RTI Toolkit: A Practical Guide for Schools

Removing the Blindfold: How to Use Classroom Data to Monitor Student Progress

Jim Wright, Presenter

Email: jimw13159@gmail.com
Workshop Downloads at: http://www.interventioncentral.org/rcscsd

Monitoring Student Progress on Classroom Interventions: 5 Big Ideas

Teachers collect and interpret multiple streams of classroom data continuously to make ongoing judgments about whether groups or individual learners are understanding instructional content, making adequate progress in coursework, and behaving appropriately. Here are five 'big ideas' about monitoring student progress that can assist teachers in collecting more useful data efficiently and making better decisions about students' response to classroom interventions.

1. Define the student problem clearly. Before the teacher can select a method of data collection to monitor student progress, that instructor must first define the academic or behavioral problem clearly (Christ, 2008). Clear definitions of the presenting concern are called 'problem identification [ID] statements'.

   Problem ID statements can often be improved by making them more specific and, when appropriate, by adding information about frequency, intensity, or other objective data to clarify the severity of the problem. For example, an instructor may initially come up with this problem ID statement, 'Angela is disruptive in class.' This vague statement can be improved with detail, e.g., 'Angela argues and refuses to comply when given a teacher request.' Similarly, a teacher's concern that 'Sam never turns in homework' can be improved if she consults her gradebook for information about how frequently the student submits work, e.g., 'Sam turns in homework only about 25 percent of the time.'

   Table 1 provides examples of how to compose specific, data-based problem-ID statements.

Table 1: How to Strengthen Descriptions of Academic and Other Behaviors

Descriptions needing improvement.	*Joshua does not know his math facts.* This description is too general: what does it mean to 'know a math fact' and what specific facts does the student not know?	*Anne doesn't respect adults.* This description is vaguely worded and includes an unnecessary value judgement.
1. Get Specific. Describe behaviors in specific terms without added value judgments.	*Joshua does not know his multiplication 0-12 math facts.*	*Anne often fails to comply with teacher requests.*
2. Use Data. Make use of available data (when available) to provide additional information about current student performance.	*When shown multiplication 0-12 Scholastic math-fact flash cards for 3 seconds, Joshua can answer 32 of 58 correctly.*	*When given directives in math class, Anne complies with those directives about 50% of the time.*
3. Reframe. State behaviors (when possible) as positive 'goal' statements.	*When shown multiplication 0-12 Scholastic math-fact flash cards for 3 seconds, Joshua will answer 58 of 58 correctly [with 95% accuracy].*	*When given directives in math class, Anne will comply with those directives within 1 minute without argument or complaint at least 90% of the time.*

2. Take full advantage of practical progress-monitoring tools available in the classroom. There are a range of data-collection methods that teachers can use to track student progress on academic or behavioral interventions, such as grades, rubrics, student interviews, behavior report cards, and checklists. Most of these measures are teacher-made and have the advantage of measuring the student's actual observed behavior or

academic performance (Howell, Hosp & Kurns, 2008).

A concern sometimes raised about such 'informal' measures is that they appear to lack the rigor of norm-referenced assessments—such as curriculum-based measurement or commercial tests—that schools use to make high-stakes judgments about the effectiveness of more intensive RTI interventions and special-education programming. However, the stakes of classroom (Tier 1) interventions are typically lower than these more advanced interventions because the teacher is proactively addressing emerging concerns *before* they escalate. The reduced stakes mean that the measures used to track success on these general-education interventions can also be less rigorous (Hosp, 2008).

3. Baseline: Know the student's starting point. When preparing to monitor a student on intervention, the teacher typically first collects 'baseline' data. In this step, the instructor assesses the student's academic or behavioral performance on one or more occasions *before* the intervention starts—and uses this preliminary data to estimate that student's starting point or current level of performance (Hixson, Christ & Bruni, 2014). Of course, baseline data is collected employing the same method of formative assessment that will be used to track progress during the intervention phase. Baseline data is helpful in calculating an intervention goal (see below). Of equal importance, baseline information can be used as a point of comparison throughout the intervention period to judge whether that student has made progress.

4. Set an intervention goal. The teacher has a last task to complete before launching an intervention and monitoring progress: establish an outcome goal for the student (Hixson, Christ & Bruni, 2014). To compute this outcome goal, the instructor decides how many instructional weeks the intervention will last and calculates a 'realistic but ambitious' performance goal that the student is expected to meet or exceed by the conclusion of the intervention period. The importance of the intervention goal, of course, is that it allows the teacher a simple, unambiguous standard against which to judge the success of the intervention. Without such a goal to work toward, the instructor is flying blind, unable to ascertain whether the student's current intervention performance falls short of, meets, or exceeds expectations.

5. Reduce the 'noise' in the data. A central truth about real-world student performance data of any kind is that each data-point contains both real information and an element of error (Hosp, 2008). Error in measurement is a natural element of data collection and can arise from many sources, including fluctuations in student mood and motivation; variability in educators' approach to data collection, scoring, and interpretation; and even the presence of environmental distractions that interfere with focus and concentration. Error in data collection is ever-present. Teachers, however, can take action to minimize the 'noise', or 'error', and to maximize the 'signal', or 'true' information, that data contains—for example, by developing standardized procedures for collecting and evaluating data of any kind and consistently following those methods or ensuring that the student is focused and sufficiently motivated before participating in an assessment session.

References

Christ, T. J. (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.

Hixson, M. D., Christ, T. J., & Bruni, T. (2014). Best practices in the analysis of progress monitoring data and decision making in A. Thomas & Patti Harris (Eds.), *Best Practices in School Psychology VI* (pp. 343-354). Silver Springs, MD: National Association of School Psychologists.

Hosp, J. L. (2008). Best practices in aligning academic assessment with instruction. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology V* (pp.363-376). Bethesda, MD: National Association of School Psychologists.

Howell, K. W., Hosp, J. L., & Kurns, S. (2008). Best practices in curriculum-based evaluation. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology V* (pp.349-362). Bethesda, MD: National Association of School Psychologists.

Classroom Data Tools: What Are They and What Can They Measure?

When a teacher wants to monitor a student's progress on a classroom academic intervention, the instructor will (1) decide what data 'channel' to use to collect that data, and then (2) select a data tool designed to capture the desired information. Here are those steps:

Step 1: Select a Data 'Channel'. While there are many ways to collect data to monitor student academic performance, virtually all information is gathered through one of four general 'data channels': direct observation, interviews, work products, or self-monitoring.

- *Direct observation*. The evaluator watches the student engaged in the academic task and records significant behaviors observed during that observation.
- *Interviews*. The evaluator talks with the student and/or adults familiar with the student to collect useful information about the student's academic performance.
- *Work products*. The evaluator reviews completed student work (e.g., in-class or homework assignments, quizzes and tests, etc.) to draw conclusions about that student's academic performance.
- *Self-monitoring*. The student collects information about his or her own academic performance and shares that data with the evaluator.

The four channels described here give teachers access to vital information on student performance. However, it is likely that the data the teacher collects across multiple situations will be highly variable and subjective—unless that instructor makes an effort to collect information in a structured, consistent format over time.

For example, a teacher might *observe* a student weekly during independent work to monitor whether the learner is consistently applying all steps of an academic strategy. If the teacher simply jots down random notes during these observations, the information collected will probably vary considerably across time, depending on what the teacher decides to include in his notes on any given day. If instead, however, the teacher uses a checklist that includes the essential steps in the academic strategy, that instructor's observations are far more likely to record accurately and consistently what steps in the strategy the student actually uses.

Checklists, rubrics, and other tools can transform information collected via observation, interviews, work products, or self-monitoring into objective formative data that can be charted over time to track the outcomes of classroom interventions.

Step 2: Select a Data Tool. Teachers have a variety of tools that they can access to collect behavioral or academic information and monitor classroom interventions. This 'look-up' chart provides a review of the most common data sources and what they can measure:

Data Tool	What It Is	What It Can Measure
Archival Data	Existing data routinely collected by schools that provides useful ongoing information about the student's academic or behavioral performance.	• Attendance • Office disciplinary referrals • Other aspects of behavior or academic performance captured in the school database

Behavior Report Cards	A teacher-created rating scale that measures student classroom behaviors. A behavior report card contains 3-4 rating items describing goal behaviors. Each item includes an appropriate rating scale (e.g., Poor-Fair-Good). At the end of an observation period, the rater fills out the report card as a summary snapshot of the student's behavior.	• General behaviors (e.g., complies with teacher requests; waits to be called on before responding) • Academic 'enabling' behaviors (e.g., has all necessary work materials; writes down homework assignment correctly and completely, etc.)
Checklists	The dividing of a larger behavioral task or sequence into constituent steps, sub-skills, or components. Each checklist element is defined in a manner that allows the observer to make a clear judgment (e.g., YES/NO, COMPLETED/NOT COMPLETED) about whether the student is displaying it.	• Step-by-step cognitive strategies • Behavioral routines • Generalization: Target behavior carried out across settings
Cumulative Mastery Records	A cumulative record of the student's acquisition/mastery of a defined collection of academic items such as multiplication math facts. This record is updated after every intervention session.	• Any discrete collection of academic items to be mastered: e.g., vocabulary, math facts, spelling words, letter or number names
Curriculum-Based Measures/ Assessment	A series of brief measures of basic academic skills given under timed conditions and scored using standardized procedures. CBM/CBA measures often include research-derived benchmark norms to assist in evaluating the student's performance.	• Speed and accuracy in basic academic skills: e.g., letter naming, number naming, number sense, vocabulary, oral reading fluency, reading comprehension (maze), production of writing, math fact computation
Grades	Represent in letter or number form the teacher's formal, summary evaluation of the student's academic performance on an assignment, quiz, test, or longer span of evaluation.	• Homework grades • Test grades • Quarterly report card grades
Logs	Written adult or student entries that track the frequency (and additional relevant details) of relevant academic performance and/or behaviors.	• Homework completion • Incidents of non-compliance • Student record of dates when he or she uses a self-guided academic intervention. • Listing of student-teacher meetings.
Rubrics	An instrument designed to measure a student on complex tasks. In a rubric, the teacher defines the categories that make up the important dimensions of a task, develops written exemplars representing mastery for each dimension, and creates a rating scale to be used in evaluating a particular student's work for each dimension.	• Any complex, multi-dimensional task: e.g., participation in a discussion; writing a research paper; preparing and presenting a PowerPoint; completing and documenting a science lab project, etc.
Work Products	Student work that reflects performance on a series of similar in-class or homework	• Work completion • Work accuracy

	assignments (e.g., successive writing assignments or ongoing math homework). A work product is selected because it can reflect growth in the intervention target skill(s). The element(s) of the work product being tracked can be objectively measures and converted to numeric data (e.g., percentage of problems completed).	• Written evidence of problem-solving steps • Quality of student work (e.g., on writing assignments)

Progress-Monitoring Questions: How Do I Measure…?

Before a teacher can select a method to monitor a student intervention, that instructor must first decide what assessment question(s) to answer. This 'look-up' chart lists the most common classroom assessment questions and specific assessments that can answer those questions.

Assessment Questions: How do I measure if the student…	Suggested Methods of Progress-Monitoring
• is becoming more accurate in an academic skill (goal: accuracy only)?	• Cumulative Mastery Record: This approach is suitable when the student is mastering a fixed set of items (e.g., biology vocabulary; multiplication math facts 0-12). • Observation/Log: The teacher observes and records instances of successful student performance. • Work product: The teacher examines student work and records the number/percentage of items correct.
• is developing fluency in an academic skill (goal: accuracy plus speed)?	• Curriculum-based measures: CBMs are a good choice for rote basic skills such as reading fluency or math fact fluency. • Other timed measures: Teachers can create their own timed proficiency assessments--that assess work efficiency by measuring accurate responding within pre-set time limits (e.g., running record).
• is increasing comprehension of independent reading?	• Grades: Assignments or quizzes are structured to assess student comprehension of assigned readings and collected with sufficient frequency to capture evidence of short-term improvements. • Work product: Short-answer questions. The teacher prepares questions suitable for assessing student comprehension of the reading (e.g., mix of factual and inferential questions). Question sets can be assigned as homework or included in quizzes. • Written-Retell Rubric. The student is assigned to summarize important points of assigned readings ('written retellings'); the teacher uses a rubric to record/evaluate 'key ideas' or concepts included in the retelling.
• is mastering a multi-step cognitive strategy or behavior routine?	• Checklist: The teacher or student uses a checklist to verify steps of the strategy successfully completed. • Work product: The student is directed to show work on assignment, e.g., perhaps assisted by visual organizers or other aids highlighting strategy steps. The teacher reviews completed work for evidence of strategy use. • Observation/Interview: An adult observes the student during the activity to record (perhaps with the help of a checklist or behavior report card) those steps successfully carried out. The observer may also ask the student to describe the steps being followed.
• is turning in homework or in-class assignments with greater frequency?	• Log: The teacher keeps a record of homework turned in.

	• Self-Monitoring: The student completes a daily classwork-readiness checklist that includes an item on whether homework was submitted.
• produces work of higher quality?	• Rubric: The teacher or student rates the quality of the work. • Checklist: The teacher or student rates whether each element or step in the assignment is complete. • Work product: The teacher defines what element(s) are missing or substandard in student work, monitor their inclusion and/or and quality over time.
• is increasing on-task behavior and academic engagement?	• Behavior report card: Rating items are specific to on-task behavior and work engagement. • Work product: Monitor amount/quality/accuracy of completed student in-class work. Improvements in work production correlate with increased on-task behavior.
• is better able to organize and implement steps necessary to complete an in-class or homework assignment?	• Checklist: Recommended if assignment steps can be rated simply COMPLETED/NOT COMPLETED. • Rubric: Recommended if assignment steps are more complex and rated along a quality continuum.
• transfers an existing skill or strategy to new settings or situations (goal: generalization)?	• Observer/Checklist: The observer notes whether the student follows the steps of the checklist in the appropriate situations or settings. • Interview/Checklist: Student is asked structured set of questions about successful use of the target skill/strategy in the target setting(s).
• improves compliance with behavioral expectations?	• Behavior report card: Rating items track compliance. • Logs: The teacher keeps a log recording incidents of misbehavior, etc. • Archival records: Office Disciplinary Referrals are tracked for incidents of non-compliance.
• improves overall academic standing in the course because of academic interventions?	• Grades. Grades are designed to reflect general improvements in academic performance. Ideally, grading opportunities are frequent and the grades used to evaluate academic improvement are a 'pure' measure of academic attainment.

Setting Outcome Goals for Academic Interventions: Benchmarks, Local Norms, and Criterion-Referenced Goals

When planning any intervention, an essential step is to calculate an outcome goal—that is, the goal used ultimately to judge whether the intervention is successful. An outcome goal typically represents improvement on one of these 2 targets:

- Observable student behavior (e.g., call outs, engagement in independent seatwork, compliance with teacher requests; number of words read correctly per minute in a grade-level text).
- Student performance on work products (e.g., number of correctly completed math problems, percentage of homework turned in, grade on a mid-term exam).

The outcome goal represents the minimum improvement in student performance or work production that indicates that a classroom intervention is successful. So, the outcome goal is selected *before* the intervention begins. There are 3 main options for setting an outcome goal. The goal can be:

1. calculated using benchmark data with research norms.
2. developed based on local/classroom norms
3. based on a teacher-selected standard (criterion-referenced)

Here is a general description of each of these methods for establishing outcome goals:

1. Benchmark data with research norms. For some basic academic skills, teachers can access published norms by grade level that can be used to set intervention goals. Benchmark norms are a type of *norm-referenced assessment*, as they allow the instructor to rank a particular student's performance (e.g., 50th percentile; 10th percentile) relative to that of grade-level peers. When available, benchmark norms are usually recommended as the best guide to use in goal-setting because they are derived from research. (A number of commercial screening and progress-monitoring tools for academic skills come with their own benchmark norms, including AIMSweb, FASTBridge, EasyCBM, and iSteep.)

   As one illustration of a benchmarked skill, oral reading fluency (ORF) can be precisely measured using curriculum-based measurement (CBM). On ORF-CBM, the student reads aloud for 1 minute from a controlled passage and receives a score for number of words read correctly. Consulting benchmark norms (Hasbrouck & Tindal, 2017), for example, a 4th-grade teacher discovers that a 4th-grade student in the middle of the school year performing at the 25th percentile reads 95 words per minute. (See Table 1.) The instructor can use this information as a starting point to calculate an intervention goal for a student in his classroom with reading-fluency delays.

Table 1: Benchmarks: Norm-Referenced Assessment Example: Grade 4: Oral Reading Fluency

	Percentile	Words Correct Per Min (WCPM)
Grade 4	90	168
	75	143
	50	120
	25	95
	10	71

Source: Hasbrouck, J. & Tindal, G. (2017). An update to compiled

ORF norms (Technical Report No.1702). Eugene, OR, Behavioral Research and Teaching, University of Oregon.

2. Local/classroom norms: Tie goals to typical classroom performance. For many classroom academic skills or behaviors (e.g., percentage of homework assignments turned in), no benchmark norms exist. Yet the teacher may wish to discover how 'typical' students in a class perform in these skills or behaviors—and use this information about average proficiency to set outcome goals for particular struggling students.

   In this situation, that instructor may decide to sample the entire class or a representative sub-group to obtain 'local norms' as an estimate of average performance. Those local norms are then used to calculate an outcome goal for any student targeted for an intervention (Christ, 2008). (NOTE: When analyzing local norms, it is generally recommended that the *median* score be used to represent a class-wide or group average, rather than the *arithmetic mean*—as median values are less likely to be distorted by extreme high or low values in the data-set.)

   An advantage of local norms is that they are anchored to current, real-life levels of classroom performance. The 2 most frequent types of local norms that teachers collect are class-wide and sub-group norms. Here are examples of each:

   - *Class-wide norms: Math-facts.* An instructor in a 3rd-grade classroom administers a timed (2-minute) math worksheet with basic multiplication facts to the entire class. The teacher counts up the number of correct digits on each student's worksheet and then reviews the data from all worksheets to find that the average (median) student writes 62 correct digits. The teacher then identifies one student in the class, Sally, whose multiplication-fact fluency is only 22 correct digits. The teacher can use the class-wide norm of 62 correct digits as a starting point to calculate an intervention goal intended eventually to bring that student's multiplication-fact fluency up to the classroom average.

   - *Class-wide norms: Homework completion.* A teacher routinely logs all submitted homework for his class into a spreadsheet that automatically calculates percentage of assignments turned in for each student. The instructor's records show that the class-wide average for submitted homework is 90 percent. He has a target student whose homework completion is only 50 percent. So, the class-wide average (local norm) is useful in setting an ambitious but realistic goal for a homework intervention plan.

   - *Sub-group norms: Writing fluency.* Teachers can also sample a sub-group of the class to develop local norms. While sub-group norms are less rigorous than class-wide norms, they are also easier to collect and calculate. For example, an instructor collects a writing assignment from a sample of 5 'typical' students in her class that she judges to have grade-appropriate writing skills and counts up the number of words in each composition. She ranks the students' results from low to high (see Table 2).

Table 2: Local Norm Group Example: Writing Assignment: Word Count				
Lucy	Ricky	Alyssa	Tyrell	Ariadne
103	107	122	132	136

   The teacher has a student, Russell, who produces very short compositions (i.e., writing only 42 words on the current writing assignment). The instructor can use the local norms to set a realistic writing-fluency goal for Russell. For example, the teacher may select a word-count goal for Russell to produce 103 words on

future writing assignments, as that would have him writing within the lower range of 'typical' writing fluency represented in these local norms.

3. Teacher-selected standard (criterion-referenced goals). In many cases, an instructor does not care to know how a student ranks among peers in a skill—the goal is simply that the student *master* that skill and advance to the next challenge. This type of goal is called 'criterion-referenced', as it is framed as the student's attainment or failure to reach a pre-selected criterion for performance (Criterion-referenced test, 2014). The teacher chooses the performance goal and the criteria for judging success. Here the student's performance is compared solely to a teacher-selected standard, with no element of peer comparison.

   Here are examples of teacher-selected (criterion-referenced) goals:

   - *Common-Core Learning Standard.* Criterion-referenced goals are sometimes imposed by others. For example, a Common Core State Standard for Mathematics states that, by the end of grade 3, the student will "know from memory all products of two one-digit numbers." (CCSS Math; p. 23). A teacher selecting this standard as the objective for a math intervention will select the goal of 100% mastery of all one-digit by one-digit multiplication facts. That instructor does not care to assess how the target student performs relative to peers, only whether the learner attains the minimum expectations of the standard.

   - *Course pre-requisite skill.* A teacher may select as a goal a skill that is a pre-requisite for success in a particular course. For example, a science teacher compiles a list of 20 essential vocabulary terms that students must know as a prerequisite for her biology course. When a student in the course is found to lack an understanding of 13 of the 20 terms, the criterion-referenced intervention goal is for the student to master all of the vocabulary terms.

   - *Cognitive strategy.* If the student is expected to master a multi-step cognitive strategy (e.g., to solve a math word problem), the teacher may set as a criterion-referenced goal that the student will use all steps of the strategy successfully during independent work. To assess attainment of this goal, the teacher could conduct an observation, directing the student to narrate aloud steps of his or her problem-solving while completing several word problems. Or the instructor may instruct the student to label each problem-solving step and show all work before turning in the worksheet. Whether through observation or review of completed work, the instructor can discern whether the student meets the criterion of successful strategy use.

References

CCSS Math: National Governors Association Center for Best Practices & Council of Chief State School Officers. (2010). *Common core state standards for mathematics.* Washington, DC: Authors. Retrieved from http://www.corestandards.org/

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.

Criterion-referenced test (2014, April 30). In S. Abbott (Ed.), The glossary of education reform. Retrieved from http://edglossary.org/criterion-referenced-test/

Hasbrouck, J. & Tindal, G. (2017). *An update to compiled ORF norms* (Technical Report No.1702). Eugene, OR, Behavioral Research and Teaching, University of Oregon.

7 Steps to Monitor Progress on Tier 1/Classroom Interventions

RTI/MTSS By Jim Wright, Contributing Consultant to Frontline Education on 1/15/2019

When I visit schools as an RTI/MTSS consultant and talk with teachers about Tier 1/classroom academic interventions, I often hear frustration over the difficulty of collecting and interpreting data to monitor student progress. Yet, the critical importance of data is that it 'tells the story' of the academic or behavioral intervention, revealing the answers to such central questions as:

- what specific skills or behaviors does the student find challenging?
- what is the student's baseline or starting point?
- what outcome goal would define success for this student?
- has the student reached the goal?

If the information required to answer any of these questions is missing, the data story becomes garbled and teachers can find themselves unsure about the purpose and/or outcome of the intervention.

While following a guide does not eliminate all difficulties in tracking Tier 1/classroom interventions, these 7 steps will help the educators you work with ask the right questions, collect useful data and arrive at meaningful answers at Tier 1.

STEP 1: What skill or behavior is being measured?

The first step in setting up a plan to monitor a student is to choose the specific skill or behavior to measure. Your 'problem-identification' statement should define that skill or behavior in clear, specific terms.

Problem-identification Statements: Examples
HOMEWORK. Russell does not turn in homework.
WRITING. Andrea's writing includes many incomplete sentences.
MATH FACTS. Rick is not fluent in multiplication math facts.
BEHAVIOR. Angela is inattentive in large-group instruction.

Keep in mind that a clear problem definition is a necessary starting point for developing a monitoring plan**[1]**: "If you can't name the problem, you can't measure it."

STEP 2: What data-collection method will best measure the target skill or behavior?

Next, select a valid, reliable and manageable way to collect data on the skill or behavior the instructor has targeted for intervention. Data sources used to track student progress on classroom interventions should be brief, valid measures of the target skill, and sensitive to short-term student gains.**[2]**

Data Collection Methods: Examples	
Problem ID Statement	*Sample Data Tool*
HOMEWORK. Russell does not turn in homework.	Homework Log
WRITING. Andrea's writing includes many incomplete sentences.	Work Product (Writing Sample): Compute percentage of complete sentences.

MATH FACTS. Rick is not fluent in multiplication math facts.	Curriculum-based Measurement: 2-minute math computation worksheets in 0-12 multiplication
BEHAVIOR. Angela is inattentive in large-group instruction.	Daily Behavior Report Card

There are a range of teacher-friendly data-collection tools to choose from, such as rubrics, checklists, Daily Behavior Report Cards (DBRC), Curriculum-based Measures (CBMs), teacher logs and student work products.

STEP 3: How long will the intervention last?

When planning a classroom intervention, the teacher should choose an end-date when he/she will review the progress-monitoring data and decide whether the intervention is successful.

A good practice is to run an academic intervention for at least 6-8 instructional weeks before evaluating its effectiveness. Student data can vary significantly from day to day**[3]**: Allowing 6-8 weeks for data collection permits the teacher to collect sufficient data points to have greater confidence when judging the intervention's impact.

STEP 4: What is the student's baseline performance?

Before launching the intervention, the teacher will use the selected data-collection tool to record baseline data reflecting the student's current performance. Baseline data represents a starting point that allows the teacher to calculate precisely any progress the student makes during the intervention.

Because student data can be variable, the instructor should strive to collect at least 3 data points before starting the intervention and average them to calculate baseline.

Baseline Data: Examples		
Problem ID Statement	*Sample Data Tool*	*Baseline Data*
HOMEWORK. Russell does not turn in homework.	Homework Log	Russell turned in homework on 20 percent of days when homework was assigned. [Data source: percentage homework completion calculated from 1 week of homework-log entries.]
WRITING. Andrea's writing includes many incomplete sentences.	Writing Sample: Compute percentage of complete sentences.	On Andrea's writing samples, an average of 40 percent of sentences are found to be incomplete. [Data source: median value of 3 writing samples collected on different days.]
MATH FACTS. Rick is not fluent in multiplication math facts.	Curriculum-based Measurement (CBM): 2-minute math computation worksheets	Rick calculates an average of 29 correct digits in 2 minutes on a 0-12 multiplication math-fact worksheet. [Data source: median value of 3 CBM worksheets collected on different days.]
BEHAVIOR. Angela is inattentive in large-group instruction.	Daily Behavior Report Card	On a DBRC item *"The student requires no more than 1 redirect for inattention during the class period,"* the teacher rates this item 'YES' during 1 of 5 days (20 percent). [Data source: percentage calculated from 5 days of DBRC data collection.]

STEP 5: What is the student's outcome goal?

Next, the teacher sets a post-intervention outcome goal that defines the student's expected performance on the target skill or behavior if the

intervention is successful (e.g., after 6-8 weeks). Setting a specific outcome goal for the student is a critical step, as it allows educators to judge the intervention's effectiveness.

Outcome Goal: Examples		
Problem ID Statement	*Sample Data Tool*	*Outcome Goal*
HOMEWORK. Russell does not turn in homework.	Homework Log	Russell will turn in at least 80 percent of assigned homework. [Data source: percentage homework completion calculated from final week of homework log entries.]
WRITING. Andrea's writing includes many incomplete sentences.	Writing Sample: Compute percentage of complete sentences.	On Andrea's writing samples, at least 90 percent of attempted sentences will be correct and complete. [Data source: median value calculated from final 3 writing samples.]
MATH FACTS. Rick is not fluent in multiplication math facts.	Curriculum-based measurement: 2-minute math computation worksheets	Rick will calculate an average of 49 correct digits in 2 minutes on a 0-12 multiplication math-fact worksheet. [Data source: average of final 2 CBM worksheets.]
BEHAVIOR. Angela is inattentive in large-group instruction.	Daily Behavior Report Card	On a DBRC item *"The student requires no more than 1 redirect for inattention during the class period,"* the teacher will rate this item 'YES' during at least 4 of 5 days (80 percent). [Data source: percentage calculated from final 5 days of DBRC data collection.]

Teachers can use several sources to calculate an outcome goal[4]:

- When using academic CBMs with benchmark norms, those grade-level norms can help the instructor to set a goal for the student.

- ***Classroom Norms.*** When measuring an academic skill for which no benchmark norms are available, the teacher might instead decide to compile classroom norms (i.e., sampling the entire class or a subgroup of the class) and use those group norms to set an outcome goal.

  Real-world Example:

  A teacher with a student who frequently writes incomplete sentences might collect writing samples from a small group of 'typical' student writers in the class, analyze those samples to calculate percentage of complete sentences, and use this peer norm (e.g., 90 percent complete sentences) to set a sentence-writing outcome goal for that struggling writer.

- ***Teacher-defined Performance Goal (Criterion Mastery).*** Sometimes, the instructor must write an outcome goal — but will have access to neither benchmark norms nor classroom norms for the skill or behavior being measured. In this case, the teacher may be able to use his or her own judgment to define a meaningful outcome goal.

  Real-world Example:

  A math instructor wishes to teach a student to follow a 7-step procedural checklist when solving math word problems. The data source in this example is the checklist, and the teacher sets as the outcome goal that — when given a word problem — the student will independently follow all steps in the teacher-supplied checklist in the correct order.

TIP: For a student with a large academic deficit, the teacher may not be able to close that skill-gap entirely within one 6-8-week intervention cycle. In this instance, the instructor should instead set an ambitious 'intermediate goal' that, if accomplished, will demonstrate the student is clearly closing the academic gap with peers. It is not unusual for students with substantial academic delays to require several successive intervention-cycles with intermediate goals before they are able to close a skill-gap sufficiently to bring them up to meet their grade-level peers.

STEP 6: How often will data be collected?

The more frequently the teacher **collects data**, the more quickly she/he will be able to judge whether an intervention is effective.**[5]** This is because more data points make trends of improvement easier to spot and increase instructors' confidence in the overall direction or 'trend' of the data.

Ideally, teachers should strive to collect data at least weekly for the duration of the intervention period. If that is not feasible, student progress should be monitored no less than twice per month.

STEP 7: How does the student's actual performance compare with the outcome goal?

Once the teacher has created a progress-monitoring plan for the student, she/he puts that plan into action. At the end of the pre-determined intervention period (e.g., in 6 weeks), the teacher reviews the student's cumulative progress-monitoring data, compares it to the outcome goal and judges the effectiveness of the intervention. Here are the decision rules:

- ***Outcome goal met.*** If the student meets the outcome goal, the intervention is a success. The teacher may decide that the intervention is no longer necessary and discontinue. Or she/he may choose to continue the present intervention for an additional period because the student still appears to benefit from it.
- ***Clear progress but outcome goal not met.*** If the student fails to meet the outcome goal, but the teacher sees clear signs that the student is making progress, that

educator might decide that the intervention shows promise. In this case, the next step would be to alter the existing intervention in some way(s) to intensify its effect. For example, the teacher could meet more frequently with the student, meet for longer sessions, shrink the group size (if the intervention is group-based), etc.

- ***Little or no progress observed.*** If the student fails to make meaningful progress on the intervention, the teacher's logical next step will be to replace the current intervention plan with a new strategy. The instructor may also decide to refer the student to receive additional RTI/MTSS academic support.

Key Takeaway: Let Data Be Your Guide

The goal in monitoring any classroom intervention is to let the data guide you in understanding a learner's unique story. When teachers can clearly define a student's specific academic or behavioral challenge, collect data that accurately tracks progress, and calculate baseline level and outcome goal as points of reference to judge intervention success, the student's story will be truly told.

[1] Upah, K. R. F. (2008). Best practices in designing, implementing, and evaluating quality interventions. In A. Thomas & J. Grimes (Eds.), Best practices in school psychology V (pp. 209-223). Bethesda, MD: National Association of School Psychologists.

[2] Howell, K. W., Hosp, J. L., & Kurns, S. (2008). Best practices in curriculum-based evaluation. In A. Thomas & J. Grimes (Eds.), Best practices in school psychology V (pp.349-362). Bethesda, MD: National Association of School Psychologists.

[3] Hixson, M. D., Christ, T. J., & Bruni, T. (2014). Best practices in the analysis of progress monitoring data and decision making in A. Thomas & Patti Harris (Eds.), Best Practices in School Psychology VI (pp. 343-354). Silver Springs, MD: National Association of School Psychologists.

[4] Shapiro, E. S. (2008). Best practices in setting progress-monitoring monitoring goals for academic skill improvement. In A. Thomas & J. Grimes (Eds.), Best practices in school psychology V (pp. 141-157). Bethesda, MD: National Association of School Psychologists.

[5] Filderman, M. J., & Toste, J. R. (2018). Decisions, decisions, decisions: Using data to make instructional decisions for struggling readers. Teaching Exceptional Children, 50(3), 130-140.