



RTI Toolkit: A Practical Guide for Schools

RTI: How to Collect Data to Understand and Fix Student Academic and Behavioral Problems

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‘RTI-Ready’ Literacy Measures: A Guide for Schools

<input type="checkbox"/> Initial Sound Fluency (Phonemic Awareness) ⌚: 3 minutes Administration: 1:1	GR	K	1	2	3	4	5	6	7	8
<i>Description:</i> The student is shown a collection of 4 pictures, each depicting an object that begins with a different letter sound. The examiner gives the student a letter sound and asks the student to select from the collection the picture of the object that begins with that letter sound. The process is repeated with new sets of pictures for the duration of the monitoring period.										
<i>Sources for This Measure</i> DIBELS (https://dibels.uoregon.edu/).[Free]. Administration Range: Pre-K through middle of Kindergarten.										

<input type="checkbox"/> Phoneme Segmentation (Phonemic Awareness) ⌚: 1 minute Administration: 1:1	GR	K	1	2	3	4	5	6	7	8
<i>Description:</i> The student is read a list of words containing 2 or more phonemes. For each word, the student is asked to recite all of the phonemes that make up the word.										
<i>Sources for This Measure</i> <ul style="list-style-type: none"> • DIBELS (https://dibels.uoregon.edu/).[Free]. Administration Range: Middle of Kindergarten through end of Grade 1. • Easy CBM (http://www.easycbm.com/).[Free]. Administration Range: Kindergarten and Grade 1. • AimsWeb (http://www.aimsweb.com/). [Pay]. Administration Range: Middle of Kindergarten through middle of Grade 1. 										

<input type="checkbox"/> Letter Naming Fluency (Alphabetic) ⌚: 1 minute Administration: 1:1	GR	K	1	2	3	4	5	6	7	8
<i>Description:</i> The student is presented with a list of randomly arranged letters. The student names as many letters as possible.										
<i>Sources for This Measure</i> <ul style="list-style-type: none"> • DIBELS (https://dibels.uoregon.edu/).[Free]. Administration Range: Beginning of Kindergarten through beginning of Grade 1. • Intervention Central (http://www.rti2.org/rti2/letterNamings).[Free]. Site provides an online application (‘Letter Naming Fluency Probe Generator’) that creates randomly generated sets of uppercase, lowercase, and mixed-case letters in English and Spanish for Letter Naming Fluency assessments. • Easy CBM (http://www.easycbm.com/).[Free]. Administration Range: Kindergarten and Grade 1. • AimsWeb (http://www.aimsweb.com/). [Pay]. Administration Range: Beginning of Kindergarten through beginning of Grade 1. 										

<input type="checkbox"/> Letter Sound Fluency (Alphabetics) ⌚: 1 minute Administration: 1:1	GR	K	1	2	3	4	5	6	7	8
<i>Description:</i> The student is presented with a list of randomly arranged letters. The student gives the sounds of as many letters as possible.										
<i>Sources for This Measure</i> <ul style="list-style-type: none"> Easy CBM (http://www.easycbm.com/).[Free]. Administration Range: Kindergarten and Grade 1. AimsWeb (http://www.aimsweb.com/). [Pay]. Administration Range: Middle of Kindergarten through beginning of Grade 1. EdCheckup (http://www.edcheckup.com/). [Pay]. Administration Range: Information unavailable. 										

<input type="checkbox"/> Nonsense Word Fluency (Alphabetics) ⌚: 1 minute Administration: 1:1	GR	K	1	2	3	4	5	6	7	8
<i>Description:</i> The student is shown a list of short nonsense words. For each word, the student is to read the word or give the sounds that make up the word.										
<i>Sources for This Measure</i> <ul style="list-style-type: none"> DIBELS (https://dibels.uoregon.edu/).[Free]. Administration Range: Middle of Kindergarten through middle of Grade 2. AimsWeb (http://www.aimsweb.com/). [Pay]. Administration Range: Middle of Kindergarten through end of Grade 1. 										

<input type="checkbox"/> Word Identification Fluency (Alphabetics) ⌚: 1 minute Administration: 1:1	GR	K	1	2	3	4	5	6	7	8
<i>Description:</i> The student is presented with a list of words randomly selected from a larger word list (e.g., Dolch Wordlist). The student reads as many words as possible.										
<i>Sources for This Measure</i> <ul style="list-style-type: none"> Easy CBM (http://www.easycbm.com/).[Free]. Administration Range: Kindergarten through Grade 3. Intervention Central (http://www.interventioncentral.org/).[Free]. Site provides an online application ('CBM List Builder') that creates randomly generated Word Identification Probes based on the Dolch Wordlist. EdCheckup (http://www.edcheckup.com/). [Pay]. Administration Range: Information unavailable. 										

<input type="checkbox"/> Oral Reading Fluency (Fluency With Text) ⌚: 1 minute Administration: 1:1	GR	K	1	2	3	4	5	6	7	8
<i>Description:</i> The student reads aloud from a passage and is scored for fluency and accuracy. Passages are controlled for level of reading difficulty.										
<i>Sources for This Measure</i> <ul style="list-style-type: none"> DIBELS (https://dibels.uoregon.edu/).[Free]. Administration Range: Middle of Grade 1 through Grade 6. Easy CBM (http://www.easycbm.com/).[Free]. Administration Range: Grade 1 through Grade 8. Intervention Central (http://www.rti2.org/rti2/oralReadings).[Free]. Site provides an online application that creates an oral reading fluency probe based on text typed in by the user. AimsWeb (http://www.aimsweb.com/). [Pay]. Administration Range: Grade 1 through Grade 8. iSteep (http://www.isteep.com/).[Pay] Administration Range: Grade 1 through Grade 5 (progress-monitoring) EdCheckup (http://www.edcheckup.com/). [Pay]. Administration Range: Information unavailable. 										

<input type="checkbox"/> Maze (Comprehension) ⌚: 1-3 minutes Administration: Group	GR	K	1	2	3	4	5	6	7	8
<i>Description:</i> The student is given a passage in which every 7th word has been removed. The student reads the passage silently. Each time the student comes to a removed word, the student chooses from among 3 replacement words: the correct word and two distractors. The student circles the replacement word that he or she believes best restores the meaning of the text.										
<i>Sources for This Measure</i> <ul style="list-style-type: none"> AimsWeb (http://www.aimsweb.com/). [Pay] Administration Range: Grade 1 through Grade 8. EdCheckup (http://www.edcheckup.com/). [Pay]. Administration Range: Information unavailable. iSteep (http://www.isteep.com/). {Pay] Administration Range: Grade 1 through Grade 6 (progress-monitoring) Intervention Central (http://www.rti2.org/rti2/mazes).[Free]. Site provides an online application that creates a maze passage probe based on text typed in by the user. 										

Evaluate the 'RTI Readiness' of Your School's Academic Measures

Directions. Use the questionnaire below to evaluate the 'RTI readiness' of any academic measure. Note that questions on the form are hierarchically organized: If items earlier in the survey are endorsed 'no', the measure probably cannot be used for more advanced applications that appear later in the survey. Use the table *Interpreting the Results of This Survey* below to identify the appropriate uses for your measure in the RTI problem-solving process..

Name of Measure: _____

Item #	Rating Item	YES	NO	
	Background: Validity.			
1.	<i>Content Validity.</i> Does the measure provide meaningful information about the academic skill of interest?	<input type="checkbox"/> Y	<input type="checkbox"/> N	Background
2.	<i>Convergent Validity.</i> Does the measure yield results that are generally consistent with other well-regarded tests designed to measure the same academic skill?	<input type="checkbox"/> Y	<input type="checkbox"/> N	
3.	<i>Predictive Validity.</i> Does the measure predict student success on an important future test, task, or other outcome?	<input type="checkbox"/> Y	<input type="checkbox"/> N	
	Baseline: Reliability.			
4.	<i>Test-Retest/Alternate-Form Reliability.</i> Does the measure have more than one version or form? If two alternate, functionally equivalent versions of the measure are administered to the student, does the student perform about the same on both?	<input type="checkbox"/> Y	<input type="checkbox"/> N	Baseline
5.	<i>Interrater Reliability.</i> When two different evaluators observe the same student's performance and independently use the measure to rate that performance, do they come up with similar ratings?	<input type="checkbox"/> Y	<input type="checkbox"/> N	
	Benchmarks & Goal-Setting			
6.	<i>Performance Benchmarks.</i> Does the measure include benchmarks or other performance criteria that indicate typical or expected student performance in the academic skill?	<input type="checkbox"/> Y	<input type="checkbox"/> N	Goal-Setting
7.	<i>Goal-Setting.</i> Does the measure include guidelines for setting specific goals for improvement?	<input type="checkbox"/> Y	<input type="checkbox"/> N	
	Progress-Monitoring and Instructional Impact			
8.	<i>Repeated Assessments.</i> Does the measure have sufficient alternative forms to assess the student weekly for at least 20 weeks?	<input type="checkbox"/> Y	<input type="checkbox"/> N	Progress-Monitoring
9.	<i>Equivalent Alternate Forms.</i> Are the measure's repeated assessments (alternative forms) equivalent in content and level of difficulty?	<input type="checkbox"/> Y	<input type="checkbox"/> N	
10.	<i>Sensitive to Short-Term Student Gains.</i> Is the measure sensitive to short-term improvements in student academic performance?	<input type="checkbox"/> Y	<input type="checkbox"/> N	
11.	<i>Positive Impact on Learning.</i> Does research show that the measure gives teachers information that helps them to make instructional decisions that positively impact student learning?	<input type="checkbox"/> Y	<input type="checkbox"/> N	

Interpreting the Results of This Survey of Your Academic Measure:

- YES to Items 1-3. **Background.** The measure gives valid *general* information about the student's academic skills and performance. While not sufficient, the data can be interpreted as part of a larger collection of student data.
- YES to Items 4-5. **Baseline.** The measure gives reliable results when given by different people and at different times of the day or week. Therefore, the measure can be used to collect a current 'snapshot' of the student's academic skills prior to starting an intervention.
- YES to Items 6-7. **Goal-Setting.** The measure includes standards (e.g., benchmarks or performance criteria) for 'typical' student performance (e.g., at a given grade level) and guidelines for estimating rates of student progress. Schools can use the measure to assess the gap in performance between a student and grade level peers—and also to estimate expected rates of student progress during an intervention.
- YES to Items 8-11. **Progress Monitoring.** The measure has the appropriate qualities to be used to track student progress in response to an intervention.

Comparing Reading Measures for 'RTI Readiness'

School: _____ Date: _____ Person(s) Completing Ratings: _____

- Phonemic Awareness/Alphabetics
 Fluency With Text
 Vocabulary
 Comprehension

Directions: Use this form to compare reading measures in your school for qualities of 'RTI readiness'. Put an 'X' in a column if the measure has that measurement quality. (Consult the form *Evaluate the 'RTI Readiness' of Your School's Academic Measures* for a more detailed description of each measurement quality.)

	Background: Validity			Baseline: Reliability		Goal-Setting		Progress-Monitoring			
	<i>Content Validity.</i>	<i>Convergent Validity</i>	<i>Predictive Validity</i>	<i>Test-Retest/ Alternate Form Reliability</i>	<i>Interrater Reliability</i>	<i>Performance Benchmarks</i>	<i>Goal- Setting</i>	<i>Repeated Assessments</i>	<i>Equivalent Alternate Forms</i>	<i>Sensitive to Short-Term Student Gains</i>	<i>Positive Impact on Learning</i>
Name of Measure	1	2	3	4	5	6	7	8	9	10	11

RTI-Ready Methods to Monitor Student Academics

Math: Early Math Fluency

<input type="checkbox"/> Quantity Discrimination Fluency	⌚: 1 minute	Administration: 1:1
<i>Description:</i> The student is given a sheet with number pairs. For each number pair, the student must name the larger of the two numbers.		
<i>Where to get materials:</i>		
<ul style="list-style-type: none"> • AimsWeb http://www.aimsweb.com/ • Intervention Central http://www.interventioncentral.org (Numberfly Early Math Fluency Probe Creator) 		
<input type="checkbox"/> Missing Number Fluency	⌚: 1 minute	Administration: 1:1
<i>Description:</i> The student is given a sheet containing numerous sets of 3 or 4 sequential numbers. For each number series, one of the numbers is missing. The student must name the missing number.		
<i>Where to get materials:</i>		
<ul style="list-style-type: none"> • AimsWeb http://www.aimsweb.com/ • Intervention Central http://www.interventioncentral.org (Numberfly Early Math Fluency Probe Creator) 		
<input type="checkbox"/> Number Identification Fluency	⌚: 1 minute	Administration: 1:1
<i>Description:</i> The student is given a sheet with numbers in random order. The student gives the name of each number.		
<i>Where to get materials:</i>		
<ul style="list-style-type: none"> • AimsWeb http://www.aimsweb.com/ • Intervention Central http://www.interventioncentral.org (Numberfly Early Math Fluency Probe Creator) 		
<input type="checkbox"/> Oral Counting Fluency	⌚: 1 minute	Administration: 1:1
<i>Description:</i> The student counts aloud as many words in sequence as possible, starting from zero or one.		
<i>Where to get materials:</i>		
<ul style="list-style-type: none"> • The student does not require materials for this assessment. The examiner can make a sheet with numbers listed sequentially from 0-100 to record those numbers that the student can recite in sequence. 		

Early Math Fluency CBM Probe: Quantity Discrimination

This introduction to the Quantity Discrimination probe provides information about the preparation, administration, and scoring of this Early Math CBM measure. Additionally, it offers brief guidelines for integrating this assessment into a school-wide 'Response-to-Intervention' model.

Quantity Discrimination: Description (Clarke & Shinn, 2005; Gersten, Jordan & Flojo, 2005)

The student is given a sheet containing pairs of numbers. In each number pair, one number is larger than the other. The numbers in each pair are selected from within a predefined range (e.g., no lower than 0 and no higher than 20). During a one-minute timed assessment, the student identifies the larger number in each pair, completing as many items as possible while the examiner records any Quantity Discrimination errors.

Quantity Discrimination: Preparation

The following materials are needed to administer Quantity Discrimination (QD) Early Math CBM probes:

- Student and examiner copies of a QD assessment probe. (Note: Customized QD probes can be created conveniently and at no cost using Numberfly, a web-based application. Visit Numberfly at <http://www.interventioncentral.org/php/numberfly/numberfly.php>).
- A pencil, pen, or marker
- A stopwatch

Quantity Discrimination: Directions for Administration

1. The examiner sits with the student in a quiet area without distractions. The examiner sits at a table across from the student.
2. The examiner says to the student:

"The sheet on your desk has pairs of numbers. In each set, one number is bigger than the other."

"When I say, 'start,' tell me the name of the number that is larger in each pair. Start at the top of this page and work across the page [demonstrate by pointing]. Try to figure out the larger number for each example.. When you come to the end of a row, go to the next row. Are there any questions? [Pause] Start. "

3. The examiner begins the stopwatch when the student responds aloud to the first item. If the student hesitates on a number for 3 seconds or longer on a Quantity Discrimination item, the examiner says, "Go to the next one." (If necessary, the examiner points to the next number as a student prompt.)

4. The examiner marks each Quantity Discrimination error by marking a slash (/) through the incorrect response item on the examiner form.
5. At the end of one minute, the examiner says, "Stop" and writes in a right-bracket symbol (]) on the examiner form after the last item that the student had attempted when the time expired. The examiner then collects the student Quantity Discrimination sheet.

Quantity Discrimination: Scoring Guidelines

Correct QD responses include:

- Quantity Discriminations read correctly
- Quantity Discriminations read incorrectly but corrected by the student within 3 seconds

Incorrect QD responses include:

- The student's reading the smaller number in the QD number pair
- Correct QD responses given after hesitations of 3 seconds or longer
- The student's calling out a number other than appears in the QD number pair
- Response items skipped by the student

To calculate a Quantity Discrimination fluency score, the examiner:

1. counts up all QD items that the student attempted to answer and
2. subtracts the number of QD errors from the total number attempted.
3. The resulting figure is the number of correct Quantity Discrimination items completed.(QD fluency score).

Quantity Discrimination Probes as Part of a Response to Intervention Model

- **Universal Screening:** To proactively identify children who may have deficiencies in development of foundation math concepts, or 'number sense' (Berch, 2003), schools may choose to screen all kindergarten and first grade students using Quantity Discrimination probes. Those screenings would take place in fall, winter, and spring. Students who fall below the 'cutpoint' of the 35th percentile (e.g., Jordan & Hanich, 2003).of the grade norms on the QD task would be identified as having moderate deficiencies and given additional interventions to build their 'number sense' skills.
- **Tier I (Classroom-Based) Interventions:** Teachers can create Quantity Discrimination probes and use them independently to track the progress of students who show modest delays in their math foundation skills.
- **Tier II (Individualized) Interventions.** Students with more extreme academic delays may be referred to a school-based problem-solving team, which will develop more intensive, specialized interventions to target the student's academic deficits (Wright, 2007). Quantity Discrimination probes can be used as one formative measure to track student progress with Tier II interventions to build foundation math skills.

Quantity Discrimination: Measurement Statistics

Test-Retest Reliability Correlations for Quantity Discrimination Probes		
<i>Time Span</i>	<i>Correlation</i>	<i>Reference</i>
13-week interval	0.85	Clarke & Shinn (2005)
26-week interval	0.86	Clarke & Shinn (2005)

Predictive Validity Correlations for Quantity Discrimination Probes		
<i>Predictive Validity Measure</i>	<i>Correlation</i>	<i>Reference</i>
Curriculum-Based Measurement Math Computation Fluency Probes: Grade 1 Addition & Subtraction (Fall Administration of QD Probe and Spring Administration of Math Computation Probe)	0.67	Clarke & Shinn (2005)
Woodcock-Johnson Tests of Achievement: Applied Problems subtest (Fall Administration of QD Probe and Spring Administration of WJ-ACH subtest)	0.79	Clarke & Shinn (2005)
Number Knowledge Test	0.53	Chard, Clarke, Baker, Otterstedt, Braun & Katz. (2005) cited in Gersten, Jordan & Flojo (2005)

References

Chard, D. J., Clarke, B., Baker, S., Otterstedt, J., Braun, D., & Katz, R. (2005). Using measures of number sense to screen for difficulties in mathematics: Preliminary findings. *Assessment For Effective Intervention, 30*(2), 3-14.

Clarke, B., & Shinn, M. (2004). A preliminary investigation into the identification and development of early mathematics curriculum-based measurement. *School Psychology Review, 33*, 234–248.

Gersten, R., Jordan, N.C., & Flojo, J.R. (2005). Early identification and interventions for students with mathematics difficulties. *Journal of Learning Disabilities, 38*, 293-304.

Jordan, N. C. & Hanich, L. B. (2003). Characteristics of children with moderate mathematics deficiencies: A longitudinal perspective. *Learning Disabilities Research and Practice, 18*(4), 213-221.

Berch, D. B. (2003). Making sense of number sense: Implications for children with mathematical disabilities. *Journal of Learning Disabilities, 38*, 333-339..

Wright, J. (2007). *The RTI toolkit: A practical guide for schools*. Port Chester, NY: National Professional Resources, Inc.

Early Math Fluency CBM Probe: Missing Number

This introduction to the Missing Number probe provides information about the preparation, administration, and scoring of this Early Math CBM measure. Additionally, it offers brief guidelines for integrating this assessment into a school-wide 'Response-to-Intervention' model.

Missing Number: Description (Clarke & Shinn, 2005; Gersten, Jordan & Flojo, 2005)

The student is given a sheet containing multiple number series. Each series consists of 3-4 numbers that appear in sequential order. The numbers in each short series are selected to fall within a predefined range (e.g., no lower than 0 and no higher than 20). In each series, one number is left blank (e.g., '1 2 _ 4'). During a one-minute timed assessment, the student states aloud the missing number in as many response items as possible while the examiner records any Missing Number errors.

Missing Number: Preparation

The following materials are needed to administer Missing Number (MN) Early Math CBM probes:

- Student and examiner copies of a MN assessment probe. (Note: Customized MN probes can be created conveniently and at no cost using Numberfly, a web-based application. Visit Numberfly at <http://www.interventioncentral.org/php/numberfly/numberfly.php>).
- A pencil, pen, or marker
- A stopwatch

Missing Number: Directions for Administration

1. The examiner sits with the student in a quiet area without distractions. The examiner sits at a table across from the student.
2. The examiner says to the student:

"The sheet on your desk has sets of numbers. In each set, a number is missing."

"When I say, 'start,' tell me the name of the number that is missing from each set of numbers. Start at the top of this page and work across the page [demonstrate by pointing]. Try to figure out the missing number for each example.. When you come to the end of a row, go to the next row. Are there any questions? [Pause] Start. "

3. The examiner begins the stopwatch when the student reads the first number aloud. If the student hesitates on a number for 3 seconds or longer on a Missing Number item, the examiner says the correct number aloud and says, "Go to the next one." (If necessary, the examiner points to the next number as a student prompt.)
4. The examiner marks each Missing Number error by marking a slash (/) through the incorrect response item on the examiner form.

5. At the end of one minute, the examiner says, “*Stop*” and writes in a right-bracket symbol (]) on the examiner form after the last item that the student had attempted when the time expired. The examiner then collects the student Missing Number sheet.

Missing Number: Scoring Guidelines

Correct MN responses include:

- Missing numbers read correctly
- Missing numbers read incorrectly but corrected by the student within 3 seconds

Incorrect MN responses include:

- Missing numbers read incorrectly
- Missing numbers read correctly after hesitations of 3 seconds or longer
- Response items skipped by the student

To calculate a Missing Number fluency score, the examiner:

1. counts up all MN items that the student attempted to read aloud and
2. subtracts the number of MN errors from the total number attempted.
3. The resulting figure is the number of correct Missing Number items completed.(MN fluency score).

Missing Number Probes as Part of a Response to Intervention Model

- **Universal Screening:** To proactively identify children who may have deficiencies in development of foundation math concepts, or ‘number sense’ (Berch, 2003), schools may choose to screen all kindergarten and first grade students using Missing Number probes. Those screenings would take place in fall, winter, and spring. Students who fall below the ‘cutpoint’ of the 35th percentile (e.g., Jordan & Hanich, 2003).of the grade norms on the MN task would be identified as having moderate deficiencies and given additional interventions to build their ‘number sense’ skills.
- **Tier I (Classroom-Based) Interventions:** Teachers can create Missing Number probes and use them independently to track the progress of students who show modest delays in their math foundation skills.
- **Tier II (Individualized) Interventions.** Students with more extreme academic delays may be referred to a school-based problem-solving team, which will develop more intensive, specialized interventions to target the student’s academic deficits (Wright, 2007). Missing Number probes can be used as one formative measure to track student progress with Tier II interventions to build foundation math skills.

Missing Number: Measurement Statistics

Test-Retest Reliability Correlations for Missing Number Probes		
<i>Time Span</i>	<i>Correlation</i>	<i>Reference</i>
13-week interval	0.79	Clarke & Shinn (2005)

26-week interval	0.81	Clarke & Shinn (2005)
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Predictive Validity Correlations for Missing Number Probes		
<i>Predictive Validity Measure</i>	<i>Correlation</i>	<i>Reference</i>
Curriculum-Based Measurement Math Computation Fluency Probes: Grade 1 Addition & Subtraction (Fall Administration of MN Probe and Spring Administration of Math Computation Probe)	0.67	Clarke & Shinn (2005)
Woodcock-Johnson Tests of Achievement: Applied Problems subtest (Fall Administration of MNF Probe and Spring Administration of WJ-ACH subtest)	0.72	Clarke & Shinn (2005)
Number Knowledge Test	0.61	Chard, Clarke, Baker, Otterstedt, Braun & Katz.(2005) cited in Gersten, Jordan & Flojo (2005)

References

Chard, D. J., Clarke, B., Baker, S., Otterstedt, J., Braun, D., & Katz, R. (2005). Using measures of number sense to screen for difficulties in mathematics: Preliminary findings. *Assessment For Effective Intervention, 30*(2), 3-14.

Clarke, B., & Shinn, M. (2004). A preliminary investigation into the identification and development of early mathematics curriculum-based measurement. *School Psychology Review, 33*, 234–248.

Gersten, R., Jordan, N.C., & Flojo, J.R. (2005). Early identification and interventions for students with mathematics difficulties. *Journal of Learning Disabilities, 38*, 293-304.

Jordan, N. C. & Hanich, L. B. (2003). Characteristics of children with moderate mathematics deficiencies: A longitudinal perspective. *Learning Disabilities Research and Practice, 18*(4), 213-221.

Berch, D. B. (2003). Making sense of number sense: Implications for children with mathematical disabilities. *Journal of Learning Disabilities, 38*, 333-339..

Wright, J. (2007). *The RTI toolkit: A practical guide for schools*. Port Chester, NY: National Professional Resources, Inc.

Early Math Fluency CBM Probe: Number Identification

This introduction to the Number Identification probe provides information about the preparation, administration, and scoring of this Early Math CBM measure. Additionally, it offers brief guidelines for integrating this assessment into a school-wide 'Response-to-Intervention' model.

Number Identification: Description (Clarke & Shinn, 2005; Gersten, Jordan & Flojo, 2005)

The student is given a sheet containing rows of randomly generated numbers (e.g., ranging from 0 to 20). During a one-minute timed assessment, the student reads aloud as many numbers as possible while the examiner records any Number Identification errors.

Number Identification: Preparation

The following materials are needed to administer Number Identification (NID) Early Math CBM probes:

- Student and examiner copies of a NID assessment probe. (Note: Customized NID probes can be created conveniently and at no cost using Numberfly, a web-based application. Visit Numberfly at <http://www.interventioncentral.org/php/numberfly/numberfly.php>).
- A pencil, pen, or marker
- A stopwatch

Number Identification: Directions for Administration

1. The examiner sits with the student in a quiet area without distractions. The examiner sits at a table across from the student.
2. The examiner says to the student:

"The sheet on your desk has rows of numbers."

"When I say, 'start,' begin reading the numbers aloud. Start at the top of this page and read across the page [demonstrate by pointing]. Try to read each number. When you come to the end of a row, go to the next row. Are there any questions? [Pause] Start. "

3. The examiner begins the stopwatch when the student reads the first number aloud. If the student hesitates on a number for 3 seconds or longer, the examiner says, *"Go to the next one."* (If necessary, the examiner points to the next number as a student prompt.)
4. The examiner marks each Number Identification error by marking a slash (/) through the incorrectly read number on the examiner form.
5. At the end of one minute, the examiner says, *"Stop"* and writes in a right-bracket symbol (]) on the examiner form from the point in the number series that the student had reached when the time expired. The examiner then collects the student Number Identification sheet.

Number Identification: Scoring Guidelines

Correct NID responses include:

- Numbers read correctly
- Numbers read incorrectly but corrected by the student within 3 seconds

Incorrect NID responses include:

- Numbers read incorrectly
- Numbers read correctly after hesitations of 3 seconds or longer
- Numbers skipped by the student

To calculate a Number Identification fluency score, the examiner:

1. counts up all numbers that the student attempted to read aloud and
2. subtracts the number of errors from the total of numbers attempted.
3. The resulting figure is the number of correct numbers identified.(NID fluency score).

Number Identification Probes as Part of a Response to Intervention Model

- **Universal Screening:** To proactively identify children who may have deficiencies in development of foundation math concepts, or 'number sense' (Berch, 2003), schools may choose to screen all kindergarten and first grade students using Number Identification probes. Those screenings would take place in fall, winter, and spring. Students who fall below the 'cutpoint' of the 35th percentile (e.g., Jordan & Hanich, 2003).of the grade norms on the NID task would be identified as having moderate deficiencies and given additional interventions to build their 'number sense' skills.
- **Tier I (Classroom-Based) Interventions:** Teachers can create Number Identification probes and use them independently to track the progress of students who show modest delays in their math foundation skills.
- **Tier II (Individualized) Interventions.** Students with more extreme academic delays may be referred to a school-based problem-solving team, which will develop more intensive, specialized interventions to target the student's academic deficits (Wright, 2007). Number Identification probes can be used as one formative measure to track student progress with Tier II interventions to build foundation math skills.

Number identification: Measurement Statistics

Test-Retest Reliability Correlations for Number Identification Probes		
<i>Time Span</i>	<i>Correlation</i>	<i>Reference</i>
13-week interval	0.85	Clarke & Shinn (2005)
26-week interval	0.76	Clarke & Shinn (2005)

Predictive Validity Correlations for Number Identification Probes		
<i>Predictive Validity Measure</i>	<i>Correlation</i>	<i>Reference</i>
Curriculum-Based Measurement Math Computation Fluency Probes: Grade 1 Addition & Subtraction (Fall Administration of MN Probe and Spring Administration of Math Computation Probe)	0.60	Clarke & Shinn (2005)
Woodcock-Johnson Tests of Achievement: Applied Problems subtest (Fall Administration of NID Probe and Spring Administration of WJ-ACH subtest)	0.72	Clarke & Shinn (2005)
Number Knowledge Test	0.58	Chard, Clarke, Baker, Otterstedt, Braun & Katz.(2005) cited in Gersten, Jordan & Flojo (2005)

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Gersten, R., Jordan, N.C., & Flojo, J.R. (2005). Early identification and interventions for students with mathematics difficulties. *Journal of Learning Disabilities, 38*, 293-304.

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Berch, D. B. (2003). Making sense of number sense: Implications for children with mathematical disabilities. *Journal of Learning Disabilities, 38*, 333-339..

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Finding Students At-Risk for Learning and Behavior Problems in Middle and High Schools: How to Create a Comprehensive School-Wide Screening Plan

Schools can use screening data efficiently to identify those students who are experiencing problems with academic performance, behavior, and attendance. Providing intervention in the beginning stages of middle or high school student's academic or behavioral problems is more likely to be effective and is typically less costly than attempting to intervene when a student's problems have spiraled into full-blown crisis. The purpose of school-wide screening, therefore, is to allow buildings to proactively flag struggling students at an early point and match them to appropriate interventions.

Schools should remember that whole-group screening results are often not sufficient to map out completely what a specific student's skill deficits might be—nor are they designed to do so. Rather, screenings help schools to single out quickly and with the minimum required investment of resources those students who need more intervention assistance. Some students picked up in a screening will require additional, detailed follow-up “instructional assessment” (Hosp, 2008) in order to better understand their learning needs and select appropriate interventions.

There are three general steps to implementing a school-wide screening program in a middle or high school:

1. First, the school must decide on the range of measures or sources of data that will be used to screen their student population.
2. Next, the school must line up the required resources to conduct the screening. This step includes scheduling time for screening measures to be administered and finding personnel to administer, score, and interpret the results of those measures.
3. Finally, the school must build a process for communicating the screening results to classroom teachers and other interventionists and for using the screening data to identify students who need supplemental (Tier 2 or 3) interventions.

Selecting the Assessment Tools or Sources of Data to Be Used for School-Wide Screening

Schools can make use of several possible types of screening data: existing data on grades, behavior, and attendance; Curriculum-Based Measurement to track basic academic skills; and computerized adaptive measures that help to determine appropriate instructional placement. Those types of screening data are described in greater detail below:

- *Existing data.* Schools collect data on student academic performance (grades), behavior (office disciplinary referrals), and attendance (daily attendance report). Measures of grades, behavior, and attendance have been found to predict student drop-out status as early as grade 6

(Balfanz, Herzog, & MacIver, 2007). Existing data (sometimes called 'archival' or 'extant' data) requires limited effort to access (Chafouleas, Riley-Tillman & Sugai, 2007) — because it has already been collected—and can be used proactively to find those students who are experiencing problems in school (Steward & Silbergliit, 2008). Use of existing data would be appropriate across all middle and high school grades. See form A, *Existing Data: Creating a Screening Plan for Your Middle or High School*, that is structured to help schools to incorporate existing data into their screening plan.

Existing data screening example. A high school monitors its teacher grade reports every five weeks. Students failing at least one course are discussed at weekly instructional team meetings to brainstorm additional Tier 1 (classroom intervention) ideas. Those students are also considered for possible supplemental reading or writing lab (Tier 2) support. Students failing two or more courses are flagged and referred to the building RTI Problem-Solving Team for a comprehensive Tier 3 intervention plan.

- *Curriculum-Based Measurement (CBM).* A series of brief, timed academic tools known as Curriculum-Based Measurement (CBM) have been developed that can assess student mastery of academic skills (Hosp, Hosp, & Howell, 2007). The most widely used types of CBM in middle and high schools are Oral Reading Fluency, Maze (Reading Comprehension), Writing, Math Computation, and Math Concepts & Applications. Schools should give some thought to matching CBMs as screening tools to the demographics of their student populations (Stewart & Silbergliit, 2008). A middle school with large numbers of high-performing students, for example, may decide not to screen its 7th grade for the basic academic skill of reading fluency. However, a high school with many students whose reading skills are below grade level may choose to screen its 9th grade for reading fluency. Review form B, *CBM: 'RTI-Ready' Curriculum-Based Measures for Middle and High Schools*, to browse different CBM options suitable to secondary schools, with Internet sources for obtaining these assessment materials.

CBM screening example. A middle school (grades 5-8) decided to use DIBELS Oral Reading Fluency (ORF) CBM probes to screen its 5th and 6th grades three times per year--both to evaluate the quality of its core literacy program and to identify students who need supplemental (Tier 2) reading fluency intervention. After using the ORF probes for one year, the school decided not to extend their use to screen grades 7 and 8, because by the spring screening date in grade 6 the great majority of students were found to be at low risk for reading fluency problems.

- *Computerized Adaptive Measures.* In many middle and high schools, the majority of students have attained fluency in basic academic skills and now face the challenges of a more demanding, advanced instructional curriculum. One solution for schools is to administer adaptive computer assessments that evaluate student curriculum knowledge. Such measures can fill an information gap as students move beyond acquisition of basic academic skills and move into higher level vocabulary, concepts, text interpretation, applied problem-solving and specialized knowledge.

Look at form C, *CBM Adaptive Computerized Assessments for Middle and High Schools: Example*, to learn more about one type of computerized academic screening tool, the Measures of Academic Progress (MAP).

Computerized adaptive measures screening example. A district housed its combined middle (grades 6-8) and high schools in one building. In addition to other sources of screening information, the school selected a computerized adaptive measure to assess general student academic-curriculum skills in reading and mathematics through the end of grade 10. This information was used to verify the effectiveness of the school's English Language Arts and Mathematics instruction, as well as to flag the handful of students needing additional supplemental (Tier 2 or 3) intervention support.

Expert Guidance in Evaluating Screening/Progress-Monitoring Tools

The National Center on Response to Intervention rates the 'technical adequacy' of commercially available academic screening and progress-monitoring tools. To review their findings, go to:

<http://www.rti4success.org/chart/progressMonitoring/progressmonitoringtoolschart.htm>

References

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A. Existing Data: Creating a Screening Plan for Your Middle or High School

Directions. Existing school information on grades, attendance, and behavior can be used as one source of student screening data (Stewart & Silbergliit, 2008). Use this form to select sources of existing data and to decide how that information will be organized for use in screening students.

<p><input type="checkbox"/> Grades. Teachers focus closely on student grades as indicators of academic success and curriculum mastery.</p>	<p><input type="checkbox"/> Attendance. Problems with school attendance are strongly predictive of academic problems and drop-out.</p>	<p><input type="checkbox"/> Behavior. Office disciplinary referrals provide relevant information about problem school behaviors..</p>
<p><i>Grades: What Grade Levels?</i> At what grade level(s) will this information be collected?</p>	<p><i>Attendance: What Grade Levels?</i> At what grade level(s) will this information be collected?</p>	<p><i>Behavior: What Grade Levels?</i> At what grade level(s) will this information be collected?</p>
<hr/>	<hr/>	<hr/>
<p><i>Grades Screening Schedule.</i> On what schedule will grades be monitored building-wide? (e.g., at 5-week intervals):</p>	<p><i>Attendance Screening Schedule.</i> On what schedule will attendance be monitored building-wide? (e.g., at 5-week intervals):</p>	<p><i>Behavior Screening Schedule.</i> On what schedule will office disciplinary referrals be monitored building-wide? (e.g., at 5-week intervals):</p>
<hr/>	<hr/>	<hr/>
<p><i>Grade Risk Threshold.</i> What is the threshold at which a grade report will identify a student as being at-risk? (e.g., failing two or more subjects)?</p>	<p><i>Attendance Risk Threshold.</i> What is the threshold at which an attendance report will identify a student as being at-risk? (e.g., missing an average of three or more school days per month with unexcused absence)?</p>	<p><i>Behavior Risk Threshold.</i> What is the threshold at which frequency or type of disciplinary referrals will identify a student as being at-risk? (e.g., 2 or more disciplinary referrals of any kind per month)?</p>
<hr/>	<hr/>	<hr/>
<p><i>Grades--Person(s) Responsible.</i> Who is responsible for periodically reviewing grades to flag students who fall within the at risk range?</p>	<p><i>Attendance--Person(s) Responsible.</i> Who is responsible for periodically reviewing attendance data to flag students who fall within the at risk range?</p>	<p><i>Behavior--Person(s) Responsible.</i> Who is responsible for periodically reviewing disciplinary data to flag students who fall within the at risk range?</p>
<hr/>	<hr/>	<hr/>
<p><i>Grades--RTI Actions.</i> What action(s) will be taken for any students identified as at risk because of grades?</p>	<p><i>Attendance--RTI Actions.</i> What action(s) will be taken for any students identified as at risk because of attendance?</p>	<p><i>Behavior--RTI Actions.</i> What action(s) will be taken for any students identified as at risk because of discipline?</p>
<ul style="list-style-type: none"> • _____ • _____ • _____ 	<ul style="list-style-type: none"> • _____ • _____ • _____ 	<ul style="list-style-type: none"> • _____ • _____ • _____

Stewart, L. H. & Silbergliit, B. (2008). Best practices in developing academic local norms. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology V* (pp. 225-242). Bethesda, MD: National Association of School Psychologists.

B. CBM: 'RTI-Ready' Curriculum-Based Measures for Middle and High Schools

Directions: Select those CBM measures below to be used in your school-wide screening. Select also the grades and screening points during the school year when each selected measure will be administered. ('F'= Fall, 'W' = Winter, 'S' = Spring).

CBM Oral Reading Fluency

GR	5			6			7			8			9			10			11			12		
	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S

⌚: 1 minute Administration: 1:1

Description: The student reads aloud from a passage and is scored for fluency and accuracy. Passages are controlled for level of reading difficulty.

Online Sources for This Measure

- AimsWeb (<http://www.aimsweb.com/>). [Pay]. Site has both English and Spanish reading probes.
- DIBELS (<https://dibels.uoregon.edu/>). [Free].
- Easy CBM (<http://www.easycbm.com/>). [Free for individual teachers; subscription pricing available to school districts].
- EdCheckup (<http://www.edcheckup.com/>). [Pay].
- iSteep (<http://www.isteep.com/>). [Pay].
- Intervention Central (<http://www.rti2.org/rti2/oralReadings>). [Free]. Application that creates an oral reading fluency probe based on text supplied by the user.

CBM Maze (Reading Comprehension)

GR	5			6			7			8			9			10			11			12		
	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S

⌚: 1-3 minutes

Administration: Group

Description: The student is given a passage in which every 7th word has been removed. The student reads the passage silently. Each time the student comes to a removed word, the student chooses from among 3 replacement words: the correct word and two distractors. The student circles the replacement word that he or she believes best restores the meaning of the text.

Online Sources for This Measure

- AimsWeb (<http://www.aimsweb.com/>). [Pay].
- EdCheckup (<http://www.edcheckup.com/>). [Pay].
- iSteep (<http://www.isteep.com/>). [Pay].
- Intervention Central (<http://www.rti2.org/rti2/mazes>). [Free]. Application that creates a maze passage probe based on text typed in by the user.
- Yearly ProgressPro (<http://www.ctb.com/yearlyprogresspro>). [Pay]. Computer-delivered Maze passages.

CBM Writing

⌚: 4 minutes

Administration: Group

GR	5			6			7			8			9			10			11			12					
	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S

Description: The student is given a story starter as a writing prompt. The student spends one minute thinking about the story starter topic, then has 3 minutes to write the story. The CBM writing probe offers three scoring options: Total Number of Words Written, Correctly Spelled Words, and Correct Writing Sequences (a scoring approach that takes into account the mechanics and conventions of writing such as punctuation, spelling, capitalization, and correct semantic and syntactic usage).

Online Sources for This Measure

- AimsWeb (<http://www.aimsweb.com/>). [Pay].
- EdCheckup (<http://www.edcheckup.com/>). [Pay].
- Intervention Central (<http://www.rti2.org/rti2/writtenExpressions>). [Free]. Application that creates a writing probe using pre-entered story starters or text typed in by the user.

**CBM Math
Computation**

⌚: 2minutes

Administration: Group

GR	5			6			7			8			9			10			11			12					
	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S

Description: The student is given a worksheet with math computation problems. The worksheet may be a single-skill probe (all problems of a single type) or a mixed-skill probe (several different problem types). The completed worksheet is scored for the number of Correct Digits (digits in student answers that are of the correct value and appear in the correct place-value location).

Online Sources for This Measure

- AimsWeb (<http://www.aimsweb.com/>). [Pay].
- EdCheckup (<http://www.edcheckup.com/>). [Pay].
- iSteep (<http://www.isteep.com/>). [Pay].
- Intervention Central (<http://www.interventioncentral.org/htmldocs/tools/mathprobe/allmult.php>). [Free]. Application that single- and mixed skill math computation probes based on user-selected criteria.
- Yearly ProgressPro (<http://www.ctb.com/yearlyprogresspro>). [Pay].

CBM Math Concepts & Applications

⌚: 8-10 minutes

Administration: Group

GR	5			6			7			8			9			10			11			12					
	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S

Description: The student is given a worksheet (or completes an online assessment) that contains a mix of applied math problems that are tied to larger concepts (e.g., to the Math Focal Points from the National Council of Teachers of Mathematics).

Online Sources for This Measure

- AimsWeb (<http://www.aimsweb.com/>). [Pay].
- Easy CBM (<http://www.easycbm.com/>). [Free for individual teachers; subscription pricing available to school districts]. Student probes can be completed online.
- iSteep (<http://www.isteep.com/>). [Pay].
- Yearly ProgressPro (<http://www.ctb.com/yearlyprogresspro>). [Pay]. Computer-delivered assessments.

C. Adaptive Computerized Assessments for Middle and High Schools: Example

A screening approach that is becoming increasingly popular for middle and high schools is to assess students' academic skills relative to curriculum expectations. Such measures can fill an information gap as students move beyond acquisition of basic academic skills and move into higher level vocabulary, concepts, text interpretation, applied problem-solving and specialized knowledge. An example of a computerized, adaptive curriculum-skills assessment is the Measures of Academic Progress (MAP) system (<http://www.nwea.org>), described below.

Directions: Select when a measure like the MAP would be used in your school-wide screening. Select also the grades and screening points during the school year when each selected measure will be administered. ('F'= Fall, 'W' = Winter, 'S' = Spring).

Measures of Academic Progress (MAP)

⌚: Untimed

Administration:

Computer-administered

GR	5			6			7			8			9			10			11			12		
	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S

Description (taken from MAP basics overview, 2009): The student can complete any one of four computer assessment modules: Reading, Language Usage, Mathematics, or Science. The assessments are untimed. The MAP program is adaptive: students are dynamically presented with new assessment items based on their previous responses. The purpose of MAP is to find students' optimal 'instructional level' rather than to demonstrate content mastery. MAP assessments can be administered 3-4 times per year. The MAP system also provides expected growth rates for students and can predict student performance on state tests based on MAP scores.

Online Source for This Measure

- Northwest Evaluation Association (<http://www.nwea.org>)

Reference

Measures of Academic Progress™ (MAP) basics overview (2009). Lake Oswego, OR: Northwest Evaluation Association. Retrieved from http://www.nwea.org/sites/www.nwea.org/files/resources/MAP%20Basics_Overview.pdf

The RIOT/ICEL Matrix: Organizing Data to Answer Questions About Student Academic Performance & Behavior

The RIOT/ICEL matrix is an assessment guide to help schools efficiently to decide what relevant information to collect on student academic performance and behavior—and also how to organize that information to identify probable reasons why the student is not experiencing academic or behavioral success.

The RIOT/ICEL matrix is not itself a data collection instrument. Instead, it is an organizing framework, or heuristic, that increases schools' confidence both in the quality of the data that they collect and the findings that emerge from the data.

Select Multiple Sources of Information: RIOT (Review, Interview, Observation, Test). The top horizontal row of the RIOT/ICEL table includes four potential sources of student information: Review, Interview, Observation, and Test (RIOT). Schools should attempt to collect information from a range of sources to control for potential bias from any one source.

- **Review.** This category consists of past or present records collected on the student. Obvious examples include report cards, office disciplinary referral data, state test results, and attendance records. Less obvious examples include student work samples, physical products of teacher interventions (e.g., a sticker chart used to reward positive student behaviors), and emails sent by a teacher to a parent detailing concerns about a student's study and organizational skills.
- **Interview.** Interviews can be conducted face-to-face, via telephone, or even through email correspondence. Interviews can also be structured (that is, using a pre-determined series of questions) or follow an open-ended format, with questions guided by information supplied by the respondent. Interview targets can include those teachers, paraprofessionals, administrators, and support staff in the school setting who have worked with or had interactions with the student in the present or past. Prospective interview candidates can also consist of parents and other relatives of the student as well as the student himself or herself.
- **Observation.** Direct observation of the student's academic skills, study and organizational strategies, degree of attentional focus, and general conduct can be a useful channel of information. Observations can be more structured (e.g., tallying the frequency of call-outs or calculating the percentage of on-task intervals during a class period) or less structured (e.g., observing a student and writing a running narrative of the observed events). Obvious examples of observation include a teacher keeping a frequency count of the times that she redirects an inattentive student to task during a class period and a school psychologist observing the number of intervals that a student talks with peers during independent seatwork. Less obvious examples of observation include having a student periodically rate her own academic engagement on a 3-point scale (self-evaluation) and encouraging a parent to send to school narrative observations of her son's typical routine for completing homework.

- **Test.** Testing can be thought of as a structured and standardized observation of the student that is intended to test certain hypotheses about why the student might be struggling and what school supports would logically benefit the student (Christ, 2008). Obvious examples of testing include a curriculum-based measurement Oral Reading Fluency probe administered to determine a student's accuracy and fluency when reading grade-level texts and a state English Language Arts test that evaluates students' mastery of state literacy standards. A less obvious example of testing might be a teacher who teases out information about the student's skills and motivation on an academic task by having that student complete two equivalent timed worksheets under identical conditions—except that the student is offered an incentive for improved performance on the second worksheet but not on the first ('Can't Do/Won't Do Assessment'). Another less obvious example of testing might be a student who has developed the capacity to take chapter pre-tests in her math book, to self-grade the test, and to write down questions and areas of confusion revealed by that test for later review with the math instructor.

Investigate Multiple Factors Affecting Student Learning: ICEL (Instruction, Curriculum, Environment, Learner). The leftmost vertical column of the RIO/ICEL table includes four key domains of learning to be assessed: Instruction, Curriculum, Environment, and Learner (ICEL). A common mistake that schools often make is to assume that student learning problems exist primarily in the learner and to underestimate the degree to which teacher instructional strategies, curriculum demands, and environmental influences impact the learner's academic performance. The ICEL elements ensure that a full range of relevant explanations for student problems are examined.

- **Instruction.** The purpose of investigating the 'instruction' domain is to uncover any instructional practices that either help the student to learn more effectively or interfere with that student's learning. More obvious instructional questions to investigate would be whether specific teaching strategies for activating prior knowledge better prepare the student to master new information or whether a student benefits optimally from the large-group lecture format that is often used in a classroom. A less obvious example of an instructional question would be whether a particular student learns better through teacher-delivered or self-directed, computer-administered instruction.
- **Curriculum.** 'Curriculum' represents the full set of academic skills that a student is expected to have mastered in a specific academic area at a given point in time. To adequately evaluate a student's acquisition of academic skills, of course, the educator must (1) know the school's curriculum (and related state academic performance standards), (2) be able to inventory the specific academic skills that the student currently possesses, and then (3) identify gaps between curriculum expectations and actual student skills. (This process of uncovering student academic skill gaps is sometimes referred to as 'instructional' or 'analytic' assessment.) More obvious examples of curriculum questions include checking whether a student knows how to compute a multiplication problem with double-digit terms and regrouping or whether that student knows key facts about the Civil War. A less obvious curriculum-related question might be whether a student possesses the full range of essential academic vocabulary (e.g., terms such as 'hypothesis') required for success in the grade 10 curriculum.

- **Environment.** The 'environment' includes any factors in the student's school, community, or home surroundings that can directly enable their academic success or hinder that success. Obvious questions about environmental factors that impact learning include whether a student's educational performance is better or worse in the presence of certain peers and whether having additional adult supervision during a study hall results in higher student work productivity. Less obvious questions about the learning environment include whether a student has a setting at home that is conducive to completing homework or whether chaotic hallway conditions are delaying that student's transitioning between classes and therefore reducing available learning time.
- **Learner.** While the student is at the center of any questions of instruction, curriculum, and [learning] environment, the 'learner' domain includes those qualities of the student that represent their unique capacities and traits. More obvious examples of questions that relate to the learner include investigating whether a student has stable and high rates of inattention across different classrooms or evaluating the efficiency of a student's study habits and test-taking skills. A less obvious example of a question that relates to the learner is whether a student harbors a low sense of self-efficacy in mathematics that is interfering with that learner's willingness to put appropriate effort into math courses.

References

Christ, T. (2008). Best practices in problem analysis. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology V* (pp. 159-176). Bethesda, MD: National Association of School Psychologists.

RIOT/ICEL Assessment Worksheet

Student: _____ Person Completing Worksheet: _____

Date: _____ Statement of Student Problem: _____

Directions: Fill out the grid below to develop an assessment plan for the targeted student.

	Review	Interview	Observe	Test
Instruction				
Curriculum				
Environment				
Learner				

Daily Behavior Report Cards: A Convenient Behavior Monitoring Tool

Daily Behavior Report Cards (DBRCs) are behavior rating forms that teachers use to evaluate the student's global behaviors on a daily basis or even more frequently. An advantage of DBRCs is that these rating forms are quick and convenient for the teacher to complete. This section contains daily and weekly versions of a generic DBRC, as well as a progress-monitoring chart to record cumulative DBRC ratings.

Increasing the Reliability of DBRCs. DBRCs rely heavily on teacher judgment and therefore can present a somewhat subjective view of the student's behavior. When a teacher's ratings on DBRCs are based on subjective opinions, there is a danger that the teacher will apply inconsistent standards each day when rating student behaviors. This inconsistency in assessment can limit the usefulness of report card data. One suggestion that teachers can follow to make it more likely that their report card ratings are consistent and objective over time is to come up with specific guidelines for rating each behavioral goal. For example, one item in the sample DBRC included in this section states that *"The student spoke respectfully and complied with adult requests without argument or complaint."* It is up to the teacher to decide how to translate so general a goal into a rubric of specific, observable criteria that permits the teacher to rate the student on this item according to a 9-point scale. In developing such criteria, the instructor will want to consider:

- *taking into account student developmental considerations.* For example, "Without argument or complaint" may mean "without throwing a tantrum" for a kindergarten student but mean "without loud, defiant talking-back" for a student in middle school.
- *tying Report Card ratings to classroom behavioral norms.* For each behavioral goal, the teacher may want to think of what the typical classroom norm is for this behavior and assign to the classroom norm a specific number rating. The teacher may decide, for instance, that the target student will earn a rating of 7 ('Usually/Always') each day that the student's compliance with adult requests closely matches that of the 'average' child in the classroom.
- *developing numerical criteria when appropriate.* For some items, the teacher may be able to translate certain more general Report Card goals into specific numeric ratings. If a DBRC item rates a student's compliance with adult requests, for example, the teacher may decide that the student is eligible to earn a rating of 7 or higher on this item on days during which instructional staff had to approach the student no more than once about noncompliance.

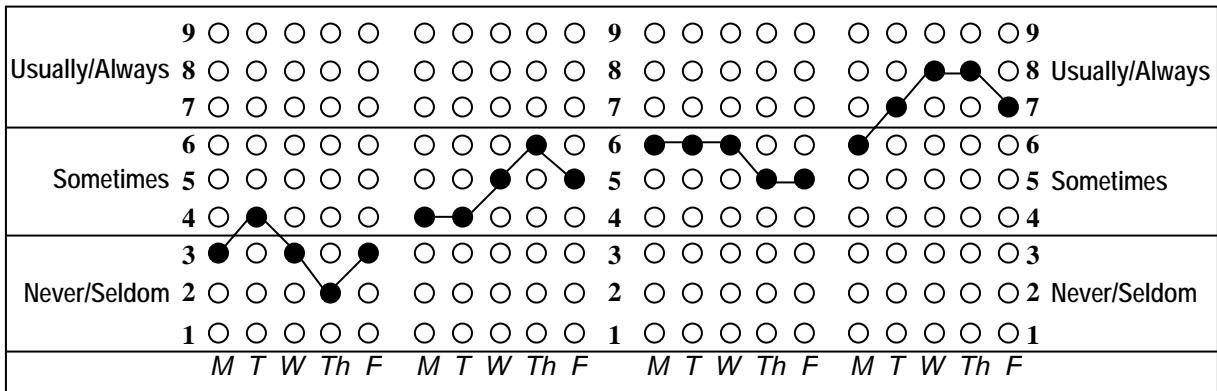
Charting Report Card Ratings. Daily Behavior Report Card ratings can be charted over time to provide a visual display of the student's progress toward behavioral goals. The sample DBRC (daily and weekly versions) included in this section has its own progress-monitoring chart, which permits the teacher to graph student behavior for up to 4 school weeks. The instructor simply fills in the bubble each day that matches the numerical rating that he or she assigned to the student for the specific behavioral goal. As multiple points are filled in on the graph, the instructor connects those points to create a time-series progress graph. (Figure 1 contains an example of a completed progress-monitoring chart.) When enough data points have been charted, the behavior graph can be used to judge the relative effectiveness of any strategies put in place to improve the student's behavior.

Using DBRCs as a Self-Monitoring Intervention. DBRCs are primarily used as a behavior-monitoring tool. However, teachers may also choose to use DBRCs as part of a student self-monitoring program, in which the student rates their own behaviors each day. If teachers decide to use student behavior report cards for self-monitoring, they should first identify and demonstrate for the student the behaviors that the

student is to monitor and show the student how to complete the behavior report card. Since it is important that the student learn the teacher's behavioral expectations, the instructor should meet with the student daily, ask the student to rate their own behaviors, and then share with the student the *teacher's* ratings of those same behaviors. The teacher and student can use this time to discuss any discrepancies in rating between their two forms. (If report card ratings points are to be applied toward a student reward program, the teacher might consider allowing points earned on a particular card item to count toward a reward *only* if the student's ratings fall within a point of the teacher's, to encourage the student to be accurate in their ratings.)

Figure 1: Example of completed DBRC progress-monitoring form

During instructional periods, the student focused his or her attention on teacher instructions, classroom lessons and assigned work.



Daily Classroom Behavior Report Card

Student: _____	Date: _____
Teacher: _____	Classroom: _____

Directions: Review each of the Behavior Report Card items below. For each item, rate the degree to which the student showed the behavior or met the behavior goal.

During instructional periods, the student focused his or her attention on teacher instructions, classroom lessons and assigned work.

Circle the degree to which the student met the behavioral goal:
1.....2.....3 | 4.....5.....6 | 7.....8.....9
Never/Seldom Sometimes Usually/Always

The student interacted with classmates appropriately and respectfully.

Circle the degree to which the student met the behavioral goal:
1.....2.....3 | 4.....5.....6 | 7.....8.....9
Never/Seldom Sometimes Usually/Always

The student completed and turned in his or her assigned class work on time.

Circle the degree to which the student met the behavioral goal:
1.....2.....3 | 4.....5.....6 | 7.....8.....9
Never/Seldom Sometimes Usually/Always

The student spoke respectfully and complied with adult requests without argument or complaint.

Circle the degree to which the student met the behavioral goal:
1.....2.....3 | 4.....5.....6 | 7.....8.....9
Never/Seldom Sometimes Usually/Always

Using Response to Intervention to Determine Special Education Eligibility: Laying the Foundation

As school districts grow their capacity to provide RTI support to struggling students, they must also develop the decision rules required to determine when students who fail to respond to general-education interventions may need special education support. While existing research gives us only a partial roadmap for what the process will look like for diagnosing Learning Disabilities under RTI, there are sufficient guideposts in place to allow districts to get started immediately in developing their own capacity to use RTI information at special education eligibility meetings. Listed below are factors for districts to consider:

Section 1: Building the Foundation. Before an effective set of decision rules can be developed to determine student eligibility for special education, the school must first put into place these foundation components and procedures.

- **Ensure Tier 1 (Classroom) Capacity to Carry Out Quality Interventions.** The classroom teacher is the ‘first responder’ available to address emerging student academic concerns. Therefore, general-education teachers should have the capacity to define student academic concerns in specific terms, independently choose and carry out appropriate evidence-based Tier 1 (classroom) interventions, and document student response to those interventions. (NOTE: See attached form *Tier 1 (Classroom) Interventions: Building Your School’s Capacity* for an 8-step process to promote teacher intervention skills.)
- **Collect Benchmarking/Universal Screening Data on Key Reading and Math (and Perhaps Other) Academic Skills for Each Grade Level.** Benchmarking data is collected on all students at least three times per year (fall, winter, spring). Measures selected for benchmarking should track student fluency and accuracy in basic academic skills that are key to success at each grade level.
- **Hold ‘Data Meetings’ With Each Grade Level.** After each benchmarking period (fall, winter, spring), the school organizes data meetings by grade level. The building administrator, classroom teachers, and perhaps other staff (e.g., reading specialist, school psychologist) meet to:
 - review student benchmark data.
 - discuss how classroom (Tier 1) instruction should be changed to accommodate the student needs revealed in the benchmarking data.
 - select students for Tier 2 (supplemental group) instruction/intervention.

Section 2: Creating Special Education Eligibility Decision Rules. Fuchs (2003) has formulated the ‘dual discrepancy model’, an influential conceptual framework for defining Learning Disabilities under RTI. According to this model, a student qualifies as LD only if (A) there is a significant academic skill gap between the target student and typical peers (discrepancy 1), and (B) the target student fails to make adequate progress to close the skill gap despite appropriate interventions (discrepancy 2). In line with RTI logic, then, the school makes the initial assumption

that students with emerging academic concerns have typical abilities and simply require the 'right' instructional strategies to be successful. Your district must develop decision rules that allow you to evaluate data collected during successive intervention trials to identify with confidence those students who are 'non-responders' to Tier 2 and Tier 3 interventions and may require special education services.

- **Establish the Minimum Number of Intervention Trials Required Prior to a Special Education Referral.** Your district should require a sufficient number of intervention trials to definitively rule out instructional variables as possible reasons for student academic delays. Many districts require that at least three Tier 2 (small-group supplemental) and/or Tier 3 (intensive, highly individualized) intervention trials be attempted before moving forward with a special education evaluation.
- **Determine the Minimum Timespan for Each Tier 2 or Tier 3 Intervention Trial.** An intervention trial should last long enough to show definitively whether it was effective. One expert recommendation (Burns & Gibbons, 2008) is that each academic intervention trial should last at least 8 instructional weeks to allow enough time for the school to collect sufficient data to generate a reliable trend line.
- **Define the Level of Student Academic Delay That Will Qualify as a Significant Skill Discrepancy.** Not all students with academic delays require special education services; those with more modest deficits may benefit from general-education supplemental interventions alone. Your district should develop guidelines for determining whether a student's academic skills should be judge as significantly delayed when compared to those of peers:
 - If using local Curriculum-Based Measurement norms, set an appropriate 'cutpoint' score (e.g., at the 10th percentile). Any student performing below that cutpoint would be identified as having a significant gap in skills.
 - If using reliable national or research norms (e.g., reading fluency norms from Hasbrouck & Tindal, 2004), set an appropriate 'cutpoint' score (e.g., at the 10th percentile). Any student performing below that cutpoint would be identified as having a significant gap in skills.
- **Define the Rate of Student Progress That Will Qualify as a Significant Discrepancy in Rate of Learning.** The question of whether a student has made adequate progress when on intervention is complex. While each student case must be considered on its own merits, however, your district can bring consistency to the process of judging the efficacy of interventions by discussing the factors below and ensuring to the maximum degree possible that your district adopts uniform expectations:
 1. *Define 'grade level performance'.* The goal of academic intervention is to bring student skills to grade level. However, your district may want to specify what is meant by 'grade level' performance. Local CBM norms or reliable national or research norms can be helpful here. The district can set a cutpoint that sets a minimum threshold for 'typical student performance' (e.g., 25th percentile or above on local or research norms). Students

whose performance is above the cutpoint would fall within the 'reachable, teachable range' and could be adequately instructed by the classroom teacher.

2. *Set ambitious but realistic goals for student improvement.* When an intervention plan is put into place, the school should predict a rate of student academic improvement that is ambitious but realistic (Hosp, Hosp, and Howell, 2007). During a typical intervention series, a student usually works toward intermediate goals for improvement, and an intermediate goal is reset at a higher level each time that the student attains it. The ultimate goal, of course, is to move the student up to grade-level performance (defined above). The school should be able to supply a rationale for how it set goals for rate of student improvement. For example, a school may use research guidelines in oral reading fluency growth (Fuchs, Fuchs, Hamlett, Walz, & Germann, 1993) to set a goal. Or the school may use local norms to compute a weekly goal for improvement by (1) calculating the amount of progress that the student needs to close to reach grade-level performance and (2) dividing that figure by the number of weeks available for intervention.
3. *Decide on a reasonable time horizon to 'catch' the student up with his or her peers.* Interventions for students with serious academic delays cannot be successfully completed overnight. It is equally true, though, that interventions cannot stretch on without end if the student fails to make adequate progress. Your district should decide on a reasonable span of time in which a student on intervention should be expected to close the gap and reach grade level performance (e.g., 12 months). Failure to close that gap within the expected timespan may be partial evidence that the student requires special education support.
4. *View student progress-monitoring data in relation to peer norms.* When viewed in isolation, student progress-monitoring data tells only part of the story. Even if students shows modest progress, they may still be falling farther and farther behind their peers in the academic skill of concern. Your district should evaluate student progress relative to peers. If the skill gap between the student and their peers (as determined through repeated school-wide benchmarking) continues to widen, despite the school's most intensive intervention efforts, this may be partial evidence that the student requires special education support.
5. *Set uniform expectations for how progress-monitoring data are presented at special education eligibility meetings.* Your district should adopt guidelines for schools in collecting and presenting student progress-monitoring information at special education eligibility meetings. For example, it is recommended that curriculum-based measurement or similar data be presented as time-series charts. These charts should include trend lines to summarize visually the student's rate of academic growth, as well as a 'goal line' indicating the intermediate or final performance goal toward which the student is working.

References

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