Progress Monitoring & Data-Based Individualization Within RTI

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Shift in Emphasis for This Session

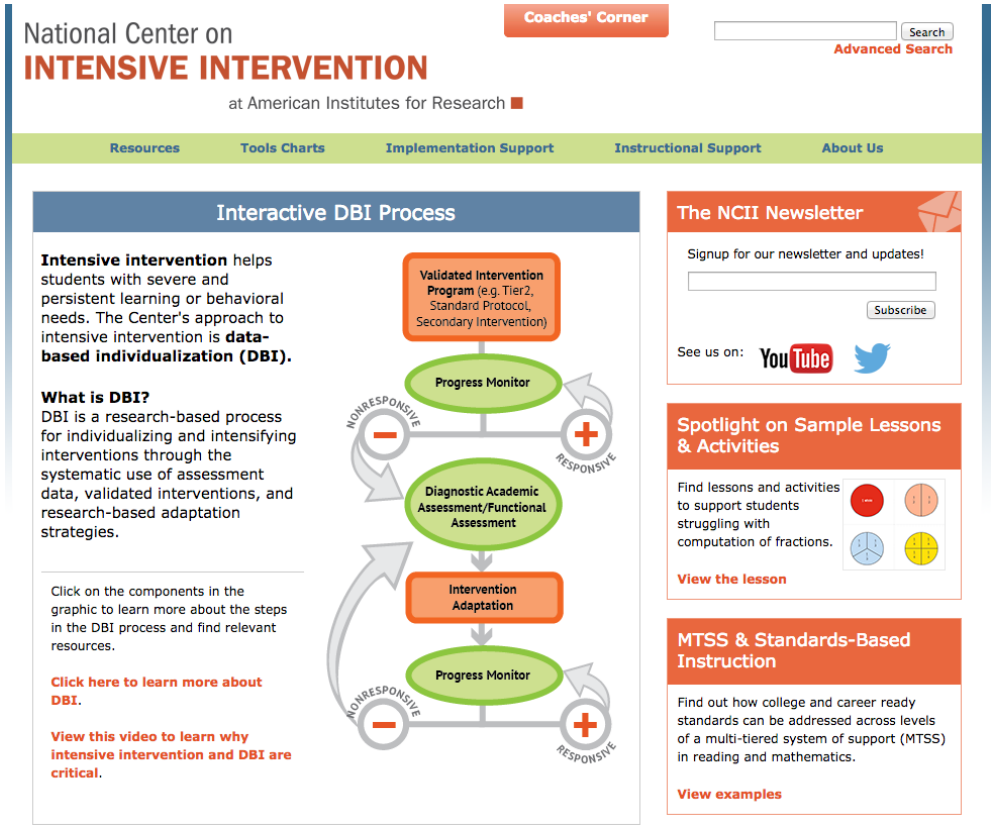
- From broad of overview of progress monitoring (PM) in mathematics to
- Major focus on Intensive (Tier 3) intervention

- Rationale: PM in mathematics is undergoing a good deal of change with adoption of Common Core and use of formative assessments
- In earlier webinars, many participants expressed mixed feeling about commonly used measures and a need for change
- Seemed best to address this issue after changes made

AND RESEARCH ON DATA BASED INSTRUCTION IN THE CONTEXT OF TIER 3 (INTENISVE INTERVENTION IS NEW AND SEEMS TO ADDRESS A PRESSING NEED IN DISTRICTS ACROSS THE STATE

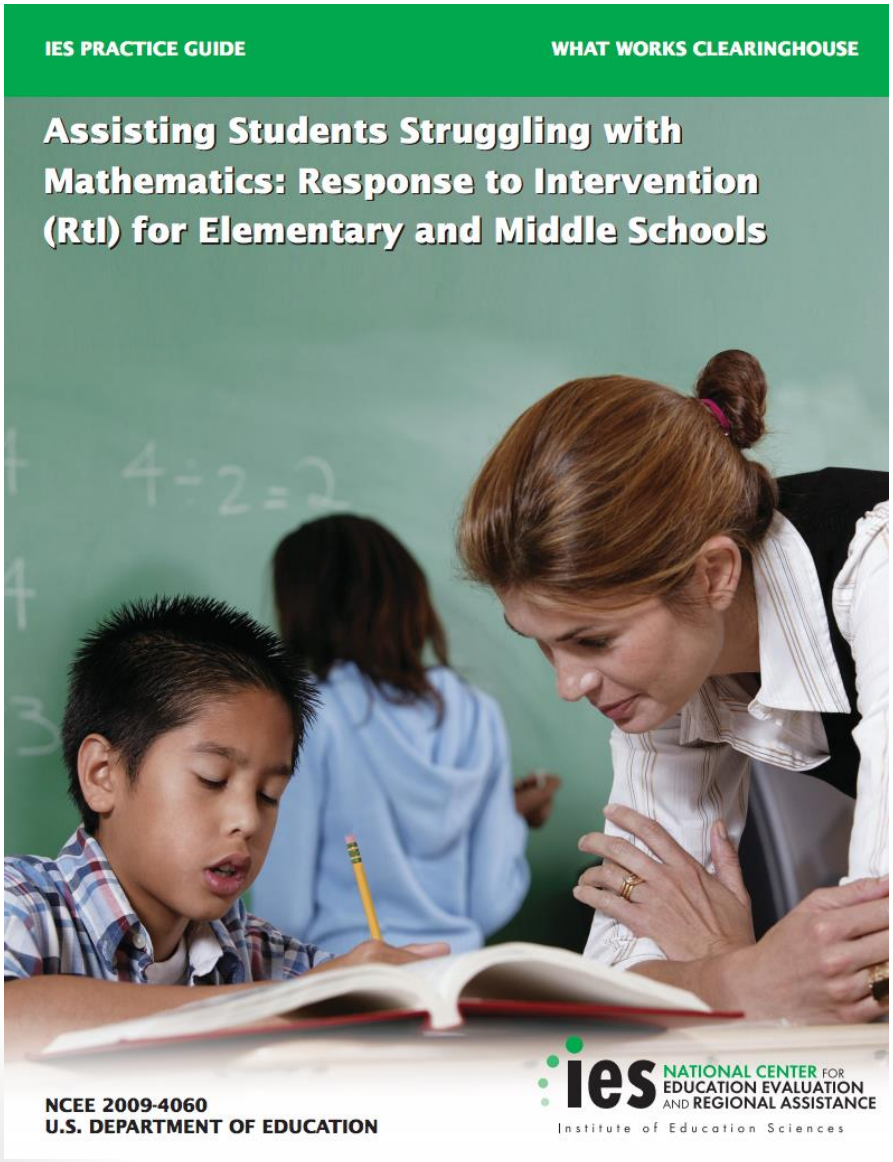
Today…

- Data-based individualization (DBI)
  - Intensive intervention
  - Role of progress monitoring



Molly: Poll Questions 1 and 2 here from last time.

Let's Review



- Strong evidence:
  - Explicit and systematic instruction
  - Instruction on solving word problems using schemas
- Moderate:
  - Screening students to identify those at risk
  - Materials with visual representations
  - Fluency building activities

Practice Guide on Progress Monitoring:

- **Level of Evidence: Low**

Why?

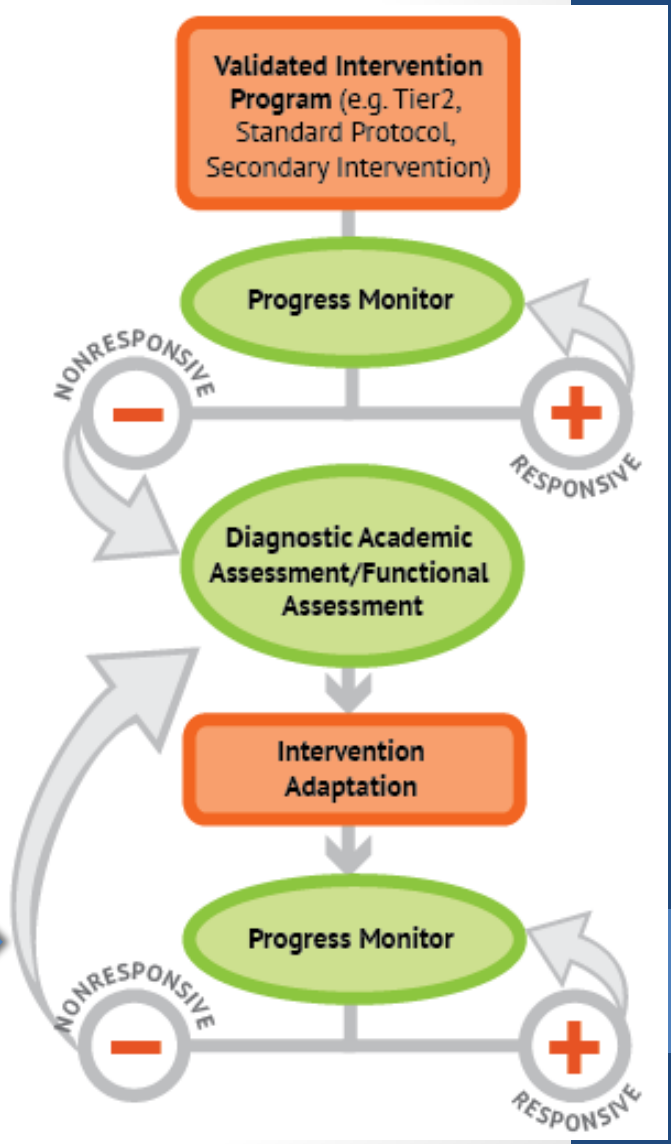
1. In effective interventions, no pm was done. Assessment typically done by daily mastery tests or weekly tests.
2. Psychometrics ok for measures but not as strong as for reading measures.
3. Many data points necessary (approx. 12) to ensure slope is reliable. A key concern in data based instruction**.**
4. Nonetheless, Panel felt that progress monitoring information useful for quickly gauging whether a students' full instructional program (Tier1, 2 &/or 3) is helping**. Especially for borderline students**
5. **Critical to ensure that progress monitoring measures are valid using data from current state assessments.**

What is DBI?

- Within an RTI framework…
  - Students nonresponsive to Tier 2
  - Students nonresponsive to Tier 3

- DBI is designed to address *severe and persistent* learning difficulties.
  - Driven by data
  - Characterized by increased intensity

Progress monitoring is constant



What is your current satisfaction with your current progress monitoring system?

Very satisfied, satisfied, indifferent, not satisfied

NCII's Approach to Intensive Intervention: Data-Based Individualization (DBI)

Data-Based Individualization (DBI) is a systematic method for using data to determine *when and how* to provide more intensive intervention:

- Origins in data-based program modification/experimental teaching were first developed at the University of Minnesota (Deno & Mirkin, 1977) and expanded upon by others (Capizzi & Fuchs, 2005; Fuchs, Deno, & Mirkin, 1984; Fuchs, Fuchs, & Hamlett, 1989).
- DBI is a process, not a single intervention program or strategy.
- Not a one-time fix—ongoing process comprising intervention and assessment adjusted over time.

Who needs intensive intervention?

- Students with disabilities who are not making adequate progress in their current instructional program
- Students who present with very low math performance
- Students in a tiered intervention program who have not responded to secondary intervention programs delivered with fidelity (i.e., Tier 2 isn't enough for the student)

Some students may move to Tier 3 quickly because of need.

DBI Steps

1. Progress monitoring
2. Diagnostic assessment (formal or informal) or use of formative assessment
3. Adaptation/ Adjustment
4. Continued progress monitoring, with adaptations occurring whenever needed to ensure adequate progress

DBI often includes Tier 2 intervention, although sometimes smaller groups (within a classroom) is possible. DBI can also be used one-on-one to help with grade level concepts

Before we begin DBI…

- In most cases, start with a Tier 2 intervention program (if available)
- Progress monitor to evaluate the student's response to the secondary intervention.
- Look carefully at data from daily mastery probes or other curriculum embedded assessments.
  - NOTE: It can take up to 12 data points to establish slope. With some students, you may want to move quicker to DBI

Thinking About Intervention Levels/Tiers

	Primary (T1)	Secondary (T2)	Intensive (T3)
Instruction/ Intervention Approach	Comprehensive research-based curriculum	Standardized, targeted small-group instruction	Individualized, based on student data
Group Size	Class-wide (with some small group instruction)	3–7 students	No more than 3 students
Monitor Progress	1x per term	At least 1x per month	Weekly
Population Served	All students	At-risk students	Significant and persistent learning needs

Key Questions About the Secondary Intervention

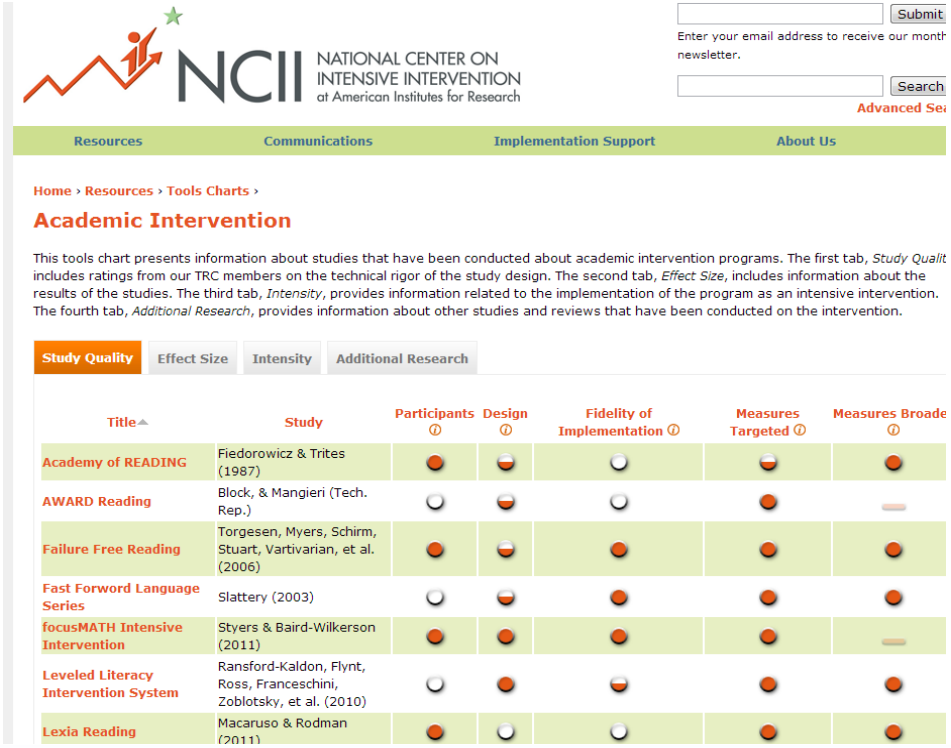
- Has the student been taught using secondary (Tier 2) intervention program (if available) that is appropriate for his or her needs?
- Has the program been implemented with fidelity?
  - Content
  - Dosage/schedule
  - Group size
- Has the program been implemented for a sufficient amount of time to determine response?

Why start with a standardized, intervention program?

- Teachers don't need to "reinvent the wheel."
- They are efficient—teachers can plan instruction for groups rather than individual students.
- Many require only a modest amount of training—often, paraeducators can help with delivery.
- Try to find an intervention with an evidence base.
- Cost considerations often a factor. Some are relatively inexpensive, some are linked to core curricula and thus may also be inexpensive to use.

NCII's Intervention Tools Chart Provides Reviews of Secondary Intervention Programs

http://www.intensiveintervention.org/resources/tools-charts



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Academic Intervention

This tools chart presents information about studies that have been conducted about academic intervention programs. The first tab, *Study Qualit* includes ratings from our TRC members on the technical rigor of the study design. The second tab, *Effect Size*, includes information about the results of the studies. The third tab, *Intensity*, provides information related to the implementation of the program as an intensive intervention. The fourth tab, *Additional Research*, provides information about other studies and reviews that have been conducted on the intervention.

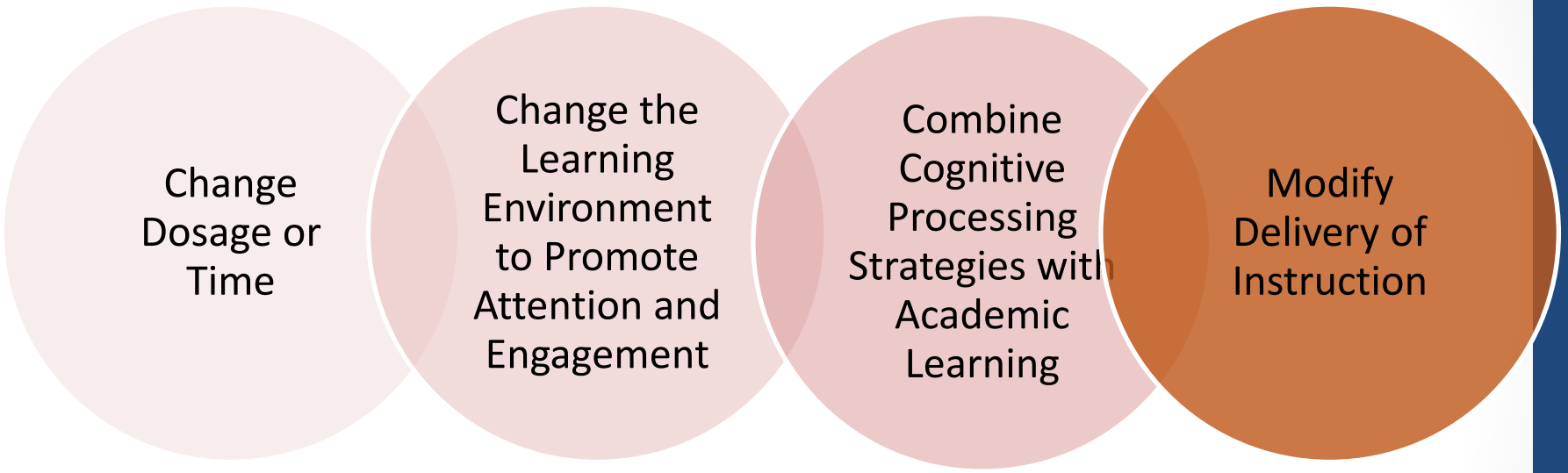
Study Quality | Effect Size | Intensity | Additional Research

Title	Study	Participants	Design	Fidelity of Implementation	Measures Targeted	Measures Broade
Academy of READING	Fiedorowicz & Trites (1987)	●	◒	○	◒	●
AWARD Reading	Block, & Mangieri (Tech. Rep.)	○	◒	○	●	—
Failure Free Reading	Torgesen, Myers, Schirm, Stuart, Vartivarian, et al. (2006)	●	◒	●	●	●
Fast Forword Language Series	Slattery (2003)	○	◒	●	●	●
focusMATH Intensive Intervention	Styers & Baird-Wilkerson (2011)	●	●	●	●	—
Leveled Literacy Intervention System	Ransford-Kaldon, Flynt, Ross, Franceschini, Zoblotsky, et al. (2010)	○	●	◒	●	●
Lexia Reading	Macaruso & Rodman (2011)	●	○	○	●	●

Can I still implement DBI if I don't have a complete menu of standardized programs?

- Yes!
- Use them *when available* and consider augmenting current offerings if there are content areas where you have insufficient resources.
- Also consider—
  - Remediation materials that came with your core program
  - Expert recommendations (if evidence-based programs are not available) from Institute of Education Sciences (IES) practice guides, reputable professional organizations, etc.
  - Standards-aligned materials
- Collect data to determine whether *most* students are profiting.

How to Intensify Intervention?



(Vaughn et al., 2013)

Practice #1: Change Dosage or Time

Practice #1: Change Dosage or Time

Methods for increasing quantity of instruction:

- Minutes per day or per session
- Sessions per week
- Total number of sessions
- Use of technology geared to intervention goals (e.g. facts programs, possibly mathematics games linked to goals, or instructional software)

Practice #2: Change the Learning Environment to Promote Attention and Engagement

Practice #2: Change the Learning Environment to Promote Attention and Engagement

- Reduce group size
- Group students with similar needs
- Change the instructional setting to reduce noise and other distractions and promote academic engagement.

Practice #3: Combine Cognitive Processing Strategies with Academic Learning

What are cognitive processes?

Cognitive processes comprise various mental activities that direct thinking and learning. Students with intensive needs have frequent issues with cognitive processes related to elements of executive function and self-regulation:

- Memory
- Attribution
- Attention
- Strategies to set and monitor learning goals

Practice #4: Modify Delivery of Instruction

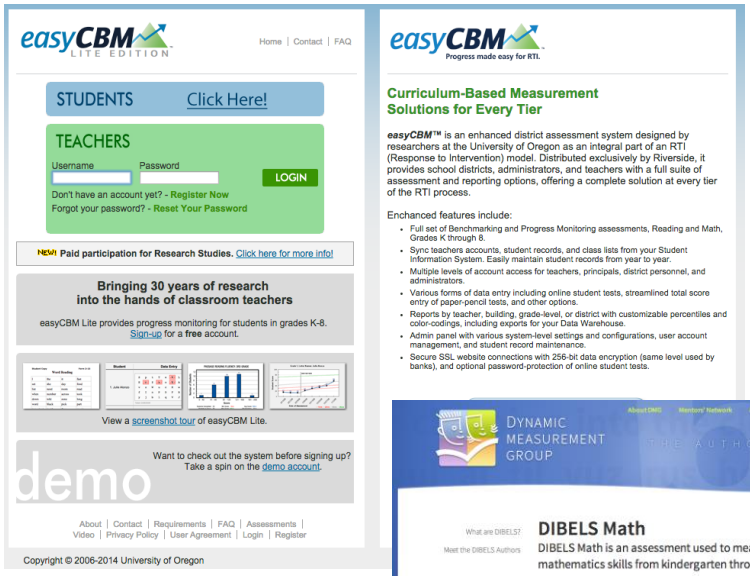
Modifying Delivery of Instruction

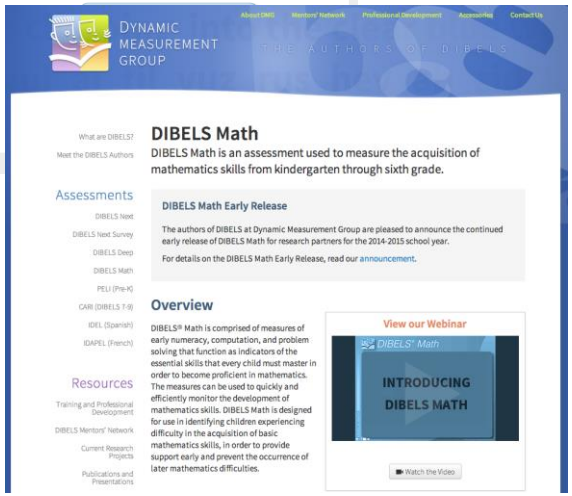
1. Consider the instructional match & prioritize skills to teach
2. Systematic Instruction
3. Explicit Instruction
4. Precise, simple language
5. Frequent opportunities for student response
6. Specific feedback and error correction procedures
7. Opportunities for practice, development of fluency, and review

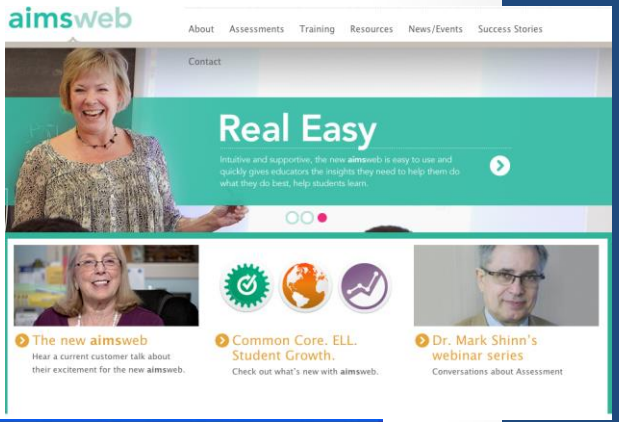
- What's one way you currently intensify intervention?
  - Dosage
  - Time
  - Environment
  - Cognitive processes
  - Modify delivery

Progress Monitoring and DBI

- DBI requires progress monitoring
- Measures must be reliable and valid







Key Things to Look for:

- 1. Is content linked to Common Core or relevant foundational skills?
- 2. Is there any evidence of concurrent validity with current state assessments?
- NOTE: This may not be available for another two years or so given all the shifts in standards/assessments.

easyCBM

- www.easycbm.com

- Numbers and Operations
- Geometry
- Measurement
- Numbers Operations and Algebra
- Geometry Measurement and Algebra
- Algebra
- Numbers Operations and Ratios
- Measurement Geometry and Algebra

AAIMS

- www.education.iastate.edu/c_i/aaims/

- Algebra Basic Skills
- Algebra Foundations
- Algebra Content Analysis

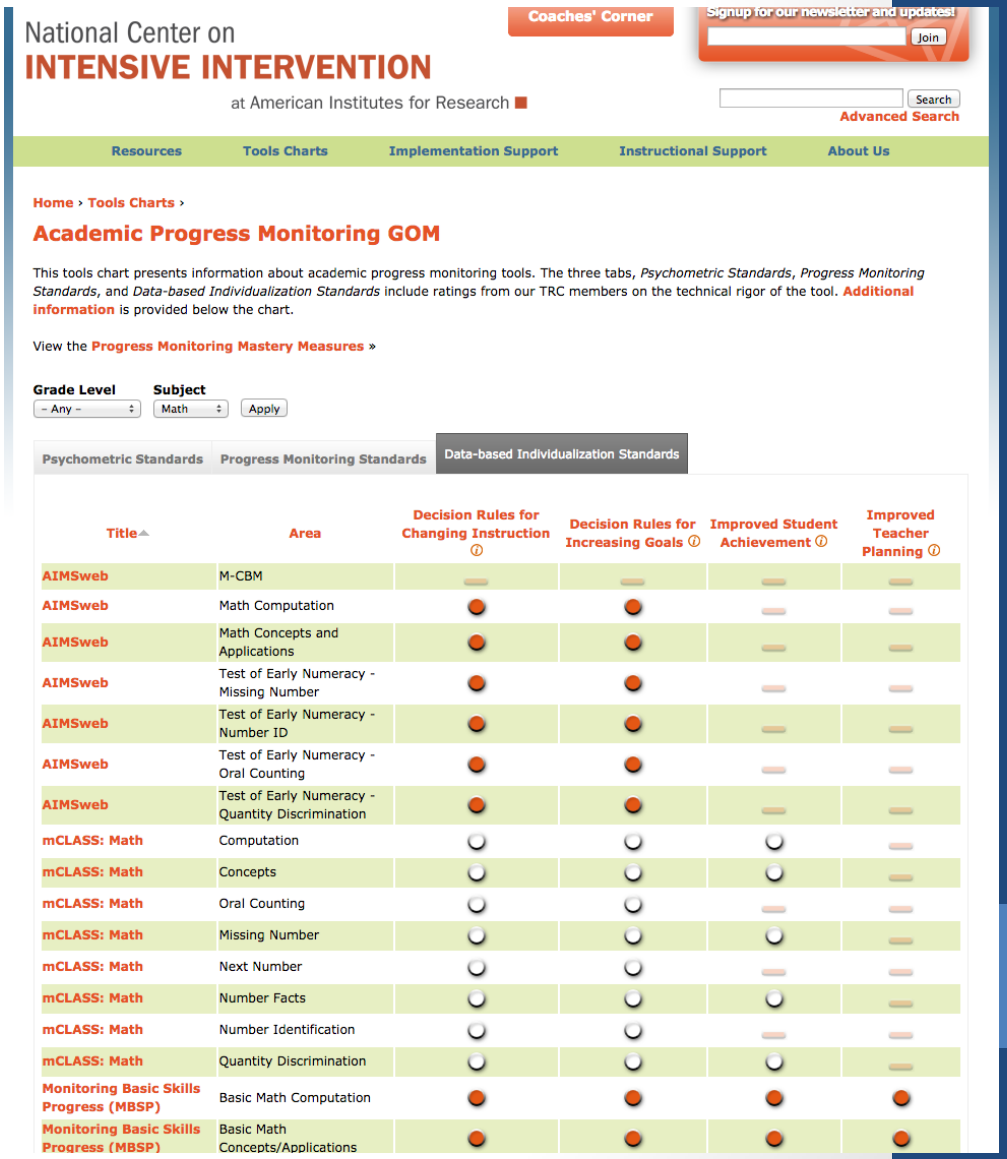
mCLASS

- www.mclasshome.com

- Counting
- Missing Number
- Next Number
- Number Facts
- Number Identification
- Quantity Discrimination
- Computation
- Concepts

Progress Monitoring and DBI

- Tools Chart for comparison purposes



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Academic Progress Monitoring GOM

This tools chart presents information about academic progress monitoring tools. The three tabs, *Psychometric Standards*, *Progress Monitoring Standards*, and *Data-based Individualization Standards* include ratings from our TRC members on the technical rigor of the tool. **Additional information** is provided below the chart.

View the **Progress Monitoring Mastery Measures** »

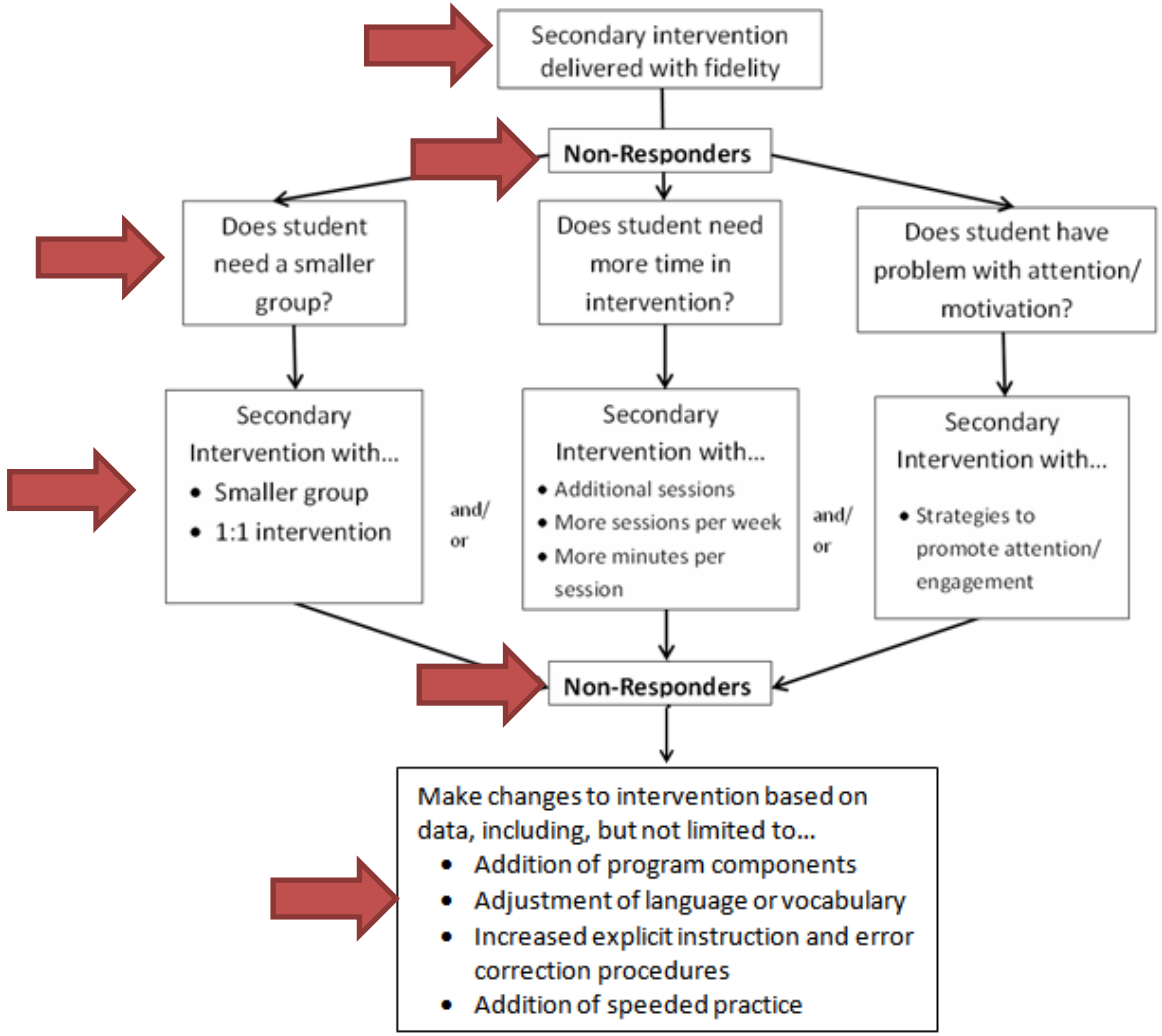
Grade Level – Any – **Subject** Math Apply

Psychometric Standards | Progress Monitoring Standards | Data-based Individualization Standards

Title	Area	Decision Rules for Changing Instruction	Decision Rules for Increasing Goals	Improved Student Achievement	Improved Teacher Planning
AIMSweb	M-CBM				
AIMSweb	Math Computation	●	●		
AIMSweb	Math Concepts and Applications	●	●		
AIMSweb	Test of Early Numeracy - Missing Number	●	●		
AIMSweb	Test of Early Numeracy - Number ID	●	●		
AIMSweb	Test of Early Numeracy - Oral Counting	●	●		
AIMSweb	Test of Early Numeracy - Quantity Discrimination	●	●		
mCLASS: Math	Computation	○	○	○	
mCLASS: Math	Concepts	○	○	○	
mCLASS: Math	Oral Counting	○	○		
mCLASS: Math	Missing Number	○	○	○	
mCLASS: Math	Next Number	○	○		
mCLASS: Math	Number Facts	○	○	○	
mCLASS: Math	Number Identification	○	○		
mCLASS: Math	Quantity Discrimination	○	○	○	
Monitoring Basic Skills Progress (MBSP)	Basic Math Computation	●	●	●	●
Monitoring Basic Skills Progress (MBSP)	Basic Math Concepts/Applications	●	●	●	●

Academic Illustration of DBI

Sample Academic Intervention Progression



Secondary Intervention Program: Student Example - Jason

Background: Jason presented serious mathematics problems. His performance is at an early third-grade level at the beginning of fifth grade.

Intervention program: Jason's teacher selected a research-validated program that addressed fraction concepts, word problems, and fluency with number combinations.

Secondary Intervention Program: Jason

Fidelity

- Group size: six students
- Session length: 20-40 minutes per session
- Frequency: 3-4 sessions per week
- Program duration: 7 weeks
- Instructional content and delivery: explicit instruction covering all components laid out in the instruction manual
- Progress monitoring: Numbers and Operations (easyCBM)

Progress Monitoring for Jason

- easyCBM
  - 3rd grade materials
  - Numbers and Operations

Math Numbers and Operations 3_1

Student Name:_____ Date:_____

1.

How many parts in all?

A. 3
B. 7
C. 9

2.

How many parts in all?

A. 2
B. 1
C. 4

3.

Which value is least?

A. $\frac{2}{5}$
B. $\frac{3}{5}$
C. $\frac{1}{5}$

4.

Sandy eats $\frac{5}{6}$ of a sandwich.

Josh eats $\frac{6}{6}$ of a sandwich.

Cathy eats $\frac{4}{6}$ of a sandwich.

Who eats the most?

A. Cathy
B. Sandy
C. Josh

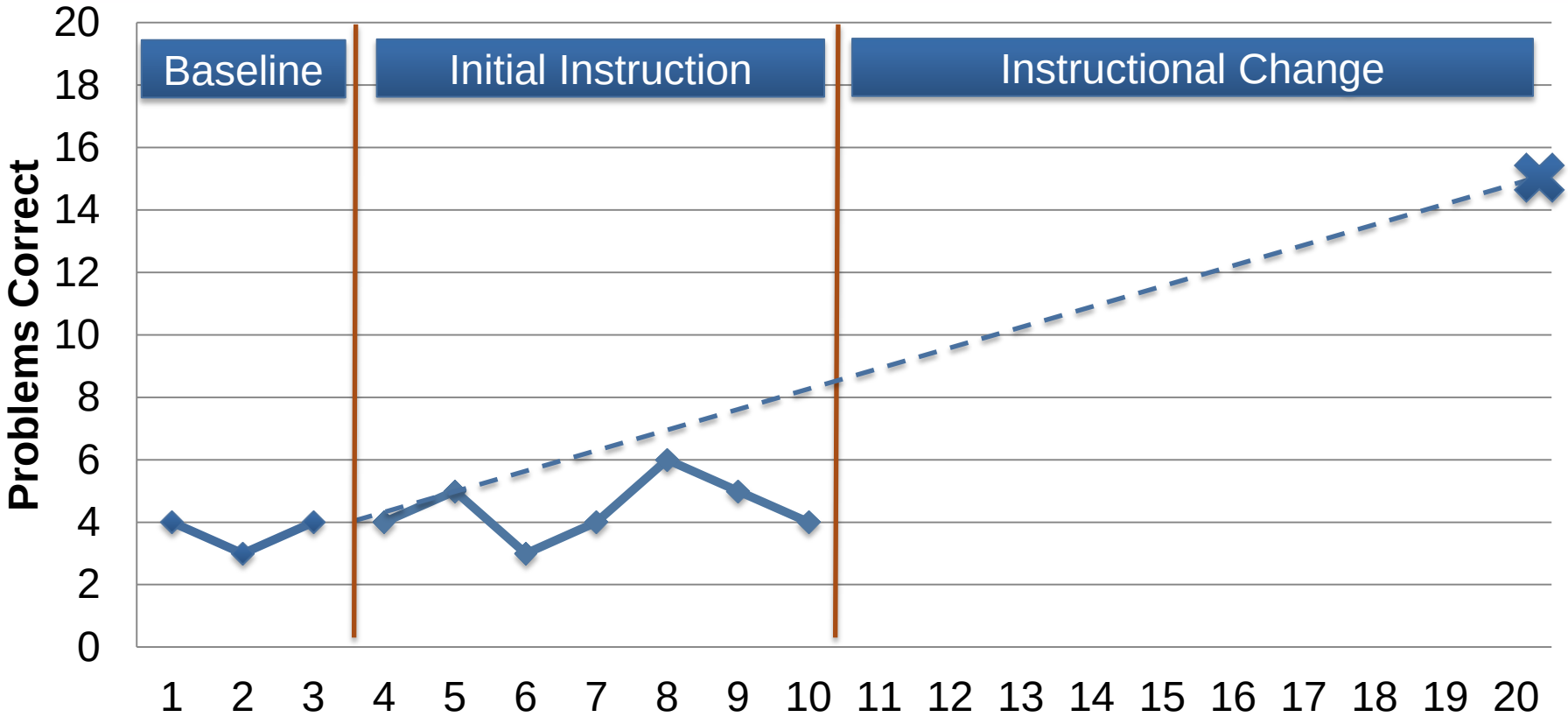
Progress Monitoring: Does Jason need DBI?

Reliable and valid tool: Jason's teacher implemented formal progress monitoring using Computation assessments that were a match for his mathematics skills.

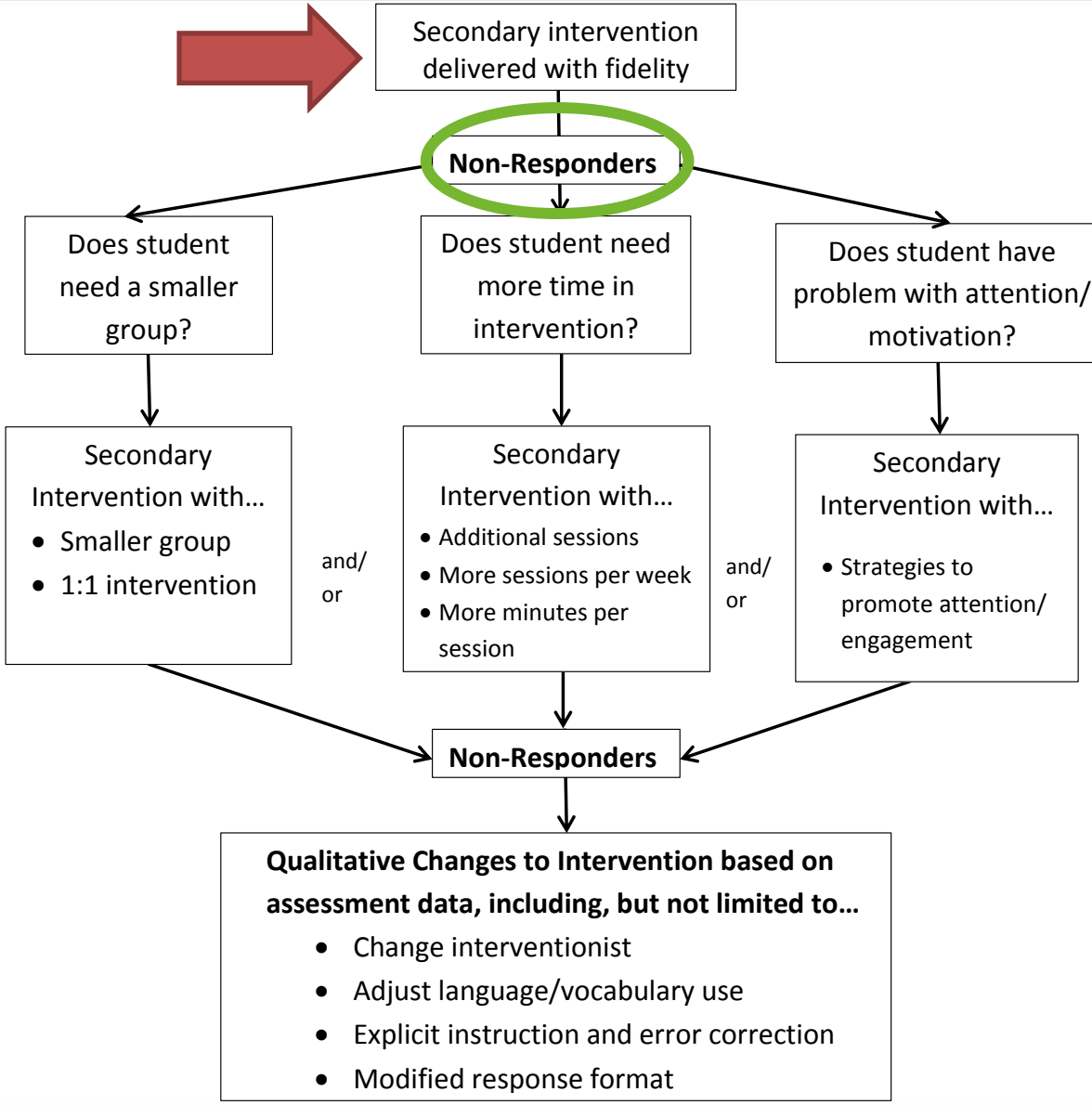
Detect improvement: This progress monitoring tool is appropriate to his skill level, allowing his teacher to detect changes in Jason's mathematics.

Rate of progress: Based on Jason's progress monitoring graph, he was not progressing at the rate needed to meet his goal.

Progress Monitoring: Jason



Progress Monitoring: Determining Jason's Need for DBI



Intervention Adaptation/Change

- When appropriate, use data to make adjustments/adaptations to the secondary intervention program to meet the unique needs of the individual.
- In some cases, however, data may indicate that the student requires a different intervention program or approach.

Consider two types of intervention change:

- Quantitative changes to setting or format
- Qualitative changes to delivery

Try quantitative change(s) first…

- **Increase** intervention frequency, length of sessions, or duration.
- **Decrease** group size.
- **Decrease** heterogeneity of the intervention group.

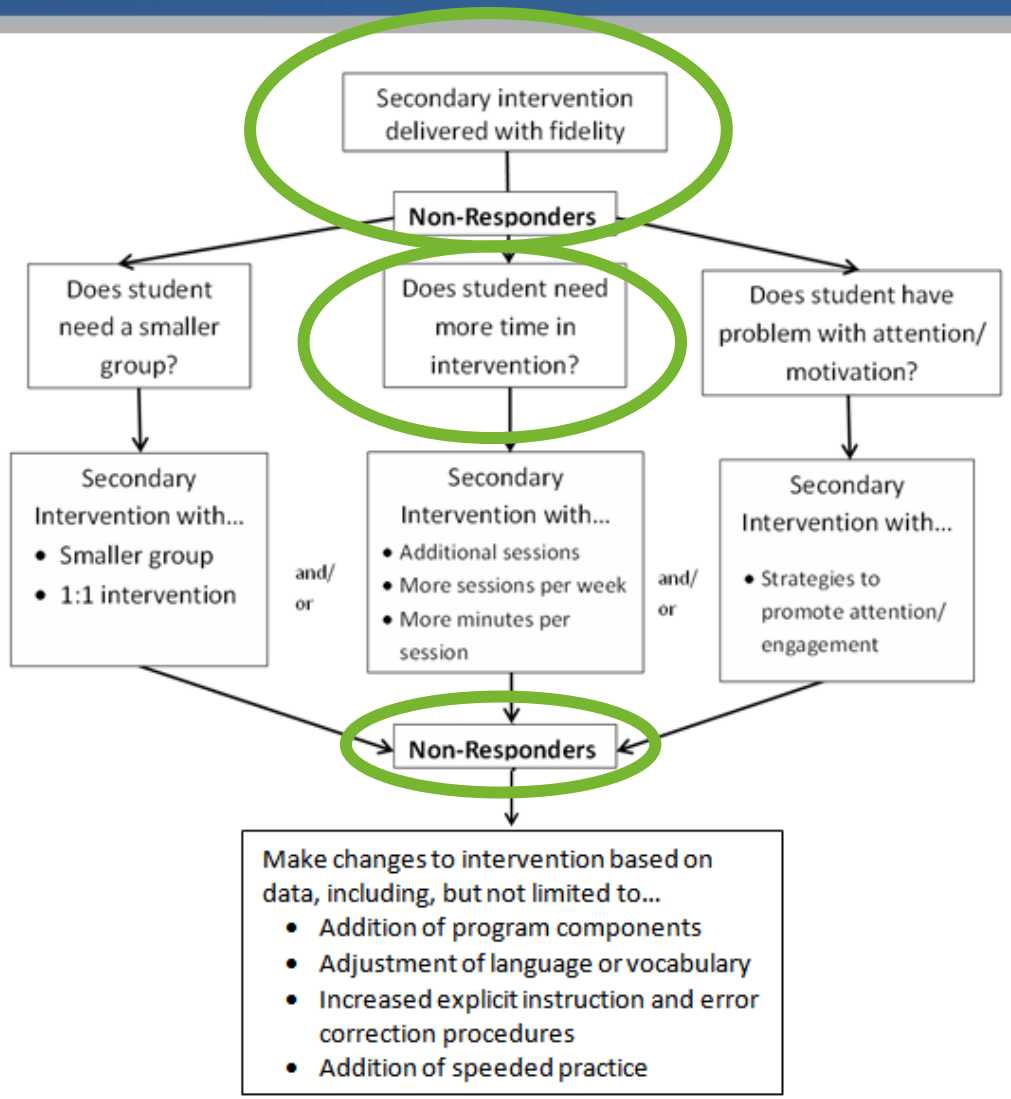
Note: In many cases, quantitative changes may be necessary, but not sufficient, to facilitate progress for students with intensive needs.

Consider qualitative changes second…

Qualitative adaptations may be made to the intervention program that alter—

- Instruction based on learner characteristics (e.g., addressing working memory or attention problems)
- Skill level of interventionist
- Content delivery
- How students respond
- The amount of adult feedback and error correction students receive
- Frequency/specificity of checks for retention
- The materials, curriculum, or whole intervention (could be a complete change in program)

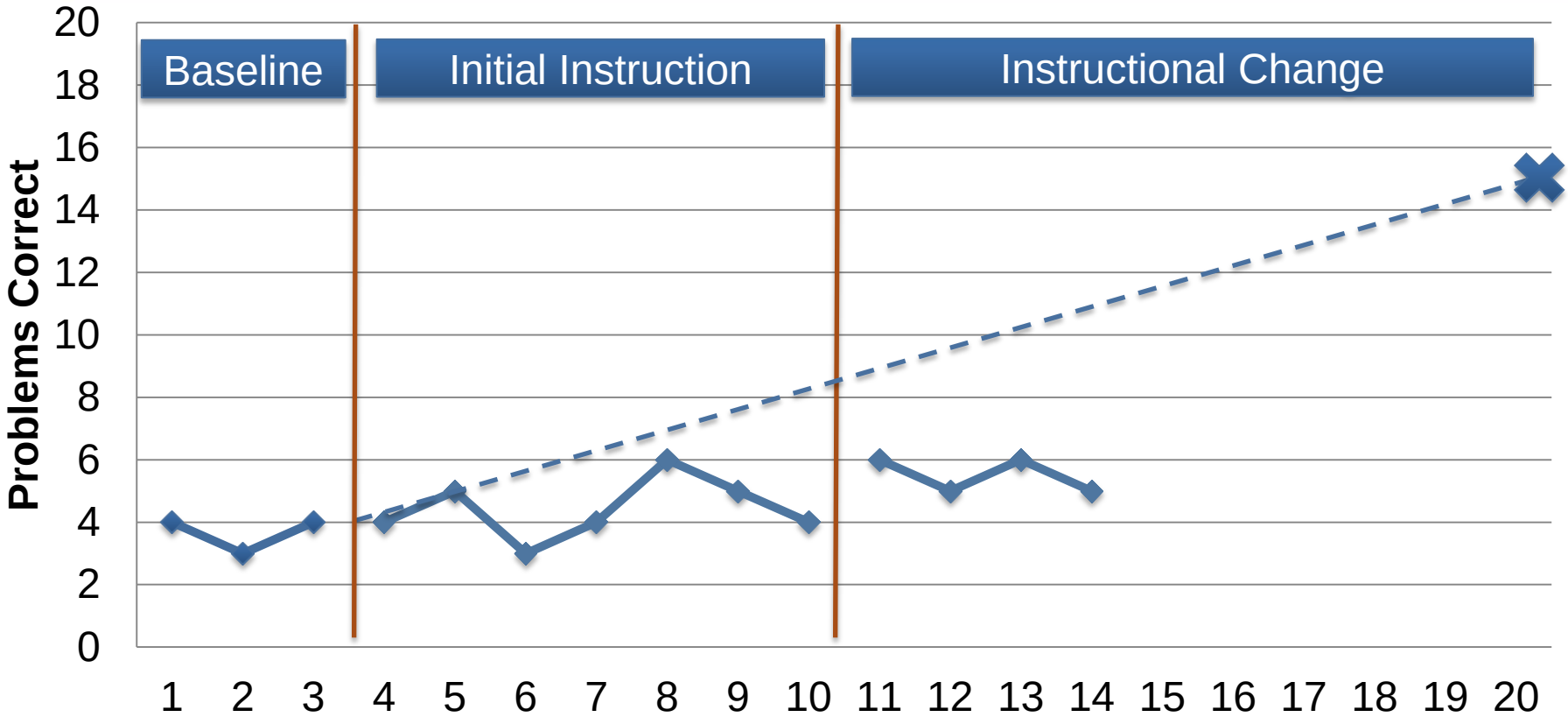
Intensify the Secondary Intervention: Begin With Quantitative Changes



Quantitative Intervention Adaptation: Jason

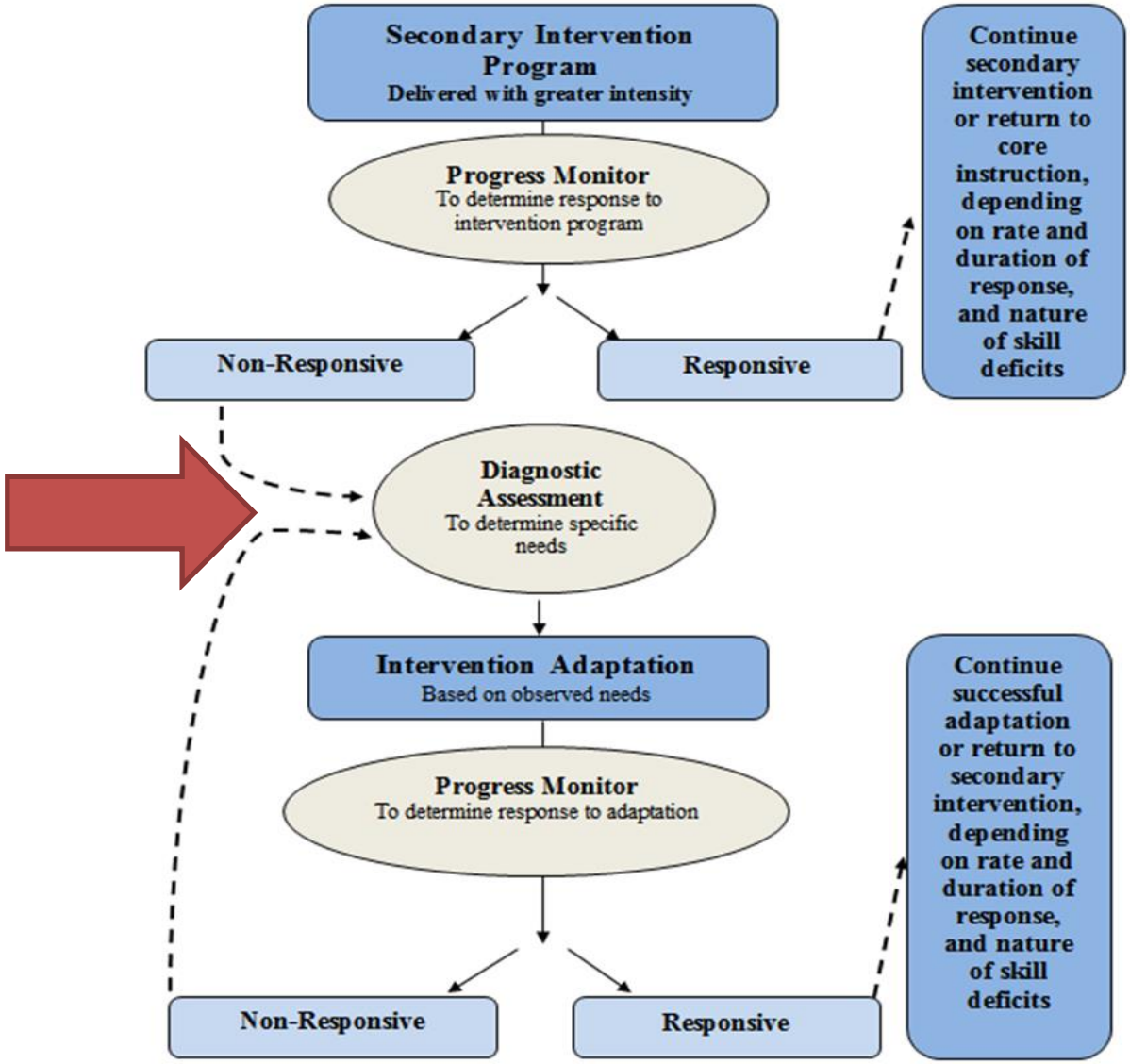
Jason's teacher intensified his instruction by adding an additional 15 minutes of instruction per session. Despite this change in intervention length, Jason continued to make insufficient progress.

Progress Monitoring: Jason



Diagnostic Assessment:

What changes are needed to support Jason?



Informal Diagnostic Assessment

- Progress monitoring assessments help teams determine *when* an instructional change is needed.
- Informal diagnostic assessments allow teams to use available data (e.g., progress monitoring data, informal skill inventories, work samples) to help determine the *nature* of the intervention change needed.

Informal Diagnostic Assessment

Potential data sources:

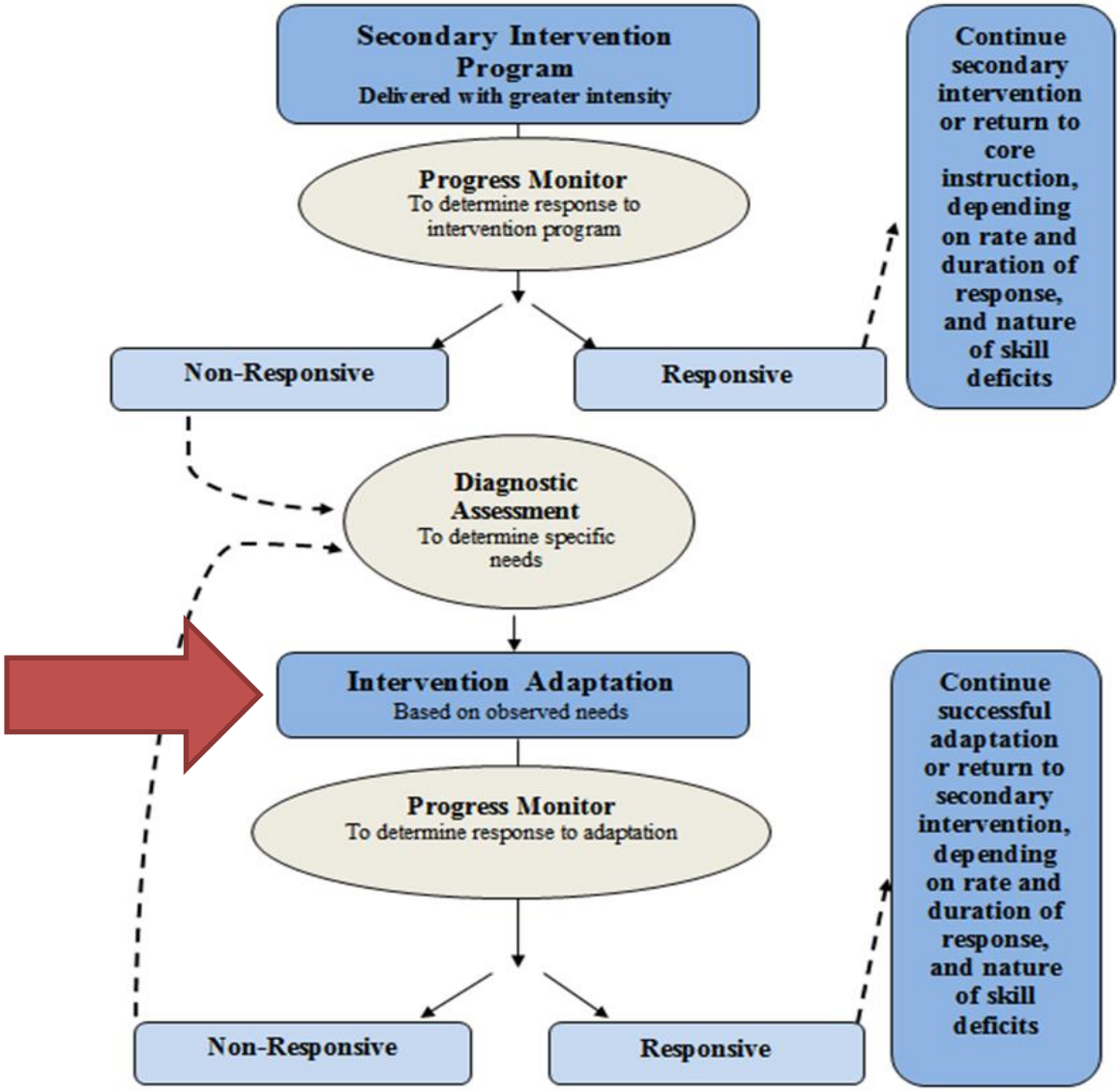
- Classroom-based assessments
- Error analysis of progress monitoring data
- Student work samples
- Standardized measures (if feasible)

Informal Diagnostic Assessment: Jason

- To determine the nature of the instructional change needed, Jason's teacher conducted an error analysis of Jason's most recent Numbers and Operations data.
- She also administered a computation assessment to determine Jason's strengths and weaknesses.

Intervention Adaptation:

Use Diagnostic Information to Adapt the Intervention



Intervention Adaptation: Jason

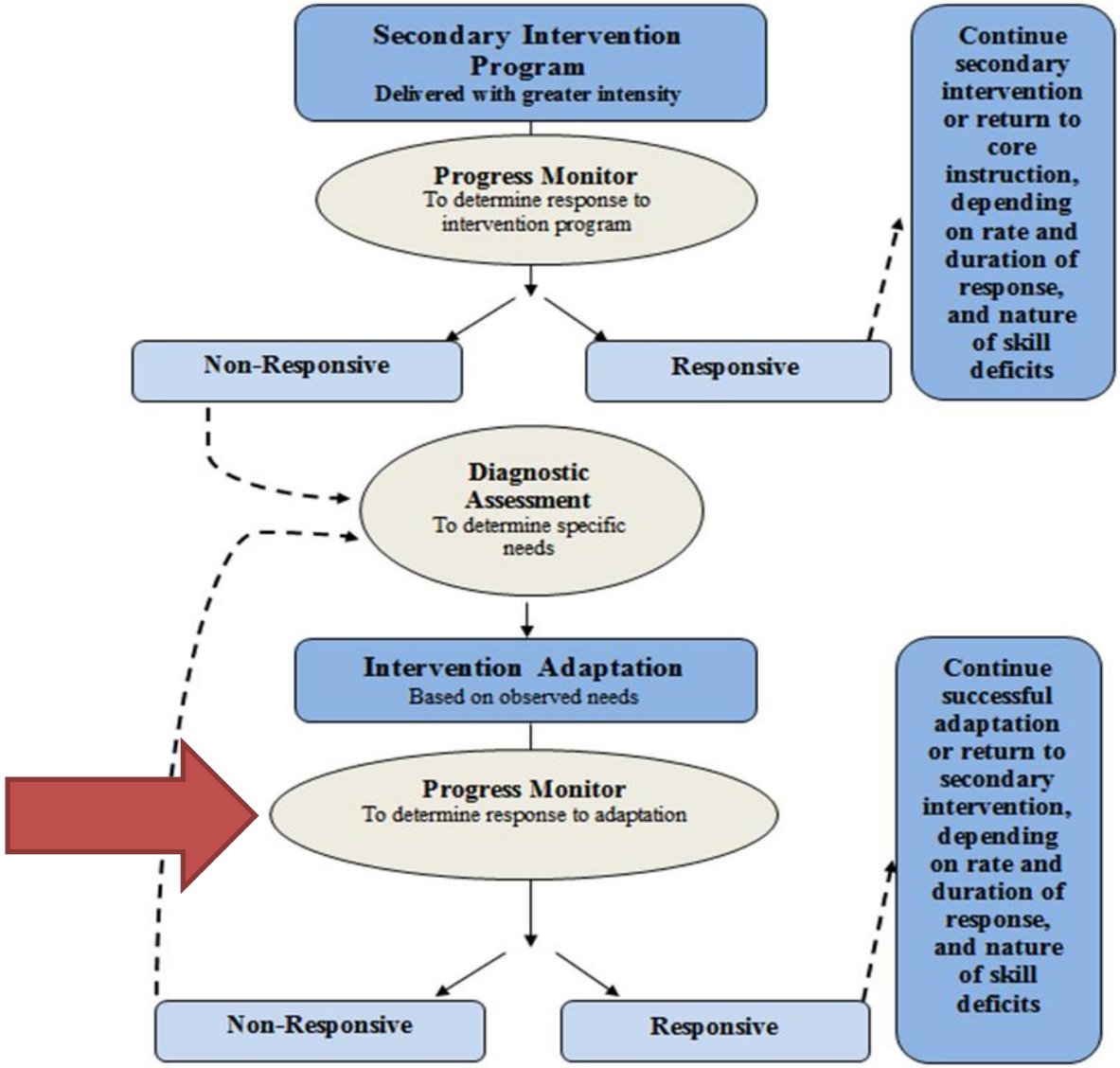
Diagnostic assessment showed that Jason had difficulty with basic number combinations and computation. His teacher applied the following intensive intervention principles to intensify his instruction:

- Incorporated fluency practice, with specified mastery criteria
- Provided explicit instruction and error correction
- Frequently checked for retention with reteaching as needed

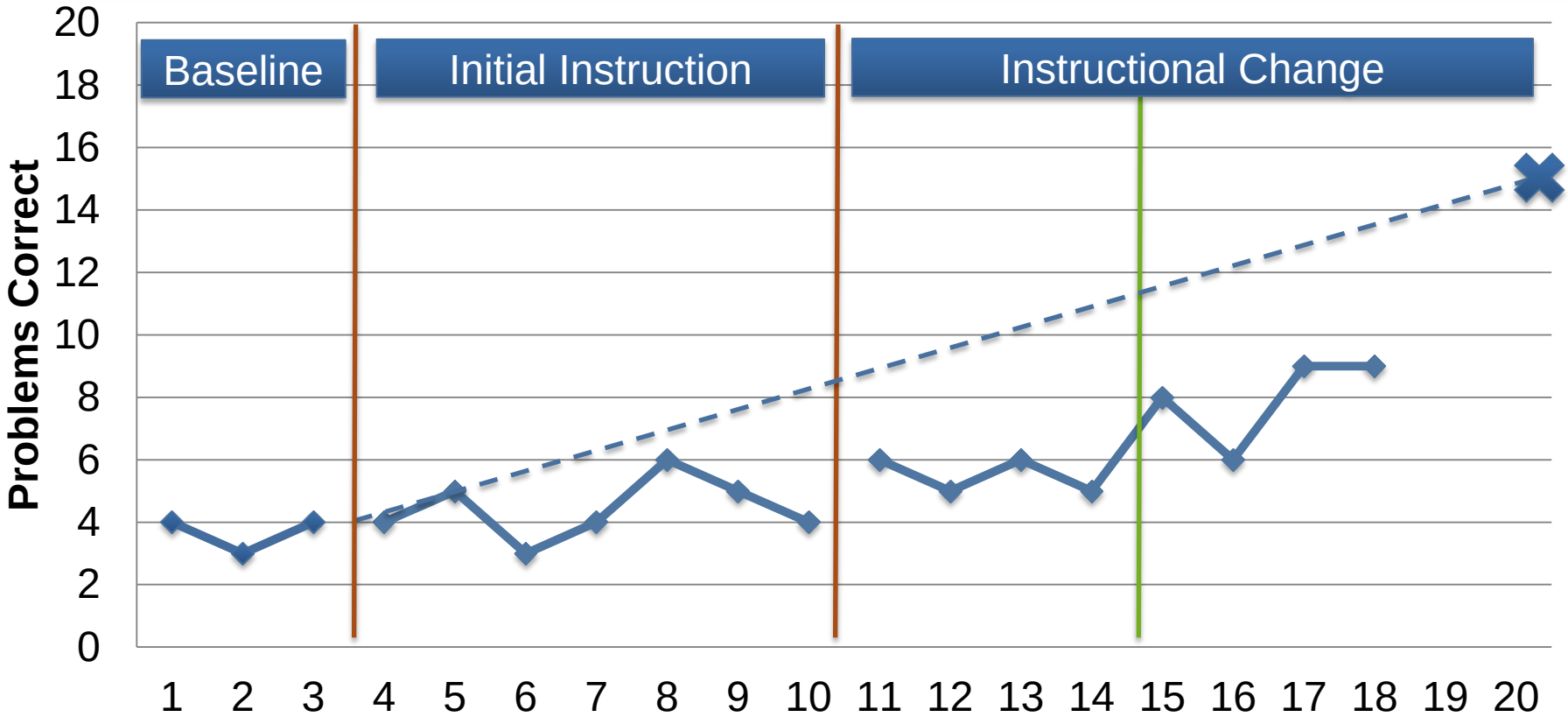
Jason's Intervention Adaptation

Ongoing Progress Monitoring

- Is Jason responding to the adapted instruction?
- Is his response sufficient?



Progress Monitoring: Jason



Evaluation of Jason's Progress

- Jason's math is improving but not fast enough to achieve his goal. Another instructional change is needed.
- Jason's teacher may collect additional diagnostic data if needed to make an informed instructional change.
- Jason's teacher will continue to collect progress monitoring data and meet with the intervention team to evaluate progress and modify the plan as needed.

Wrap Up

- What is DBI?
- What are methods for intensifying intervention?
- What's the role of progress monitoring?
  - How to learn information about progress monitoring measures used within intensive intervention?

Thank you!

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