills-based assessment that systematically evaluates student performance on important skills from the year-long curriculum. Given for 15 minutes, the measure provides multiple-choice items related to such item clusters as passage comprehension (providing narrative, informational, and functional text), vocabulary, word analysis, spelling, language mechanics, and language usage and expression. Levels of mastery indicating "mastered," "partially mastered," and "not mastered" are provided for general language skill clusters as well as for specific skills, such main idea or literal details.

Selection of a Web-Based Progress Monitoring System

When selecting a Web-based system for progress monitoring, several considerations must be addressed, including the types of measures provided as well as the grade or age range addressed by the measures. The types of feedback and reporting tools each Web-based system provides, cost for the system, and the breadth of academic areas covered are additional considerations.
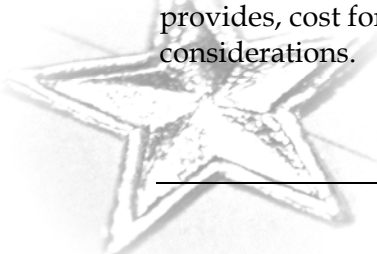
Generally Effective Reading Instruction

When determining interventions to implement, the teacher should consider whether the instructional practice is supported by evidence of its effectiveness. When determining which intervention to implement, one might consider the student's scores and instructional implications. For instance, if the student has very low scores, the student would likely benefit from instruction in decoding and word identification. If the student's scores are somewhat low, he or she would likely benefit from a fluency intervention. If the student has average scores, the student would likely benefit from vocabulary instruction and text comprehension strategies.

In 2000, the National Reading Panel (NRP) released its findings with respect to critical areas of literacy instruction and highlighted the following five areas:

Phonemic Awareness—ability to hear and manipulate individual sounds in oral language

Phonics—understanding and connecting letters of written language with sounds of oral language

Fluency—reading text accurately and quickly

Vocabulary—oral or reading language needed for effective communication

Text Comprehension—purposeful and active strategies for understanding written language

In the following paragraphs, potential instructional strategies or interventions are described in each of these areas.

Phonemic Awareness

Phonological awareness is the understanding that oral language can be broken down into smaller components. Students who demonstrate an ability to manipulate those components (e.g., sentences into words, words into syllables, words into onsets and rimes, and words into individual phonemes—s/ /u/ /n/) have developed skill in phonological awareness. Phonemic awareness, that is, being able to hear and manipulate individual sounds within words, appears to be especially critical for reading development. According to the document *Put Reading First*, some of the various dimensions of phonemic awareness include phoneme isolation, identity, categorization, <u>blending</u>, <u>segmentation</u>, deletion, addition, and substitution. Two dimensions appear especially related to later student reading and spelling achievement:

- **<u>Blending</u>**: I'll say the sounds of a word. You guess what the word is. What word is this?   /fffuuunnn/
- **<u>Segmenting</u>**: I'm going to say a word, and then I'll say each sound in the word. Listen carefully. "man" — /m/ /a/ /n/ Now I'll say a different word and you tell me each sound you hear.
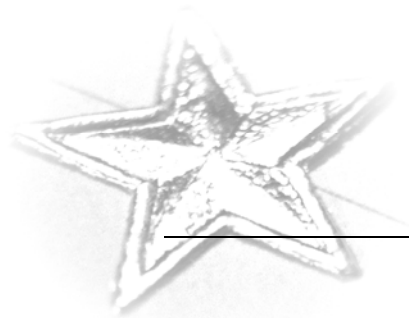
A generally more sophisticated phonemic awareness activity involves phoneme deletion or substitution. Several examples follow.

- I'm going to ask you to say a word and then to say it again without one or more of its sounds. Say "sat." Now say it again, but don't say /s/. ("at")

- Say "plate" but don't say /p/. ("late")

- Say "plane" but don't say /n/. ("play")

- Say "plane" but change /pl/ to /dr/ ("drain")

Phonics

A second area reviewed by the NRP was phonics. The particular type of phonics instruction highlighted as beneficial to students is systematic and explicit phonics instruction, which appears to improve young children's decoding, spelling, and reading comprehension and older students' word reading and oral text reading skills. Examples of elements of systematic and explicit phonics instruction include:

- Systematic: logical sequence and careful selection of letter-sounds for instruction

- Explicit: precise directions for teachers or careful wording to emphasize accurate models for students and to make letter-sound relationships conspicuous

Phonics instruction remains challenging to many teachers for several reasons. Many teacher preparation programs do not provide training in phonics instruction. Additionally, the English alphabet contains 26 letters, but roughly 44 phonemes are used. These sounds are represented by as many as 250 different spellings (e.g., /f/ as in *ph, f, gh, ff*). Until very recently, many core beginning reading programs did not emphasize systematic and explicit phonics instruction.

In terms of phonics interventions, some basic guidelines for teachers include using a functional sequence of letter-sounds, that is, one that leads to rapid success in reading words, and providing opportunities for practicing decoding skills both in word lists and in connected text. With respect to systematic and explicit phonics instruction, teachers should attempt to:

- Introduce the most common sound for a new letter (/k/ for "c")

- Separate potentially confusing letters due to visual or auditory similarity (h/n, e/i, b/d)

- Introduce lower case letters first (more functional)

- Start with high-utility letters (s, t, m, and vowels, not z, x)

- Select words that start with continuous sounds rather than stop sounds when beginning to sound out words--or for blending and segmenting practice (e.g., use "mat" before "bat")

These strategies will help students develop a solid foundation of letter-sound relations. However, as soon as 4-6 letter-sounds are mastered, instruction should include decoding strategies (i.e., sounding out) as well as sight word reading. When students have learned to apply sounding out strategies with several words and when they know several sight words, instructional practice should include using those words in sentences and connected text.

Fluency

Fluency is important because fluent readers tend to focus their attention on making connections among the ideas in a text and between these ideas and their background knowledge. Therefore, they are able to focus on comprehension. However, less fluent readers appear to focus their attention primarily on decoding and accessing the meaning of individual words. Therefore, they have little attention left for comprehending text.

When looking at the NRP's findings with respect to fluency, one intervention is clearly outstanding: repeated and monitored oral reading significantly improves reading fluency and overall reading achievement. In contrast, silent, independent reading <u>with little guidance or feedback</u> may not be enough to improve fluency and overall reading achievement.

Current norms for oral reading fluency are listed in the table below. These norms represent data collected for as many as 100,000 students.

Grade	1	2	3	4	5	6	7	8
WPM	59	89	107	125	138	150	150	10

Taken from: Oral Reading Fluency, 90 Years of Measurement. Behavioral Research and Teaching, Eugene, OR, 2005. http://brt.uoregon.edu/techreports/TR_33_NCORF_DescStats.pdf

Besides repeated and monitored oral reading, several other strategies aid in promoting fluency:

- Modeling fluent reading. Have students reread text themselves. Read aloud daily.
- Using text at independent level (approx. 95% accuracy).
- Using adults, peers, or tape recorders for modeling and practicing one-to-one (although classwide partner reading is an option). Choral reading may engage groups of students.

Interventions suggested in *Put Reading First* include:

- Student-adult reading
- Choral reading
- Tape-assisted reading
- Partner reading
- Reader's theater

Repeated Readings as an Instructional Strategy

The text used for repeated readings may be of varying length--often 100-word passages are used for young elementary children. Or, the teacher may set a time limit, such as 1 or 2 minutes, to have the child read as much as possible with the target being an increase in number of words on subsequent readings. Text used for fluency practice should include only words the student

can read rapidly and accurately, either through efficient decoding or good sight-word vocabulary. Research has demonstrated that material should be read three to four times for maximum benefit. In addition, when progress is charted, the charting also reinforces the student's increases in rate.

Vocabulary

Many words are learned indirectly through everyday experiences with oral and written language (e.g., conversations, listening to others read, reading independently). However, some vocabulary must be taught directly through specific word instruction or through word-learning strategies.

### Direct Vocabulary Learning: Specific-Word Instruction

Direct vocabulary instruction aids in comprehension. However, a text may have too many unknown words for direct instruction, in which case it is important for the teacher to be selective (e.g., choose important, useful, and difficult words). Students do not have to know all words in order to understand text. Some sample strategies include teaching specific words prior to reading (e.g., use a model, synonym, or definition); providing repeated exposure to vocabulary often and in many different contexts; and teaching word-learning strategies. One of the most important aspects of teaching vocabulary is selecting an appropriate set of examples and non-examples to use. Clearly defining a vocabulary term through specific examples may be critical for students' retention of the word and for generalization.

Examples for Specific-Word Instruction (Carnine, Silbert, Kame'enui, & Tarver, 2002)

- Model the concept "above." Use hand or object and place <u>above</u> or <u>not above</u> other objects (demonstrate position)

- Teach meaning for "gigantic" by using the synonym "large." Connect to prior knowledge, check with examples and nonexamples, and use in sentences

- Teach meaning by providing definition for "exit—-a door that leads out of the building. Is this (point to front door) an exit or not? How do you know?"

Other evidence-based vocabulary interventions include:

1. Keyword approach (Mastropieri & Scruggs, 1998)

   - Helps students associate a visual image of the meaning with a word to be remembered

2. Word webbing

   - Activates prior knowledge by associating vocabulary in the story with words students already know

   - Connect visually in a "web"

3. Active engagement

   - Make mental pictures of definitions
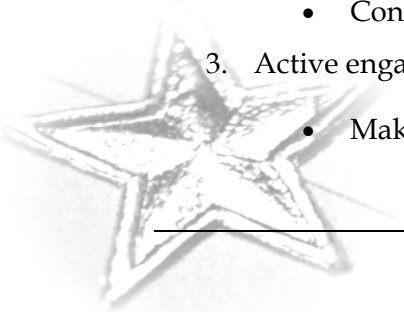
- Use the words in writing tasks

Comprehension

Comprehension is the reason for reading! Comprehension is both purposeful and active. Good readers have a purpose for reading and they think actively about what they are reading as they are doing it. Metacognition refers to "thinking about thinking" and involves monitoring one's understanding during reading and applying "fix up" strategies, such as adjusting reading speed, rereading, and checking understanding afterward.

Several specific comprehension strategies have been deemed effective according to the review of research by the NRP (2000). These include:

Comprehension monitoring—involves students using a set of steps to recognize when they have difficulties understanding

Graphic and semantic organizers (webs, charts, frames)—to illustrate relationships among ideas/events

Summarizing—involves synthesis of important ideas; helps to identify main ideas, eliminate unnecessary information, and remember content

Answering questions and generating own questions—help students to establish purpose, focus attention, think and monitor actively, review content, and relate content to prior knowledge

Story structure—knowledge of story parts (e.g., characters, setting, problem, sequence of events, problem resolution) facilitates comprehension

Guidelines for how to teach comprehension include the use of cooperative learning methods and procedures that enable students to integrate the use of multiple strategies. Teachers should try to promote the flexible use of different strategies across types of reading texts. Additionally, comprehension instruction needs to be explicit and conspicuous to students. As with other learning strategies, comprehension strategies should be taught directly, providing students with a mechanism that will help them internalize the strategy and use it again in other contexts. Explicit teaching of comprehension strategies should include the following steps:

1. Provide explanations—Why the strategy helps and when it should be applied

2. Model or demonstrate strategy—think aloud

3. Provide guided practice using strategy

4. Scaffold assistance during practice opportunities until students become independent in applying strategy

Comprehension strategy instruction should focus on three broad categories: (a) previewing, predicting, and activating background knowledge; (b) questioning to promote understanding, clarifying, and monitoring comprehension; and (c) identifying the main idea and summarizing information.

***Previewing, predicting, and activating background knowledge***

In the first area, previewing, predicting, and activating background knowledge, teachers may find several strategies to be useful, including connecting to students' prior knowledge (activating the "known"), semantic mapping or concept mapping (also a good strategy to use with content-area text), and K-W-L-Q (what the students know, what they want to know, what they learned, and questions they still have; Bryant, 1998).

The steps in one particular strategy, semantic mapping (Scanlon et al., 1992), include:

1. Stating the Purpose

   - Activate background knowledge
   - Summarize what has been read

2. Presenting the core word or core questions related to the story

3. Students generating words related to core word or answers for questions

   - Teacher lists student responses on the board
   - Related words or answers are put into groups

4. Connecting groups to form a map

5. After reading selection, discussing and rearranging or adding to map

Another comprehension strategy, K-W-L-Q, has the following steps:

1. State the purpose

   - Activate background knowledge
   - Set purpose for reading

2. 4 steps of KWLQ

   - Accessing what *I <u>KNOW</u>*
     - Brainstorm about ideas
     - Categorize information

   - Determining what I <u>*WANT*</u> to learn
     - What do we want to find
     - Write specific questions

   - Recalling what I did <u>*LEARN*</u>
     - Answer specific questions
     - Write down everything else learned
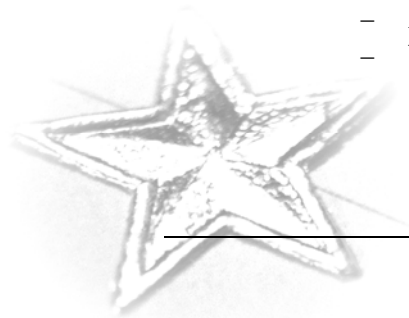
- More *QUESTIONS* I still have
    - Brainstorming *QUESTIONS* that I still have

Questioning to promote understanding, clarifying, and monitoring comprehension

In the area of questioning to promote understanding, clarifying, and monitoring comprehension, two specific strategies that relate to self-questioning are highlighted.

1. Self-Questions to Foster Comprehension (Alvermann et al., 1989)

    - Think Ahead
        - What is this section about?
        - What do I already know about the topic?
        - What do I want to find out?
        - What is my goal?
        - How should I go about reading to meet my goal?

    - Think While Reading
        - What have I read about so far?
        - Do I understand it?
        - If not, what should I do?
        - What is the author saying, and what did I think about it?

    - Think Back
        - Have I learned what I wanted to learn?
        - How can I use what I read?

2. Self-Questioning Strategy (Wong & Jones, 1982)

Students should complete the following questions and activities as they read a passage:

- What are you studying this passage for? (So that you can answer some questions that will be given later.)
- Find the main idea(s) in the paragraph and underline it (them).
- Think of a question about the main idea you have underlined. Remember what a good question should be like. ("Good Questions" are those that directly focus on important textual elements. Write the question in the margin.)
- Learn the answer to your question. (Write the answer in the margin.)
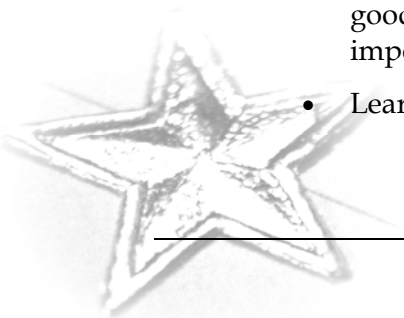
- Always look back at the previous questions and answers to see how each successive question and answer provides you with more information.
- Identify the main idea and summarize information.

In the area of identifying the main idea and summarizing information, interventions that may include story grammar, general summarization strategies, and a specific paraphrasing strategy known as RAP.

A story grammar helps students understand how text is organized and helps readers construct meaning. A story grammar includes the textual elements around which a story is organized, including setting, characters, plot, and theme. An example of teaching procedures and a story map follows:

Procedures:

1. Teacher models

   - Reads story aloud
   - Stops at story map points
   - Student labels information
   - Teacher fills in map on board / Student copies information onto own map

2. Lead (Guided Practice)

   - Teacher or student reads story and completes map, one element at a time
   - Teacher prompts when necessary
   - Student reviews map

3. Teach (Independent practice)

   - Student reads story and generates map

4. Test

   - Student answers questions who, what, where, when, and so forth

5. Generalization and Maintenance

   - Student uses the story map in another content area
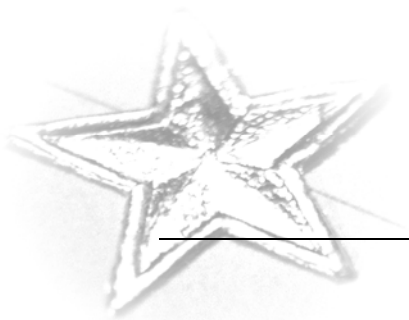
Story Map
Setting:
Characters:
Problem:
Important Events:
Outcome:
Theme:

Summarization strategies include story retelling and creating main idea maps (similar to semantic maps or story grammars). A particular paraphrasing strategy is RAP. The purpose of the RAP strategy is paraphrasing and retelling. The steps include:

- <u>R</u>EAD a paragraph
- <u>A</u>SK yourself: "What were the main ideas and details of the paragraph?"
  - Look at first sentence
  - Look for repetitions of same word(s)
- <u>P</u>UT main idea and details in our own words

Multicomponent programs

Two multicomponent intervention programs that are research-based and provide instruction and instructional practice on multiple reading strategies include Peer-Assisted Learning Strategies (PALS; D. Fuchs, Fuchs, & Burish, 2000; D. Fuchs, Fuchs, Mathes, & Simmons, 1997) and Collaborative Strategic Reading (Vaughn & Klingner, 1999).

PALS is a classwide peer tutoring program used to supplement classroom literacy instruction for practicing important reading skills and stratgies, such as decoding, sight-word recognition, oral reading fluency, summarization, and prediction. PALS includes validated instructional practices that strengthen the general education's capacity to meet academic needs of increasingly diverse population in classrooms. PALS is based on Juniper Gardens Classwide Peer Tutoring model. Over 10 years of experimental research supports the use of PALS. It has been used in Title 1 and Non-Title 1 schools and in urban and suburban schools. PALS research includes high, average, and low achievers as well as students with disabilities.

The critical features of PALS include: (a) supplemental reading practice several times per week (30-45 min. each session, depending on grade level and activities), (b) structured activities, (c) reciprocal roles (Coaches and Readers), (d) individualized support--corrective feedback, (e) more time on task with active engagement, (f) inclusion of all students with built-in opportunities for success, (g) facilitation of positive peer interactions, (h) opportunities to monitor student progress, and (i) practical AND effective strategies. The general procedures for PALS follow:

- PALS is conducted three times each week (about 30-45 min. per session) but four times is recommended in Title I schools or very low-achieving schools

- Students are rank ordered, split in half, and stronger readers from the top half are paired with weaker readers from the bottom half.

- Each pair is assigned to one of two teams

- Teams and pairs remain together for 3-4 weeks, and partners work to earn points for their team each week

- Within pairs, the stronger reader reads first to provide a model, but coach and reader roles are switched during each activity

- Partners read text at the level of the weaker reader

- Teachers monitor students, provide help, and award bonus points for good tutoring behaviors

For Kindergarten and First-Grade Students, PALS activities include teacher-led practice. Partner activities that are conducted in pairs include work in phonological awareness (e.g., saying first and last sounds, rhyming, counting sounds, segmenting, and blending), letter-sound correspondences (e.g., letters and letter combinations), decoding (e.g., words and sentences), and fluency (e.g., sight words, stories, and book reading).

In grades 2-6, the sequence of PALS activities is structured as follows:

1. **Partner Reading** (11-12 minutes)

   - Stronger reader reads for 5 min

   - Weaker reader reads same text for 5 min

   - Weaker reader retells selection for 1 min. in Grades 2-3 or for 2 min. in Grades 4-6

2. **Paragraph Shrinking** (10 minutes)

   - Stronger reader reads new text, stopping to summarize after each paragraph: states the most important who or what, tells what mainly happened, and gives main idea statement in 10 words or less (5 min.)

   - Weaker reader continues with new text using same procedure (5 min.)
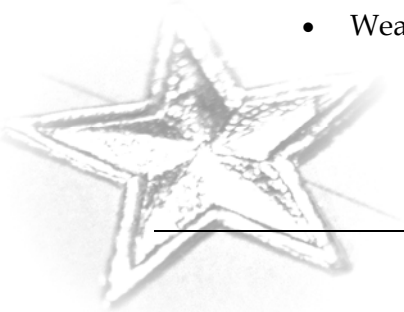
3. **Prediction Relay** (10 minutes)

- Stronger reader makes prediction for next half page, reads half page, stops to verify prediction for 5 min.

- Weaker reader continues with new text using same strategy for 5 min.

Collaborative Strategic Reading (CSR) is another multicomponent strategy that aids in fluency, comprehension, decoding, and vocabulary development. In CSR, the steps include previewing the text, reading with a partner and identifying "clicks" (words that they know) and "clunks" (words with which students struggle), and getting the gist (summarizing). A sequence of activities for a typical lesson might look like the following:

1. Previewing

- Learn as much about the passage as they can in 2-3 minutes

- Activate their background knowledge about the topic

- Make predictions about what they will read

- Pique their interest in the topic

2. Click and clunk

- Clicks—student understands what he/she is reading. Clunks—student doesn't understand and needs to use fix-up strategies

3. Getting the gist

- Read each section and ask yourself:

- Who or what is it about?

- What is most important about the who or what?

4. Wrap Up

- Formulate questions and answers about the key ideas from the passage

5. Discuss what students have learned

When determining what reading strategies to implement, the follow remain questions one should consider:

1. When will you implement interventions? (i.e., use of data-based decisions rules)

2. How often will you make decisions about what interventions should be implemented? (i.e., use of data-based decision rules)

3. How will you determine what intervention to implement? (Be sure to consider the evidence base for this intervention.) How will you judge the effectiveness of this intervention for your students?
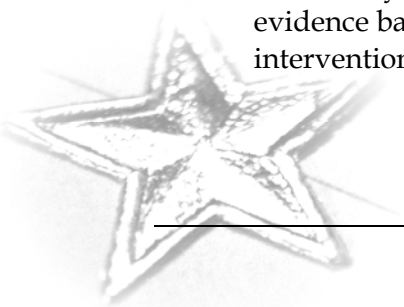
Applications

Case Study 1, Jonah's CBM graph
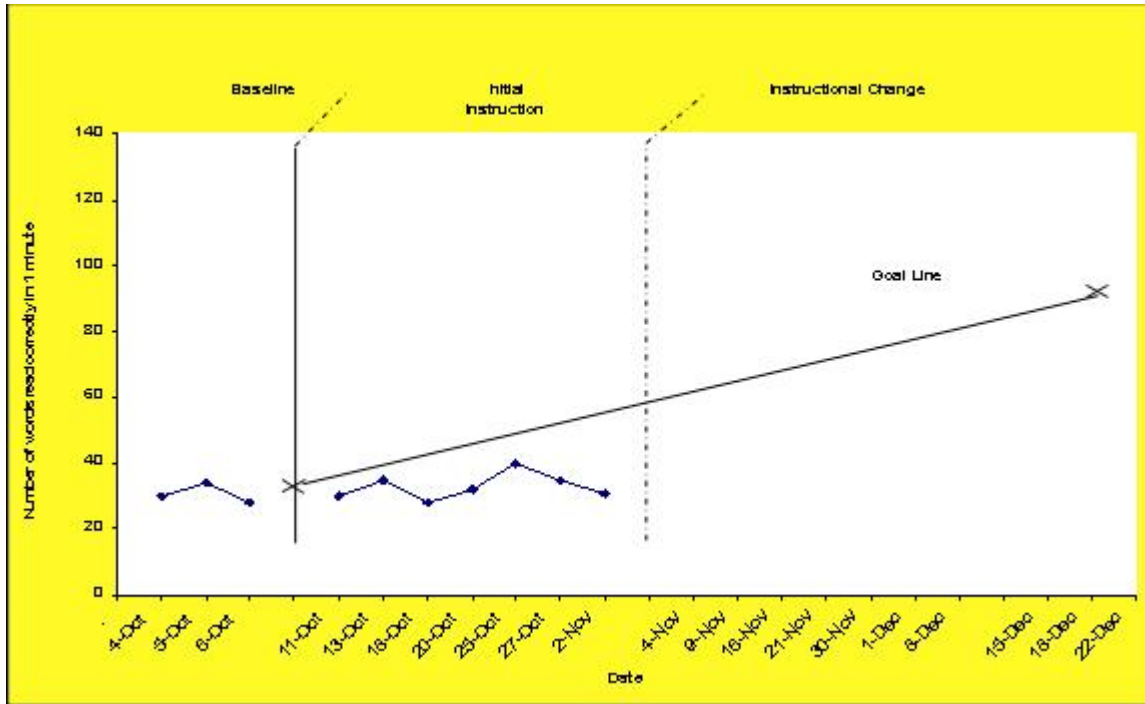
| Word Written	Word Spoken	Grapho-phonemic	Syntax	Semantics
was	saw	no	yes	no
very	him	no	no	no
excited	-----	no	no	no
just	our	no	no	no
brought	b	minimal	no	no
brother	mother	yes	yes	no
were	was	minimal	yes	yes
very	much	no	yes	yes
surprised	sorpray	yes	no	no
puppy	pup	yes	yes	yes
Quick Miscue Analysis	30%	50%	30%	

Jonah is a—

- 2nd grader who makes many errors during oral reading fluency assessments

- Word correct scores are lower than classmates': 30, 35, 28, 32, 40, 35, and 31

- Daily teacher-directed, whole-class instruction that includes some independent work; also two days per week has two reading groups focused on skills-based activities; three days per week has whole-class writing activities
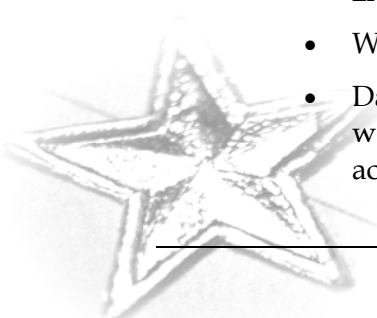
- Score of 31 on last oral reading fluency probe, and Quick Miscue Analysis illustrates types of miscues Jonah made on first 10

What might you ask Jonah's teacher about structuring class time and activities for language arts? What type of intervention(s) might benefit Jonah?

Case Study 2, Alex's CBM Graph
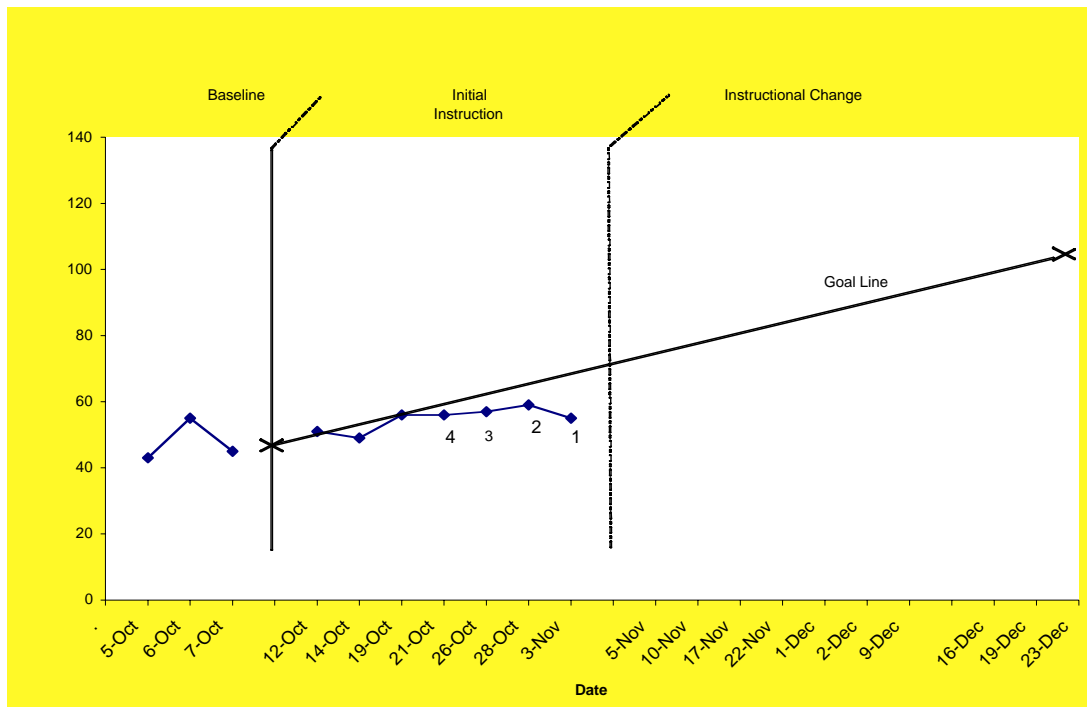
Alex is a 3rd grade student in Mr. Simon's general education classroom. Alex has always been a slow reader, and as the text has become more difficult, her reading has gotten even slower. Mr. Simon has asked the special education teacher for advice, because he isn't sure why Alex reads slowly. Mr. Simon has been collecting 1-minute samples of Alex's reading performance in grade-level text and has been graphing that performance. For the last several probes, Alex's scores have fallen below the goal line. On these passages, Alex has received the following scores:

- Passage 1—57 wcpm, 3 errors (Sahara (teacher supplied--TS); desert (said "dessert"); arid (TS))

- Passage 2—58 wcpm, 2 errors (Thursday (said Tuesday); while (said "whil"))

- Passage 3—55 wcpm, 3 errors (passage (TS); blossoming (TS); garden (said "garnet"))

For each passage, Mr. Simon also has Alex retell everything that she can remember about what she read. Alex retells an average of 87% of main story elements.

Based on the information you have, what reading intervention might you suggest for Alex at this time?

Appendix A

Sample CBM reading graph

Reading Graph for Micah
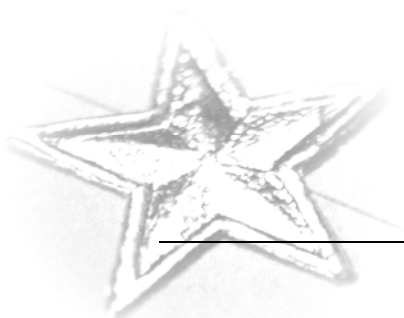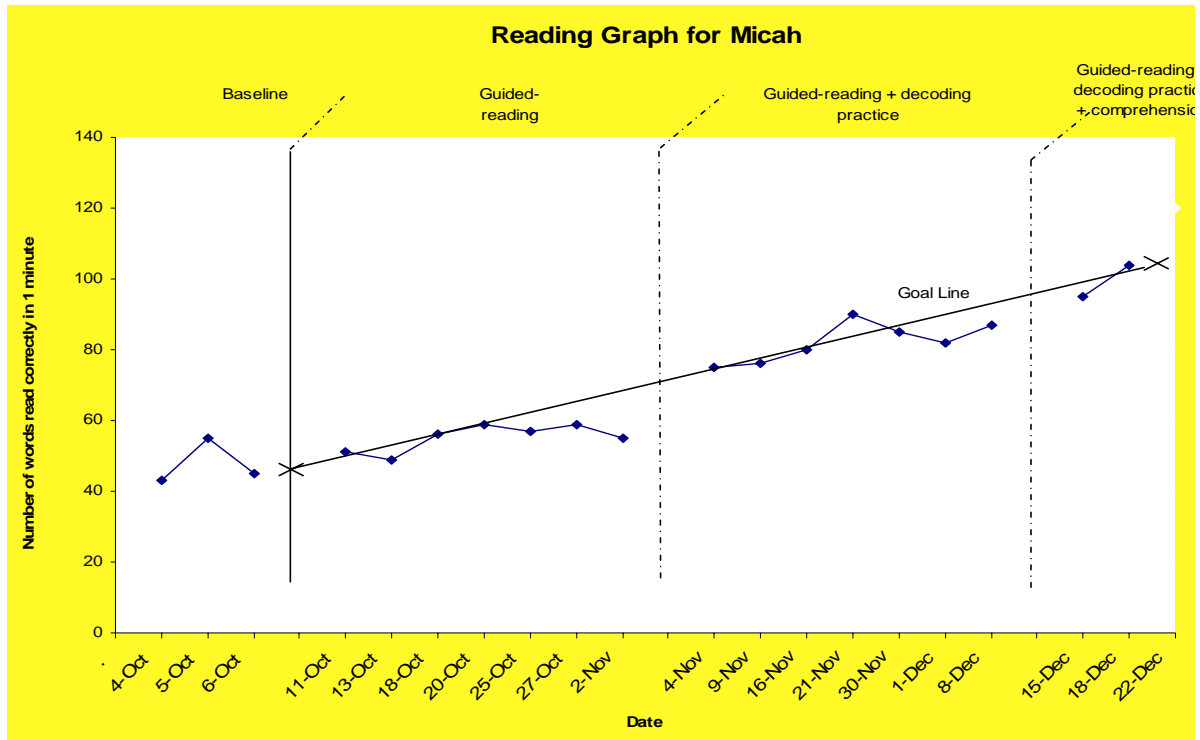
Appendix B

Examples of Common Print-Based Progress Monitoring Measures in Reading:

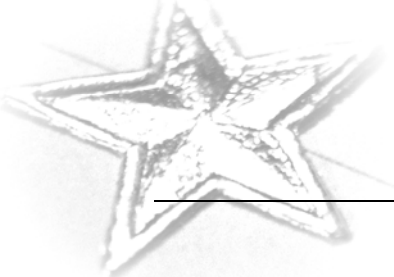*Letter-Naming Fluency – used primarily for kindergarten students*
Directions: Students are asked to name as many letters as they can in 1 minute. The number graphed is the number of letters named correctly in 1 minute.

t	S	R
u	b	C
W	p	m
e	A	q
x	s	y
P	L	o

Letter-Sound Fluency – Used primarily for kindergarten students
Directions: Students are asked to name as many letter sounds as they can in 1 minute. The number graphed is the number of letter sounds said correctly in 1 minute.

t	S	R
u	b	C
W	p	m
e	A	q
x	s	y
P	L	o

Nonsense-word fluency – used primarily for Kindergarten and 1st grade students
Directions: Students are asked to name as many sounds or words as they can in 1 minute. The number graphed is the number of sounds produced correctly in 1 minute (students may say individual sounds or say the entire word; however, credit is awarded for each sound produced)

tov	sut	rom
ud	bof	coz
wid	peb	mot
eb	ak	jeb
pex	sim	yaz
pim	lut	ob

Word Identification Fluency – used primarily for 1st grade students
Directions: Students are asked to read aloud as many words as they can in 1 minute. The number graphed is the number of words pronounced correctly in 1 minute.

than	new	back
and	same	sun
tree	went	until
could	comes	find
saw	going	eat
always	ask	want
street	said	at

Oral Reading Fluency – used for students who are beginning to read connected text through high school students.
Directions: Student reads aloud for 1 minute while the teacher keeps track of the student's errors. Number graphed is the number of words read correctly in 1 minute.

Raymond lived in Georgia. He was born there and had many friends. One day Dad had come home from work to say that they would have to move far away. Dad worked in a factory. The factory had closed and Dad needed a new job. Dad had found a new job and now they had to move.

Raymond was sad because he did not want to leave his school. He did not want to leave his friends.

"I am sorry, son," said Dad.

"It is OK," said Raymond with a smile. He did not want Dad to feel bad.

They packed up the car and moved to a new state. Their new house was old and scary. "I wonder whether there are any ghosts living in our house," said Raymond. The house was big and dark. The front of the house was covered by trees. Even the trees looked scary. The blowing breeze made them look alive.

Inside, the house was dark, so Dad fixed the lights and turned them on. Then they unpacked the car and Raymond went up to his new room. The walls were cracked. Dad would paint them. Raymond was afraid to open the closet. He would do it later.

Raymond went down to the kitchen. Mom was making dinner. She had fried chicken and potatoes cooking because these were Raymond's favorites.

After dinner Raymond felt sleepy, so he went to his room to go to sleep. "Good night!" he called down to Mom and Dad.

"Sweet dreams," they said back.

Raymond got into bed and turned out the light. He began to fall asleep. Then he heard a loud noise. It came from the closet. Raymond

Maze Fluency — used primarily for students in 4th grade through high school.
Directions: Students read along silently to themselves, circling the word choices whenever they come to three words that are bold and underlined. The number graphed is the number of correct word choices made in 2.5 minutes.
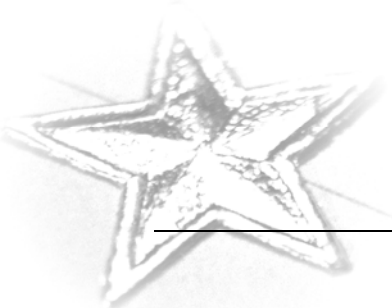
THE CAVE TRIP

Mrs. Jones said that Cindy's class [**was/ step/ hill**] going on a field trip. The [**stare/ class/ green**] of third graders had never been [**be/ on/ so**] a field trip before. Cindy was [**bed/ went/ very**] excited. Mrs. Jones said that the [**class/ chair/ peach**] was going on a field trip [**at/ to/ is**] see the caves up in the mountains. [**Show/ And/ The**] class had been studying about caves [**for/ sad/ kill**] the last few weeks. Cindy [**wet/ and/ ill**] her classmates had seen pictures of [**shout/ caves/ sing**]. Now, they were going to see [**a/ are/ or**] real cave.

A week later, the students [**then/ her/ and**] Mrs. Jones climbed onto a bus [**four/ that/ dime**] would take them to [**and/ the/ sat**] cave. It was early in the morning [**sit/ tap/ and**] the air was chilly. Mrs. Jones [**got/ sat/ had**] warned all of the students to [**bring/ pillow/ horse**] a sweater because the air might [**be/ to/ it**] chilly in the cave. Cindy was [**work/ jump/ very**] glad that she had brought her sweater.

[**Rain/ Halt/ The**] bus driver started the engine and [**the/ was/ got**] bus began to roll. The bus [**rolled/ mother/ girls**] along the freeway. Finally the bus [**lather/ coffee/ pulled**] onto a little country road that [**ate/ led/ pear**] to the cave.
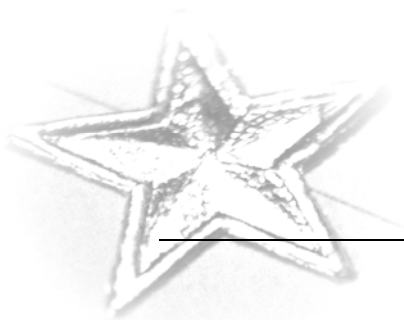
When the students arrived at the [**goat/ math/ cave**], all they could [**see/ kite/ lot**] was a mountain with a big [**toys/ trees/ black**] hole in the side. A

Appendix C

Instructional Interventions for Progress Monitoring Documentation

Date	Instructional Strategies (Procedures and Skills)	Size of Instructional Group (# Teachers:# Students)	Allocated Instructional Time and Frequency	Instructional Resources (Curriculum, Level, Materials)	Reinforcement Strategies (Optional)

Appendix D

Resources for CBM Information and Evidence-Based Interventions

National Center on Student Progress Monitoring--http://www.studentprogress.org

- Web site that provides information and technical assistance on progress monitoring for elementary students.

- Watch for conference notices, as this technical assistance center funded by OSEP offers training in progress monitoring.

Research Institute on Progress Monitoring--http://www.progressmonitoring.org

- Web site that provides information regarding the OSEP-funded project to evaluate the effects of individualized instruction on access to and progress within the general education curriculum.

- Provides information on current and previous research in CBM, including a comprehensive literature review

AIMSweb, from Edformation--www.aimsweb.com

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

Dynamic Indicators of Basic Early Literacy Skills--http://dibels.uroregon.edu

- Research, benchmarks, administration directions, and probes for grades K-3; oral reading fluency passages also for grades 4-6 (free to download; fee per student for report access)

Edcheckup--www.edcheckup.com

- A Web site where teachers can access CBM probes in reading and writing; after student data are entered (or probes are scored electronically), class and individual student charts and graphs are provided, along with recommendations regarding the need for intervention (fee based)

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

- Provides assessment tools, instructional feedback, and data reports and analysis in mathematics, reading, and language arts as well as instructional modules for students based on specific skills assessed (fee based).

Monitoring Basic Skills Progress--
http://www.proedinc.com/store/index.php?mode=product_detail&id=0840

- Link to the Pro-Ed site where this Macintosh computer program can be purchased for CBM maze administration and scoring; also available for mathematics computation and concepts and applications (blackline masters available for
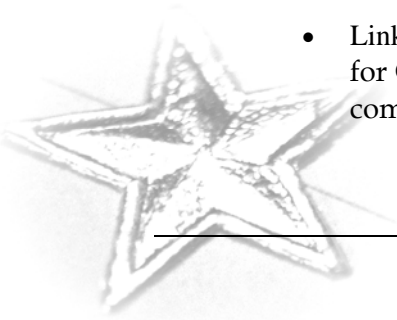
mathematics CBM probes and can be purchased separately from the computer program)

Intervention Central--www.interventioncentral.org

- A Web site 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).

Consortium on Reading Excellence (CORE), www.corelearn.com

- Resources for evidence-based reading interventions

Division for Learning Disabilities (DLD) Research to Practice Web site:
http://www.teachingld.org/

- Includes details about DLD's annual conference to provide information and training to teachers about 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.
- Web-based tutorials on CBM reading and maze are also available to members on this Web site.

Oral Reading Fluency, 90 Years of Measurement. Behavioral Research and Teaching, Eugene, OR, 2005. http://brt.uoregon.edu/techreports/TR_33_NCORF_DescStats.pdf

- Recent oral reading fluency norms based on data for over 100,000 students

Put Reading First,
http://www.nifl.gov/partnershipforreading/publications/reading_first1.html

- Describes findings from the National Reading Panel report in a practitioner-oriented document. Includes reading activities that are evidence-based for each of the five big areas of reading.

Peer-Assisted Learning Strategies (PALS), http://www.peerassistedlearningstrategies.net

- Web site includes information related to research support, obtaining materials, and/or training

University of Maryland's *Project AIM's (Alternative Identification Models)***—**
http://www.glue.umd.edu/%7Edlspeece/cbmreading/index.html

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

University of Minnesota--www.education.umn.edu/research/CBM.htm

- This site provides a brief background and summary of CBM research at the University of Minnesota.

**University of South Florida--** http://sss.usf.edu/cbm/SiteMap.htm

- This site is maintained by the University of South Florida and provides resources and information regarding the use of CBM and DIBELS (Dynamic Indicators of Basic Early Literacy Skills).

Vanderbilt University—contact 615-343-4782 (Lynn and Doug Fuchs)

- May order CBM early literacy and reading probes for cost of copying and shipping.

Wireless Generation—www.wirelessgeneration.com

- Provides software for handheld computers that aids in monitoring student performance in reading (using the DIBELS, for example) and in math.
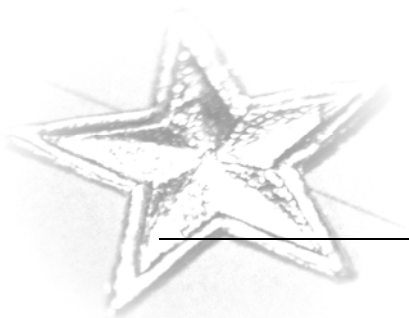
Appendix E

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