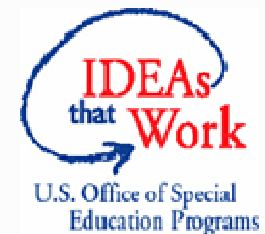
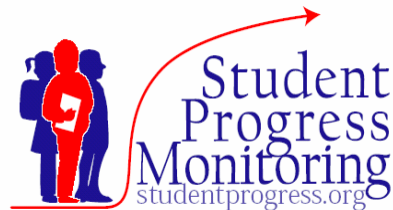


A blue silhouette of a person reaching their right arm up towards a gold star on a wall. The background is a gradient of light blue and yellow.

Using CBM for AYP and Other Data Reporting

Michelle Hosp, Ph.D.
University of Utah

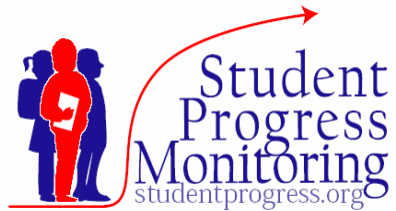


Overview

- Review of Curriculum-Based Measurement (CBM)
- Defining Adequate Yearly Progress (AYP) using CBM Benchmarks
- Using CBM Data for School Accountability
 - By Student, Teacher, Grade, School, Disaggregated Groups
 - Writing IEP Goals and Objectives



Acknowledgments



- John Hosp
- Heartland AEA 11
- Ken Howell



CBM Materials Available For:

- Reading
- Math
- Spelling
- Writing



The Basics of CBM

- CBM monitors student progress throughout the school year
- Students are given CBM probes at regular intervals
 - Weekly, bi-weekly, monthly
- Teachers use student data to quantify short- and long-term goals that will meet end-of-year goals
- Estimate rates of student improvement



The Basics of CBM- Cont

- CBM tests are brief and easy to administer
- All tests are different, but assess the same skills and the same difficulty level
- CBM scores are graphed for teachers to use to make decisions about instructional programs and teaching methods for each student
- Identify students who are not demonstrating adequate progress



The Basics of CBM- Cont

- CBM Data can also be used for making decision about:
 - AYP
 - Classrooms
 - Grades
 - Schools
 - Disaggregated Groups



What We Look For in CBM

- Students whose scores are going up
 - Indicates they are becoming better readers, spellers, writers, in math
- Students whose scores are flat
 - Indicates they are not profiting from instructional program and require a change in their instructional program

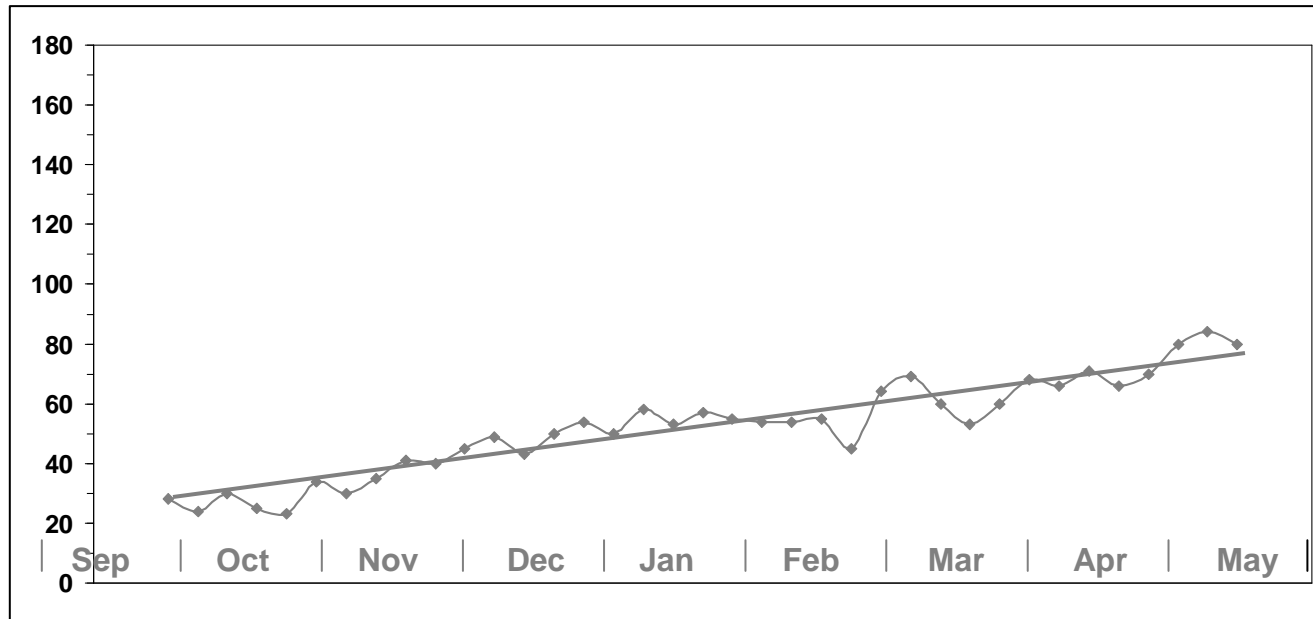


Sarah's Progress on Words Read Correctly

Sarah Smith

Reading 2

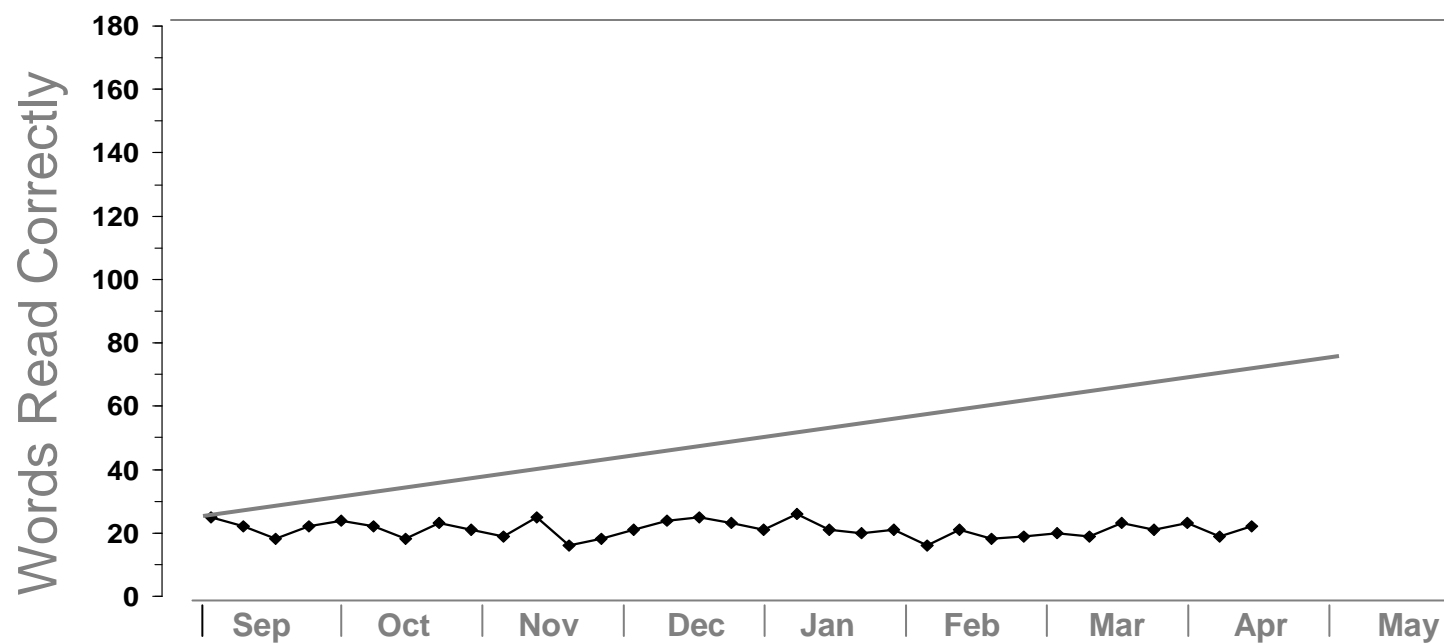
Words Read Correctly




Jessica's Progress on Words Read Correctly

Jessica Jones

Reading 2



A child is shown from the back, reaching up with their right hand towards a gold star on the wall. The scene is set against a light-colored wall with a yellowish-gold gradient at the top. The child is wearing a light-colored shirt. The star is five-pointed and has a textured, metallic appearance.

Most Forms of Classroom Assessment Are Mastery Measurement

CBM is *NOT* (typically) Mastery Measurement

CBM *IS* (usually) a General Outcome Measure

Salient Features of General Outcome Measurement

- General domains, not subskills
 - Keeps global curriculum outcomes intact and uses long-term goals
- Makes no assumptions about instructional hierarchy for determining measurement (i.e., CBM fits with any instructional approach)
 - No measurement shifts



Salient Features of General Outcome Measurement (cont)

- Incorporates automatic tests of retention and generalization
 - Measurement of Long-Term Curricular Goal Performance
- Test Construction
 - Standardized procedures used to assess performance on the long-term goal
 - Reliability & validity can be determined

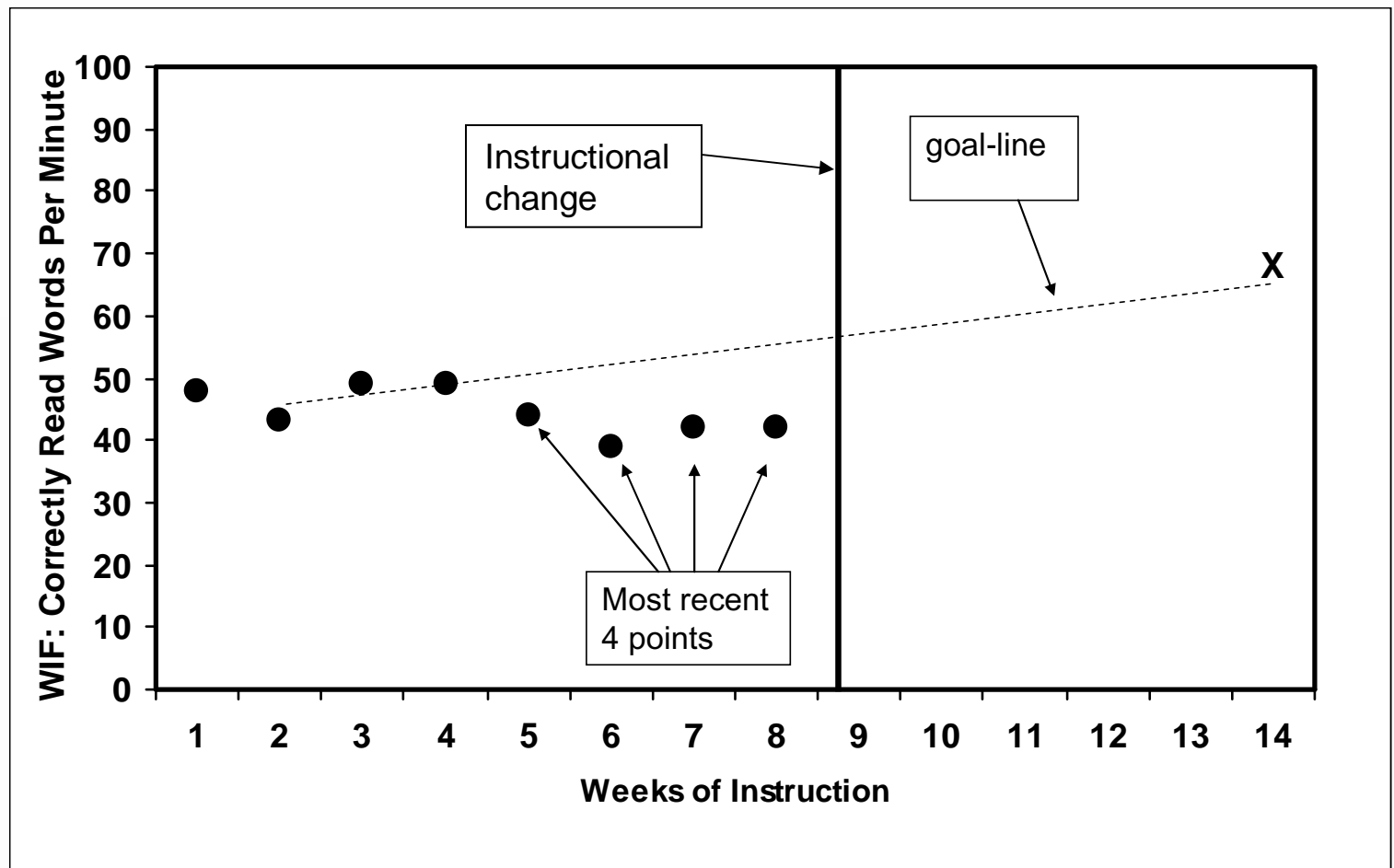


Downsides to General Outcome Measurement

- Often lacks information on specific subskills
 - If interested in identifying specific skills to teach, GOM not appropriate
 - Need to use a mastery measure or diagnostic measure
- Fidelity of implementation is important



Graphing Scores and Applying Decision Rules



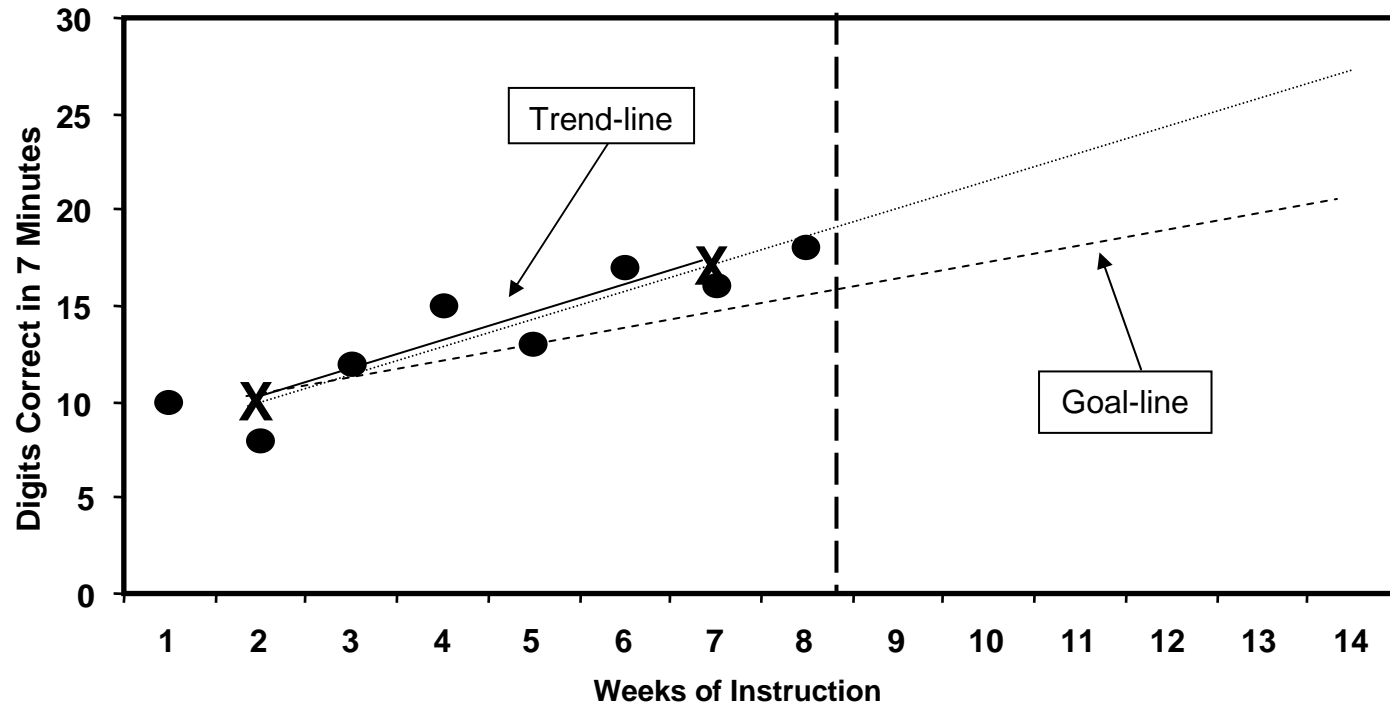
CBM Example: Computation

- Samantha's Computation test:
 - Samantha's digits correct score is 49.

| Sheet #15 | | Computation 5 | | |
|---|---|--|---|---|
| Password: HAT | | | | |
| Name: <u>Samantha</u> | | Date: <u>November 16</u> | | |
| A $\frac{3}{5} - \frac{2}{7} = \frac{11}{35}$ $\frac{21}{35} - \frac{10}{35} =$ | X $\begin{array}{r} 5.697 \\ - 3.300 \\ \hline 2.397 \end{array}$ | X $\begin{array}{r} 111 \\ 27568 \\ + 46047 \\ \hline 73605 \end{array}$ | D $\frac{3}{7} + \frac{4}{7} = \frac{7}{7} = 1$ | E $\begin{array}{r} 300 \\ \times 62 \\ \hline 6000 \\ 18000 \\ \hline 18600 \end{array}$ |
| X $8\frac{3}{11} - 2\frac{4}{11} =$ | G $\begin{array}{r} 2 \\ \times 528 \\ \hline 1584 \\ 1056 \\ \hline 17424 \end{array}$ | X $38 \overline{)76}$ | I $\begin{array}{r} 599\cancel{3} \\ - 24915 \\ \hline 35026 \end{array}$ | J Rename as improper: $8\frac{1}{2} = \frac{17}{2}$ |
| K Reduce: $\frac{4}{6} = \frac{2}{3}$ | L Rename as mixed: $\frac{16}{3} = 5\frac{1}{3}$ | M $\begin{array}{r} 1 \\ 8.492 \\ + .160 \\ \hline 8.652 \end{array}$ | N $5\frac{3}{5} + 2\frac{3}{5} =$ $7\frac{6}{5} = 8\frac{1}{5}$ | O $\begin{array}{r} 1111 \\ 66000 \\ 7594 \\ 248 \\ + 930 \\ \hline 74772 \end{array}$ |
| P $\begin{array}{r} 90 \text{ R6} \\ 8 \overline{)726} \\ \underline{72} \\ 06 \\ \underline{60} \\ 60 \end{array}$ | Q Reduce: $\frac{3}{12} = \frac{1}{4}$ | R $\frac{8}{9} - \frac{1}{3} =$ | S $7 \overline{)847}$ | T $\begin{array}{r} 68650 \\ - 7397 \\ \hline \end{array}$ |
| U Rename as improper: $6\frac{2}{3} =$ | V $28 \overline{)68}$ | W $\frac{2}{3} + \frac{2}{9} =$ | X Rename as mixed: $\frac{37}{8} =$ | Y $\frac{2}{5} + \frac{2}{7} =$ |



Graphing Scores and Applying Decision Rules



CBM and Adequate Yearly Progress (AYP)



CBM and AYP

- The No Child Left Behind Act requires all schools to show Adequate Yearly Progress (AYP) towards proficiency goal
- Schools must determine measure(s) for AYP evaluation and the criterion for deeming an individual student “proficient”
- CBM can be used to fulfill the AYP evaluation in reading and math



CBM Benchmarks

- How to define “adequate” progress?
CBM benchmarks.
 - Research-derived end-of-year minimum scores that indicate grade-level proficiency
 - Progress monitoring tools include these data: See the NCSPM Tools Chart at www.studentprogress.org





Review of Progress Monitoring Tools

Updated December 2006

The National Center on Student Progress Monitoring does not endorse or recommend the tools included in the chart. The Center provides this information to assist educators and practitioners in making informed decisions about scientifically-based tools that best meet their individual needs.

| Tools | Area | Foundational Psychometric Standards | | Progress Monitoring Standards | | | | |
|--|-------------------------------|-------------------------------------|----------|-------------------------------|----------------------------------|----------------|--|--------------------------------|
| | | Reliability | Validity | Alternate Forms | Sensitive to Student Improvement | AYP Benchmarks | Improving Student Learning or Teacher Planning | Rates of Improvement Specified |
| Accelerated Reader | * Accelerated Reader | ○ | ● | ○ | ● | ● | ● | ● |
| | * Math | ● | ● | ● | ○ | ● | ○ | ● |
| AIMSweb | Maze | ● | ● | ● | ● | ● | ● | ● |
| | Reading | ● | ● | ● | ● | ● | ● | ● |
| | * Test of Early Numeracy | ● | ● | ● | ● | ● | ○ | ● |
| | Early Literacy | ● | ● | ○ | ● | ● | ● | ● |
| | Spelling | ● | ● | ● | ● | ● | ● | ● |
| | * Written Expression (WE) | ● | ○ | ● | ● | ● | ● | ● |
| Dynamic Indicators of Basic Early Literacy Skills (DIBELS) | Initial Sound Fluency | ● | ● | ● | ● | ● | ○ | ● |
| | Word Use Fluency | ● | ● | ● | ○ | ○ | ○ | ○ |
| | Retell Fluency | ● | ● | ● | ○ | ○ | ○ | ○ |
| | Oral Reading Fluency | ● | ● | ● | ○ | ○ | ○ | ○ |
| | Phonemic Segmentation Fluency | ● | ● | ● | ● | ● | ● | ● |
| | Nonsense Word Fluency | ● | ● | ● | ● | ● | ● | ● |
| EdCheckup | Maze | ● | ● | ○ | ● | ● | ● | ● |
| | Reading | ● | ● | ● | ● | ● | ● | ● |

Reading CBM Benchmarks

- K: 40 correct letter sounds per min (LSF)**
- 1: 60 words correct from list per min (WIF)**
- 1: 50 words correct from text per min (PRF)**
- 2: 75 words correct from text per min (PRF)**
- 3: 100 words correct from text per min (PRF)**
- 4: 20 replacements to text per 2.5 min (MAZE)**
- 5: 25 replacements to text per 2.5 min (MAZE)**
- 6: 30 replacements to text per 2.5 min (MAZE)**

Note: these numbers may change pending further research



Math CBM Benchmarks

| Grade | Probe | Maximum score | Benchmark |
|--------------|---------------------------|---------------|-----------|
| Kindergarten | Data not yet available | | |
| First | Computation | 30 | 20 digits |
| First | Data not yet available | | |
| Second | Computation | 45 | 20 digits |
| Second | Concepts and Applications | 32 | 20 blanks |
| Third | Computation | 45 | 30 digits |
| Third | Concepts and Applications | 47 | 30 blanks |
| Fourth | Computation | 70 | 40 digits |
| Fourth | Concepts and Applications | 42 | 30 blanks |
| Fifth | Computation | 80 | 30 digits |
| Fifth | Concepts and Applications | 32 | 15 blanks |
| Sixth | Computation | 105 | 35 digits |
| Sixth | Concepts and Applications | 35 | 15 blanks |



CBM & AYP

- Schools can assess students to identify number of initial students who meet benchmarks (initial proficiency)
- The discrepancy between initial proficiency and universal proficiency is calculated
- The discrepancy is divided by the number of years before the 2013-2014 deadline
- Provides the number of additional students who must meet benchmarks each year



Three steps for Applying CBM to the AYP Requirement

- **Step 1:** Quantifying initial proficiency status
- **Step 2:** Quantifying the discrepancy between initial proficiency status and universal proficiency
- **Step 3:** Identifying AYP



Step 1

Quantifying initial proficiency status

- School assesses every student using CBM
- Identify number of students who meet CBM benchmarks
- This number is the school's initial proficiency status



Step 2

Quantifying the discrepancy between initial proficiency status and universal proficiency

- Universal proficiency = the 2013-2014 goal of 100% proficient
- Subtract initial proficiency from total number of students in the school



Step 3

Identifying AYP

- Divide discrepancy by number of years remaining before 2013-2014
- This is your AYP goal or the number of students who need to reach the CBM benchmarks each year in order to achieve universal proficiency by the deadline.

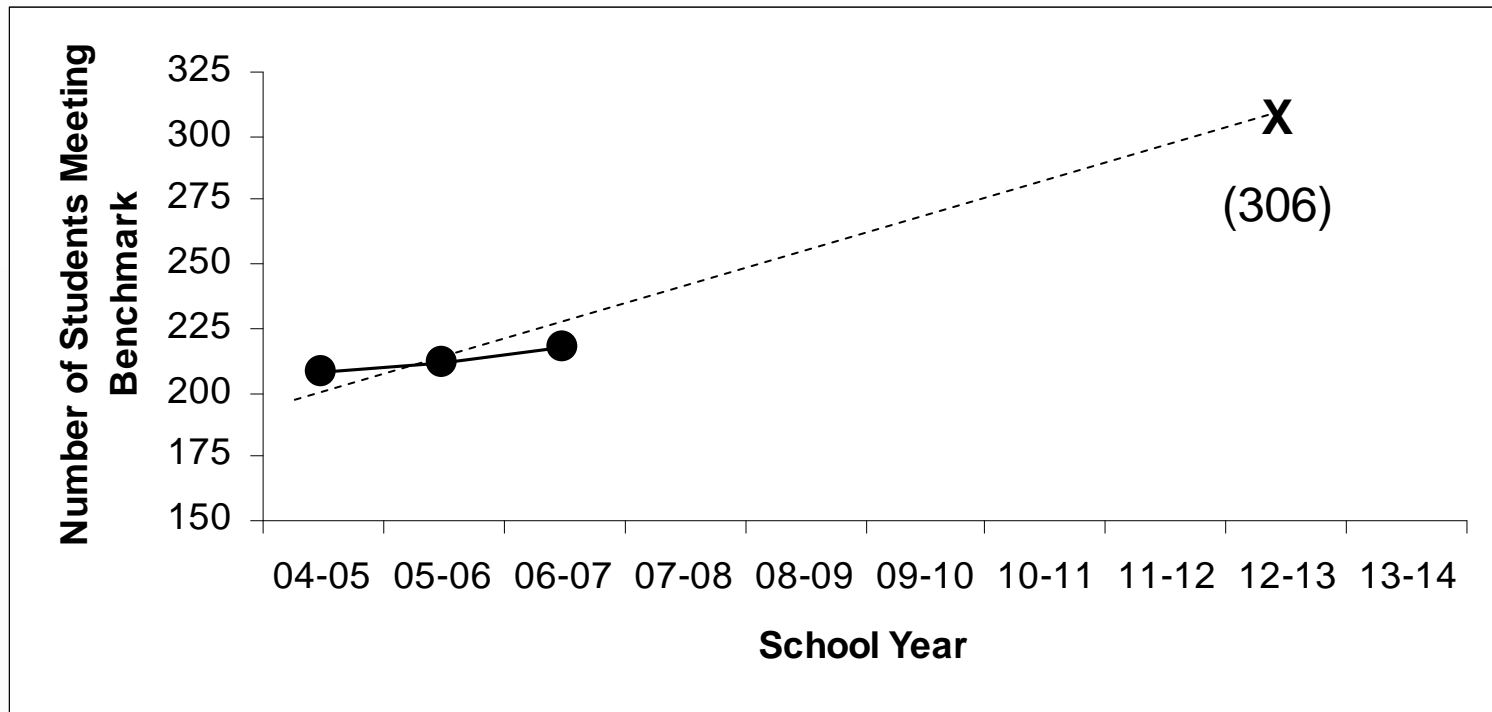


Using CBM Data for AYP: Example

-
- Centerview Elementary school had 306 students in 2006-2007
 - 218 students met end-of-year benchmarks
 - The discrepancy between universal proficiency and the current status is $306 - 218 = 88$ students
 - Universal proficiency must be reached by 2013-14, or within 7 years. $88 \div 7 = 12.57$
 - Centerview Elementary needs for 13 additional students per year to meet end-of-year benchmark to meet the universal proficiency goal.



AYP Graph Example: Centerview Elementary



Advantages of Using CBM for AYP

- Measures are simple and easy to administer
- Measures are reliable and valid
- Training is quick
- Entire student body can be measured efficiently and frequently
- Routine testing allows schools to track progress during school year
- Multi-level monitoring (school, teacher, student) makes CBM more a tool that enhances efficiency, rather than a burden



How to Use CBM Data for School Accountability

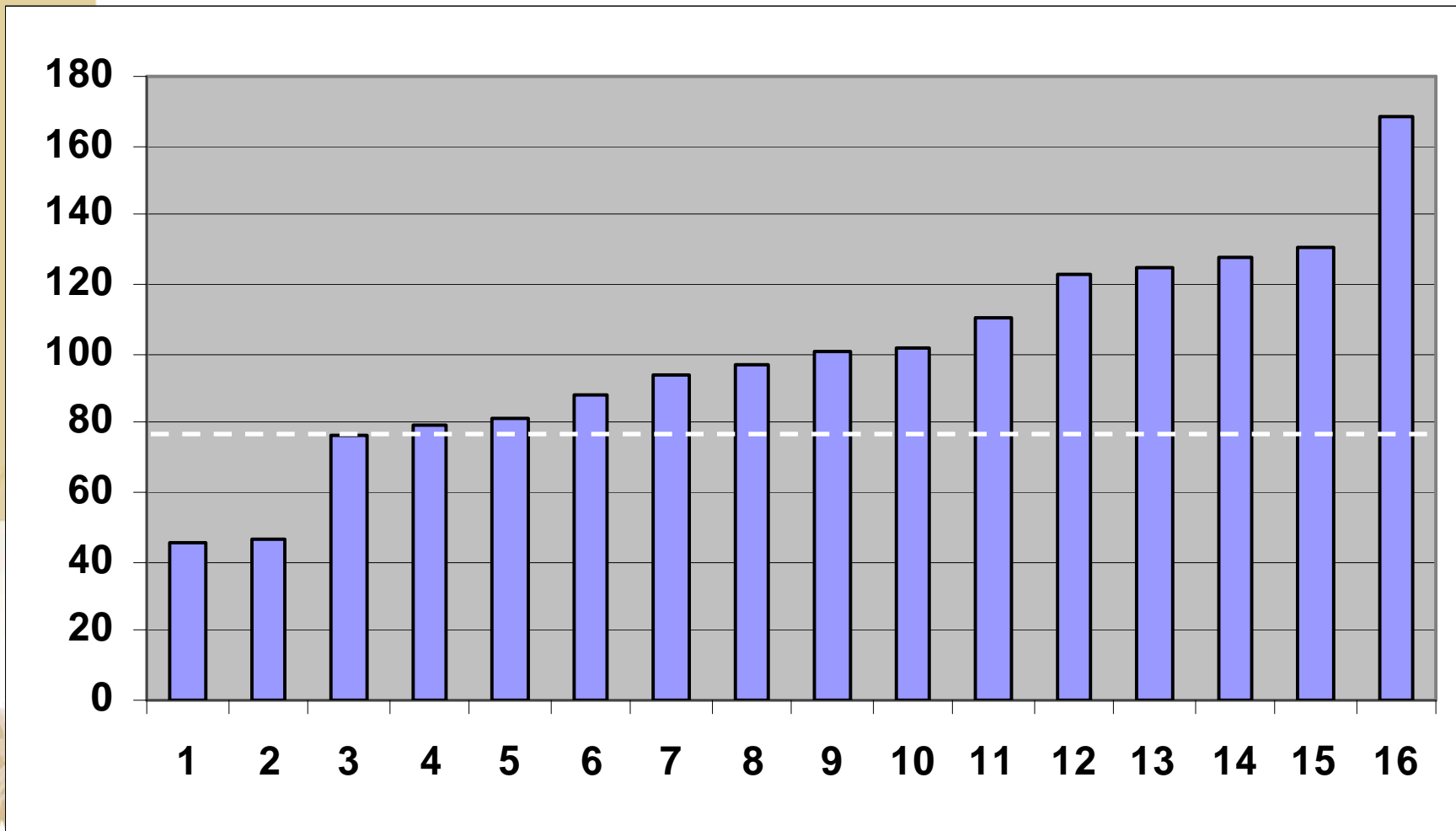


Using Assessment to Guide Instruction

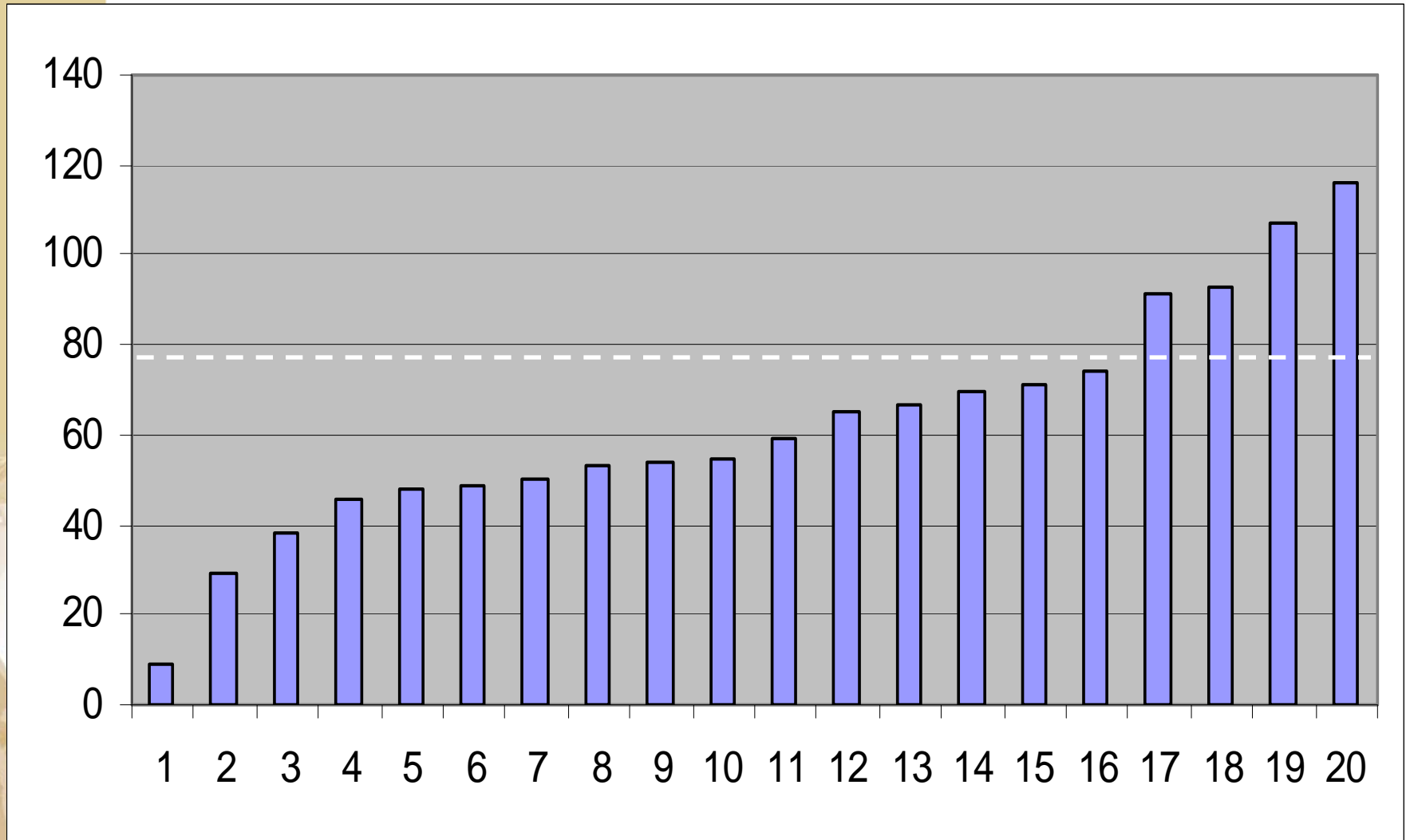
- School-wide assessment
 - Need efficient, reliable, valid data collection methods
 - Linked to standards and benchmarks
 - Sensitive to change over time
 - Repeatable
 - Displayed in a format that is easily understood
 - Allows for making decisions about individuals, classrooms, groups of students, grade levels, and schools (and sometimes districts and states)



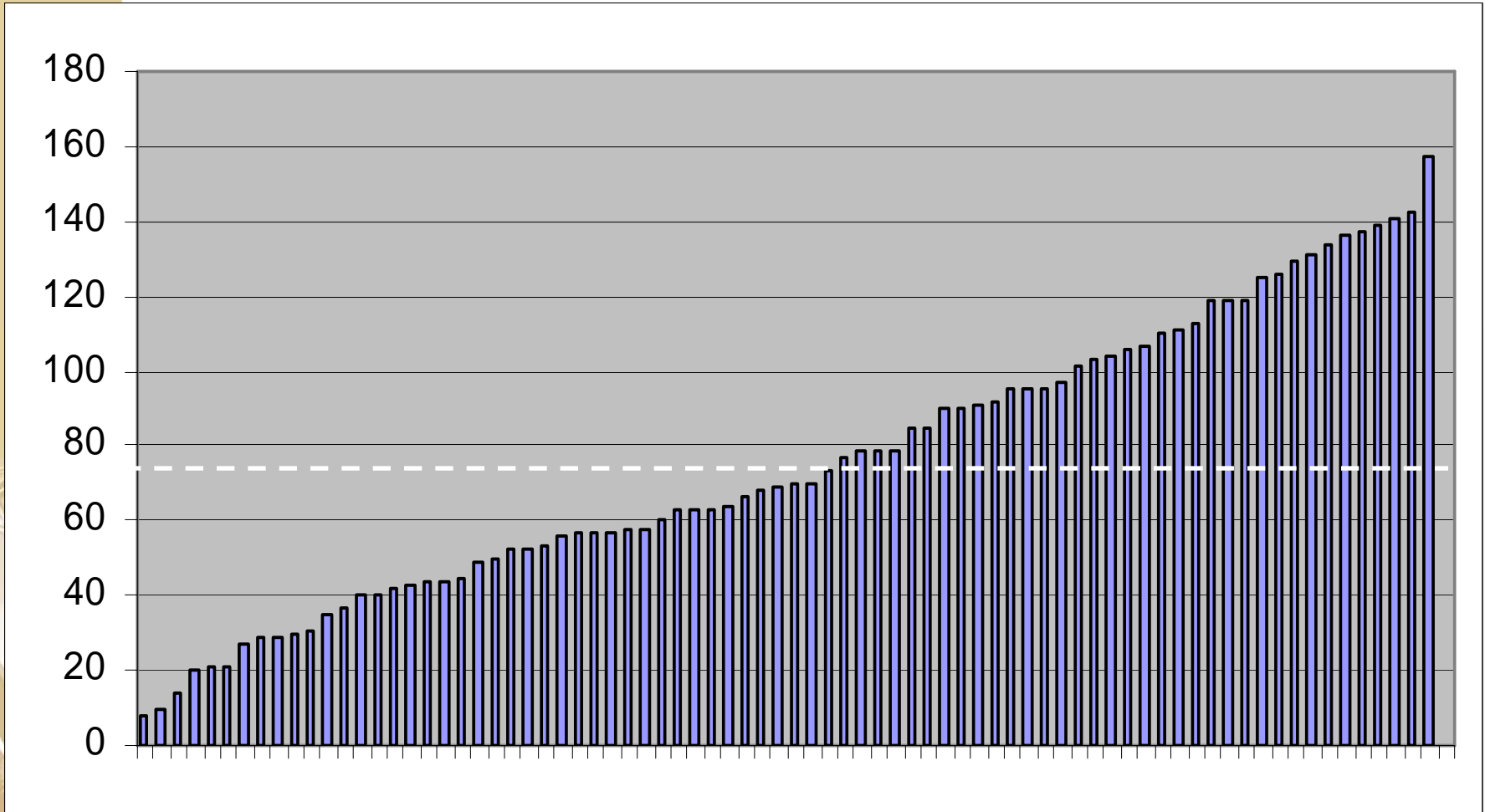
Using CBM PRF to Guide Instruction (Classroom Level, Park School, 2nd Grade, Ms. Smiley)



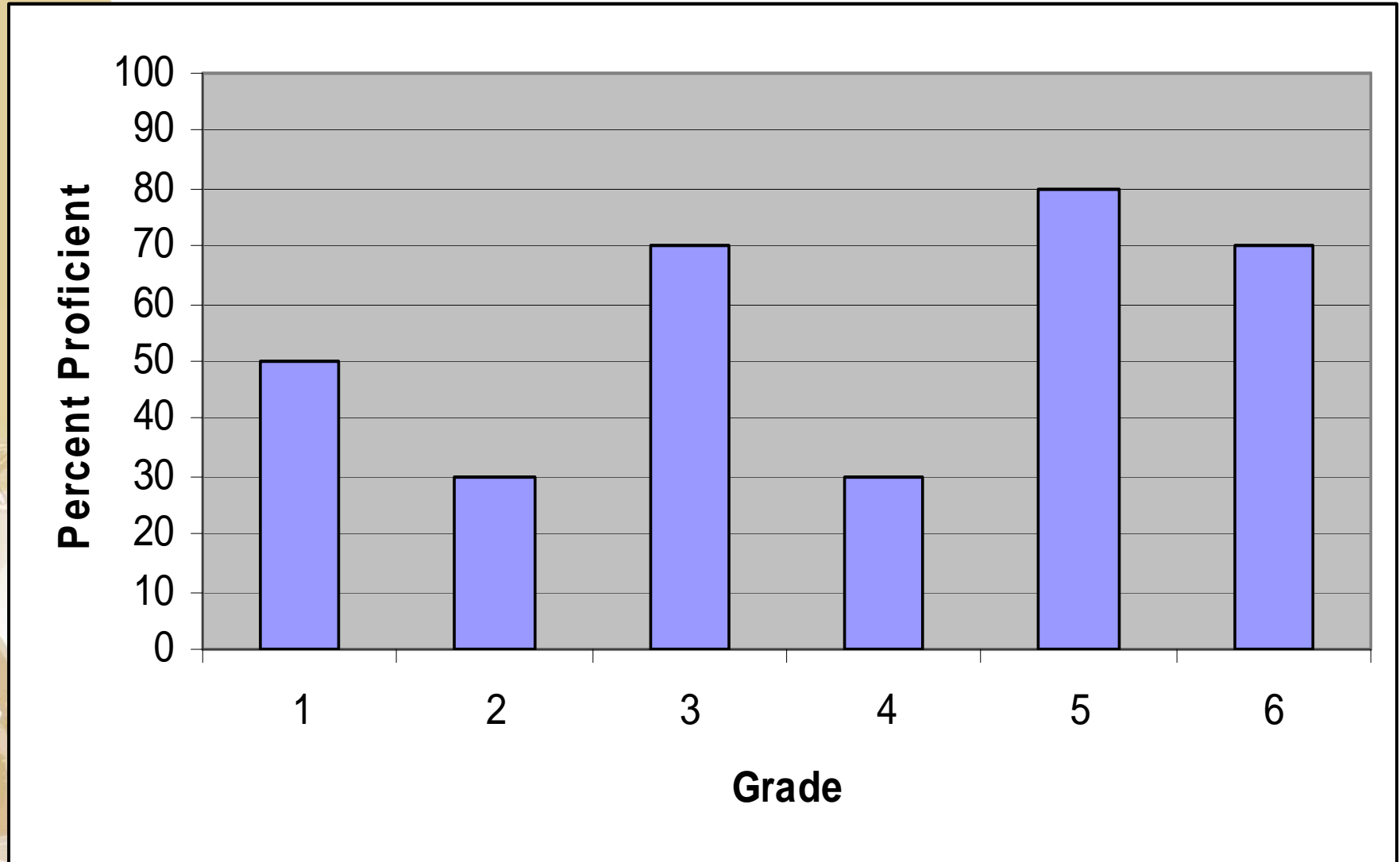
Using CBM PRF to Guide Instruction (Classroom Level- Park School and 2nd Grade, Ms. Hope)



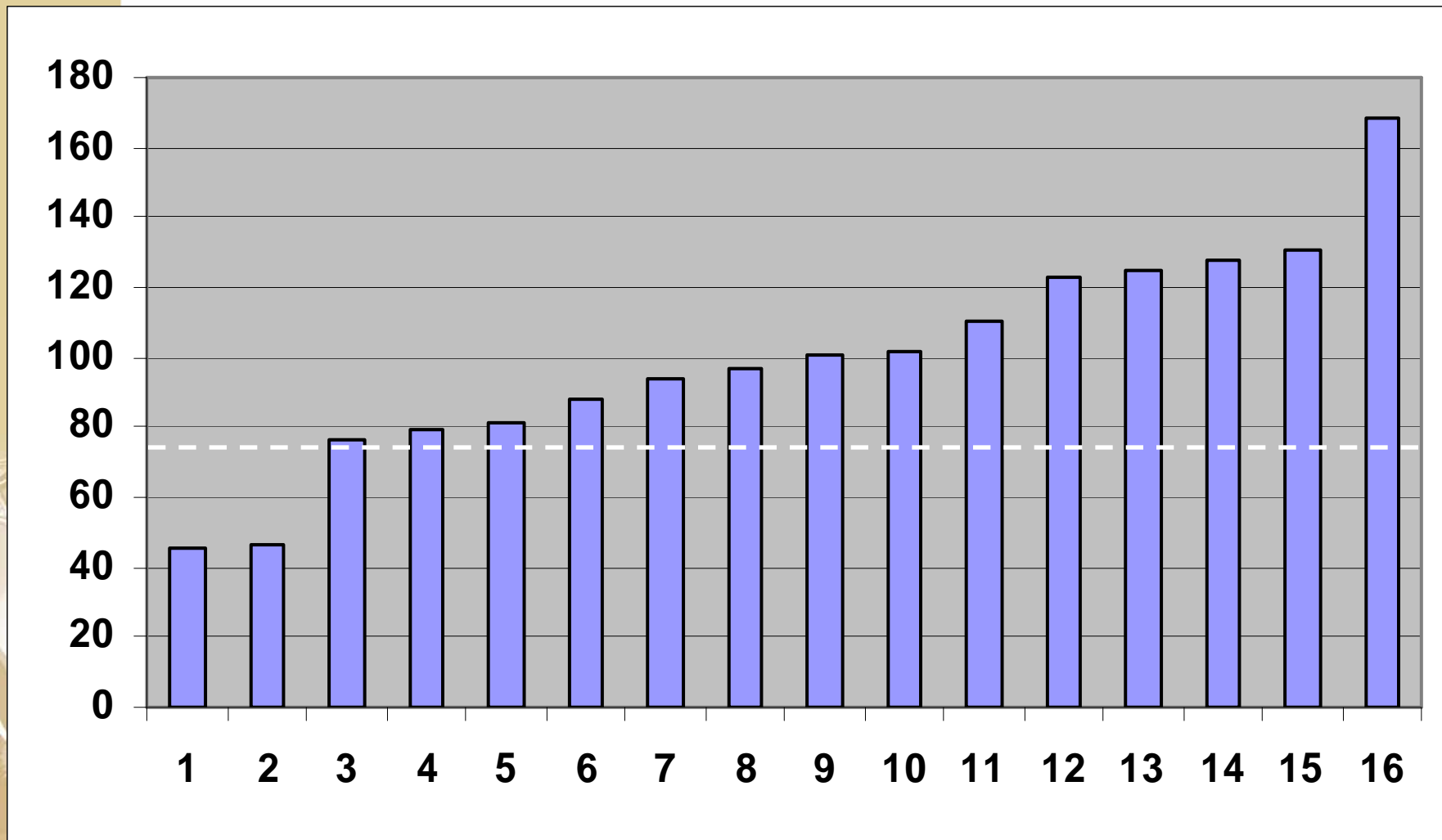
Using CBM PRF to Guide Instruction (Grade Level, Park School, 2nd Grade, All 4 Teachers)



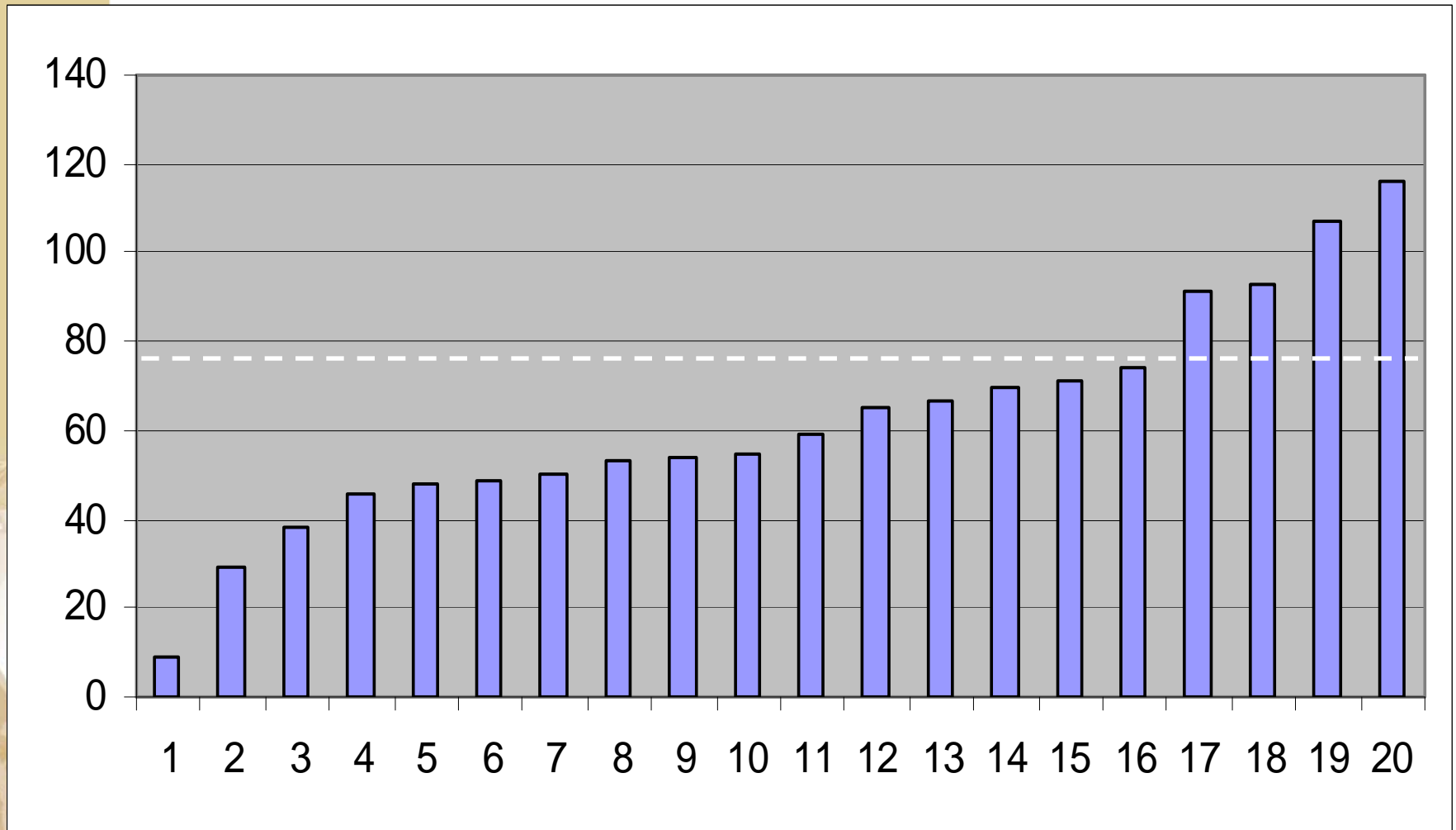
Using CBM PRF to Guide Instruction (School Level, Park School, All Grades)



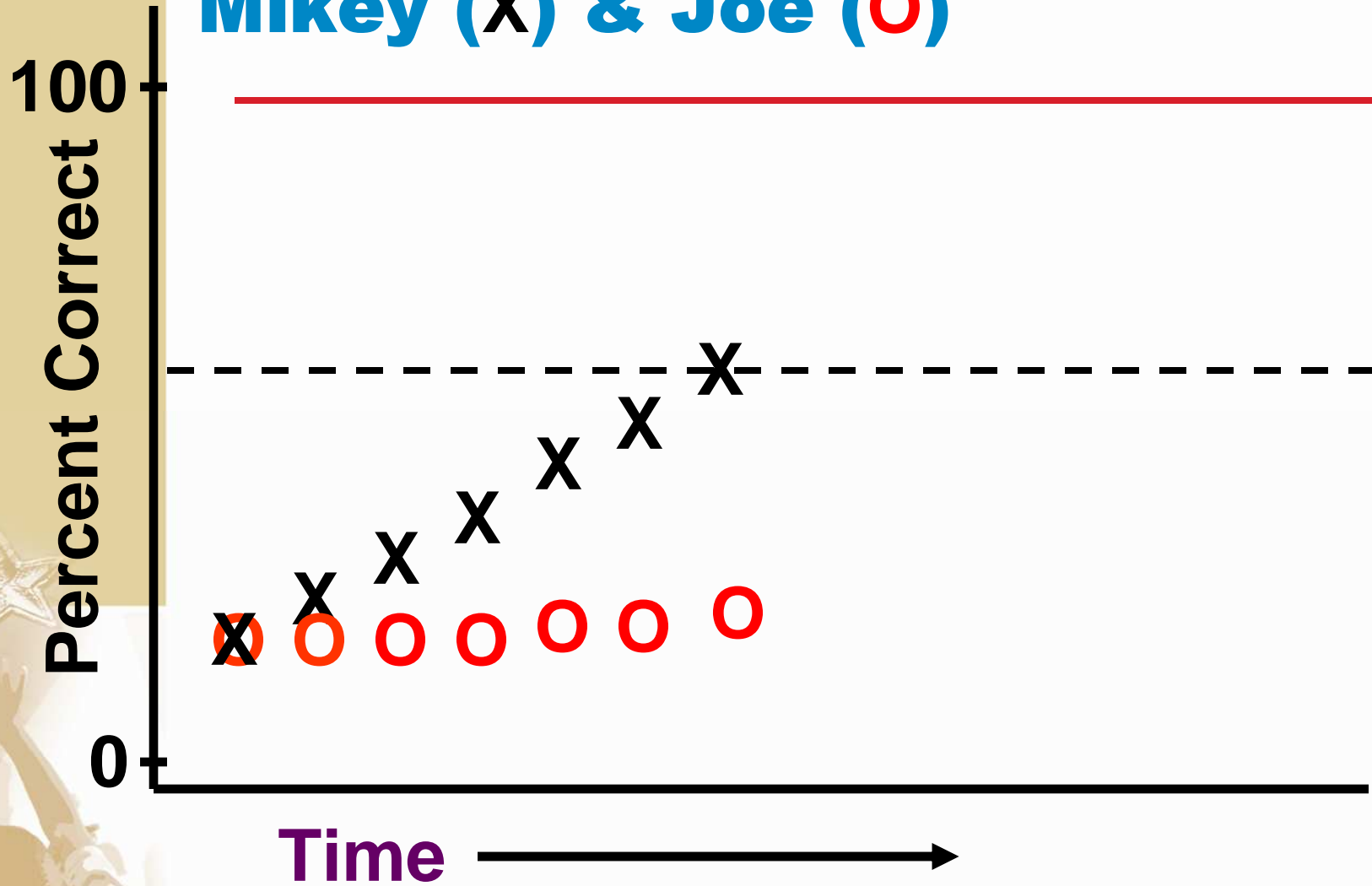
Using CBM PRF to Guide Instruction (Disaggregated Group, Park School, 2nd Grade, Black)



Using CBM PRF to Guide Instruction (Disaggregated Group, Park School, 2nd Grade, White)



Multiplication Facts For Mikey (X) & Joe (O)



Ken Howell

Using Assessment to Guide Instruction (cont)

- All assessment should be planful
- Select measures because they target skills or behaviors that are important
 - i.e., the measures should be aligned with the curriculum we are trying to teach



One Way to be Planful: Use Summative *and* Formative Evaluation

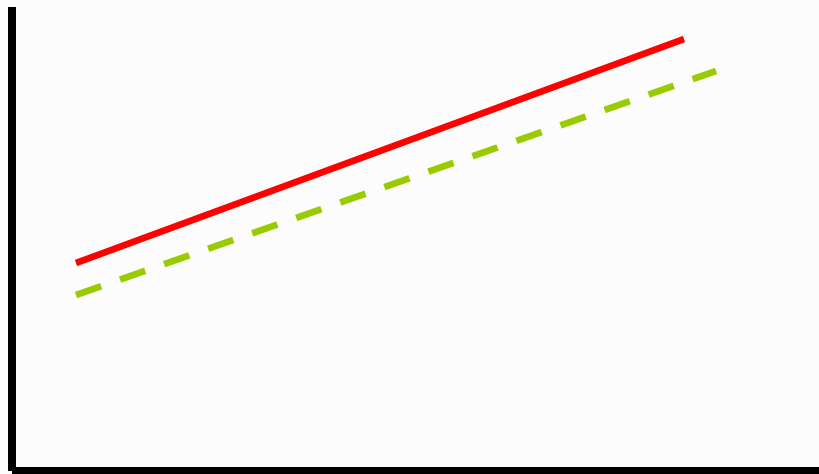
- *Shift from a static image of what has been learned to a fluid view of what is being learned*
- *Move to a dual discrepancy matrix when attempting to examine a learning problem*
 - *one of the most important shifts*



Four dual discrepancy conclusions

1. Both level of performance and rate of progress are fine

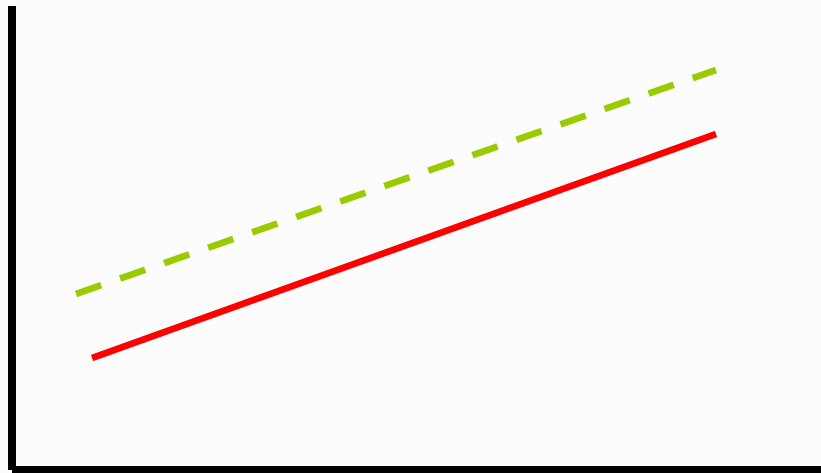
Decision: keep doing what we were doing, celebrate success



Four dual discrepancy conclusions

2. Level of performance is low, but rate of progress is fine

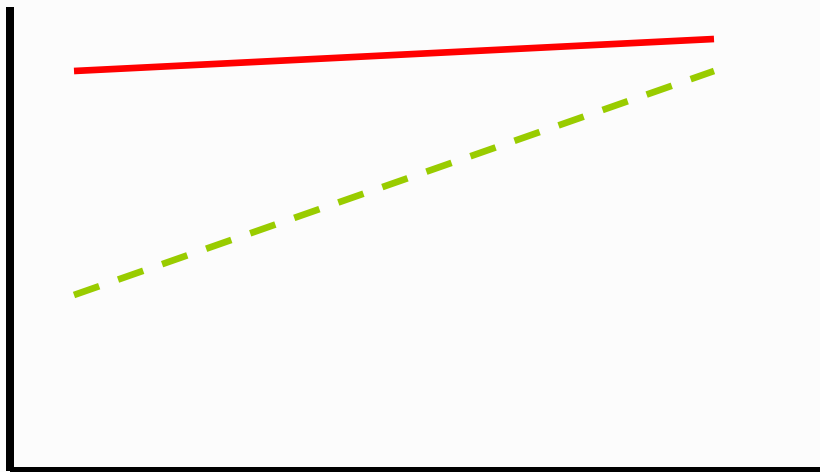
Decision: some concern to catch student up, but is not going to get farther behind



Four dual discrepancy conclusions

3. Level of performance is fine, but rate of progress is low

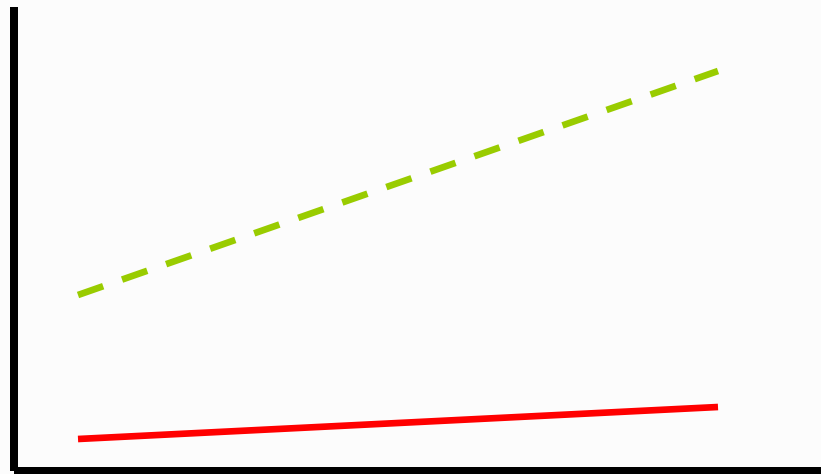
Decision: student may be okay now, but won't be in the future unless we intervene



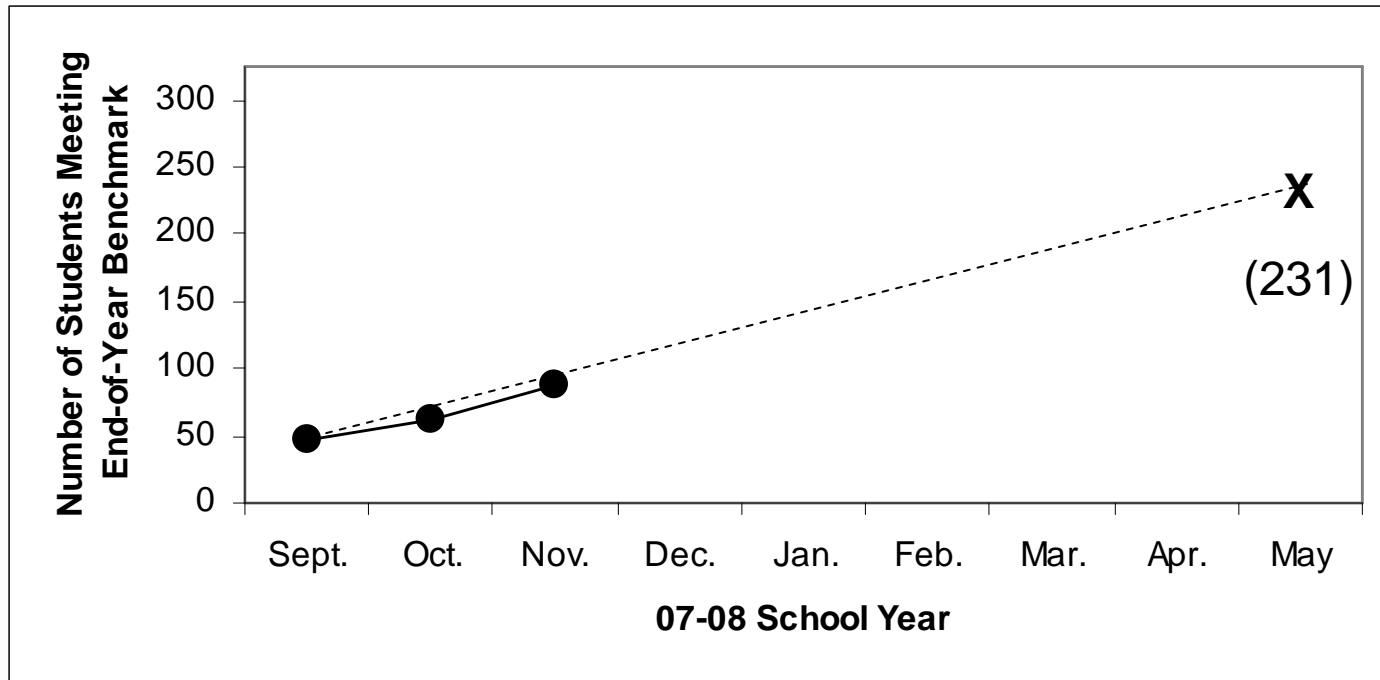
Four dual discrepancy conclusions

-
4. Both level of performance and rate of progress are low

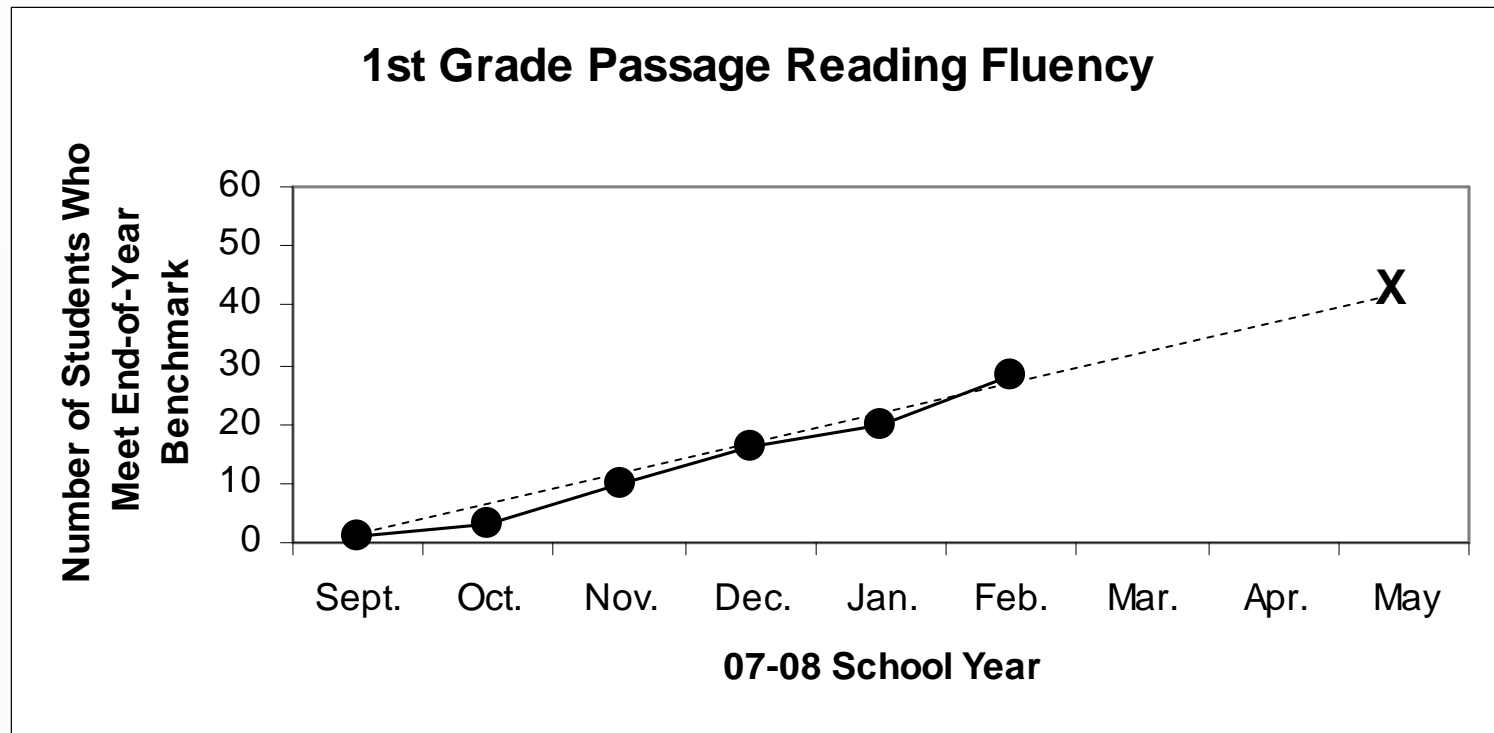
Decision: panic!



Using CBM Graphs for School Accountability: Within-Year School Progress

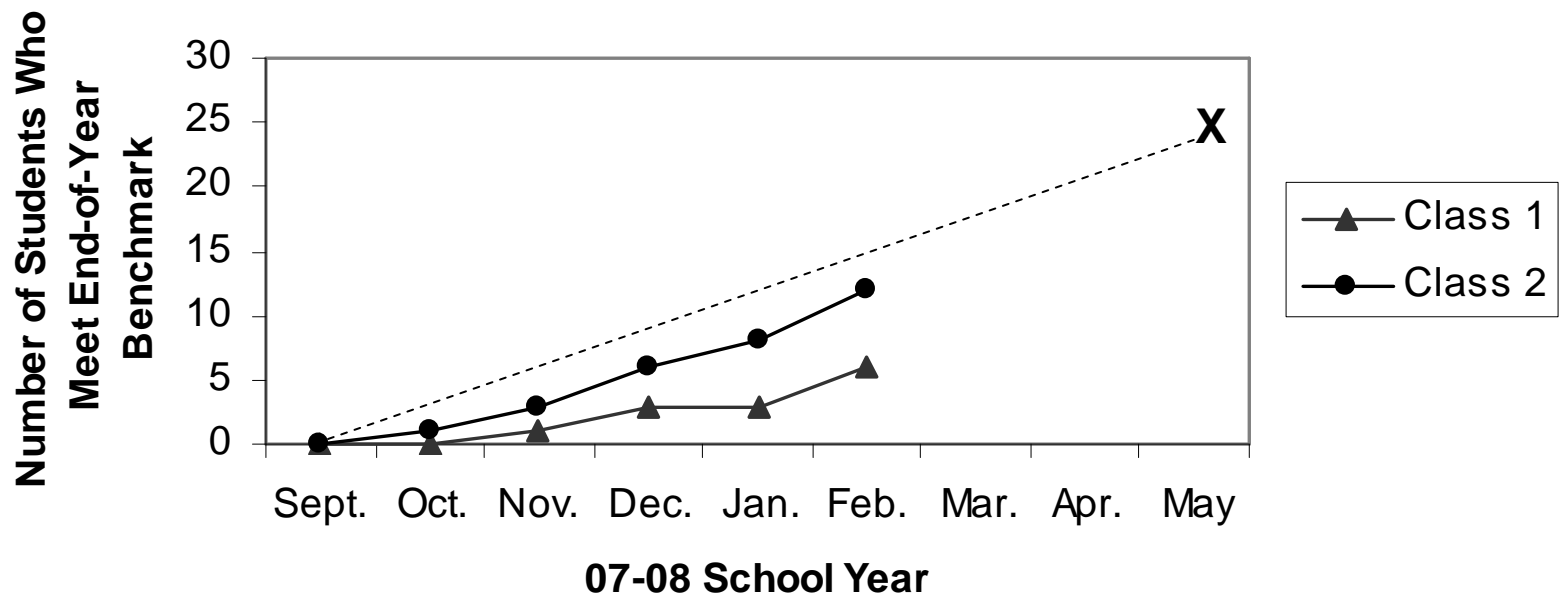


Using CBM Graphs for School Accountability: Progress by Grade



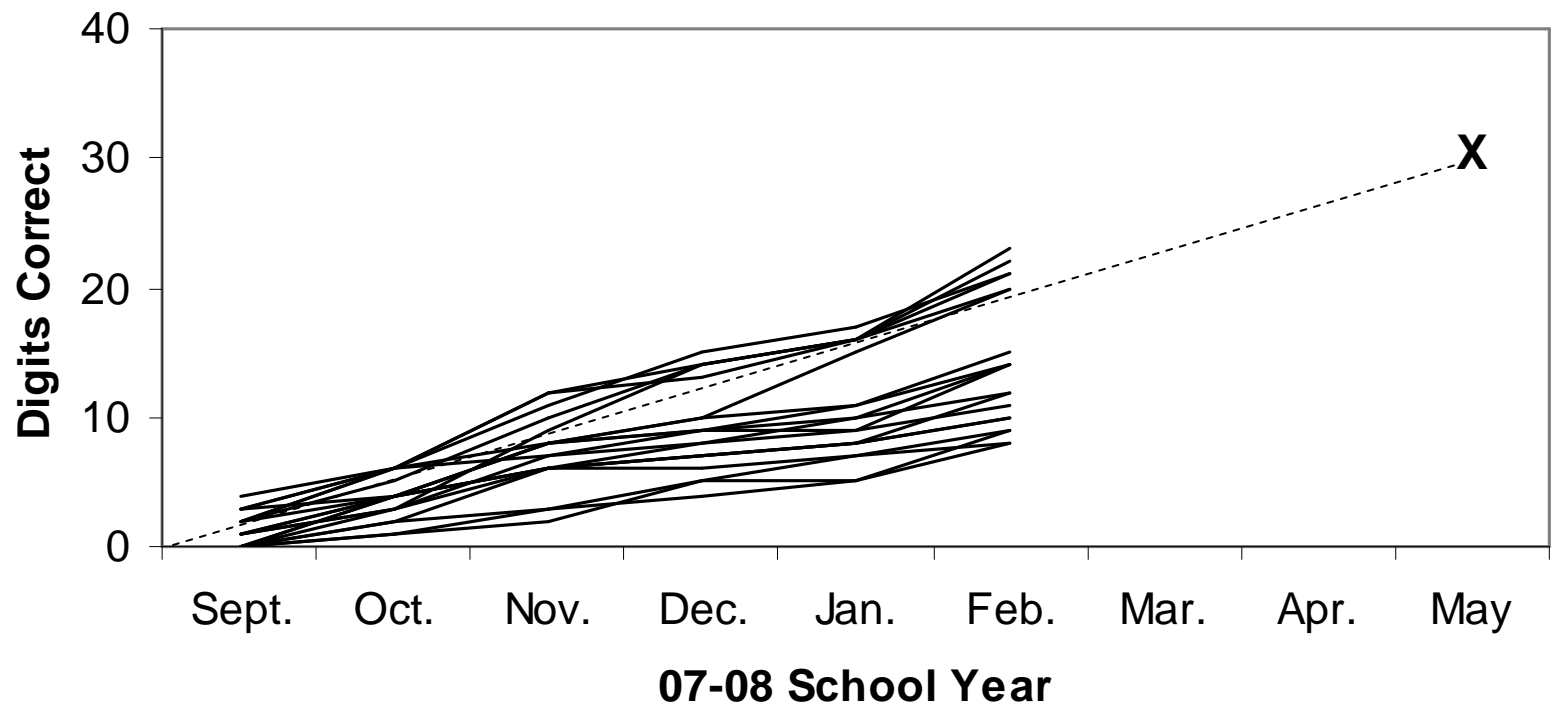
Using CBM Graphs for School Accountability: Progress by Classroom

3rd Grade Computation

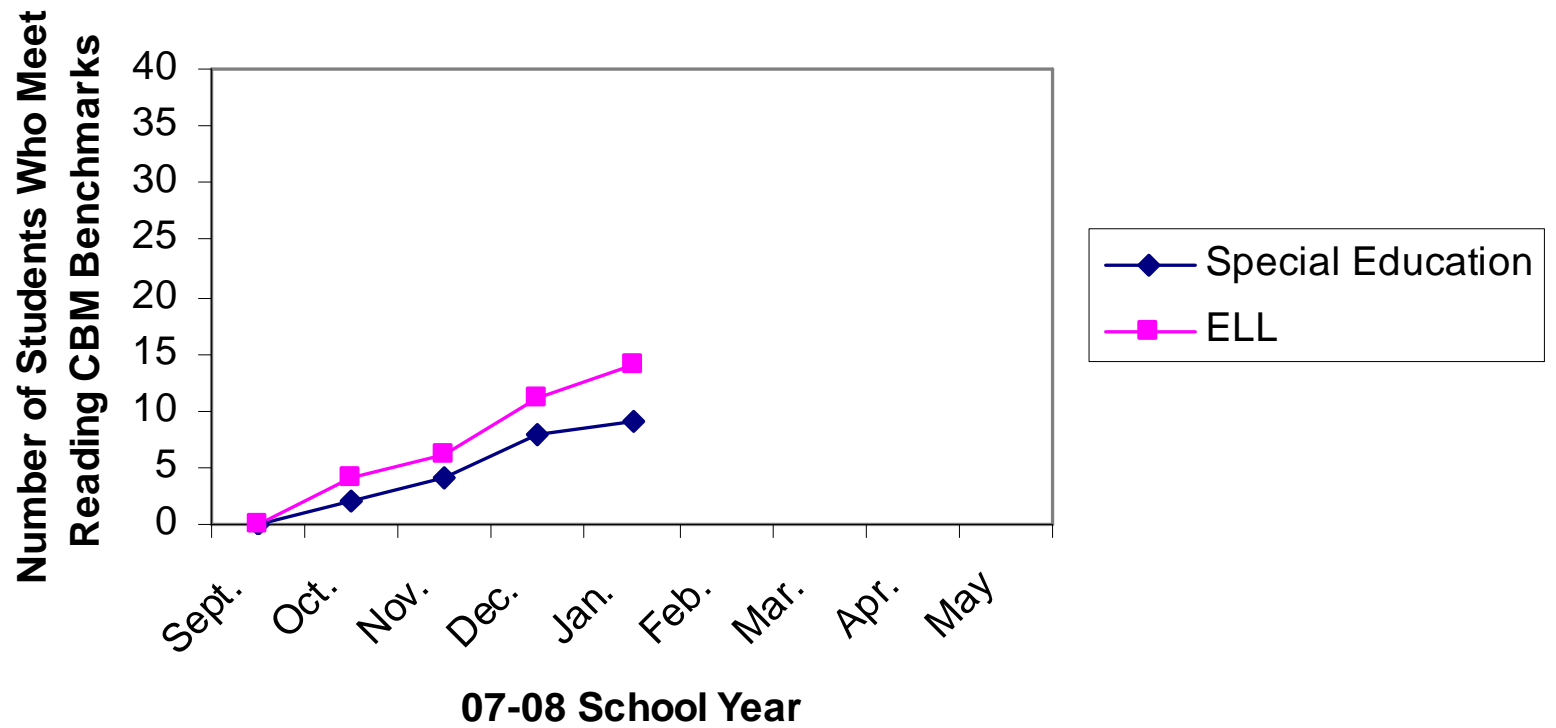


Using CBM Graphs for School Accountability: Student Data Aggregated by Classroom

All Students in Mr. Smith's Class



Using CBM Graphs for Program Accountability



Another Way to be Planful: Focus on Alterable Variables

Moving the focus from unalterable variables to alterable variables allows educators to get information about things that they can do something about



Ken Howell

“Unalterable” variables:

- “Unalterable” variables
 - Those which educators cannot be reasonably expected to change
 - Sometimes called “Distal Variables” as they do not have a direct and immediate impact on the quality of lessons
 - Poor predictors of *individual* student learning
- Unalterable doesn’t automatically mean unimportant



“Alterable” variables:

- “Alterable” variables
 - Educators can reasonably be expected to change these through, or during, the process of instruction
 - Sometimes called “Proximal Variables” as they are close to the learning event and have been shown to directly and immediately affect the quality of learning
 - Alterable variables are the best predictors of individual student learning



Changing our evaluative focus from
unalterable variables

to

alterable variables

will result in us getting information
about things we can actually do
something about



Variables Related to Student Achievement

| | <u>Within Student</u> | <u>External to Student</u> |
|---|--|--|
| Alterable | <ul style="list-style-type: none"> Desire to learn Strategies for learning Knowledge Skills Prior content knowledge Self-efficacy/helplessness | <ul style="list-style-type: none"> Quality of curriculum Quality of instruction Pedagogical knowledge Content knowledge Quality of evaluation Quality of learning environment Quality of time/content |
| Unalterable (Hard to Change) | <ul style="list-style-type: none"> Race Genetic potential Gender/sex Birth order Disposition Health Physical differences IQ Disability category Personal history | <ul style="list-style-type: none"> Family income and resources Family housing Parent years of schooling Mobility Members of family Family values Peer socioeconomic status Family history |

CBM & IEPs

- Time
- Learner
- Behavior
- Level
- Content
- Material
- Criteria



IEP Goals & Objectives

- Time (The amount of time the goal is written for)
 - “In 30 weeks...”
- Learner (The student for whom the goal is written)
 - “..Jose will...”
- Behavior (The specific skill the student will demonstrate)
 - “...read aloud...”
- Level (The grade the content is from)
 - “...2nd grade...”
- Content (What the student is learning about)
 - “...reading...”
- Material (What the student is using)
 - “...passages from ORF CBM progress monitoring material...”
- Criteria (The expected level of performance including time and accuracy)
 - “..90 words correctly in one minute with greater than 95% accuracy”



Goals and Objectives

- Writing goals and objectives use the same principles but goals are typically written for 1 year and objectives are on a shorter time frame.



Reading Goals

■ ORF Goal

- In one year, Edgar will read aloud a 2nd grade passage from ORF CBM progress monitoring material at 90 words correctly in 1 minute with greater than 95% accuracy.

■ Mazes Goal

- In 30 weeks, Devin will correctly restore missing words on a 4th grade maze passage from Maze CBM progress monitoring material at 20 words correct in 3 minutes with greater than 95% accuracy.



Reading Objectives

■ ORF Objective

- In 10 weeks, Edgar will read aloud a 2nd grade passage from OR CBM progress monitoring material at 50 words correctly in 1 minute, with greater than 95% accuracy.

■ Maze Objective

- In 10 weeks, Devin will correctly restore missing words on a 4th grade maze passage from Maze CBM progress monitoring material at 8 words correct in 3 minutes, with greater than 95% accuracy.



Additional Resources

- RIPM Leadership Team Content Module
 - www.progressmonitoring.net. Click on RIPM Products, then Content Modules



National Center on Student Progress Monitoring

www.studentprogress.org

(866) 770-6111 (Toll-Free)

Email: studentprogress@air.org

