The Classroom Teacher as Intervention 'First Responder': Tools for Academic Intervention and Assessment

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Effective Instruction: Key Components

Intervention & Related RTI Terms: Definitions

Educators who serve as interventionists should be able to define and distinguish among the terms *core instruction*, *intervention*, *instructional adjustment*, and *modification*. (In particular, interventionists should avoid using modifications as part of an RTI plan for a general education student, as they can be predicted to undermine the student's academic performance.) Here are definitions for these key terms.

- Core Instruction. Those instructional strategies that are used routinely with all students in a general-education setting are considered 'core instruction'. High-quality instruction is essential and forms the foundation of RTI academic support. NOTE: While it is important to verify that a struggling student receives good core instructional practices, those routine practices do not 'count' as individual student interventions.

- Intervention. An academic *intervention* is a strategy used to teach a new skill, build fluency in a skill, or encourage a child to apply an existing skill to new situations or settings. An intervention can be thought of as "a set of actions that, when taken, have demonstrated ability to change a fixed educational trajectory" (Methe & Riley-Tillman, 2008; p. 37). As an example of an academic intervention, the teacher may select question generation (Davey & McBride,1986.; Rosenshine, Meister & Chapman, 1996), a strategy in which the student is taught to locate or generate main idea sentences for each paragraph in a passage and record those 'gist' sentences for later review.

- Instructional Adjustment (Accommodation). An *instructional adjustment* (also known as an 'accommodation') is intended to help the student to fully access and participate in the general-education curriculum without changing the instructional content and without reducing the student's rate of learning (Skinner, Pappas & Davis, 2005). An instructional adjustment is intended to remove barriers to learning while still expecting that students will master the same instructional content as their typical peers. An instructional adjustment for students who are slow readers, for example, may include having them supplement their silent reading of a novel by listening to the book on tape. An instructional adjustment for unmotivated students may include breaking larger assignments into smaller 'chunks' and providing students with performance feedback and praise for each completed 'chunk' of assigned work (Skinner, Pappas & Davis, 2005).

- Modification. A modification changes the expectations of what a student is expected to know or do—typically by lowering the academic standards against which the student is to be evaluated. Examples of modifications are giving a student five math computation problems for practice instead of the 20 problems assigned to the rest of the class or letting the student consult course notes during a test when peers are not permitted to do so. Instructional modifications are essential elements on the Individualized Education Plans (IEPs) or Section 504 Plans of many students with special needs. Modifications are generally not included on a general-education student's RTI intervention plan, however, because the assumption is that the student can be successful in the curriculum with appropriate interventions and instructional adjustments alone. In fact, modifying the work of struggling general education students is likely to have a negative effect that works *against* the goals of RTI. Reducing academic expectations will result in these students falling further behind rather than closing the performance gap with peers

References

Davey, B., & McBride, S. (1986). Effects of question-generation training on reading comprehension. *Journal of Educational Psychology, 78,* 256-262.

Methe, S. A., & Riley-Tillman, T. C. (2008). An informed approach to selecting and designing early mathematics interventions. School Psychology Forum: Research into Practice, 2, 29-41.

Rosenshine, B., Meister, C., & Chapman, S. (1996). Teaching students to generate questions: A review of the intervention studies. *Review of Educational Research, 66*, 181-221.

Skinner, C. H., Pappas, D. N., & Davis, K. A. (2005). Enhancing academic engagement: Providing opportunities for responding and influencing students to choose to respond. Psychology in the Schools, 42, 389-403.

Motivation Challenge 1: *The student is unmotivated because he or she cannot do the assigned work.*

Profile of a Student with This Motivation Problem: The student lacks essential skills required to do the task. Areas of deficit might include basic academic skills, cognitive strategies, and academic-enabler skills. Here are definitions of these skill areas:

- *Basic academic skills.* Basic skills have straightforward criteria for correct performance (e.g., the student defines vocabulary words or decodes text or computes 'math facts') and comprise the building-blocks of more complex academic tasks (Rupley, Blair, & Nichols, 2009). The instructional goal in basic skills is for students to become 'automatic' in the skill(s) being taught.

- *Cognitive strategies.* Students employ specific cognitive strategies as "guiding procedures" to complete more complex academic tasks such as reading comprehension or writing (Rosenshine, 1995). Cognitive strategies are "intentional and deliberate procedures" that are under the conscious control of the student (Rupley, Blair, & Nichols, 2009; p. 127). The instructional goals are to train students to use specific cognitive instruction strategies, to reliably identify the conditions under which they should employ these strategies, and to actually use them correctly and consistently.

  Question generation is an example of a cognitive strategy to promote reading comprehension (Rosenshine, Meister, & Chapman, 1996); the student is trained to locate or write main-idea sentences for each paragraph in a passage, then write those main ideas onto separate note cards with corresponding questions.

- *Academic-enabling skills.* Skills that are 'academic enablers' (DiPerna, 2006) are not tied to specific academic knowledge but rather aid student learning across a wide range of settings and tasks. Examples of academic-enabling skills include organizing work materials, time management, and making and sticking to a work plan. The instructional goal is to train students to acquire these academic-support skills and to generalize their use to become efficient, self-managing learners.

What the Research Says: When a student lacks the capability to complete an academic task because of limited or missing basic skills, cognitive strategies, or academic-enabling skills, that student is still in the acquisition stage of learning (Haring et al., 1978). That student cannot be expected to be motivated or to be successful as a learner unless he or she is first explicitly taught these weak or absent essential skills (Daly, Witt, Martens & Dool, 1997).

How to Verify the Presence of This Motivation Problem: The teacher collects information (e.g., through observations of the student engaging in academic tasks; interviews with the student; examination of work products, quizzes, or tests) demonstrating that the student lacks basic skills, cognitive strategies, or academic-enabling skills essential to the academic task.

How to Fix This Motivation Problem: Students who are not motivated because they lack essential skills need to be taught those skills.

Direct-Instruction Format. Students learning new material, concepts, or skills benefit from a 'direct instruction' approach. (Burns, VanDerHeyden & Boice, 2008; Rosenshine, 1995; Rupley, Blair, & Nichols, 2009). When following a direct-instruction format, the teacher:

- ❑ ensures that the lesson content is appropriately matched to students' abilities.
- ❑ opens the lesson with a brief review of concepts or material that were previously presented.
- ❑ states the goals of the current day's lesson.
- ❑ breaks new material into small, manageable increments, or steps.
- ❑ throughout the lesson, provides adequate explanations and detailed instructions for all concepts and materials being taught. NOTE: Verbal explanations can include 'talk-alouds' (e.g., the teacher describes and explains each step of a cognitive strategy) and 'think-alouds' (e.g., the teacher applies a cognitive strategy to a particular problem or task and verbalizes the steps in applying the strategy).
- ❑ regularly checks for student understanding by posing frequent questions and eliciting group responses.
- ❑ verifies that students are experiencing sufficient success in the lesson content to shape their learning in the desired direction and to maintain student motivation and engagement.
- ❑ provides timely and regular performance feedback and corrections throughout the lesson as needed to guide student learning.
- ❑ allows students the chance to engage in practice activities distributed throughout the lesson (e.g., through teacher demonstration; then group practice with teacher supervision and feedback; then independent, individual student practice).
- ❑ ensures that students have adequate support (e.g., clear and explicit instructions; teacher monitoring) to be successful during independent seatwork practice activities.

References:

Burns, M. K., VanDerHeyden, A. M., & Boice, C. H. (2008). Best practices in intensive academic interventions. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology V* (pp.1151-1162). Bethesda, MD: National Association of School Psychologists.

Daly, E. J., Witt, J. C., Martens, B. K., & Dool, E. J. (1997). *A model for conducting a functional analysis of academic performance problems.* School Psychology Review, 26, 554-574.

DiPerna, J. C. (2006). Academic enablers and student achievement: Implications for assessment and intervention services in the schools. Psychology *in the Schools, 43*, 7-17.

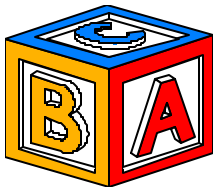
Haring, N.G., Lovitt, T.C., Eaton, M.D., & Hansen, C.L. (1978). *The fourth R: Research in the classroom.* Columbus, OH: Charles E. Merrill Publishing.

Rosenshine, B. (1995). Advances in research on instruction. *The Journal of Educational Research, 88,* 262-288.

Rosenshine, B., Meister, C., & Chapman, S. (1996). *Teaching students to generate questions: A review of the intervention studies.* Review of Educational Research, 66, 181-221.

Rupley, W. H., Blair, T. R., & Nichols, W. D. (2009). Effective reading instruction for struggling readers: The role of direct/explicit teaching. *Reading & Writing Quarterly, 25*:125–138.

Building Blocks of Effective Instruction



Good classroom instruction is no accident. Two powerful tools for analyzing the quality of student instruction are the *Instructional Hierarchy* and the *Learn Unit*.

Instructional Hierarchy. As students are taught new academic skills, they go through a series of predictable learning stages. At the start, a student is usually halting and uncertain as he or she tries to use the target skill. With teacher feedback and lots of practice, the student becomes more fluent, accurate, and confident in using the skill. It can be very useful to think of these phases of learning as a *hierarchy* (See chart on page 2). The learning hierarchy (Haring, Lovitt, Eaton, & Hansen, 1978) has four stages: *acquisition*, *fluency*, *generalization*, and *adaptation*:

1. **Acquisition.** The student has begun to learn how to complete the target skill correctly but is not yet accurate or fluent in the skill. The goal in this phase is to improve accuracy.
2. **Fluency.** The student is able to complete the target skill accurately but works slowly. The goal of this phase is to increase the student's speed of responding (fluency).
3. **Generalization.** The student is accurate and fluent in using the target skill but does not typically use it in different situations or settings. Or the student may confuse the target skill with 'similar' skills. The goal of this phase is to get the student to use the skill in the widest possible range of settings and situations, or to accurately discriminate between the target skill and 'similar' skills.
4. **Adaptation.** The student is accurate and fluent in using the skill. He or she also uses the skill in many situations or settings. However, the student is not yet able to modify or adapt the skill to fit novel task demands or situations.

The 'Learn Unit'. At the core of good instruction lies the ''Learn Unit', a 3-step process in which the student is invited to engage in an academic task, delivers a response, and then receives immediate feedback about how he or she did on the task (Heward, 1996). Here is an explanation of the stages of the 'Learn Unit':

1. **Academic Opportunity to Respond**. The student is presented with a meaningful opportunity to respond to an academic task. A question posed by the teacher, a math word problem, and a spelling item on an educational computer 'Word Gobbler' game could all be considered academic opportunities to respond.
2. **Active Student Response**. The student answers the item, solves the problem presented, or completes the academic task. Answering the teacher's question, computing the answer to a math word problem (and showing all work), and typing in the correct spelling of an item when playing an educational computer game are all examples of active student responding.
3. **Performance Feedback**. The student receives timely feedback about whether his or her response is correct—often with praise and encouragement. A teacher exclaiming 'Right! Good job!' when a student gives an response in class, a student using an answer key to check her answer to a math word problem, and a computer message that says 'Congratulations! You get 2 points for correctly spelling this word!" are all examples of corrective feedback.

The more frequently a student cycles through complete 'Learn Unit' trials, the faster that student is likely to make learning progress. If any one of these steps is missing, the quality of instruction will probably be compromised.

References

Haring, N.G., Lovitt, T.C., Eaton, M.D., & Hansen, C.L. (1978). *The fourth R: Research in the classroom.* Columbus, OH: Charles E. Merrill Publishing Co.

Heward, W.L. (1996). Three low-tech strategies for increasing the frequency of active student response during group instruction. In R.Gardner, D.M.Sainato, J.O.Cooper, T.E.Heron, W.L.Heward, J.W.Eshleman,& T.A.Grossi (Eds.), *Behavior analysis in education: Focus on measurably superior instruction* (pp.283-320). Pacific Grove, CA: Brooks/Cole.

Instructional Hierarchy: Matching Interventions to Student Learning Stage (Haring, et al., 1978)

Learning Stage	*Student 'Look-Fors'…*	*What strategies are effective…*
Acquisition: Exit Goal: The student can perform the skill accurately with little adult support.	• Is just beginning to learn skill • Not yet able to perform learning task reliably or with high level of accuracy	• Teacher actively demonstrates target skill • Teacher uses 'think-aloud' strategy-- especially for thinking skills that are otherwise covert • Student has models of correct performance to consult as needed (e.g., correctly completed math problems on board) • Student gets feedback about correct performance • Student receives praise, encouragement for *effort*
Fluency: Exit Goals: The student (a) has learned skill well enough to retain (b) has learned skill well enough to combine with other skills, (c) is as fluent as peers.	• Gives accurate responses to learning task • Performs learning task slowly, haltingly	• Teacher structures learning activities to give student opportunity for active (observable) responding • Student has frequent opportunities to *drill* (direct repetition of target skill) and *practice* (blending target skill with other skills to solve problems) • Student gets feedback on *fluency* and *accuracy* of performance • Student receives praise, encouragement for *increased fluency*
Generalization: Exit Goals: The student (a) uses the skill across settings, situations; (b) does not confuse target skill with similar skills	• Is accurate and fluent in responding • May fail to apply skill to new situations, settings • May confuse target skill with similar skills (e.g., confusing '+' and 'x' number operation signs)	• Teacher structures academic tasks to require that the student use the target skill regularly in assignments. • Student receives encouragement, praise, reinforcers for using skill in new settings, situations • If student confuses target skill with similar skill(s), the student is given practice items that force him/her to correctly discriminate between similar skills • Teacher works with parents to identify tasks that the student can do outside of school to practice target skill • Student gets periodic opportunities to review, practice target skill to ensure maintenance
Adaptation: Exit Goal: The Adaptation phase is continuous and has no exit criteria.	• Is fluent and accurate in skill • Applies skill in novel situations, settings without prompting • Does not yet modify skill as needed to fit new situations (e.g., child says 'Thank you' in all situations, does not use modified, equivalent phrases such as "I appreciate your help.")	• Teacher helps student to articulate the *'big ideas'* or core element(s) of target skill that the student can modify to face novel tasks, situations (e.g., fractions, ratios, and percentages link to the 'big idea' of *the part in relation to the whole*; 'Thank you' is part of a larger class of *polite speech*) • Train for adaptation: Student gets opportunities to practice the target skill with modest modifications in new situations, settings with encouragement, corrective feedback, praise, other reinforcers. • Encourage student to set own goals for adapting skill to new and challenging situations.

Academic Interventions 'Critical Components' Checklist

This checklist summarizes the essential components of academic interventions. When preparing a student's Tier 1, 2, or 3 academic intervention plan, use this document as a 'pre-flight checklist' to ensure that the academic intervention is of high quality, is sufficiently strong to address the identified student problem, is fully understood and supported by the teacher, and can be implemented with integrity. NOTE: While the checklist refers to the 'teacher' as the interventionist, it can also be used as a guide to ensure the quality of interventions implemented by non-instructional personnel, adult volunteers, parents, and peer (student) tutors.

Directions: When creating an academic intervention plan, review that plan by comparing it to each of the items below.

- If a particular intervention element is missing or needs to be reviewed, check the 'Critical Item?' column for that element.
- Write any important notes or questions in the 'Notes' column.

Allocating Sufficient Contact Time & Assuring Appropriate Student-Teacher Ratio

The cumulative time set aside for an intervention and the amount of direct teacher contact are two factors that help to determine that intervention's 'strength' (Yeaton & Sechrest, 1981).

Critical Item?	Intervention Element	Notes
☐	**Time Allocated.** The time set aside for the intervention is appropriate for the type and level of student problem (Burns & Gibbons, 2008; Kratochwill, Clements & Kalymon, 2007). When evaluating whether the amount of time allocated is adequate, consider: • Length of each intervention session. • Frequency of sessions (e.g.., daily, 3 times per week) • Duration of intervention period (e.g., 6 instructional weeks)	
☐	**Student-Teacher Ratio.** The student receives sufficient contact from the teacher or other person delivering the intervention to make that intervention effective. NOTE: Generally, supplemental intervention groups should be limited to 6-7 students (Burns & Gibbons, 2008).	

Matching the Intervention to the Student Problem

Academic interventions are not selected at random. First, the student academic problem(s) is defined clearly and in detail. Then, the likely explanations for the academic problem(s) are identified to understand which intervention(s) are likely to help—and which should be avoided.

Critical Item?	Intervention Element	Notes
☐	**Problem Definition.** The student academic problem(s) to be addressed in the intervention are defined in clear, specific, measureable terms (Bergan, 1995; Witt, VanDerHeyden & Gilbertson, 2004). The full problem definition describes: • *Conditions*. Describe the environmental conditions or task demands in place when the academic problem is observed. • *Problem Description*. Describe the actual observable academic behavior in which the student is engaged. Include rate, accuracy, or other quantitative information of student performance. • *Typical or Expected Level of Performance*. Provide a typical or expected performance criterion for this skill or behavior. Typical or expected academic performance can be calculated using a variety of sources,	
☐	**Appropriate Target.** Selected intervention(s) are appropriate for the identified student problem(s) (Burns, VanDerHeyden & Boice, 2008). TIP: Use the Instructional Hierarchy (Haring et al., 1978) to select	

	academic interventions according to the four stages of learning: • *Acquisition*. The student has begun to learn how to complete the target skill correctly but is not yet accurate in the skill. Interventions should improve accuracy. • *Fluency*. The student is able to complete the target skill accurately but works slowly. Interventions should increase the student's speed of responding (fluency) as well as to maintain accuracy. • *Generalization*. The student may have acquired the target skill but does not typically use it in the full range of appropriate situations or settings. Or the student may confuse the target skill with 'similar' skills. Interventions should get the student to use the skill in the widest possible range of settings and situations, or to accurately discriminate between the target skill and 'similar' skills. • *Adaptation*. The student is not yet able to modify or adapt an existing skill to fit novel task-demands or situations. Interventions should help the student to identify key concepts or elements from previously learned skills that can be adapted to the new demands or situations.	
☐	'Can't Do/Won't Do' Check. The teacher has determined whether the student problem is primarily a skill or knowledge deficit ('can't do') or whether student motivation plays a main or supporting role in academic underperformance ('wont do'). If motivation appears to be a significant factor contributing to the problem, the intervention plan includes strategies to engage the student (e.g., high interest learning activities; rewards/incentives; increased student choice in academic assignments, etc.) (Skinner, Pappas & Davis, 2005; Witt, VanDerHeyden & Gilbertson, 2004).	

Incorporating Effective Instructional Elements

These effective 'building blocks' of instruction are well-known and well-supported by the research. They should be considered when selecting or creating any academic intervention.

Critical Item?	Intervention Element	Notes
☐	Explicit Instruction. Student skills have been broken down "into manageable and deliberately sequenced steps" and the teacher provided" overt strategies for students to learn and practice new skills" (Burns, VanDerHeyden & Boice, 2008, p.1153).	
☐	Appropriate Level of Challenge. The student experienced sufficient success in the academic task(s) to shape learning in the desired direction as well as to maintain student motivation (Burns, VanDerHeyden & Boice, 2008).	
☐	Active Engagement. The intervention ensures that the student is engaged in 'active accurate responding' (Skinner, Pappas & Davis, 2005).at a rate frequent enough to capture student attention and to optimize effective learning.	
☐	Performance Feedback. The student receives prompt performance feedback about the work completed (Burns, VanDerHeyden & Boice, 2008).	
☐	Maintenance of Academic Standards. If the intervention includes any accommodations to better support the struggling learner (e.g., preferential seating, breaking a longer assignment into smaller chunks), those accommodations do not substantially lower the academic standards against which the student is to be evaluated and are not likely to reduce the student's rate of learning (Skinner, Pappas & Davis, 2005).	

Verifying Teacher Understanding & Providing Teacher Support		
The teacher is an active agent in the intervention, with primary responsibility for putting it into practice in a busy classroom. It is important, then, that the teacher fully understands how to do the intervention, believes that he or she can do it, and knows whom to seek out if there are problems with the intervention.		
Critical Item?	Intervention Element	Notes
☐	Teacher Responsibility. The teacher understands his or her responsibility to implement the academic intervention(s) with integrity.	
☐	Teacher Acceptability. The teacher states that he or she finds the academic intervention feasible and acceptable for the identified student problem.	
☐	Step-by-Step Intervention Script. The essential steps of the intervention are written as an 'intervention script'--a series of clearly described steps—to ensure teacher understanding and make implementation easier (Hawkins, Morrison, Musti-Rao & Hawkins, 2008).	
☐	Intervention Training. If the teacher requires training to carry out the intervention, that training has been arranged.	
☐	Intervention Elements: Negotiable vs. Non-Negotiable. The teacher knows all of the steps of the intervention. Additionally, the teacher knows which of the intervention steps are 'non-negotiable' (they must be completed exactly as designed) and which are 'negotiable' (the teacher has some latitude in how to carry out those steps) (Hawkins, Morrison, Musti-Rao & Hawkins, 2008).	
☐	Assistance With the Intervention. If the intervention cannot be implemented as designed for any reason (e.g., student absence, lack of materials, etc.), the teacher knows how to get assistance quickly to either fix the problem(s) to the current intervention or to change the intervention.	

Documenting the Intervention & Collecting Data		
Interventions only have meaning if they are done within a larger data-based context. For example, interventions that lack baseline data, goal(s) for improvement, and a progress-monitoring plan are 'fatally flawed' (Witt, VanDerHeyden & Gilbertson, 2004).		
Critical Item?	Intervention Element	Notes
☐	Intervention Documentation. The teacher understands and can manage all documentation required for this intervention (e.g., maintaining a log of intervention sessions, etc.).	
☐	Checkup Date. Before the intervention begins, a future checkup date is selected to review the intervention to determine if it is successful. Time elapsing between the start of the intervention and the checkup date should be short enough to allow a timely review of the intervention but long enough to give the school sufficient time to judge with confidence whether the intervention worked.	
☐	Baseline. Before the intervention begins, the teacher has collected information about the student's baseline level of performance in the identified area(s) of academic concern (Witt, VanDerHeyden &	

	Gilbertson, 2004).	
☐	Goal. Before the intervention begins, the teacher has set a specific goal for predicted student improvement to use as a minimum standard for success (Witt, VanDerHeyden & Gilbertson, 2004). The goal is the expected student outcome by the checkup date if the intervention is successful.	
☐	Progress-Monitoring. During the intervention, the teacher collects progress-monitoring data of sufficient quality and at a sufficient frequency to determine at the checkup date whether that intervention is successful (Witt, VanDerHeyden & Gilbertson, 2004).	

References

Bergan, J. R. (1995). Evolution of a problem-solving model of consultation. *Journal of Educational and Psychological Consultation, 6(2),* 111-123.

Burns, M. K., & Gibbons, K. A. (2008). Implementing response-to-intervention in elementary and secondary schools. Routledge: New York.

Burns, M. K., VanDerHeyden, A. M., & Boice, C. H. (2008). Best practices in intensive academic interventions. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology V* (pp.1151-1162). Bethesda, MD: National Association of School Psychologists.

Haring, N.G., Lovitt, T.C., Eaton, M.D., & Hansen, C.L. (1978). *The fourth R: Research in the classroom*. Columbus, OH: Charles E. Merrill Publishing Co.

Hawkins, R. O., Morrison, J. Q., Musti-Rao, S., & Hawkins, J. A. (2008). Treatment integrity for academic interventions in real- world settings. *School Psychology Forum, 2*(3), 1-15.

Kratochwill, T. R., Clements, M. A., & Kalymon, K. M. (2007). Response to intervention: Conceptual and methodological issues in implementation. In Jimerson, S. R., Burns, M. K., & VanDerHeyden, A. M. (Eds.), Handbook of response to intervention: The science and practice of assessment and intervention. New York: Springer.

Skinner, C. H., Pappas, D. N., & Davis, K. A. (2005). Enhancing academic engagement: Providing opportunities for responding and influencing students to choose to respond. *Psychology in the Schools, 42*, 389-403.

Witt, J. C., VanDerHeyden, A. M., & Gilbertson, D. (2004). Troubleshooting behavioral interventions. A systematic process for finding and eliminating problems. *School Psychology Review, 33*, 363-383.

Yeaton, W. M. & Sechrest, L. (1981). Critical dimensions in the choice and maintenance of successful treatments: Strength, integrity, and effectiveness. *Journal of Consulting and Clinical Psychology, 49*, 156-167.

Reading: Selected Interventions

School-Wide Strategies for Managing...
READING

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The ability to read allows individuals access to the full range of a culture's artistic and scientific knowledge. Reading is a complex act. Good readers are able fluently to decode the words on a page, to organize and recall important facts in a text, to distill from a reading the author's opinions and attitudes, and to relate the content of an individual text to a web of other texts previously read. The foundation that reading rests upon is the ability to decode. Emergent readers require the support of more accomplished readers to teach them basic vocabulary, demonstrate word attack strategies, model fluent reading, and provide corrective feedback and encouragement. Newly established readers must build fluency and be pushed to exercise their reading skills across the widest possible range of settings and situations. As the act of decoding becomes more effortless and automatic, the developing reader is able to devote a greater portion of cognitive energy to understanding the meaning of the text. Reading comprehension is not a single skill but consists of a cluster of competencies that range from elementary strategies for identifying and recalling factual content to highly sophisticated techniques for inferring an author's opinions and attitudes. As researcher Michael Pressley points out, reading comprehension skills can be thought of as unfolding along a timeline. Before beginning to read a particular selection, the skilled student reader must engage prior knowledge, predict what the author will say about the topic, and set specific reading goals. While reading, the good reader self-monitors his or her understanding of the text, rereads sentences and longer passages that are unclear, and updates predictions about the text based on what he or she has just read. After completing a text, the good reader summarizes its main points (perhaps writing them down), looks back in the text to clarify any points that are unclear, and continues to think about the text and its implications for a period of time. Reading comprehension can also be thought of as a bundle of interdependent skills that range from basic to more advanced. Teachers should ensure that students understand and appropriately use simple comprehension strategies (such as looking back in a text to clarify factual information) before teaching them advanced comprehension strategies such as SQ3R ('Survey, Question, Read, Recite, Review'). Ultimately, reading is a competency that is continually honed and improved over a lifetime. The teacher's goal is to build students into independent readers whose skills improve with self-guided practice. Below are a number of instructional strategies to promote word decoding, reading decoding, and reading comprehension.

Independent Practice: Set Up Reading Centers *(Florida Center for Reading Research, 2005)*. When students have mastered a reading skill, they can work independently at reading centers to practice and become more fluent in that skill under the watchful eye of the teacher. The reading center is set up with fun and engaging activities designed to extend and reinforce literacy content presented by the teacher. Students work on independent reading-related activities individually or in pairs or groups. As examples of reading center choices, students may listen to taped books, read alone or to each other, use magnetic letters to spell a specified list of words, or create storyboards or comic strips that incorporate pictures and words. Each reading center activity is tied to specific student literacy goals. The activities in reading centers may change often to give children a chance to practice new skills and to keep the content of these centers fresh and engaging.

Reading Comprehension: Activating Prior Knowledge *(Hansen, & Pearson, 1983)*. The instructor demonstrates to students how they can access their prior knowledge about a topic to improve comprehension of an article or story. The instructor first explains the benefit of using prior knowledge. The instructor tells students that recalling their prior experiences (“their own life”) can help them to understand the content of their reading--because new facts make sense only when we connect them to what we already know. Next, the instructor demonstrates the text prediction strategy to the class by selecting a sample passage (displayed as an overhead) and using a “think-aloud” approach to illustrate the strategy steps: STEP 1: THINK ABOUT WHAT AND WHY:

The teacher connects the article to be read with the instructor's own prior knowledge about the topic. The teacher might say, for example, “I am about to read a short article about [topic]. Before I read the article, though, I should think about my life experiences and what they might tell me about [topic]. By thinking about my own life, I will better understand the article.” STEP 2: SELECT MAIN IDEAS FROM THE ARTICLE TO POSE PRIOR-KNOWLEDGE AND PREDICTION QUESTIONS. The teacher chooses up to 3 main ideas that appear in the article or story. For each key idea, the instructor poses one question requiring that readers tap their own prior knowledge of the idea (e.g., “What are your own attitudes and experiences about [idea]?”) and another that prompts them to predict how the article or story might deal with the idea (e.g., "What do you think the article will say about [idea]?"). STEP 3: HAVE STUDENTS READ THE ARTICLE INDEPENDENTLY. Once the teacher has primed students' prior knowledge by having them respond to the series of prior-knowledge and prediction questions, students read the selection independently.

Reading Comprehension: Anticipation Reading Guide *(Duffelmeyer, 1994; Merkley, 1996)*. To activate their prior knowledge of a topic, students complete a brief questionnaire on which they must express agreement or disagreement with 'opinion' questions tied to the selection to be read; students then engage in a class discussion of their responses. The instructor first constructs the questionnaire. Each item on the questionnaire is linked to the content of the article or story that the students will read. All questionnaire items use a 'forced-choice' format in which the student must simply agree or disagree with the item. After students have completed the questionnaire, the teacher reviews responses with the class, allowing students an opportunity to explain their rationale for their answers. Then students read the article or story.

Reading Comprehension: Building Comprehension of Textbook Readings Through SQ3R *(Robinson, 1946)*. Students grasp a greater amount of content from their textbook readings when they use the highly structured SQ3R ('Survey, Question, Read, Recite, Review') process. (1) SURVEY: Prior to reading a section of the textbook, the reader surveys the selection by examining charts, tables, or pictures, looking over chapter headings and subheadings, and reading any individual words or blocks of text highlighted by the publisher. (2) QUESTION: In preparation for reading, the reader next generates and writes down a series of key 'questions' about the content based on the material that he or she has surveyed. (3) READ: As the reader reads through the selection, he or she seeks answers to the questions posed. (4) RECITE: After finishing the selection, the reader attempts to recite from memory the answers to the questions posed. If stuck on a question, the reader scans the text to find the answer. (5) REVIEW: At the end of a study session, the reader reviews the list of key questions and again recites the answers. If the reader is unable to recall an answer, he or she goes back to the text to find it.

Reading Comprehension: Conversing With the Writer Through Text Annotation *(Harris, 1990; Sarkisian, Toscano, Tomkins-Tinch, & Casey, 2003)*. Students are likely to increase their retention of information when they interact actively with their reading by jotting comments in the margin of the text. Students are taught to engage in an ongoing 'conversation' with the writer by recording a running series of brief comments in the margins of the text. Students may write annotations to record their opinions of points raised by the writer, questions triggered by the reading, or vocabulary words that the reader does not know and must look up. NOTE: Because this strategy requires that students write in the margins of a book or periodical, text annotation is suitable for courses in which students have either purchased the textbook or have photocopies of the reading available on which to write.

Reading Comprehension: Mining Information from the Text Book *(Garner, Hare, Alexander, Haynes, & Vinograd, 1984)*. With ‘text lookback’ the student increases recall of information by skimming previously read material in the text in a structured manner to look that information up. First, define for the student the difference between ‘lookback’ and ‘think’ questions. ‘Lookback’ questions are those that tell us that the answer can be found right in the article, while ‘think’ questions are those that ask you to give your own opinion, belief, or ideas. When faced with a lookback question,

readers may need to look back in the article to find the information that they need. But readers can save time by first skimming the article to get to the general section where the answer to the question is probably located. To skim efficiently, the student should (1) read the text-lookback question carefully and highlight the section that tells the reader what to look for (e.g., “What does the article say are the FIVE MOST ENDANGERED SPECIES of whales today?”), (2) look for titles, headings, or illustrations in the article that might tell the reader where the information that he or she is looking for is probably located, (3) read the beginning and end sentences in individual paragraphs to see if that paragraph might contain the desired information.

Reading Comprehension: Previewing the Chapter *(Gleason, Archer, & Colvin, 2002)*. The student who systematically previews the contents of a chapter before reading it increases comprehension--by creating a mental map of its contents, activating prior knowledge about the topic, and actively forming predictions about what he or she is about to read. In the previewing technique, the student browses the chapter headings and subheadings. The reader also studies any important graphics and looks over review questions at the conclusion of the chapter. Only then does the student begin reading the selection.

Reading Comprehension: Question-Answer Relationships (QAR) *(Raphael, 1982; Raphael, 1986)*. Students are taught to identify 'question-answer relationships', matching the appropriate strategy to comprehension questions based on whether a question is based on fact, requires inferential thinking, or draws upon the reader's own experience. Students learn that answers to RIGHT THERE questions are fact-based and can be found in a single sentence, often accompanied by 'clue' words that also appear in the question. Students are informed that they will also find answers to THINK AND SEARCH questions in the text--but must piece those answers together by scanning the text and making connections between different pieces of factual information. AUTHOR AND YOU questions require that students take information or opinions that appear in the text and combine them with the reader's own experiences or opinions to formulate an answer. ON MY OWN questions are based on the students' own experiences and do not require knowledge of the text to answer. Students are taught to identify question-answer relationships in class discussion and demonstration. They are then given specific questions and directed to identify the question type and to use the appropriate strategy to answer.

Reading Comprehension: Reading Actively *(Gleason, Archer, & Colvin, 2002)*. By reading, recalling, and reviewing the contents of every paragraph, the student improves comprehension of the longer passage. The instructor teaches students to first read through the paragraph, paying particular attention to the topic and important details and facts. The instructor then directs students to cover the paragraph and state (or silently recall) the key details of the passage from memory. Finally, the instructor prompts students to uncover the passage and read it again to see how much of the information in the paragraph the student had been able to accurately recall. This process is repeated with all paragraphs in the passage.

Reading Fluency: Listening, Reading, And Receiving Corrective Feedback *(Rose & Sherry, 1984; Van Bon, Boksebeld, Font Freide, & Van den Hurk, J.M., 1991)*. The student ‘rehearses’ a text by first following along silently as a more accomplished reader (tutor) reads a passage aloud; then the student reads the same passage aloud while receiving corrective feedback as needed. The student and tutor sit side-by-side at a table with a book between them. The tutor begins by reading aloud from the book for about 2 minutes while the student reads silently. If necessary, the tutor tracks his or her progress across the page with an index finger to help the student to keep up. At the end of the 2 minutes, the tutor stops reading and asks the student to read aloud. If the student commits a reading error or hesitates for longer than 3-5 seconds, the tutor tells the student the correct word and has the student continue reading. For each new passage, the tutor first reads the passage aloud before having the student read aloud.

Reading Fluency: Paired Reading *(Topping, 1987)*. The student builds fluency and confidence as a reader by first reading aloud in unison with an accomplished reader, then signaling that he or she

is ready to read on alone with corrective feedback. The more accomplished reader (tutor) and student sit in a quiet location with a book positioned between them. The tutor says to the student, "Now we are going to read aloud together for a little while. Whenever you want to read alone, just tap the back of my hand like this [demonstrate] and I will stop reading. If you come to a word you don't know, I will tell you the word and begin reading with you again." Tutor and student begin reading aloud together. If the student misreads a word, the tutor points to the word and pronounces it. Then the student repeats the word. When the student reads the word correctly, tutor and student resume reading through the passage. When the child delivers the appropriate signal (a hand tap) to read independently, the tutor stops reading aloud and instead follows along silently as the student continues with oral reading. The tutor occasionally praises the student in specific terms for good reading (e.g., "That was a hard word. You did a nice job sounding it out!"). If, while reading alone, the child either commits a reading error or hesitates for longer than 5 seconds, the tutor points to the error-word and pronounces it. Then the tutor tells the student to say the word. When the student pronounces the error-word correctly, tutor and student resume reading aloud in unison. This tandem reading continues until the student again signals to read alone.

Reading Fluency: Repeated Reading *(Herman, 1985; Rashotte & Torgesen, 1985; Rasinski, 1990)*. The student increases fluency in decoding by repeatedly reading the same passage while receiving help with reading errors. A more accomplished reader (tutor) sits with the student in a quiet location with a book positioned between them. The tutor selects a passage in the book of about 100 to 200 words in length. The tutor directs the student to read the passage aloud. If the student misreads a word or hesitates for longer than 5 seconds, the tutor reads the word aloud and has the student repeat the word correctly before continuing through the passage. If the student asks for help with any word, the tutor reads the word aloud. If the student requests a word definition, the tutor gives the definition. When the student has completed the passage, the tutor directs the student to read the passage again. The tutor directs the student to continue rereading the same passage until either the student has read the passage a total of 4 times or the student reads the passage at the rate of at least 85 to 100 words per minute. Then tutor and student select a new passage and repeat the process.

Word Decoding: Drilling Error Words *(Jenkins & Larson, 1979)*. When students practice, drill, and receive corrective feedback on words that they misread, they can rapidly improve their vocabulary and achieve gains in reading fluency. Here are steps that the teacher or tutor will follow in the Error Word Drill: (1) When the student misreads a word during a reading session, write down the error word and date in a separate "Error Word Log". (2) At the end of the reading session, write out all error words from the reading session onto index cards. (If the student has misread more than 20 different words during the session, use just the first 20 words from your error-word list. If the student has misread fewer than 20 words, consult your "Error Word Log" and select enough additional error words from past sessions to build the review list to 20 words.) (3) Review the index cards with the student. Whenever the student pronounces a word correctly, remove that card from the deck and set it aside. (A word is considered correct if it is read correctly within 5 seconds. Self-corrected words are counted as correct if they are made within the 5-second period. Words read correctly after the 5-second period expires are counted as incorrect.) (4) When the student misses a word, pronounce the word for the student and have the student repeat the word. Then say, "What word?" and direct the student to repeat the word once more. Place the card with the missed word at the bottom of the deck. (5) Error words in deck are presented until all have been read correctly. All word cards are then gathered together, reshuffled, and presented again to the student. The drill continues until either time runs out or the student has progressed through the deck without an error on two consecutive cards.

Word Decoding: Tackling Multi-Syllabic Words *(Gleason, Archer, & Colvin, 2002)*. The student uses affixes (suffixes and prefixes) and decodable 'chunks' to decode multi-syllabic words. The instructor teaches students to identify the most common prefixes and suffixes present in multi-syllable words, and trains students to readily locate and circle these affixes. The instructor also

trains students to segment the remainder of unknown words into chunks, stressing that readers do not need to divide these words into dictionary-perfect syllables. Rather, readers informally break up the word into graphemes (any grouping of letters including one or more vowels that represents a basic sound unit—or grapheme--in English). Readers then decode the mystery word by reading all affixes and graphemes in the order that they appear in that word.

Word Decoding: Teach a Hierarchy of Strategies *(Haring, Lovitt, Eaton & Hansen, 1978)*. The student has a much greater chance of successfully decoding a difficult word when he or she uses a 'Word Attack Hierarchy'--a coordinated set of strategies that move from simple to more complex. The student uses successive strategies until solving the word. (1) When the student realizes that he or she has misread a word, the student first attempts to decode the word again. (2) Next, the student reads the entire sentence, using the context of that sentence to try to figure out the word's meaning--and pronunciation. (3) The student breaks the word into parts, pronouncing each one. (4) If still unsuccessful, the student uses an index card to cover sections of the word, each time pronouncing only the part that is visible. The student asks 'What sound does ___ make?, using phonics information to sound out the word. (5) If still unsuccessful, the student asks a more accomplished reader to read the word.

References

Duffelmeyer, F.A. (1994). Effective anticipation guide statements for learning from expository prose. Journal of Reading, 37, 452 - 457.

Florida Center for Reading Research (2005). Student center activities: Teacher resource guide. Retrieved August 20, 2006, from http://www.fcrr.org/Curriculum/pdf/TRG_Final_Part1.pdf

Garner, R., Hare, V.C., Alexander, P., Haynes, J., & Vinograd, P. (1984). Inducing use of a text lookback strategy among unsuccessful readers. American Educational Research Journal, 21, 789-798.

Gleason, M. M., Archer, A. L., & Colvin, G. (2002). Interventions for improving study skills. In M. A. Shinn, H. M. Walker & G. Stoner (Eds.), Interventions for academic and behavior problems II: Preventive and remedial approaches (pp.651-680). Bethesda, MD: National Association of School Psychologists.

Hansen, J. & Pearson, P.D. (1983). An instructional study: Improving the inferential comprehension of good and poor fourth-grade readers. Journal of Educational Psychology, 75, 821-829.

Haring, N.G., Lovitt, T.C., Eaton, M.D., & Hansen, C.L. (1978). The fourth R: Research in the classroom. Columbus, OH: Charles E. Merrill Publishing.

Harris, Jane (1990). Text annotation and underlining as metacognitive strategies to improve comprehension and retention of expository text. Paper presented at the Annual Meeting of the National Reading Conference (Miami).

Herman, P.A. (1985). The effects of repeated readings on reading rate, speech pauses, and word recognition accuracy. Reading Research Quarterly, 20, 553-565.

Jenkins, J. & Larsen, D. (1979). Evaluation of error-correction procedures for oral reading. Journal of Special Education, 13, 145-156.

Merkley, D.J. (1996). Modified anticipation guide. Reading Teacher, 50, 365-368.

Raphael, T. (1982). Question-answering strategies for children. The Reading Teacher, 36, 186-190.

Raphael, T. (1986). Teaching question answer relationships, revisited. The Reading Teacher, 39, 516-522.

Rashotte, C.A. & Torgesen, J.K. (1985). Repeated reading and reading fluency in learning disabled children. Reading Research Quarterly, 20, 180-188.

Rasinski, T.V. (1990). Effects of repeated reading and listening-while-reading on reading fluency. Journal of Educational Research, 83(3), 147-150.

Robinson, F. P. (1946). Effective study. New York: Harper & Row

Rose, T.L., & Sherry, L. (1984). Relative effects of two previewing procedures on LD adolescents' oral reading performance. Learning Disabilities Quarterly, 7, 39-44.

Sarkisian V., Toscano, M., Tomkins-Tinch, K., & Casey, K. (2003). Reading strategies and critical thinking. Retrieved October 15, 2006, from http://www.academic.marist.edu/alcuin/ssk/stratthink.html

Topping, K. (1987). Paired reading: A powerful technique for parent use. Reading Teacher, 40, 608-614.

Van Bon, W.H.J., Boksebeld, L.M., Font Freide, T.A.M., & Van den Hurk, J.M. (1991). A comparison of three methods of reading-while-listening. Journal of Learning Disabilities, 24, 471-476.

Letter Cube Blending

DESCRIPTION: The Letter Cube Blending intervention targets alphabetic (phonics) skills. The student is given three cubes with assorted consonants and vowels appearing on their sides. The student rolls the cubes and records the resulting letter combinations on a recording sheet. The student then judges whether each resulting 'word' composed from the letters randomly appearing on the blocks is a real word or a nonsense word. The intervention can be used with one student or a group. (Florida Center for Reading Research, 2009; Taylor, Ding, Felt, & Zhang, 2011).

MATERIALS:

- ❑ Three Styrofoam cubes with selected consonants and vowels displayed on the cube faces. (See directions for preparing these cubes below.)
- ❑ Letter Cube Blending Recording Sheet

PREPARATION: Here are guidelines for preparing Letter Cubes (adapted from Florida Center for Reading Research, 2009):

1. Start with three (3) Styrofoam blocks (about 3 inches in diameter). These blocks can be purchased at most craft stores.
2. With three markers of different colors (green, blue, red), write the lower-case letters listed below on the sides of the three blocks--with one bold letter displayed per side.

   - Block 1: t,c,d,b,f,m: green marker
   - Block 2: a,e,i,o.u,i (The letter *I* appears twice on the block.): blue marker
   - Block 3: b,d,m,n,r,s: red marker

   Draw a line under any letter that can be confused with letters that have the identical shape but a different orientation (e.g., *b* and *d).*

INTERVENTION STEPS: At the start of the intervention, each student is given a Letter Cube Blending Recording Sheet. During the Letter Cube Blending activity:

1. Each student takes a turn rolling the Letter Cubes. The student tosses the cubes on the floor, a table, or other flat, unobstructed surface. The cubes are then lined up in 1-2-3 (green: blue: red) order.
2. The student is prompted to sound out the letters on the cubes. The student is prompted to sound out each letter, to blend the letters, and to read aloud the resulting 'word'.
3. The student identifies and records the word as 'real' or 'nonsense'. The student then identifies the word as 'real' or 'nonsense' and then writes the word on in the appropriate column on the Letter Cube Blending Recording Sheet.
4. The activity continues to 10 words. The activity continues until students in the group have generated at least 10 words on their recording sheets.

References

Florida Center for Reading Research. (2009). *Letter cube blending.* Retrieved from http://www.fcrr.org/SCAsearch/PDFs/K-1P_036.pdf

Taylor, R. P., Ding, Y., Felt, D., & Zhang, D. (2011). Effects of Tier 1 intervention on letter–sound correspondence in a Response-to-Intervention model in first graders. *School Psychology Forum, 5*(2), 54-73.

Letter Cube Blending Activity (Florida Center for Reading Research, 2009)

Directions: Have the student toss the Letter Cubes. Line up the Cubes in GREEN-BLUE-RED (G-B-R) order. Have the student sound out each of the letters on the Cubes in G-B-R order. Have the student read the 'word' spelled out on the Cubes. Then have the student decide whether the 'word' is real or nonsense and write the word under the appropriate column below. Continue until at least 10 'words' have been generated by this group activity.

Student Name _____

Real Word	Nonsense Word

Paired Reading

Description: The student reads aloud in tandem with an accomplished reader. At a student signal, the helping reader stops reading, while the student continues on. When the student commits a reading error, the helping reader resumes reading in tandem.

Materials:

- Reading book

Preparation:

- The teacher, parent, adult tutor, or peer tutor working with the student should be trained in advance to use the paired-reading approach.

Intervention Script:

1. Sit with the student in a quiet location without too many distractions. Position the book selected for the reading session so that both you and the student can easily follow the text.

2. Say to the student, *"Now we are going to read aloud together for a little while. Whenever you want to read alone, just tap the back of my hand like this* [demonstrate] *and I will stop reading. If you come to a word you don't know, I will tell you the word and begin reading with you again."*

3. Begin reading aloud with the student. If the student misreads a word, point to the word and pronounce it. Then have the student repeat the word. When the student reads the word correctly, resume reading through the passage.

4. When the child delivers the appropriate signal (a hand tap), stop reading aloud and instead follow along silently as the student continues with oral reading. Be sure occasionally to praise the student in specific terms for good reading (e.g., "That was a hard word. You did a nice job sounding it out!").

5. If, while reading alone, the child either commits a reading error or hesitates for longer than 5 seconds, point to the error-word and pronounce it. Then tell the student to say the word. When the student pronounces the error-word correctly, begin reading aloud again in unison with the student.

6. Continue reading aloud with the student until he or she again signals to read alone.

Tips:

Consider Using Paired Reading for Peer Tutoring or as a Parent Strategy. Paired reading is a highly structured but simple strategy that can easily be taught to others—including to school-age children and youth. If you have a pool of responsible older students available you may want to create a cross-age peer tutoring program that uses

paired reading as its central intervention. Or train parents to use this simple reading strategy when they read with their children at home.

References:

Topping, K. (1987). Paired reading: A powerful technique for parent use. *Reading Teacher, 40,* 608-614.

Reading Comprehension 'Fix-Up' Skills: A Toolkit

Good readers continuously monitor their understanding of informational text. When necessary, they also take steps to improve their understanding of text through use of reading comprehension 'fix-up' skills. Presented here are a series of fix-up skill strategies that can help struggling students to better understand difficult reading assignments.

- [Core Instruction] Providing Main Idea Practice through 'Partner Retell' (Carnine & Carnine, 2004). Students in a group or class are assigned a text selection to read silently. Students are then paired off, with one student assigned the role of 'reteller' and the other appointed as 'listener'. The reteller recounts the main idea to the listener, who can comment or ask questions. The teacher then states the main idea to the class. Next, the reteller locates two key details from the reading that support the main idea and shares these with the listener. At the end of the activity, the teacher does a spot check by randomly calling on one or more students in the listener role and asking them to recap what information was shared by the reteller.

- [Accommodation] Developing a Bank of Multiple Passages to Present Challenging Concepts (Hedin & Conderman, 2010; Kamil et al., 2008; Texas Reading Initiative, 2002). The teacher notes which course concepts, cognitive strategies, or other information will likely present the greatest challenge to students. For these 'challenge' topics, the teacher selects alternative readings that present the same general information and review the same key vocabulary as the course text but that are more accessible to struggling readers (e.g., with selections written at an easier reading level or that use graphics to visually illustrate concepts). These alternative selections are organized into a bank. Students are encouraged to engage in wide reading by choosing selections from the bank as a means to better understand difficult material.

- [Student Strategy] Promoting Understanding & Building Endurance through Reading-Reflection Pauses (Hedin & Conderman, 2010). The student decides on a reading interval (e.g., every four sentences; every 3 minutes; at the end of each paragraph). At the end of each interval, the student pauses briefly to recall the main points of the reading. If the student has questions or is uncertain about the content, the student rereads part or all of the section just read. This strategy is useful both for students who need to monitor their understanding as well as those who benefit from brief breaks when engaging in intensive reading as a means to build up endurance as attentive readers.

- [Student Strategy] Identifying or Constructing Main Idea Sentences (Davey & McBride, 1986; Rosenshine, Meister & Chapman, 1996). For each paragraph in an assigned reading, the student either (a) highlights the main idea sentence or (b) highlights key details and uses them to write a 'gist' sentence. The student then writes the main idea of that paragraph on an index card. On the other side of the card, the student writes a question whose answer is that paragraph's main idea sentence. This stack of 'main idea' cards becomes a useful tool to review assigned readings.

- [Student Strategy] Restructuring Paragraphs with Main Idea First to Strengthen 'Rereads' (Hedin & Conderman, 2010). The student highlights or creates a main idea sentence for each paragraph in the assigned reading. When rereading each paragraph of the selection, the student (1) reads the main idea sentence or student-generated 'gist' sentence first (irrespective of where that sentence actually falls in the paragraph); (2) reads the remainder of the paragraph, and (3) reflects on how the main idea relates to the paragraph content.

- [Student Strategy] Summarizing Readings (Boardman et al., 2008). The student is taught to summarize readings into main ideas and essential details--stripped of superfluous content. The act of summarizing longer readings can promote understanding and retention of content while the summarized text itself can be a useful study tool.

- [Student Strategy] Linking Pronouns to Referents (Hedin & Conderman, 2010). Some readers lose the connection between pronouns and the nouns that they refer to (known as 'referents')—especially when reading challenging text. The student is encouraged to circle pronouns in the reading, to explicitly identify each pronoun's referent, and (optionally) to write next to the pronoun the name of its referent. For example, the student may add the referent to a pronoun in this sentence from a biology text: *"The Cambrian Period is the first geological age that has large numbers of multi-celled organisms associated with* ***it*** *Cambrian Period."*

- [Student Strategy] Apply Vocabulary 'Fix-Up' Skills for Unknown Words (Klingner & Vaughn, 1999). When confronting an unknown word in a reading selection, the student applies the following vocabulary 'fix-up' skills:

  1. Read the sentence again.
  2. Read the sentences before and after the problem sentence for clues to the word's meaning.
  3. See if there are prefixes or suffixes in the word that can give clues to meaning.
  4. Break the word up by syllables and look for 'smaller words' within.

- [Student Strategy] Compiling a Vocabulary Journal from Course Readings (Hedin & Conderman, 2010). The student highlights new or unfamiliar vocabulary from course readings. The student writes each term into a vocabulary journal, using a standard 'sentence-stem' format: e.g., "*Mitosis* means…" or "A *chloroplast* is…". If the student is unable to generate a definition for a vocabulary term based on the course reading, he or she writes the term into the vocabulary journal without definition and then applies other strategies to define the term: e.g., look up the term in a dictionary; use Google to locate two examples of the term being used correctly in context; ask the instructor, etc.).

- [Student Strategy] Encouraging Student Use of Text Enhancements (Hedin & Conderman, 2010). Text enhancements can be used to tag important vocabulary terms, key ideas, or other reading content. If working with photocopied material, the student can use a highlighter to note key ideas or vocabulary. Another enhancement strategy is the 'lasso and rope' technique—using a pen or pencil to circle a vocabulary term and then drawing a line that connects that term to its underlined definition. If working from a textbook, the student can cut sticky notes into strips. These strips can be inserted in the book as pointers to text of interest. They can also be used as temporary labels—e.g., for writing a vocabulary term and its definition.

- [Student Strategy] Reading Actively Through Text Annotation (Harris, 1990; Sarkisian et al., 2003). Students are likely to increase their retention of information when they interact actively with their reading by jotting comments in the margin of the text. Using photocopies, the student is taught to engage in an ongoing 'conversation' with the writer by recording a running series of brief comments in the margins of the text. The student may write annotations to record opinions about points raised by the writer, questions triggered by the reading, or unknown vocabulary words.

References

Boardman, A. G., Roberts, G., Vaughn, S., Wexler, J., Murray, C. S., & Kosanovich, M. (2008). *Effective instruction for adolescent struggling readers: A practice brief.* Portsmouth, NH: RMC Research Corporation, Center on Instruction.

Carnine, L., & Carnine, D. (2004). The interaction of reading skills and science content knowledge when teaching struggling secondary students. *Reading & Writing Quarterly, 20*, 203-218.

Davey, B., & McBride, S. (1986). Effects of question-generation training on reading comprehension. *Journal of Educational Psychology, 78*, 256-262.

Harris, J. (1990). Text *annotation and underlining as metacognitive strategies to improve comprehension and retention of expository text*. Paper presented at the Annual Meeting of the National Reading Conference (Miami).

Hedin, L. R., & Conderman, G. (2010). Teaching students to comprehend informational text through rereading. *The Reading Teacher, 63*(7), 556–565.

Kamil, M. L., Borman, G. D., Dole, J., Kral, C. C., Salinger, T., & Torgesen, J. (2008). *Improving adolescent literacy: Effective classroom and intervention practices: A practice guide* (NCEE #2008-4027). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from http://ies.ed.gov/ncee/wwc.

Klingner, J. K., & Vaughn, S. (1999). Promoting reading comprehension, content learning, and English acquisition through collaborative strategic reading (CSR). *The Reading Teacher, 52*(7), 738-747.

Rosenshine, B., Meister, C., & Chapman, S. (1996). Teaching students to generate questions: A review of the intervention studies. *Review of Educational Research, 66*, 181-221.

Sarkisian V., Toscano, M., Tomkins-Tinch, K., & Casey, K. (2003). Reading *strategies and critical thinking*. Retrieved October 15, 2006, from http://www.academic.marist.edu/alcuin/ssk/stratthink.html

Texas Reading Initiative. (2002). *Promoting vocabulary development: Components of effective vocabulary instruction*. Austin, TX: Author. Retrieved November 15, 2010, from http://www.tea.state.tx.us/reading/practices/redbk5.pdf

Phrase-Cued Text Lessons

DESCRIPTION: Phrase-cued texts are a means to train students to recognize the natural pauses that occur between phrases in their reading. Because phrases are units that often encapsulate key ideas, the student's ability to identify them can enhance comprehension of the text (Rasinski, 1990, 1994).

MATERIALS:

- ❑ Two copies of a student passage: One annotated with phrase-cue marks and the other left without annotation.

PREPARATION: Here are guidelines for preparing phrase-cued passages:

1. Select a passage. Select a short (100-250 word) passage that is within the student's instructional or independent reading level.

2. Mark sentence boundaries. Mark the sentence boundaries of the passage with double slashes (//).

3. Mark within-sentence phrase-breaks. Read through the passage to locate 'phrase breaks' —naturally occurring pause points that are found within sentences. Mark each of these phrase breaks with a single slash mark (/).

INTERVENTION STEPS: Phrase-cued text lessons should be carried out in 10 minute sessions 3-4 times per week. Here are steps to carrying out this intervention:

1. [When first using this strategy] Introduce phrase-cued texts to the student. Say to the student: *"Passages are made up of key ideas, and these key ideas are often contained in units of words called 'phrases'. Several phrases can make up a sentence. When we read, it helps to read phrase by phrase to get the full meaning of the text."*

   Show the student a prepared passage with phrase-cue marks inserted. Point out how double-slash marks signal visually to the reader the longer pauses at sentence boundaries and single slash marks signal the shorter phrase pauses within sentences.

2. Follow the phrase-cued text reading sequence: The tutor prepares a new phrase-cued passage for each session and follows this sequence:

   a. The tutor reads the phrase-cued passage aloud once as a model, while the student follows along silently.

   b. The student reads the phrase-cued passage aloud 2-3 times. The tutor provides ongoing feedback about the student reading, noting the student's observance of phrase breaks. Tutor and student can also briefly discuss the content of the passage during intervals between re-readings.

   c. The session concludes with the student reading aloud a copy of the passage *without* phrase-cue marks. The tutor provides feedback about the student's success in recognizing the natural phrase breaks in the student's final read-aloud.

Additional Ideas for Using Phrase-Cued Texts. Educators might consider these additional ideas for using this strategy (Rasinski, 1994):

1. Use phrase-cued texts in a group-lesson format. The teacher can modify the intervention sequence (described above) to accommodate a group or class. The teacher models reading of the phrase-cued passage; the teacher and students next read through the passage chorally; then students (in pairs or individually) practice reading the phrase-cued text aloud while the instructor circulates around the room to observe. Finally, students individually read aloud the original passage without phrase-cue marks.

2. Encourage parents to use the phrase-cued text strategy. Parents can extend the impact of this strategy by using it at home. The teacher meets with the parent (e.g., at a parent-teacher conference) to demonstrate the phrase-cued text instructional sequence (described above). The teacher then gives the parent a collection of prepared passages (with one copy of each passage marked for phrase cues and the other left unmarked). The parent is instructed to use one passage per session with their child at home.

References

Rasinski, T.V. (1990). *The effects of cued phrase boundaries on reading performance: A review*. Kent, Ohio: Kent State University. (ERIC Document Reproduction Service No. ED313689).

Rasinski, T. V. (1994). Developing syntactic sensitivity in reading through phrase-cued texts. *Intervention in School and Clinic, 29*, 165-168.

Math: Selected Interventions

School-Wide Strategies for Managing... MATHEMATICS

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Mathematics instruction is a lengthy, incremental process that spans all grade levels. As children begin formal schooling in kindergarten, they develop 'number sense', an intuitive understanding of foundation number concepts and relationships among numbers. A central part of number sense is the student's ability to internalize the number line as a precursor to performing mental arithmetic. As students progress through elementary school, they must next master common math operations (addition, subtraction, multiplication, and division) and develop fluency in basic arithmetic combinations ('math facts'). In later grades, students transition to applied, or 'word', problems that relate math operations and concepts to real-world situations. Successful completion of applied problems requires that the student understand specialized math vocabulary, identify the relevant math operations needed to solve the problem while ignoring any unnecessary information also appearing in that written problem, translate the word problem from text format into a numeric equation containing digits and math symbols, and then successfully solve. It is no surprise, then, that there are a number of potential blockers to student success with applied problems, including limited reading decoding and comprehension skills, failure to acquire fluency with arithmetic combinations (math facts), and lack of proficiency with math operations. Deciding what specific math interventions might be appropriate for any student must therefore be a highly individualized process, one that is highly dependent on the student's developmental level and current math skills, the requirements of the school district's math curriculum, and the degree to which the student possesses or lacks the necessary auxiliary skills (e.g., math vocabulary, reading comprehension) for success in math. Here are some wide-ranging classroom (Tier I RTI) ideas for math interventions that extend from the primary through secondary grades.

Applied Problems: Encourage Students to Draw to Clarify Understanding *(Van Essen & Hamaker, 1990; Van Garderen, 2006)*. Making a drawing of an applied, or 'word', problem is one easy heuristic tool that students can use to help them to find the solution. An additional benefit of the drawing strategy is that it can reveal to the teacher any student misunderstandings about how to set up or solve the word problem. To introduce students to the drawing strategy, the teacher hands out a worksheet containing at least six word problems. The teacher explains to students that making a picture of a word problem sometimes makes that problem clearer and easier to solve. The teacher and students then independently create drawings of each of the problems on the worksheet. Next, the students show their drawings for each problem, explaining each drawing and how it relates to the word problem. The teacher also participates, explaining his or her drawings to the class or group. Then students are directed independently to make drawings as an intermediate problem-solving step when they are faced with challenging word problems. NOTE: This strategy appears to be more effective when used in later, rather than earlier, elementary grades.

Applied Problems: Improving Performance Through a 4-Step Problem-Solving Approach *(Pólya, 1957; Williams, 2003)*. Students can consistently perform better on applied math problems if they follow an efficient 4-step plan of understanding the problem, devising a plan, carrying out the plan, and looking back. (1) UNDERSTAND THE PROBLEM. To fully grasp the problem, the student may restate the problem in his or her own words, note key information, and identify missing information. (2) DEVISE A PLAN. In mapping out a strategy to solve the problem, the student may make a table, draw a diagram, or translate the verbal problem into an equation. (3) CARRY OUT THE PLAN. The student implements the steps in the plan, showing work and checking work for each step. (4) LOOK BACK. The student checks the results. If the answer is written as an equation, the student puts the results in words and checks whether the answer addresses the question posed in the original word problem.

Math Computation: Boost Fluency Through Explicit Time-Drills *(Rhymer, Skinner, Jackson, McNeill, Smith & Jackson, 2002; Skinner, Pappas & Davis, 2005; Woodward, 2006)*. Explicit time-drills are a method to boost students' rate of responding on math-fact worksheets. The teacher hands out the worksheet. Students are told that they will have 3 minutes to work on problems on the sheet. The teacher starts the stop watch and tells the students to start work. At the end of the first minute in the 3-minute span, the teacher 'calls time', stops the stopwatch, and tells the students to underline the last number written and to put their pencils in the air. Then students are told to resume work and the teacher restarts the stopwatch. This process is repeated at the end of minutes 2 and 3. At the conclusion of the 3 minutes, the teacher collects the student worksheets. TIPS: Explicit time-drills work best on 'simple' math facts requiring few computation steps. They are less effective on more complex math facts. Also, a less intrusive and more flexible version of this intervention is to use time-prompts while students are working independently on math facts to speed their rate of responding. For example, at the end of every minute of seatwork, the teacher can call the time and have students draw a line under the item that they are working on when that minute expires.

Math Computation: Motivate With 'Errorless Learning' Worksheets *(Caron, 2007)*. Reluctant students can be motivated to practice math number problems to build computational fluency when given worksheets that include an answer key (number problems with correct answers) displayed at the top of the page. In this version of an 'errorless learning' approach, the student is directed to complete math facts as quickly as possible. If the student comes to a number problem that he or she cannot solve, the student is encouraged to locate the problem and its correct answer in the key at the top of the page and write it in. Such speed drills build computational fluency while promoting students' ability to visualize and to use a mental number line. TIP: Consider turning this activity into a 'speed drill'. The student is given a kitchen timer and instructed to set the timer for a predetermined span of time (e.g., 2 minutes) for each drill. The student completes as many problems as possible before the timer rings. The student then graphs the number of problems correctly computed each day on a time-series graph, attempting to better his or her previous score.

Math Computation: Two Ideas to Jump-Start Active Academic Responding *(Skinner, Pappas & Davis, 2005)*. Research shows that when teachers use specific techniques to motivate their classes to engage in higher rates of active and accurate academic responding, student learning rates are likely to go up. Here are two ideas to accomplish increased academic responding on math tasks. First, break longer assignments into shorter assignments with performance feedback given after each shorter 'chunk' (e.g., break a 20-minute math computation worksheet task into 3 seven-minute assignments). Breaking longer assignments into briefer segments also allows the teacher to praise struggling students more frequently for work completion and effort, providing an additional 'natural' reinforcer. Second, allow students to respond to easier practice items orally rather than in written form to speed up the rate of correct responses.

Math Homework: Motivate Students Through Reinforcers, Interesting Assignments, Homework Planners, and Self-Monitoring *(Bryan & Sullivan-Burstein, 1998)*. Improve students' rate of homework completion and quality by using reinforcers, motivating 'real-life' assignments, a homework planner, and student self-monitoring. (1) Reinforcers: Allow students to earn a small reward (e.g., additional free time) when they turn in all homework assignments for the week. (2) 'Real-life' Assignments: Make homework meaningful by linking concepts being taught to students' lives. In a math lesson on estimating area, for example, give students the homework task of calculating the area of their bedroom and estimating the amount of paint needed to cover the walls. (3) Homework Planner: Teach students to use a homework planner to write down assignments, organize any materials (e.g., worksheets) needed for homework, transport completed homework safely back to school, and provide space for parents and teachers to communicate about homework via written school-home notes. (4) Student Self-Monitoring: Direct students to chart their homework completion each week. Have students plot the number of assignments turned in on-time in green, assignments not turned in at all in red, and assignments turned in late in yellow.

Math Instruction: Consolidate Student Learning During Lecture Through the Peer-Guided Pause *(Hawkins, & Brady, 1994)*. During large-group math lectures, teachers can help students to retain more instructional content by incorporating brief Peer Guided Pause sessions into lectures. Students are trained to work in pairs. At one or more appropriate review points in a lecture period, the instructor directs students to pair up to work together for 4 minutes. During each Peer Guided Pause, students are given a worksheet that contains one or more correctly completed word or number problems illustrating the math concept(s) covered in the lecture. The sheet also contains several additional, similar problems that pairs of students work cooperatively to complete, along with an answer key. Student pairs are reminded to (a) monitor their understanding of the lesson concepts; (b) review the correctly math model problem; (c) work cooperatively on the additional problems, and (d) check their answers. The teacher can direct student pairs to write their names on the practice sheets and collect them as a convenient way to monitor student understanding.

Math Instruction: Increase Student Engagement and Improve Group Behaviors With Response Cards *(Armendariz & Umbreit, 1999; Lambert, Cartledge, Heward & Lo, 2006)*. Response cards can increase student active engagement in group math activities while reducing disruptive behavior. In the group-response technique, all students in the classroom are supplied with an erasable tablet ('response card'), such as a chalk slate or laminated white board with erasable marker. The teacher instructs at a brisk pace. The instructor first poses a question to the class. Students are given sufficient wait time for each to write a response on his or her response card. The teacher then directs students to present their cards. If most or all of the class has the correct answer, the teacher praises the group. If more than one quarter of the students records an incorrect answer on their cards, however, the teacher uses guided questions and demonstration to steer students to the correct answer.

Math Instruction: Maintain a Supportive Atmosphere for Classroom "Math Talk" *(Cooke & Adams, 1998)*. Teachers can promote greater student 'risk-taking' in mathematics learning when they cultivate a positive classroom atmosphere for math discussions while preventing peers from putting each other down. The teacher models behavioral expectations for open, interactive discussions, praises students for their class participation and creative attempts at problem-solving, and regularly points out that incorrect answers and misunderstandings should be celebrated—as they often lead to breakthroughs in learning. The teacher uses open-ended comments (e.g., "What led you to that answer?") as tools to draw out students and encourage them to explore and apply math concepts in group discussion. Students are also encouraged in a supportive manner to evaluate each other's reasoning. However, the teacher intervenes immediately to prevent negative student comments or 'put-downs' about peers. As with any problem classroom behavior, a first offense requires that the student meet privately with the instructor to discuss teacher expectations for positive classroom behavior. If the student continues to put down peers, the teacher imposes appropriate disciplinary consequences.

Math Instruction: Support Students Through a Wrap-Around Instruction Plan *(Montague, 1997; Montague, Warger & Morgan, 2000)*. When teachers instruct students in more complex math cognitive strategies, they must support struggling learners with a 'wrap-around' instructional plan. That plan incorporates several elements: (a) Assessment of the student's problem-solving skills. The instructor first verifies that the student has the necessary academic competencies to learn higher-level math content, including reading and writing skills, knowledge of basic math operations, and grasp of required math vocabulary. (b) Explicit instruction. The teacher presents new math content in structured, highly organized lessons. The instructor also uses teaching tools such as Guided Practice (moving students from known material to new concepts through a thoughtful series of teacher questions) and 'overlearning' (teaching and practicing a skill with the class to the point at which students develop automatic recall and control of it). (c) Process modeling. The teacher adopts a 'think aloud' approach, or process modeling, to verbally reveal his or her cognitive process to the class while using a cognitive strategy to solve a math problem. In turn, students are encouraged to think aloud when applying the same strategy—first as part of a whole-class or cooperative learning group, then independently. The teacher observes students

during process modeling to verify that they are correctly applying the cognitive strategy. (d) Performance feedback. Students get regular performance feedback about their level of mastery in learning the cognitive strategy. That feedback can take many forms, including curriculum-based measurement, timely corrective feedback, specific praise and encouragement, grades, and brief teacher conferences. (e) Review of mastered skills or material. Once the student has mastered a cognitive strategy, the teacher structures future class lessons or independent work to give the student periodic opportunities to use and maintain the strategy. The teacher also provides occasional brief 'booster sessions', reteaching steps of the cognitive strategy to improve student retention.

Math Instruction: Unlock the Thoughts of Reluctant Students Through Class Journaling *(Baxter, Woodward & Olson, 2005)*. Students can effectively clarify their knowledge of math concepts and problem-solving strategies through regular use of class 'math journals'. Journaling is a valuable channel of communication about math issues for students who are unsure of their skills and reluctant to contribute orally in class. At the start of the year, the teacher introduces the journaling assignment, telling students that they will be asked to write and submit responses at least weekly to teacher-posed questions. At first, the teacher presents 'safe' questions that tap into the students' opinions and attitudes about mathematics (e.g., 'How important do you think it is nowadays for cashiers in fast-food restaurants to be able to calculate in their head the amount of change to give a customer?"). As students become comfortable with the journaling activity, the teacher starts to pose questions about the students' own mathematical thinking relating to specific assignments. Students are encouraged to use numerals, mathematical symbols, and diagrams in their journal entries to enhance their explanations. The teacher provides brief written comments on individual student entries, as well as periodic oral feedback and encouragement to the entire class on the general quality and content of class journal responses. Regular math journaling can prod students to move beyond simple 'rote' mastery of the steps for completing various math problems toward a deeper grasp of the math concepts that underlie and explain a particular problem-solving approach. Teachers will find that journal entries are a concrete method for monitoring student understanding of more abstract math concepts. To promote the quality of journal entries, the teacher might also assign them an effort grade that will be calculated into quarterly math report card grades.

Math Problem-Solving: Help Students Avoid Errors With the 'Individualized Self-Correction Checklist' *(Zrebiec Uberti, Mastropieri & Scruggs, 2004)*. Students can improve their accuracy on particular types of word and number problems by using an 'individualized self-instruction checklist' that reminds them to pay attention to their own specific error patterns. To create such a checklist, the teacher meets with the student. Together they analyze common error patterns that the student tends to commit on a particular problem type (e.g., 'On addition problems that require carrying, I don't always remember to carry the number from the previously added column.'). For each type of error identified, the student and teacher together describe the appropriate step to take to prevent the error from occurring (e.g., 'When adding each column, make sure to carry numbers when needed.'). These self-check items are compiled into a single checklist. Students are then encouraged to use their individualized self-instruction checklist whenever they work independently on their number or word problems. As older students become proficient in creating and using these individualized error checklists, they can begin to analyze their own math errors and to make their checklists independently whenever they encounter new problem types.

Math Review: Balance Massed & Distributed Practice *(Carnine, 1997)*. Teachers can best promote students acquisition and fluency in a newly taught math skill by transitioning from massed to distributed practice. When students have just acquired a math skill but are not yet fluent in its use, they need lots of opportunities to try out the skill under teacher supervision—a technique sometimes referred to as 'massed practice'. Once students have developed facility and independence with that new math skill, it is essential that they then be required periodically to use the skill in order to embed and retain it—a strategy also known as 'distributed practice'. Teachers can program distributed practice of a math skill such as reducing fractions to least common

denominators into instruction either by (a) regularly requiring the student to complete short assignments in which they practice that skill in isolation (e.g., completing drill sheets with fractions to be reduced), or (b) teaching a more advanced algorithm or problem-solving approach that incorporates--and therefore requires repeated use of--the previously learned math skill (e.g., requiring students to reduce fractions to least-common denominators as a necessary first step to adding the fractions together and converting the resulting improper fraction to a mixed number).

Math Review: Teach Effective Test-Preparation Strategies *(Hong, Sas, & Sas, 2006)*. A comparison of the methods that high and low-achieving math students typically use to prepare for tests suggests that struggling math students need to be taught (1) specific test-review strategies and (2) time-management and self-advocacy skills. Among review-related strategies, deficient test-takers benefit from explicit instruction in how to take adequate in-class notes; to adopt a systematic method to review material for tests (e.g., looking over their notes each night, rereading relevant portions of the math text, reviewing handouts from the teacher, etc.), and to give themselves additional practice in solving problems (e.g., by attempting all homework items, tackling additional problems from the text book, and solving problems included in teacher handouts). Deficient test-takers also require pointers in how to allocate and manage their study time wisely, to structure their study environment to increase concentration and reduce distractions, as well as to develop 'self-advocacy' skills such as seeking additional help from teachers when needed. Teachers can efficiently teach effective test-preparation methods as a several-session whole-group instructional module.

Math Vocabulary: Preteach, Model, and Use Standard Math Terms *(Chard, D., n.d.)*. Three strategies can help students to learn essential math vocabulary: preteaching key vocabulary items, modeling those vocabulary words, and using only universally accepted math terms in instruction. (1) Preteach key math vocabulary. Math vocabulary provides students with the language tools to grasp abstract mathematical concepts and to explain their own reasoning. Therefore, do not wait to teach that vocabulary only at 'point of use'. Instead, preview relevant math vocabulary as a regular a part of the 'background' information that students receive in preparation to learn new math concepts or operations. (2) Model the relevant vocabulary when new concepts are taught. Strengthen students' grasp of new vocabulary by reviewing a number of math problems with the class, each time consistently and explicitly modeling the use of appropriate vocabulary to describe the concepts being taught. Then have students engage in cooperative learning or individual practice activities in which they too must successfully use the new vocabulary—while the teacher provides targeted support to students as needed. (3) Ensure that students learn standard, widely accepted labels for common math terms and operations and that they use them consistently to describe their math problem-solving efforts.

References

Armendariz, F., & Umbreit, J. (1999). Using active responding to reduce disruptive behavior in a general education classroom. Journal of Positive Behavior Interventions, 1(3), 152-158.

Baxter, J. A., Woodward, J., & Olson, D. (2005). Writing in mathematics: An alternative form of communication for academically low-achieving students. Learning Disabilities Research & Practice, 20(2), 119–135.

Bryan, T., & Sullivan-Burstein, K. (1998). Teacher-selected strategies for improving homework completion. Remedial & Special Education, 19, 263-275.

Carnine, D. (1997). Instructional design in mathematics for students with learning disabilities. Journal of Learning Disabilities, 30, 130-141.

Caron, T. A. (2007). Learning multiplication the easy way. The Clearing House, 80, 278-282.

Chard, D. (n.d..) Vocabulary strategies for the mathematics classroom. Retrieved November 23, 2007, from http://www.eduplace.com/state/pdf/author/chard_hmm05.pdf

Cooke, L B. & Adams, V. M. (1998). Encouraging "math talk" in the classroom. Middle School Journal, 29(5), 35-40.

Hawkins, J., & Brady, M. P. (1994). The effects of independent and peer guided practice during instructional pauses on the academic performance of students with mild handicaps. Education & Treatment of Children, 17 (1), 1-28.

Hong, E., Sas, M., & Sas, J. C. (2006). Test-taking strategies of high and low mathematics achievers. Journal of Educational Research, 99(3), 144-155.

Lambert, M. C., Cartledge, G., Heward, W. L., & Lo, Y. (2006). Effects of response cards on disruptive behavior and academic responding during math lessons by fourth-grade urban students. Journal of Positive Behavior Interventions, 8(2), 88-99.

Montague, M. (1997). Cognitive strategy instruction in mathematics for students with learning disabilities. Journal of Learning Disabilities, 30, 164-177.

Montague, M., Warger, C., & Morgan, T. H. (2000). Solve it! Strategy instruction to improve mathematical problem solving.. Learning Disabilities Research & Practice, 15, 110-116.

Pólya, G. (1957). How to solve it (2nd ed.). Princeton University Press: Princeton, N.J.

Rhymer, K. N., Skinner, C. H., Jackson, S., McNeill, S., Smith, T., & Jackson, B. (2002). The 1-minute explicit timing intervention: The influence of mathematics problem difficulty. Journal of Instructional Psychology, 29(4), 305-311.

Skinner, C. H., Pappas, D. N., & Davis, K. A. (2005). Enhancing academic engagement: Providing opportunities for responding and influencing students to choose to respond. Psychology in the Schools, 42, 389-403.

Van Essen, G., & Hamaker, C. (1990). Using self-generated drawings to solve arithmetic word problems. Journal of Educational Research, 83, 301-312.

Van Garderen, D. (2006). Spatial visualization, visual imagery, and mathematical problem solving of students with varying abilities. Journal of Learning Disabilities, 39, 496-506.

Williams, K. M. (2003). Writing about the problem solving process to improve problem-solving performance. Mathematics Teacher, 96(3), 185-187.

Woodward, J. (2006). Developing automaticity in multiplication facts integrating strategy instruction with timed practice drills. Learning Disability Quarterly, 29, 269-289.

Zrebiec Uberti, H., Mastropieri, M. A., & Scruggs, T. E. (2004). Check it off: Individualizing a math algorithm for students with disabilities via self-monitoring checklists. Intervention in School and Clinic, 39, 269-275.

Building Number Sense Through a Counting Board Game

DESCRIPTION: The student plays a number-based board game to build skills related to 'number sense', including number identification, counting, estimation skills, and ability to visualize and access specific number values using an internal number-line (Siegler, 2009).

MATERIALS:

- *Great Number Line Race!* Form (attached)
- Spinner divided into two equal regions marked "1" and "2" respectively. (NOTE: If a spinner is not available, the interventionist can purchase a small blank wooden block from a crafts store and mark three of the sides of the block with the number "1" and three sides with the number "2".)

INTERVENTION STEPS: A counting-board game session lasts 12 to 15 minutes, with each game within the session lasting 2-4 minutes. Here are the steps:

1. *Introduce the Rules of the Game.* If the student is unfamiliar with the counting board game, interventionist trains the student to play it.

   The student is told that he or she will attempt to beat another player (either another student or the interventionist). The student is then given a penny or other small object to serve as a game piece. The student is told that players takes turns spinning the spinner (or, alternatively, tossing the block) to learn how many spaces they can move on *the Great Number Line Race!* board. Each player then advances the game piece, moving it forward through the numbered boxes of the game-board to match the number "1" or "2" selected in the spin or block toss.

   When advancing the game piece, the player must call out the number of each numbered box as he or she passes over it. For example, if the player has a game piece on box 7 and spins a "2", that player advances the game piece two spaces, while calling out "8" and "9" (the names of the numbered boxes that the game piece moves across during that turn).

   The player who reaches the "10" box first is the winner.

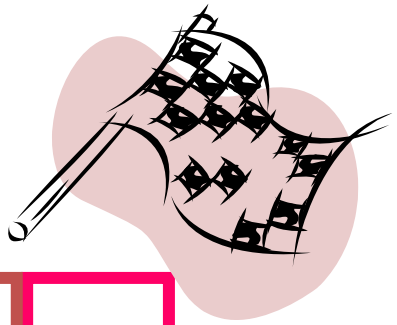
2. *Record Game Outcomes.* At the conclusion of each game, the interventionist records the winner using the form found on the *Great Number Line Race!* form. The session continues with additional games being played for a total of 12-15 minutes.

3. *Continue the Intervention Up to an Hour of Cumulative Play.* The counting-board game continues until the student has accrued a total of at least one hour of play across multiple days. (The amount of cumulative play can be calculated by adding up the daily time spent in the game as recorded on the *Great Number Line Race!* form.)

Reference

Siegler, R. S. (2009). Improving the numerical understanding of children from low-income families. *Child Development Perspectives, 3*(2), 118-124.

The Great Number-Line Race!



Start 1 2 3 4 5 6 7 8 9 10

Date: _____ Start Time: _____ : _____ End Time: _____ : _____

Directions: Mark the winner for each game with an 'X' in the table below.

Players	Game 1	Game 2	Game 3	Game 4	Game 5	Game 6	Game 7
1: _____							
2: _____							

Source: Siegler, R. S. (2009). Improving the numerical understanding of children from low-income families. *Child Development Perspectives, 3*(2), 1

Reducing the Student's Memorization Load: Math 'Shortcuts'

Students who struggle with math computation may benefit from being taught math 'shortcuts' that lighten the cognitive load (Gersten, Jordan & Flojo, 2005). Here are suggested shortcuts for the basic math operations:

Addition (Miller, Strawser & Mercer, 1996)

- ❑ The order of the numbers in an addition problem does not affect the answer.
- ❑ When zero is added to the original number, the answer is the original number.
- ❑ When 1 is added to the original number, the answer is the next larger number.

- ❑ ADDITION: Strategic Count-Up Strategy (Fuchs et al., 2009):

    1. The student is given a copy of the number-line.
    2. When presented with a two-addend addition problem, the student is taught to start with the larger of the two addends and to 'count up' by the amount of the smaller addend to arrive at the answer to the problem.

Subtraction (Miller, Strawser & Mercer, 1996)

- ❑ When zero is subtracted from the original number, the answer is the original number.
- ❑ When 1 is subtracted from the original number, the answer is the next smaller number.
- ❑ When the original number has the same number subtracted from it, the answer is zero.

- ❑ SUBTRACTION: Strategic Count-Up Strategy (Fuchs et al., 2009):

    1. The student is given a copy of the number-line.
    2. The student is taught to refer to the first number appearing in the subtraction problem (the minuend) as 'the number you start with' and to refer to the number appearing after the minus (subtrahend) as 'the minus number'.
    3. The student is directed to start at the minus number on the number-line and to count up to the starting number while keeping a running tally of numbers counted up on his or her fingers.
    4. The final tally of digits separating the minus number and starting number is the answer to the subtraction problem.

Multiplication (Miller, Strawser & Mercer, 1996)

- ❑ When a number is multiplied by zero, the answer is zero.
- ❑ When a number is multiplied by 1, the answer is the original number.
- ❑ When a number is multiplied by 2, the answer is equal to the number being added to itself.
- ❑ The order of the numbers in a multiplication problem does not affect the answer.

MULTIPLICATION: Strategic Count-By Strategy (Cullinan, Lloyd & Epstein, 1981)

1. The student looks at the two terms of the multiplication problem. The student picks one of the terms as a number that he or she can count by (the 'count by' number).
2. The student takes the remaining term from the multiplication problem (the 'count times' number) and makes a corresponding number of tally marks to match it.
3. The student starts counting using the 'count by' number. While counting, the student touches each of the tally marks matching the 'count times' number.
4. The student stops counting when he or she has reached the final tally-mark. The student writes down the last number said as the answer to the multiplication problem.

Division (Miller, Strawser & Mercer, 1996)

- ❑ When zero is divided by any number, the answer is zero.
- ❑ When a number is divided by 1, the answer is the original number.
- ❑ When a number is divided by itself, the answer is 1.

References

Cullinan, D., Lloyd, J., & Epstein, M.H. (1981). Strategy training: A structured approach to arithmetic instruction. *Exceptional Education Quarterly, 2*, 41-49.

Fuchs, L. S., Powell, S. R., Seethaler, P. M., Cirino, P. T., Fletcher, J. M., Fuchs, D., & Hamlett, C. L. (2009). The effects of strategic counting instruction, with and without deliberate practice, on number combination skill among students with mathematics difficulties. *Learning and Individual Differences 20*(2), 89-100.

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.

Miller, S.P., Strawser, S., & Mercer, C.D. (1996). Promoting strategic math performance among students with learning disabilities. *LD Forum, 21*(2), 34-40.

Strategic Number Counting Instruction

DESCRIPTION: The student is taught explicit number counting strategies for basic addition and subtraction. Those skills are then practiced with a tutor (adapted from Fuchs et al., 2009).

MATERIALS:

- Number-line (attached)
- Number combination (math fact) flash cards for basic addition and subtraction
- *Strategic Number Counting Instruction Score Sheet* (attached)

PREPARATION: The tutor trains the student to use these two counting strategies for addition and subtraction:

ADDITION: The student is given a copy of the appropriate number-line (1-10 or 1-20—see attached). When presented with a two-addend addition problem, the student is taught to start with the larger of the two addends and to 'count up' by the amount of the smaller addend to arrive at the answer to the problem.

SUBTRACTION: The student is given a copy of the appropriate number-line (1-10 or 1-20—see attached).. The student is taught to refer to the first number appearing in the subtraction problem (the minuend) as 'the number you start with' and to refer to the number appearing after the minus (subtrahend) as 'the minus number'. The student is directed to start at the minus number on the number-line and to count up to the starting number while keeping a running tally of numbers counted up on his or her fingers. The final tally of digits separating the minus number and starting number is the answer to the subtraction problem.

INTERVENTION STEPS: For each tutoring session, the tutor follows these steps:

1. *Create Flashcards.* The tutor creates addition and/or subtraction flashcards of problems that the student is to practice. Each flashcard displays the numerals and operation sign that make up the problem but leaves the answer blank.

2. *Review Count-Up Strategies*. At the opening of the session, the tutor asks the student to name the two methods for answering a math fact. The correct student response is 'Know it or count up.' The tutor next has the student describe how to count up an addition problem and how to count up a subtraction problem. Then the tutor gives the student two sample addition problems and two subtraction problems and directs the student to solve each, using the appropriate count-up strategy.

3. *Complete Flashcard Warm-Up*. The tutor reviews addition/subtraction flashcards with the student for three minutes. Before beginning, the tutor reminds the student that, when shown a flashcard, the student should try to 'pull the answer from your head'—but that if the student does not know the answer, he or she should use the appropriate count-up strategy. The tutor then reviews the flashcards with the student. Whenever the student makes an error, the tutor directs the student to use the correct count-up strategy to solve. NOTE: If the student cycles through all cards in the stack before the three-minute period has elapsed, the tutor shuffles the cards and begins again.

   At the end of the three minutes, the tutor counts up the number of cards reviewed and records the number of

cards that the student (a) identified from memory, (b) solved using the count-up strategy, and (c) was not able to correctly answer. These totals are recorded on the Strategic *Number Counting Instruction Score Sheet*

4. *Repeat Flashcard Review*. The tutor shuffles the math-fact flashcards, encourages the student to try to beat his or her previous score, and again reviews the flashcards with the student for three minutes. As before, whenever the student makes an error, the tutor directs the student to use the appropriate count-up strategy. Also, if the student completes all cards in the stack with time remaining, the tutor shuffles the stack and continues presenting cards until the time is elapsed.

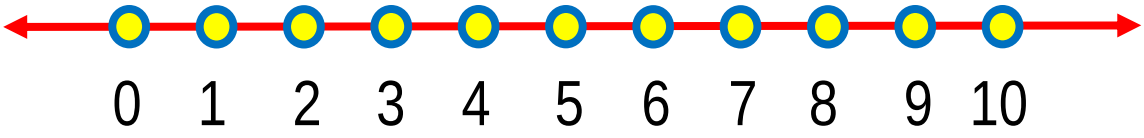
   At the end of the three minutes, the tutor again counts up the number of cards reviewed and records the number of cards that the student (a) identified from memory, (b) solved using the count-up strategy, and (c) was not able to correctly answer. These totals are again recorded on the Strategic *Number Counting Instruction Score Sheet.*

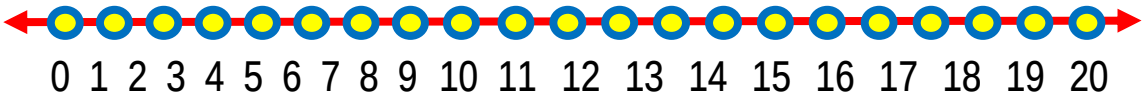
5. *Provide Performance Feedback*. The tutor gives the student feedback about whether (and by how much) the student's performance on the second flashcard trial exceeded the first. The tutor also provides praise if the student beat the previous score or encouragement if the student failed to beat the previous score.

Reference

Fuchs, L. S., Powell, S. R., Seethaler, P. M., Cirino, P. T., Fletcher, J. M., Fuchs, D., & Hamlett, C. L. (2009). The effects of strategic counting instruction, with and without deliberate practice, on number combination skill among students with mathematics difficulties. *Learning and Individual Differences 20*(2), 89-100.

Strategic Number Counting Instruction: Number-Lines





Strategic Number Counting Instruction Score Sheet

Student: _____ Interventionist(s): _____

Directions: During the strategic number counting instruction intervention, use this sheet to tally student responses: Number of Flash-Cards Known From Memory; Number of Flash-Cards Answered Correctly With Count-Up Strategy (with or without assistance); Number of Flash-Cards Unknown or Answered Incorrectly (even with assistance).

Date:_____	[Optional] Type/Range of Addition/Subtraction Math-Fact Flash-Cards Reviewed This Session:	
Trial 1: Math Flash-Card Warm-Up: 3 Minutes		
Number of Flash-Cards Known From Memory	Number of Flash-Cards Answered Correctly With Count-Up Strategy	Number of Flash-Cards Unknown or Answered Incorrectly
Trial 2: Math Flash-Card Review: 3 Minutes		
Number of Flash-Cards Known From Memory	Number of Flash-Cards Known From Memory	Number of Flash-Cards Known From Memory

Date:_____	[Optional] Type/Range of Addition/Subtraction Math-Fact Flash-Cards Reviewed This Session:	
Trial 1: Math Flash-Card Warm-Up: 3 Minutes		
Number of Flash-Cards Known From Memory	Number of Flash-Cards Answered Correctly With Count-Up Strategy	Number of Flash-Cards Unknown or Answered Incorrectly
Trial 2: Math Flash-Card Review: 3 Minutes		
Number of Flash-Cards Known From Memory	Number of Flash-Cards Known From Memory	Number of Flash-Cards Known From Memory

Student Self-Monitoring of Productivity to Increase Fluency on Math Computation Worksheets

DESCRIPTION: The student monitors and records her or his work production on math computation worksheets on a daily basis—with a goal of improving overall fluency (Maag, Reid, R., & DiGangi, 1993). This intervention can be used with a single student, a small group, or an entire class.

MATERIALS:

- Student self-monitoring audio prompt: Tape / audio file with random tones or dial-style kitchen timer
- Math computation worksheets containing problems targeted for increased fluency
- *Student Speed Check!* recording form (attached)

Preparation: To prepare for the intervention the teacher:

1. *Decides on the Length and Frequency of Each Self-Monitoring Period.* The instructor decides on the length of session and frequency of the student's self-monitoring intervention. NOTE: One good rule of thumb is to set aside at least 10 minutes per day for this or other interventions to promote fluent student retrieval of math facts (Gersten et al., 2009). For example, Mrs. Rilke, a 3rd-grade teacher, decides that her student, Roy, will monitor his productivity on math computation worksheets on a daily basis for 10 minutes per session.

2. *Selects a Math Computation Skill Target*. The instructor chooses one or more problem types that are to appear in intervention worksheets. For example, Mrs. Rilke decides to target two math computation problem-types for Roy: Addition—double-digit plus double-digit with regrouping and Subtraction—double-digit plus double-digit with no regrouping.

3. *Creates Math Computation Worksheets*. When the teacher has chosen the problem types, he or she makes up sufficient equivalent worksheets (with the same number of problems and the same mix of problem-types) to be used across the intervention days. Each worksheet should have enough problems to keep the student busy for the length of time set aside for a self-monitoring intervention session.

   For example, when designing a worksheet, Mrs. Rilke decides to include 15 problems per sheet for her 3rd grade student, to keep Roy busy for the 10 minute daily intervention period. The teacher then goes to the free math worksheet generator at www.interventioncentral.org to create and print off 25 equivalent math worksheets for use across all intervention days (5 days per week for five instructional weeks).

4. *Determines How Many Audio Prompts the Student Will Receive.* This intervention relies on student self-monitoring triggered by audio prompts. Therefore, the teacher must decide on a fixed number of audio prompts the student is to receive per session. NOTE: On the attached *Student Speed Check!* form, space is provided for the student to record productivity for up to five audio prompts per session.

5. *Selects a Method to Generate Random Audio Prompts*. Next, the teacher must decide on how to generate the audio prompts (tones) that drive this intervention. There are two possible choices:

(A) The teacher can develop a tape or audio file that has several random tones spread across the time-span of the intervention session, with the number of tones equaling the fixed number of audio prompts selected for the intervention (see previous step). For example, the instructor may develop a 10-minute tape with five tones randomly sounding at 2 minutes, 3 minutes, 5 minutes, 7 minutes, and 10 minutes.

(B) The instructor may purchase a dial-type kitchen timer. During the intervention period, the instructor turns the dial to a randomly selected number of minutes. When the timer expires and chimes as a student audio prompt, the teacher resets the timer to another random number of minutes and repeats this process until the intervention period is over. Of course, the teacher must ensure that the student receives the same fixed number of audio prompts (e.g., 5) across each intervention session and that all audio prompts are delivered by the conclusion of the timed intervention session. Before each intervention session, the teacher may want to preselect several random time intervals. For example, on a given day, the instructor who wants to include five timer prompts in a 10 minute intervention session may decide to ring the timer at 2 minutes, 3 minutes, 5 minutes, 7 minutes, and 10 minutes. This sequence would then be changed for the next session.

6. *Trains the Student in the Procedures to Self-Monitor Productivity.* The teacher meets with the student to train him or her in the steps of the intervention (described in the next session).

INTERVENTION STEPS: Sessions of the productivity self-monitoring intervention for math computation include these steps:

1. *[Student] Set a Session Computation Goal.* The student looks up the total number of problems completed on his or her most recent timed worksheet and writes that figure into the 'Score to Beat' section of the current day's *Student Speed Check!* form.

2. *[Teacher] Set the Timer or Start the Tape.* The teacher directs the student to begin working on the worksheet and either starts the tape with tones spaced at random intervals or sets a kitchen timer. If using a timer, the teacher randomly sets the timer randomly to a specific number of minutes. When the timer expires and chimes as a student audio prompt, the teacher resets the timer to another random number of minutes and repeats this process until the intervention period is over.

3. *[Student] At Each Tone, Record Problems Completed.* Whenever the student hears an audio prompt or at the conclusion of the timed intervention period, the student pauses to:

    a. circle the problem that he or she is currently working on

    b. count up the number of problems completed since the previous tone (or in the case of the first tone, the number of problems completed since starting the worksheet)

    c. record the number of completed problems next to the appropriate tone interval on the attached *Student Speed Check!* form.

4. [Teacher] *Announce the End of the Intervention Period*. The teacher announces that the intervention period is over and that the student should stop working on the worksheet. NOTE: If a tape or audio file is being used to deliver audio tones, it can contain an announcement stating that the intervention period has ended.

5. *[Student] Tally Day's Performance.* The student adds up the problems completed at the tone-intervals to give a productivity total for the day. The student then compares the current day's figure to that of the previous day to see if he or she was able to beat the previous score. If YES, the student receives praise from the teacher; if NO, the student receives encouragement from the teacher.

References

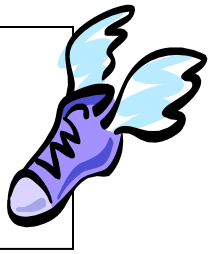
Maag, J. W., Reid, R., & DiGangi, S. A. (1993). Differential effects of self-monitoring attention, accuracy, and productivity. *Journal of Applied Behavior Analysis, 26*, 329-344.

Gersten, R., Beckmann, S., Clarke, B., Foegen, A., Marsh, L., Star, J. R., & Witzel,B. (2009). *Assisting students struggling with mathematics: Response to Intervention RtI) for elementary and middle schools* (NCEE 2009-4060). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sci ences, U.S. Department of Education. Retrieved from http://ies.ed.gov/ncee/wwc/publications/practiceguides/

Student Speed Check!

Student Name: _____ Classroom: _____

Directions: Use this form to track your speed in completing math worksheets.



Score to Beat: How many problems did I complete at my last session?	_____ Problems
Today's Session:	Date: _____
How many problems did I complete at TONE #1?	_____ Problems
How many more problems did I complete at TONE #2?	_____ Problems
How many more problems did I complete at TONE #3?	_____ Problems
How many more problems did I complete at TONE #4?	_____ Problems
How many more problems did I complete at TONE #5?	_____ Problems
How many more problems did I complete between the final tone and the end of the session?	_____ Problems
TOTAL number of problems completed in this session:	_____ Problems
Did I beat my previous score?	___ Yes ___ No

Score to Beat: How many problems did I complete at my last session?	_____ Problems
Today's Session:	Date: _____
How many problems did I complete at TONE #1?	_____ Problems
How many more problems did I complete at TONE #2?	_____ Problems
How many more problems did I complete at TONE #3?	_____ Problems
How many more problems did I complete at TONE #4?	_____ Problems
How many more problems did I complete at TONE #5?	_____ Problems
How many more problems did I complete between the final tone and the end of the session?	_____ Problems
TOTAL number of problems completed in this session:	_____ Problems
Did I beat my previous score?	___ Yes ___ No

Increase Student Math Success with Customized Math Self-Correction Checklists

DESCRIPTION: The teacher analyzes a particular student's pattern of errors commonly made when solving a math algorithm (on either computation or word problems) and develops a brief error self-correction checklist unique to that student. The student then uses this checklist to self-monitor—and when necessary correct—his or her performance on math worksheets before turning them in.

MATERIALS:

- Customized student math error self-correction checklist (described below)
- Worksheets or assignments containing math problems matched to the error self-correction checklist

INTERVENTION STEPS: The intervention with customized math error self-correction checklists includes these steps (adapted from Dunlap & Dunlap, 1989; Uberti et al., 2004):

1. *Develop the Checklist*. The teacher draws on multiple sources of data available in the classroom to create a list of errors that the student commonly makes on a specific type of math computation or word problem. Good sources of information for analyzing a student's unique pattern of math-related errors include review of completed worksheets and other work products, interviewing the student, asking the student to solve a math problem using a 'think aloud' approach to walk through the steps of an algorithm, and observing the student completing math problems in a cooperative learning activity with other children.

   Based on this error analysis, the teacher creates a short (4-to-5 item) student self-correction checklist that includes the most common errors made by that student. Items on the checklist are written in the first person and when possible are stated as 'replacement' or goal behaviors. This checklist might include steps in an algorithm that challenge the student (e.g., "I underlined all numbers at the top of the subtraction problem that were smaller than their matching numbers at the bottom of the problem") as well as goals tied to any other errors that impede math performance (e.g., "I wrote all numbers carefully so that I could read them easily and not mistake them for other numbers").

   NOTE: To reduce copying costs, the teacher can laminate the self-correction checklist and provide the student with an erasable marker to allow for multiple re-use of the form.

2. *Introduce the Checklist.* The teacher shows the student the self-correction checklist customized for that student. The teacher states that the student is to use the checklist to check his or her work before turning it in so that the student can identify and correct the most common errors.

3. *Prompt the Student to Use the Checklist to Evaluate Each Problem.* The student is directed to briefly review all items on the checklist before starting any worksheet or assignment containing the math problems that it targets.

   When working on the math worksheet or assignment, the student uses the checklist after *every* problem to check his or her work—marking each checklist item with a plus sign ('+') if correctly followed or a minus sign ('-') if not correctly followed. If any checklist item receives a minus rating, the student is directed to leave the original

solution to the problem untouched, to solve the problem again, and again to use the checklist to check the work. Upon finishing the assignment, the student turns it in, along with the completed self-correction checklists.

4. *Provide Performance Feedback, Praise, and Encouragement*. Soon after the student submits any math worksheets associated with the intervention, the teacher should provide him or her with timely feedback about errors, praise for correct responses, and encouragement to continue to apply best effort.

5. *[OPTIONAL] Provide Reinforcement for Checklist Use*. If the student appears to need additional incentives to increase motivation for the intervention, the teacher can assign the student points for intervention compliance: (1) the student earns one point on any assignment for each correct answer, and (2) the student earns an additional point for each problem on which the student committed none of the errors listed on the self-correction checklist. The student is allowed to collect points and to redeem them for privileges or other rewards in a manner to be determined by the teacher.

6. *Fade the Intervention*. The error self-correction checklist can be discontinued when the student is found reliably to perform on the targeted math skill(s) at a level that the teacher defines as successful (e.g., 90 percent success or greater).

Reference

Dunlap, L. K., & Dunlap, G. (1989). A self-monitoring package for teaching subtraction with regrouping to students with learning disabilities. *Journal of Applied Behavior Analysis, 229*, 309-314.

Uberti, H. Z., Mastropieri, M. A., & Scruggs, T. E. (2004). Check it off: Individualizing a math algorithm for students with disabilities via self-monitoring checklists. *Intervention in School and Clinic, 39*(5), 269-275.

SAMPLE: Math Self-Correction Checklist

Student Name: _____ Date: _____

Rater: Student Classroom: _____

Directions: To the Student: BEFORE YOU START: Look at each of these goals for careful math work before beginning your assignment. AFTER EACH PROBLEM: Stop and rate YES or NO whether you performed each goal correctly.

	Problem#1	Problem#2	Problem#3	Problem#4	Problem#5
I underlined all numbers at the top of the subtraction problem that were smaller than their matching numbers at the bottom of the problem. Did the student succeed in this behavior goal? ❑ YES ❑ NO	__Y __N	__Y __N	__Y __N	__Y __N	__Y __N
I wrote all numbers carefully so that I could read them easily and not mistake them for other numbers. Did the student succeed in this behavior goal? ❑ YES ❑ NO	__Y __N	__Y __N	__Y __N	__Y __N	__Y __N
I lined up all numbers in the right place-value columns. Did the student succeed in this behavior goal? ❑ YES ❑ NO	__Y __N	__Y __N	__Y __N	__Y __N	__Y __N
I rechecked all of my answers. Did the student succeed in this behavior goal? ❑ YES ❑ NO	__Y __N	__Y __N	__Y __N	__Y __N	__Y __N

Math Self-Correction Checklist

Student Name: _____ Date: _____

Rater: Student Classroom: _____

Directions: To the Student: BEFORE YOU START: Look at each of these goals for careful math work before beginning your assignment. AFTER EACH PROBLEM: Stop and rate YES or NO whether you performed each goal correctly.

	Problem#1	Problem#2	Problem#3	Problem#4	Problem#5
_____ Did the student succeed in this math goal? ❑ YES ❑ NO	__Y __N	__Y __N	__Y __N	__Y __N	__Y __N
_____ Did the student succeed in this math goal? ❑ YES ❑ NO	__Y __N	__Y __N	__Y __N	__Y __N	__Y __N
_____ Did the student succeed in this math goal? ❑ YES ❑ NO	__Y __N	__Y __N	__Y __N	__Y __N	__Y __N
_____ Did the student succeed in this math goal? ❑ YES ❑ NO	__Y __N	__Y __N	__Y __N	__Y __N	__Y __N

Peer Tutoring in Math Computation with Constant Time Delay

DESCRIPTION: This intervention employs students as reciprocal peer tutors to target acquisition of basic math facts (math computation) using constant time delay (Menesses & Gresham, 2009; Telecsan, Slaton, & Stevens, 1999). Each tutoring 'session' is brief and includes its own progress-monitoring component--making this a convenient and time-efficient math intervention for busy classrooms.

MATERIALS:

Student Packet: A work folder is created for each tutor pair. The folder contains:

- ❑ 10 math fact cards with equations written on the front and correct answer appearing on the back. NOTE: The set of cards is replenished and updated regularly as tutoring pairs master their math facts.
- ❑ Progress-monitoring form for each student.
- ❑ Pencils.

PREPARATION: To prepare for the tutoring program, the teacher selects students to participate and trains them to serve as tutors.

Select Student Participants. Students being considered for the reciprocal peer tutor program should at minimum meet these criteria (Telecsan, Slaton, & Stevens, 1999, Menesses & Gresham, 2009):

- ❑ Is able and willing to follow directions;
- ❑ Shows generally appropriate classroom behavior;
- ❑ Can attend to a lesson or learning activity for at least 20 minutes.
- ❑ Is able to name all numbers from 0 to 18 (if tutoring in addition or subtraction math facts) and name all numbers from 0 to 81 (if tutoring in multiplication or division math facts).
- ❑ Can correctly read aloud a sampling of 10 math-facts (equation plus answer) that will be used in the tutoring sessions. (NOTE: The student does not need to have memorized or otherwise mastered these math facts to participate—just be able to read them aloud from cards without errors).
- ❑ [To document a deficit in math computation] When given a two-minute math computation probe to complete independently, computes fewer than 20 correct digits (Grades 1-3) or fewer than 40 correct digits (Grades 4 and up) (Deno & Mirkin, 1977).

NOTE: Teachers may want to use the attached *Reciprocal Peer Tutoring in Math Computation: Teacher Nomination Form* to compile a list of students who would be suitable for the tutoring program.

Train the Student Tutors. Student tutors are trained through explicit instruction (Menesses & Gresham, 2009) with the teacher clearly explaining the tutoring steps, demonstrating them, and then having the students practice the steps with performance feedback and encouragement from the teacher. The teacher also explains, demonstrates, and observes students practice the progress-monitoring component of the program. (NOTE: Teachers can find a handy listing of all the tutoring steps in which students are to be trained on the attached form *Peer Tutoring in Math*

Computation with Constant Time Delay: Integrity Checklist. This checklist can also be used to evaluate the performance of students to determine their mastery of the tutoring steps during practice sessions with the teacher.)

When students have completed their training, the teacher has each student role-play the tutor with the teacher assuming the role of tutee. The tutor-in-training works through the 3-minute tutoring segment and completes the follow-up progress-monitoring activity. The teacher then provides performance feedback. The student is considered to be ready to tutor when he or she successfully implements all steps of the intervention (100% accuracy) on three successive training trials (Menesses & Gresham, 2009).

INTERVENTION STEPS: Students participating in the tutoring program meet in a setting in which their tutoring activities will not distract other students. The setting is supervised by an adult who monitors the students and times the tutoring activities. These are the steps of the tutoring intervention:

1. Complete the Tutoring Activity. In each tutoring pair, one of the students assumes the role of tutor. The supervising adult starts the timer and says 'Begin'; after 3 minutes, the adult stops the timer and says 'Stop'.

   While the timer is running, the tutor follows this sequence:

   a. *Presents Cards*. The tutor presents each card to the tutee for 3 seconds.

   b. *Provides Tutor Feedback*. [When the tutee responds correctly] The tutor acknowledges the correct answer and presents the next card.

      [When the tutee does not respond within 3 seconds or responds incorrectly] The tutor states the correct answer and has the tutee repeat the correct answer. The tutor then presents the next card.

   c. *Provides Praise*. The tutor praises the tutee immediately following correct answers.

   d. *Shuffles Cards*. When the tutor and tutee have reviewed all of the math-fact carts, the tutor shuffles them before again presenting cards.

   e. *Continues to the Timer*. The tutor continues to presents math-fact cards for tutee response until the timer rings.

2. Assess the Progress of the Tutee. The tutor concludes each 3-minute tutoring session by assessing the number of math facts mastered by the tutee. The tutor follows this sequence:

   a. *Presents Cards.* The tutor presents each card to the tutee for 3 seconds.

   b. *Remains Silent*. The tutor does not provide performance feedback or praise to the tutee, or otherwise talk during the assessment phase.

   c. *Sorts Cards*. Based on the tutee's responses, the tutor sorts the math-fact cards into 'correct' and 'incorrect' piles.

d. *Counts Cards and Records Totals*. The tutor counts the number of cards in the 'correct' and 'incorrect' piles and records the totals on the tutee's progress-monitoring chart.

3. Switch Roles. After the tutor has completed the 3-minute tutoring activity and assessed the tutee's progress on math facts, the two students reverse roles. The new tutor then implements steps 2 and 3 described above with the new tutee.

4. Conduct Tutoring Integrity Checks and Monitor Student Performance. As the student pairs complete the tutoring activities, the supervising adult monitors the integrity with which the intervention is carried out. At the conclusion of the tutoring session, the adult gives feedback to the student pairs, praising successful implementation and providing corrective feedback to students as needed. NOTE: Teachers can use the attached form *Peer Tutoring in Math Computation with Constant Time Delay: Integrity Checklist* to conduct integrity checks of the intervention and student progress-monitoring components of the math peer tutoring.

   The adult supervisor also monitors student progress. After each student pair has completed one tutoring cycle and assessed and recorded their progress, the supervisor reviews the score sheets. If a student has successfully answered all 10 math fact cards three times in succession, the supervisor provides that student's tutor with a new set of math flashcards.

References

Deno, S. L., & Mirkin, P. K. (1977). Data-based program modification: A manual. Reston, VA: Council for Exceptional Children.

Menesses, K. F., & Gresham, F. M. (2009). Relative efficacy of reciprocal and nonreciprocal peer tutoring for students at-risk for academic failure. *School Psychology Quarterly, 24*, 266–275.

Telecsan, B. L., Slaton, D. B., & Stevens, K. B. (1999). Peer tutoring: Teaching students with learning disabilities to deliver time delay instruction. *Journal of Behavioral Education, 9*, 133-154.

Reciprocal Peer Tutoring in Math Computation: Teacher Nomination Form

Teacher: _____ Classroom: _____ Date: _____

Directions: Select students in your class that you believe would benefit from participation in a peer tutoring program to boost math computation skills. Write the names of your student nominees in the space provided below. Remember, students who are considered for the peer tutoring program should—*at minimum*—meet these criteria:

- Show generally appropriate classroom behaviors and follow directions.
- Can pay attention to a lesson or learning activity for at least 20 minutes.
- Are able to wait appropriately to hear the correct answer from the tutor if the student does not know the answer.
- When given a two-minute math computation probe to complete independently, computes fewer than 20 correct digits (Grades 1-3) or fewer than 40 correct digits (Grades 4 and up) (Deno & Mirkin, 1977).
- Can name all numbers from 0 to 18 (if tutoring in addition or subtraction math facts) and name all numbers from 0 to 81 (if tutoring in multiplication or division math facts).
- Can correctly read aloud a sampling of 10 math-facts (equation plus answer) that will be used in the tutoring sessions. (NOTE: The student does not need to have memorized or otherwise mastered these math facts to participate—just be able to read them aloud from cards without errors).

Number Student	Name	NOTES
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

Peer Tutoring in Math Computation with Constant Time Delay: Integrity Checklist			
Tutoring Session: Intervention Phase			
Directions: Observe the tutor and tutee for a full intervention session. Use this checklist to record whether each of the key steps of the intervention were correctly followed.			
Correctly Carried Out?	Step Tutor	Action	NOTES
___ Y ___ N	1.	Promptly Initiates Session. At the start of the timer, the tutor immediately presents the first math-fact card.	
___ Y ___ N	2.	Presents Cards. The tutor presents each card to the tutee for 3 seconds.	
___ Y ___ N	3.	Provides Tutor Feedback. [When the tutee responds correctly] The tutor acknowledges the correct answer and presents the next card. [When the tutee does not respond within 3 seconds or responds incorrectly] The tutor states the correct answer and has the tutee repeat the correct answer. The tutor then presents the next card.	
___ Y ___ N	4.	Provides Praise. The tutor praises the tutee immediately following correct answers.	
___ Y ___ N	5.	Shuffles Cards. When the tutor and tutee have reviewed all of the math-fact carts, the tutor shuffles them before again presenting cards.	
___ Y ___ N	6.	Continues to the Timer. The tutor continues to presents math-fact cards for tutee response until the timer rings.	

Tutoring Session: Assessment Phase			
Directions: Observe the tutor and tutee during the progress-monitoring phase of the session. Use this checklist to record whether each of the key steps of the assessment were correctly followed.			
Correctly Carried Out?	Step	Tutor Action	NOTES
___ Y ___ N	1.	Presents Cards. The tutor presents each card to the tutee for 3 seconds.	
___ Y ___ N	2.	Remains Silent. The tutor does not provide performance feedback or praise to the tutee, or otherwise talk during the assessment phase.	
___ Y ___ N	3.	Sorts Cards. The tutor sorts cards into 'correct' and 'incorrect' piles based on the tutee's responses.	
___ Y ___ N	4.	Counts Cards and Records Totals. The tutor counts the number of cards in the 'correct' and 'incorrect' piles and records the totals on the tutee's progress-monitoring chart.	

Math Tutoring: Score Sheet

Tutor 'Coach': _____ Tutee 'Player': _____

Directions to the Tutor: Write down the number of math-fact cards that your partner answered *correctly* and the number answered *incorrectly*.		
Date:	Cards Correct:	Cards Incorrect:
Date:	Cards Correct:	Cards Incorrect:
Date:	Cards Correct:	Cards Incorrect:
Date:	Cards Correct:	Cards Incorrect:
Date:	Cards Correct:	Cards Incorrect:
Date:	Cards Correct:	Cards Incorrect:
Date:	Cards Correct:	Cards Incorrect:
Date:	Cards Correct:	Cards Incorrect:

Combining Cognitive & Metacognitive Strategies to Assist Students With Mathematical Problem Solving

Solving an advanced math problem independently requires the coordination of a number of complex skills. The student must have the capacity to reliably implement the specific steps of a particular problem-solving process, or cognitive strategy. At least as important, though, is that the student must also possess the necessary metacognitive skills to analyze the problem, select an appropriate strategy to solve that problem from an array of possible alternatives, and monitor the problem-solving process to ensure that it is carried out correctly.

The following strategies combine both cognitive and metacognitive elements (Montague, 1992; Montague & Dietz, 2009). First, the student is taught a 7-step process for attacking a math word problem (cognitive strategy). Second, the instructor trains the student to use a three-part self-coaching routine for each of the seven problem-solving steps (metacognitive strategy).

In the cognitive part of this multi-strategy intervention, the student learns an explicit series of steps to analyze and solve a math problem. Those steps include:

1. Reading the problem. The student reads the problem carefully, noting and attempting to clear up any areas of uncertainly or confusion (e.g., unknown vocabulary terms).
2. Paraphrasing the problem. The student restates the problem in his or her own words.
3. 'Drawing' the problem. The student creates a drawing of the problem, creating a visual representation of the word problem.
4. Creating a plan to solve the problem. The student decides on the best way to solve the problem and develops a plan to do so.
5. Predicting/Estimating the answer. The student estimates or predicts what the answer to the problem will be. The student may compute a quick approximation of the answer, using rounding or other shortcuts.
6. Computing the answer. The student follows the plan developed earlier to compute the answer to the problem.
7. Checking the answer. The student methodically checks the calculations for each step of the problem. The student also compares the actual answer to the estimated answer calculated in a previous step to ensure that there is general agreement between the two values.

The metacognitive component of the intervention is a three-part routine that follows a sequence of 'Say', 'Ask, 'Check'. For each of the 7 problem-solving steps reviewed above:

- The student first self-instructs by stating, or 'saying', the purpose of the step ('Say').
- The student next self-questions by 'asking' what he or she intends to do to complete the step ('Ask').
- The student concludes the step by self-monitoring, or 'checking', the successful completion of the step ('Check').

While the Say-Ask-Check sequence is repeated across all 7 problem-solving steps, the actual content of the student self-coaching comments changes across the steps.

Table 1 shows how each of the steps in the word problem cognitive strategy is matched to the three-part Say-Ask-Check sequence:

Table 1: 'Say-Ask-Check' Metacognitive Prompts Tied to a Word-Problem Cognitive Strategy (Montague, 1992)		
Cognitive Strategy Step	Metacognitive 'Say-Ask-Check' Prompt Targets	Sample Metacognitive 'Say-Ask-Check' Prompts
1. Read the problem.	'Say' (Self-Instruction) Target: *The student reads and studies the problem carefully before proceeding.* *'Ask' (Self-Question) Target: Does the student fully understand the problem?* *'Check' (Self-Monitor) Target: Proceed only if the problem is understood.*	Say: "I will read the problem. I will reread the problem if I don't understand it." Ask: "Now that I have read the problem, do I fully understand it?" Check: "I understand the problem and will move forward."
2. Paraphrase the problem.	'Say' (Self-Instruction) Target: *The student restates the problem in order to demonstrate understanding.* *'Ask' (Self-Question) Target: Is the student able to paraphrase the problem?* *'Check' (Self-Monitor) Target: Ensure that any highlighted key words are relevant to the question.*	Say: "I will highlight key words and phrases that relate to the problem question." "I will restate the problem in my own words." Ask: "Did I highlight the most important words or phrases in the problem?" Check: "I found the key words or phrases that will help to solve the problem."
3. 'Draw' the problem.	'Say' (Self-Instruction) Target: *The student creates a drawing of the problem to consolidate understanding.* *'Ask' (Self-Question) Target: Is there a match between the drawing and the problem?* *'Check' (Self-Monitor) Target: The drawing includes in visual form the key elements of the math problem.*	Say: "I will draw a diagram of the problem." Ask: "Does my drawing represent the problem?" Check: "The drawing contains the essential parts of the problem."
4. Create a plan to solve the problem.	'Say' (Self-Instruction) Target: *The student generates a plan to solve the problem.* *'Ask' (Self-Question) Target: What plan will help the student to solve this problem?* *'Check' (Self-Monitor) Target: The plan is appropriate to solve the problem.*	Say: "I will make a plan to solve the problem." Ask: "What is the first step of this plan? What is the next step of the plan?" Check: "My plan has the right steps to solve the problem."
5. Predict/estimate the	'Say' (Self-Instruction) Target: *The student uses estimation or other strategies to predict or*	Say: "I will estimate what the answer will be."

Answer.	*estimate the answer.* *'Ask' (Self-Question) Target: What estimating technique will the student use to predict the answer?* *'Check' (Self-Monitor) Target: The predicted/estimated answer used all of the essential problem information.*	Ask: "What numbers in the problem should be used in my estimation?" Check: "I did not skip any important information in my estimation."
6. Compute the answer.	'Say' (Self-Instruction) Target: *The student follows the plan to compute the solution to the problem.* *'Ask' (Self-Question) Target: Does the answer agree with the estimate?* *'Check' (Self-Monitor) Target: The steps in the plan were followed and the operations completed in the correct order.*	Say: "I will compute the answer to the problem." Ask: "Does my answer sound right?" "Is my answer close to my estimate?" Check: "I carried out all of the operations in the correct order to solve this problem."
7. Check the answer.	'Say' (Self-Instruction) Target: *The student reviews the computation steps to verify the answer.* *'Ask' (Self-Question) Target: Did the student check all the steps in solving the problem and are all computations correct?* *'Check' (Self-Monitor) Target: The problem solution appears to have been done correctly.*	Say: "I will check the steps of my answer." Ask: "Did I go through each step in my answer and check my work?" Check: ""

Students will benefit from close teacher support when learning to combine the 7-step cognitive strategy to attack math word problems with the iterative 3-step metacognitive Say-Ask-Check sequence. Teachers can increase the likelihood that the student will successfully acquire these skills by using research-supported instructional practices (Burns, VanDerHeyden, & Boice, 2008), including:

- Verifying that the student has the necessary foundation skills to solve math word problems
- Using explicit instruction techniques to teach the cognitive and metacognitive strategies
- Ensuring that all instructional tasks allow the student to experience an adequate rate of success
- Providing regular opportunities for the student to be engaged in active accurate academic responding
- Offering frequent performance feedback to motivate the student and shape his or her learning.

References

Burns, M. K., VanDerHeyden, A. M., & Boice, C. H. (2008). Best practices in intensive academic interventions. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology V* (pp.1151-1162). Bethesda, MD: National Association of School Psychologists.

Montague, M. (1992). The effects of cognitive and metacognitive strategy instruction on the mathematical problem solving of middle school students with learning disabilities. *Journal of Learning Disabilities, 25,* 230-248.

Montague, M., & Dietz, S. (2009). Evaluating the evidence base for cognitive strategy instruction and mathematical problem solving. *Exceptional Children, 75*, 285-302.

Writing: Selected Interventions

School-Wide Strategies for Managing...
WRITING

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The act of writing contains its own inner tensions. Writers must abide by a host of rules that govern the mechanics and conventions of writing yet are also expected—within the constraints of those rules-- to formulate original, even creative, thoughts. It is no wonder that many students find writing to be a baffling exercise and have little sense of how to break larger writing assignments into predictable, achievable subtasks. But of course writing can be taught and writing can be mastered. The best writing instruction places the process of written expression on a timeline: Good writers first plan their writing. Then they write. Once a draft has been created, good writers review and revise their work. While the stages of the writing process are generally sequential, good writers also find themselves jumping frequently between these stages (for example, collecting additional notes and writing new sections of a paper as part of the revision process). Depending upon their stage of development as writers, struggling student writers may benefit from the following strategies:

Content: Memorize a Story Grammar Checklist *(Reid & Lienemann, 2006)*. Students write lengthier stories that include greater detail when they use a memorized strategy to judge their writing-in-progress. These young writers are taught a simple mnemonic device with 7 elements: 'WWW, What=2, How = 2'. This mnemonic translates into a story grammar checklist: WHO the main character is; WHERE the story takes place; WHEN the story occurs; WHAT the main character(s) do or plan to do; WHAT happens next; HOW the story concludes; and HOW the character(s) feel about their experiences. Students are taught this strategy through teacher demonstration, discussion, teacher modeling; and student use of the strategy with gradually fading teacher support. When students use the 'WWW, What=2, How = 2' tactic independently, they may still need occasional prompting to use it in their writing. NOTE: Teachers can apply this intervention idea to any genre of writing (e.g., persuasive essay), distilling its essential elements into a similar short, easily memorized checklist to teach to students.

Fluency: Have Students Write Every Day *(Graham, Harris & Larsen, 2001)*. Short daily writing assignments can build student writing fluency and make writing a more motivating activity. For struggling writers, formal writing can feel much like a foreign language, with its own set of obscure grammatical rules and intimidating vocabulary. Just as people learn another language more quickly and gain confidence when they use it frequently, however, poor writers gradually develop into better writers when they are prompted to write daily--and receive rapid feedback and encouragement about that writing. The teacher can encourage daily writing by giving short writing assignments, allowing time for students to journal about their learning activities, requiring that they correspond daily with pen pals via email, or even posting a question on the board as a bell-ringer activity that students can respond to in writing for extra credit. Short daily writing tasks have the potential to lower students' aversion to writing and boost their confidence in using the written word.

Fluency: Self-Monitor and Graph Results to Increase Writing Fluency *(Rathvon, 1999)*. Students gain motivation to write through daily monitoring and charting of their own and classwide rates of writing fluency. At least several times per week, assign your students timed periods of 'freewriting' when they write in their personal journals. Freewriting periods all the same amount of time each day. After each freewriting period, direct each student to count up the number of words he or she has written in the daily journal entry (whether spelled correctly or not). Next, tell students to record their personal writing-fluency score in their journal and also chart the score on their own time-series graph for visual feedback. Then collect the day's writing-fluency scores of all students in the class, sum those scores, and chart the results on a large time-series graph posted at the front of the room. At the start of each week, calculate that week's goal of increasing total class

words written by taking last week's score and increasing by five percent. At the end of each week, review the class score and praise students if they have shown good effort.

Instruction: Essentials of Good Teaching Benefit Struggling Writers *(Gersten, Baker, & Edwards,1999)*. Teachers are most successful in reaching students with writing delays when their instruction emphasizes the full writing process, provides strategy sheets, offers lots of models of good writing, and gives students timely editorial feedback. Good instructors build their written expression lessons around the 3 stages of writing –planning, writing, and revision— and make those stages clear and explicit. Skilled instructors also provide students with 'think sheets' that outline step-by-step strategies for tackle the different phases of a writing assignment (e.g., taking concise notes from research material; building an outline; proofreading a draft). Students become stronger writers when exposed to different kinds of expressive text, such as persuasive, narrative, and expository writing. Teachers can make students more confident and self-sufficient as writers when they give them access to plentiful examples of good prose models that the student can review when completing a writing assignment. Finally, strong writing teachers provide supportive and timely feedback to students about their writing. When teachers or classmates offer writing feedback to the student, they are honest but also maintain an encouraging tone.

Motivation: Stimulate Interest With an Autobiography Assignment *(Bos & Vaughn, 2002)*. Assigning the class to write their own autobiographies can motivate hard-to-reach students who seem uninterested in most writing assignments. Have students read a series of autobiographies of people who interest them. Discuss these biographies with the class. Then assign students to write their own autobiographies. (With the class, create a short questionnaire that students can use to interview their parents and other family members to collect information about their past.) Allow students to read their finished autobiographies for the class.

Organization: Build an Outline by Talking Through the Topic *(The Writing Center, University of North Carolina at Chapel Hill, n.d./ 23 December 2006)*. Students who struggle to organize their notes into a coherent outline can tell others what they know about the topic—and then capture the informal logical structure of that conversation to create a working outline. The student studies notes from the topic and describes what he or she knows about the topic and its significance to a listener. (The student may want to audio-record this conversation for later playback.) After the conversation, the student jots down an outline from memory to capture the structure and main ideas of the discussion. This outline 'kernel' can then be expanded and refined into the framework for a paper.

Organization: 'Reverse Outline' the Draft *(The Writing Center, University of North Carolina at Chapel Hill, n.d./ 23 December 2006)*. Students can improve the internal flow of their compositions through 'reverse outlining'. The student writes a draft of the composition. Next, the student reads through the draft, jotting notes in the margins that signify the main idea of each paragraph or section. Then the student organizes the margin notes into an outline to reveal the organizational structure of the paper. This 'reverse outline' allows the student to note whether sections of the draft are repetitious, are out of order, or do not logically connect with one another.

Planning: Brainstorm to Break the 'Idea' Logjam *(The Writing Center, University of North Carolina at Chapel Hill, n.d./ 28 December 2006)*. Brainstorming is a time-tested method that can help students to generate motivating topics for writing assignments and uncover new ideas to expand and improve their compositions. Here are four brainstorming strategies to teach to students: FREEWRITING: The student sets a time limit (e.g., 15 minutes) or length limit (e.g., one hand-written page) and spontaneously writes until the limit is reached. The writer does not judge the writing but simply writes as rapidly as possible, capturing any thought that comes to mind on the topic. Later, the student reviews the freewriting to pick out any ideas, terms, or phrasing that might be incorporated into the writing assignment. LISTING: The student selects a topic based on an idea or key term related to the writing assignment. The writer then rapidly brainstorms a list of any items that might possibly relate to the topic. Finally, the writer reviews the list to select items that

might be useful in the assigned composition or trigger additional writing ideas. SIMILES: The student selects a series of key terms or concepts linked to the writing assignment. The student brainstorms, using the framework of a simile: " _1_ is like _2_." The student plugs a key term into the first blank and then generates as many similes as possible (e.g., "A SHIP is like a CITY ON THE SEA."). REFERENCES: The student jots down key ideas or terms from the writing assignment. He or she then browses through various reference works (dictionaries, encyclopedias, specialized reference works on specific subjects) looking randomly for entries that trigger useful ideas. (Writers might try a variation of this strategy by typing assignment-related search terms into GOOGLE or another online search engine.)

Proofreading: Teach A Memory Strategy *(Bos & Vaughn, 2002)*. When students regularly use a simple, portable, easily memorized plan for proofreading, the quality of their writing can improve significantly. Create a poster to be put up in the classroom summarizing the SCOPE proofreading elements: (1) SPELLING: Are my words spelled correctly; (2) CAPITALIZATION: Have I capitalized all appropriate words, including first words of sentences, proper nouns, and proper names?; (3) ORDER of words: Is my word order (syntax) correct?; (4) PUNCTUATION: Did I use end punctuation and other punctuation marks appropriately? (5) EXPRESSION of complete thoughts: Do all of my sentences contain a noun and verb to convey a complete thought? Review the SCOPE proofreading steps by copying a first-draft writing sample onto an overhead and evaluating the sample with the class using each item from the SCOPE poster. Then direct students to pair off and together evaluate their own writing samples using SCOPE. When students appear to understand the use of the SCOPE plan, require that they use this strategy to proofread all written assignments before turning them in.

Proofreading: Use Selective Proofreading With Highlighting of Errors *(Frus, n.d./18 November 2006)*. To prevent struggling writers from becoming overwhelmed by teacher proofreading corrections, focus on only 1 or 2 proofreading areas when correcting a writing assignment. Create a student 'writing skills checklist' that inventories key writing competencies (e.g., grammar/syntax, spelling, vocabulary, etc.). For each writing assignment, announce to students that you will grade the assignment for overall content but will make proofreading corrections on only 1-2 areas chosen from the writing skills checklist. (Select different proofreading targets for each assignment matched to common writing weaknesses in your classroom.) Also, to prevent cluttering the student's paper with potentially discouraging teacher comments and editing marks, underline problems in the student' text with a highlighter and number the highlighted errors sequentially at the left margin of the student paper. Then (if necessary) write teacher comments on a separate feedback sheet to explain the writing errors. (Identify each comment with the matching error-number from the left margin of the student's worksheet.) With fewer proofreading comments, the student can better attend to the teacher feedback. Also, even a heavily edited student assignment looks neat and tidy when teachers use the highlighting/numbering technique—preventing students from becoming disheartened at the site of an assignment scribbled over with corrective comments.

Spelling: Leverage the Power of Memory Through Cover-Copy-Compare *(Murphy, Hern, Williams, & McLaughlin, 1990)*. Students increase their spelling knowledge by copying a spelling word from a correct model and then recopying the same word from memory. Give students a list of 10-20 spelling words, an index card, and a blank sheet of paper. For each word on the spelling list, the student (1) copies the spelling list item onto a sheet of paper, (2) covers the newly copied word with the index card, (3) writes the spelling word again on the sheet (spelling it from memory), and (4) uncovers the copied word and checks to ensure that the word copied from memory is spelled correctly. If that word is spelled incorrectly, the student repeats the sequence above until the word copied from memory is spelled correctly--then moves to the next word on the spelling list.

References

Bos, C.S. & Vaughn, S. (2002). Strategies for teaching students with learning and behavior problems. Boston: Allyn and Bacon.

Frus, P. (n.d./18 November 2006). Commenting effectively on student writing. Retrieved November 18, 2006, from http://www.crlt.umich.edu/crlttext/P7_2text.html

Gersten, R., Baker, S., & Edwards, L. (1999). Teaching expressive writing to students with learning disabilities: A meta-analysis. New York: National Center for Learning Disabilities.

Graham, S., Harris, K. R., & Larsen, L. (2001). Prevention and intervention of writing difficulties for students with learning disabilities. Learning Disabilities Research & Practice, 16, 74-84.

Murphy, J., Hern, C., Williams, R., & McLaughlin, T. (1990). The effects of the copy, cover, and compare approach in increasing spelling accuracy with learning disabled students. Contemporary Educational Psychology, 15, 378-386.

Rathvon, N. (1999). Effective school interventions. New York: Guilford Press.

Reid, R. & Lienemann, T.O. (2006). Self-regulated strategy development for written expression with students with attention deficit/hyperactivity disorder. Exceptional Children, 73, 53-68.

The Writing Center, University of North Carolina at Chapel Hill (n.d.). Brainstorming. Retrieved December 28, 2006, from http://www.unc.edu/depts/wcweb/handouts/brainstorming.html

The Writing Center, University of North Carolina at Chapel Hill (n.d.). Reorganizing your draft. Retrieved December 23, 2006, from http://www.unc.edu/depts/wcweb/handouts/organization.html

Spelling: Cover-Copy-Compare

DESCRIPTION: In this intervention to promote acquisition of spelling words, the student is given a spelling sheet with the target words correctly spelled. The student looks at each correctly spelled word, covers the word briefly and copies it from memory, then compares the copied word to the original correct model (Skinner, McLaughlin & Logan, 1997).

GROUP SIZE: Whole class, small group, individual student TIME: Variable up to 15 minutes per session

MATERIALS:

- *Worksheet: Cover-Copy-Compare* (attached)
- *Spelling Log: Mastered Words* (attached)

INTERVENTION STEPS: Here are the steps of Cover-Copy-Compare for spelling:

1. *[Teacher] Create a Cover-Copy-Compare Spelling Sheet.* The teacher selects up to 10 spelling words for the student to work on during the session and writes those words as correct models into the left column ('Spelling Words') of the *Worksheet: Cover-Copy-Compare* (attached). The teacher then pre-folds the spelling sheet using as a guide the vertical dashed line ('fold line') bisecting the left side of the student worksheet.
2. *[Student] Use the Cover-Copy-Compare Procedures.* During the Cover-Copy-Compare intervention, the student follows these self-directed steps for each spelling word:
    - Look at the correctly spelled target word that appears in the left column of the sheet.
    - Fold the left side of the page over at the pre-folded vertical crease to hide the correct model ('Cover').
    - Spell the word from memory, writing it in the first response blank under the 'Student Response' section of the spelling sheet ('Copy').
    - Uncover the correct model and compare it to the student response ('Compare'). If the student spelling is CORRECT, move to the next word on the list and repeat these procedures. If the student spelling is INCORRECT, draw a line through the incorrect response, study the correct model again, cover the model, copy the word from memory into the second response blank under the 'Student Response' section of the spelling sheet, and again check the correctness of its spelling.
    - Continue until all words on the spelling list have been spelled and checked against the correct models.
3. *[Teacher] Log Spelling Words Mastered by Student.* The teacher should select an objective standard for judging that the student using Cover-Copy-Compare has 'mastered' a spelling word (e.g., when the student is able to copy a specific word from memory without error on three successive occasions). The teacher can then apply this standard for mastery to identify and log spelling words in each session, using the *Spelling Log: Mastered Words* sheet (attached).

References

Skinner, C. H., McLaughlin, T. F., & Logan, P. (1997). Cover, copy, and compare: A self-managed academic intervention effective across skills, students, and settings. *Journal of Behavioral Education, 7*, 295-306.

Worksheet: Cover-Copy-Compare Student: _____ Date: _____

Spelling Words	Student Response
1.	1a.
	1b.
2.	2a.
	2b.
3.	3a.
	3b.
4.	4a.
	4b.
5.	5a.
	5b.
6.	6a.
	6b.
7.	7a.
	7b.
8.	8a.
	8b.
9.	9a.
	9b.
10.	10a.
	10b.

Fold Line

Spelling Log: Mastered Words

Student: _____ School Yr: _____ Classroom/Course: _____

Spelling Cumulative Mastery Log: During the spelling intervention, log each mastered word below with date of mastery.

Word 1: _____ Date: ___/___/___	Word 21: _____ Date: ___/___/___
Word 2: _____ Date: ___/___/___	Word 22: _____ Date: ___/___/___
Word 3: _____ Date: ___/___/___	Word 23: _____ Date: ___/___/___
Word 4: _____ Date: ___/___/___	Word 24: _____ Date: ___/___/___
Word 5: _____ Date: ___/___/___	Word 25: _____ Date: ___/___/___
Word 6: _____ Date: ___/___/___	Word 26: _____ Date: ___/___/___
Word 7: _____ Date: ___/___/___	Word 27: _____ Date: ___/___/___
Word 8: _____ Date: ___/___/___	Word 28: _____ Date: ___/___/___
Word 9: _____ Date: ___/___/___	Word 29: _____ Date: ___/___/___
Word 10: _____ Date: ___/___/___	Word 30: _____ Date: ___/___/___
Word 11: _____ Date: ___/___/___	Word 31: _____ Date: ___/___/___
Word 12: _____ Date: ___/___/___	Word 32: _____ Date: ___/___/___
Word 13: _____ Date: ___/___/___	Word 33: _____ Date: ___/___/___
Word 14: _____ Date: ___/___/___	Word 34: _____ Date: ___/___/___
Word 15: _____ Date: ___/___/___	Word 35: _____ Date: ___/___/___
Word 16: _____ Date: ___/___/___	Word 36: _____ Date: ___/___/___
Word 17: _____ Date: ___/___/___	Word 37: _____ Date: ___/___/___
Word 18: _____ Date: ___/___/___	Word 38: _____ Date: ___/___/___
Word 19: _____ Date: ___/___/___	Word 39: _____ Date: ___/___/___
Word 20: _____ Date: ___/___/___	Word 40: _____ Date: ___/___/___

Sentence Combining: Teaching Rules of Sentence Structure by Doing

Students with poor writing skills often write sentences that lack 'syntactic maturity' (Robinson & Howell, 2008). That is, these writers' sentences often follow a simple, stereotyped format. In public schools, grammar skills have traditionally been taught in isolation to give students the advanced writing knowledge required to master a diverse range of sentence structures. However, isolated grammar instruction appears to have little or no positive impact in helping poor writers become better writers (Graham & Perin, 2007). A promising alternative is to use sentence combining (Graham & Perin, 2007; Strong, 1986). In this approach, students are presented with kernel sentences and given explicit instruction in how to weld these kernel sentences into more diverse sentence types either by using connecting words to combine multiple sentences into one or by isolating key information from an otherwise superfluous sentence and embedding that important information into the base sentence.

In a simple demonstration of sentence combining, a student may generate these two sentences in her composition on the American Revolution: *The American army had few supplies in the winter of 1776. The American army had few trained military leaders.*

The instructor might meet with the student and have the student recopy the two sentences in this format:

> The American army had few supplies in the winter of 1776.
> The American army had few trained military leaders. (and)

The student would be encouraged to combine the two shorter sentences into a more comprehensive sentence by using the connecting word (coordinating conjunction) '*and'* to combine objects: *The American army had few supplies and few trained military leaders in the winter of 1776.*

Formatting Sentence Combining Examples

These simple formatting conventions are used in sentence-combining exercises (Saddler, 2005; Strong, 1986):

- In each example, the base clause (sentence) appears first. Any sentence(s) to be combined or embedded with the base clause appear below that base clause.

  Example: Base clause: The dog ran after the bus.
  Sentence to be embedded: The dog is yellow.
  Student-generated solution: *The yellow dog ran after the bus.*

- 'Connecting words' to be used as a sentence-combining tool appear in parentheses at the end of a sentence that is to be combined with the base clause.

  Example: Base clause: The car stalled.
  Sentence to be combined: The car ran out of gas. (because)
  Student-generated solution: *The car stalled because it ran out of gas.*

- The element(s) of any sentence to be embedded in the base clause are underlined.

  Example: Base clause: The economic forecast resulted in strong stock market gains.
  Sentence to be embedded: The economic forecast was upbeat.
  Student-generated solution: *The upbeat economic forecast resulted in strong stock market gains.*

Using Sentence Combining in Instruction

Teachers who use sentence combining in their writing instruction should follow a direct-instruction approach (Saddler, 2005). The instructor fosters a learning atmosphere that encourages students to take risks when participating in sentence-combining activities. When first introducing sentence-combining to the class, the instructor explains that using varied sentence structures helps writers to better convey meaning. The instructor tells students that there are often multiple correct ways to combine sentences. The instructor completes several sentence-combining examples in front of the group, using a think-aloud approach to show his or her thinking process in successfully combining sentences. Students should then complete sentence-combining examples in pairs or groups, with the instructor circulating through the class to check for student understanding. Eventually, students work independently on sentence combining tasks to demonstrate mastery. They may then be asked to look in their own writing for examples in which they could combine sentences to improve

A listing of types and examples of sentence-combining appears below in Table 1. When creating lessons on sentence combining, instructors should review the potential types of sentence-combining in Table 1 and decide the order in which those types might be presented to their class.

Table 1: Sentence-combining types and examples (Saddler, 2005; Strong, 1986)

Type of Sentence	Sentence Combining Example
Multiple (Compound) Sentence Subjects or Objects: Two or more subjects can be combined with a conjunction (e.g., *or*, *and*). Two or more direct or indirect objects can be combined with a conjunction (e.g., *or*, *and*).	• Skyscrapers in the city were damaged in the hurricane. Bridges in the city were damaged in the hurricane. *Skyscrapers and bridges in the city were damaged in the hurricane.* • When they travel, migratory birds need safe habitat. When they travel, migratory birds need regular supplies of food. *When they travel, migratory birds need safe habitat and regular supplies of food.*
Adjectives & Adverbs: When a sentence simply contains an adjective or adverb that modifies the noun or verb of another sentence, the adjective or adverb from the first sentence can be embedded in the related sentence.	• Dry regions are at risk for chronic water shortages. Overpopulated regions are at risk for chronic water shortages. *Dry and overpopulated regions are at risk for chronic water shortages.* • Health care costs have risen nationwide. Those health care costs have risen quickly. *Health care costs have risen quickly nationwide.*

Connecting Words: One or more sentences are combined with connecting words. Coordinating conjunctions (e.g., *and, but*) link sentences on an equal basis. Subordinating conjunctions (e.g., *after, until, unless, before, while, because*) link sentences with one of the sentences subordinate or dependent on the other.	• The house was falling apart. No one seemed to care. (but) *The house was falling apart, but no one seemed to care.* • The glaciers began to melt. The earth's average temperature increased. (because) *The glaciers began to melt because the earth's average temperature increased.*
Relative Clauses: Sentence contains an embedded, subordinate clause that modifies a noun.	• The artist was the most popular in the city. The artist painted watercolors of sunsets. (who) *The artist who painted watercolors of sunsets was the most popular in the city.*
Appositives: Sentence contains two noun phrases that refer to the same object. When two sentences refer to the same noun, one sentence be reduced to an appositive and embedded in the other sentence.	• The explorer paddled the kayak across the raging river. The explorer was <u>an expert in handling boats</u>. *The explorer, an expert in handling boats, paddled the kayak across the raging river.*
Possessive Nouns: A sentence that describes possession or ownership can be reduced to a possessive noun and embedded in another sentence.	• Some historians view the Louisiana Purchase as the most important expansion of United States territory. The Louisiana Purchase was <u>President Jefferson's</u> achievement. *Some historians view President Jefferson's Louisiana Purchase as the most important expansion of United States territory.*

References

Graham, S., & Perin, D. (2007). *Writing next: Effective strategies to improve writing of adolescents in middle and high schools – A report to Carnegie Corporation of New York*. Washington, DC Alliance for Excellent Education.

Robinson, L. K., & Howell, K. W. (2008). Best practices in curriculum-based evaluation & written expression. In A. Thomas & J. Grimes (Eds.), Best practices in school psychology V (pp. 439-452). Bethesda, MD: National Association of School Psychologists.

Saddler, B. (2005). Sentence combining: A sentence-level writing intervention. *The Reading Teacher, 58,* 468-471.

Strong, W. (1986). *Creative approaches to sentence combining*. Urbana, OL: ERIC Clearinghouse on Reading and Communication Skill & National Council of Teachers of English.

Methods of Classroom Data Collection

- ❑ *Existing data*. The teacher uses information already being collected in the classroom or school that is relevant to the identified student problem.

  Examples of existing data include:

  - Grades
  - attendance/tardy records,
  - office disciplinary referrals
  - homework completion

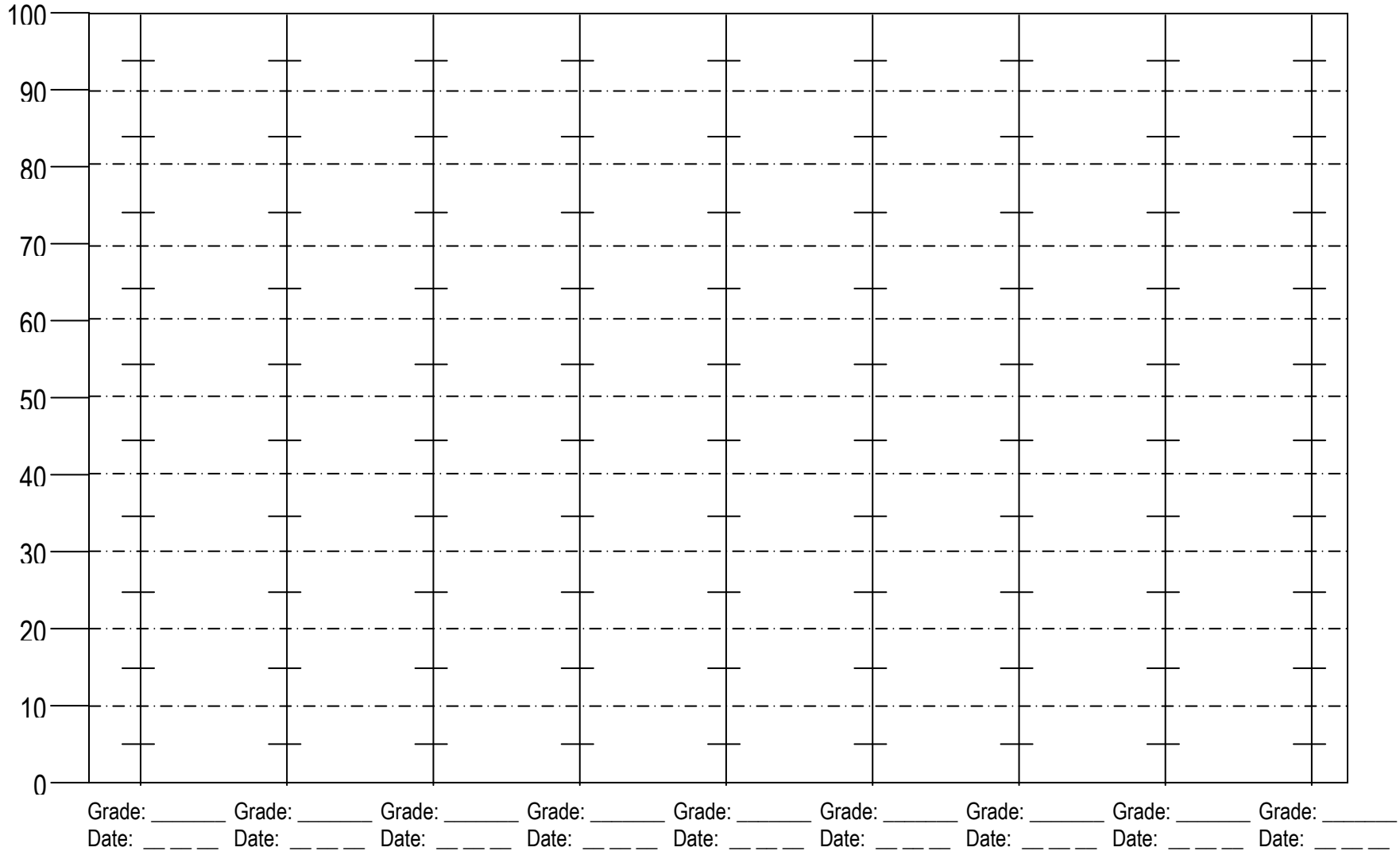
  NOTE: Existing data is often not sufficient alone to monitor a student on intervention but can be a useful *supplemental* source of data on academic or behavioral performance.

  Example: Mrs. Berman, a high-school social studies teacher, selected grades from weekly quizzes as one measure to determine if a study-skills intervention would help Rick, a student in her class. Prior to the intervention, the teacher computed the average of Rick's most recent 4 quiz grades. The baseline average quiz grade for Rick was 61. Mrs. Smith set an average quiz grade of 75 as the intervention goal. The teacher decided that at the intervention check-up in six weeks, she would average the most recent 2 weekly quiz grades to see if the student reached the goal.

Progress-Monitoring Graph: Student Grades

Student: _____ Course: _____ School Year: _____

___ Test Grades ____ Quiz Grades ____ Assignments (Describe): _____



- *Global skill checklist*. The teacher selects a global skill (e.g., homework completion; independent seatwork). The teacher then breaks the global skill down into a checklist of component sub-skills--a process known as 'discrete categorization' (Kazdin, 1989). An observer (e.g., teacher, another adult, or even the student) can then use the checklist to note whether a student successfully displays each of the sub-skills on a given day. Classroom teachers can use these checklists as convenient tools to assess whether a student has the minimum required range of academic enabling skills for classroom success. Teachers or tutors may also want to review these checklists with students and encourage them to use the checklists independently to take greater responsibility for their own learning.

  NOTE: The 'Academic Enablers' Observational Checklists that appear on the following pages are ready-made examples of global skill checklists.

  Example: A middle school math instructor, Mr. Haverneck, was concerned that a student, Rodney, appears to have poor 'organization skills'. Mr. Haverneck created a checklist of observable subskills that, in his opinion, were part of the global term 'organization skills:

  1. arriving to class on time;
  2. bringing work materials to class;
  3. following teacher directions in a timely manner;
  4. knowing how to request teacher assistance when needed;
  5. having an uncluttered desk with only essential work materials.

Mr. Havernick monitored the student's compliance with elements of this organization -skills checklist across three days of math class. He discovered that – on average—Rodney successfully carried out only 2 of the 5 possible subskills (baseline). Mr. Havernick implemented several strategies to help Rodney to improve his organization skills and set the goal that by the last week of a 5-week intervention, the student would be found to use all five of the subskills on at least 4 out of 5 days.

'Academic Enabler' Observational Checklists: Measuring Students' Ability to Manage Their Own Learning

Student academic success requires more than content knowledge or mastery of a collection of cognitive strategies. Academic accomplishment depends also on a set of ancillary skills and attributes called 'academic enablers' (DiPerna, 2006). Examples of academic enablers include:

- Study skills
- Homework completion
- Cooperative learning skills
- Organization
- Independent seatwork

Because academic enablers are often described as broad skill sets, however, they can be challenging to define in clear, specific, measureable terms. A useful method for defining a global academic enabling skill is to break it down into a checklist of component sub-skills--a process known as 'discrete categorization' (Kazdin, 1989). An observer can then use the checklist to note whether a student successfully displays each of the sub-skills.

Observational checklists that define academic enabling skills have several uses in Response to Intervention:

- Classroom teachers can use these skills checklists as convenient tools to assess whether a student possesses the minimum 'starter set' of academic enabling skills needed for classroom success.

- Teachers or tutors can share examples of academic-enabler skills checklists with students, training them in each of the sub-skills and encouraging them to use the checklists independently to take greater responsibility for their own learning.

- Teachers or other observers can use the academic enabler checklists periodically to monitor student progress during interventions--assessing formatively whether the student is using more of the sub-skills.

A collection of the most common global 'academic enabler' skills in ready-made checklist format appear below.

Study Skills. The student:				
❑ takes complete, organized class notes in legible form and maintains them in one accessible note book	Poor Fair 1 2	Good 3	NA –
❑ reviews class notes frequently (e.g., after each class) to ensure understanding	Poor Fair 1 2	Good 3	NA –
❑ When reviewing notes, uses highlighters, margin notes, or other strategies to note questions or areas of confusion for later review with teacher or tutor	Poor Fair 1 2	Good 3	NA –
❑ follows an efficient strategy to study for tests and quizzes	Poor Fair 1 2	Good 3	NA –
❑ allocates enough time to study for tests and quizzes	Poor Fair 1 2	Good 3	NA –
❑ is willing to seek help from the teacher to answer questions or clear up areas of confusion	Poor Fair 1 2	Good 3	NA –
❑ Other: _____			
Comments: _____ _____			

Organization Skills. The student:			
❑ arrives to class on time.	Poor Fair 1 2	Good 3	NA –
❑ maintains organization of locker to allow student to efficiently store and retrieve needed books, assignments, work materials, and personal belongings	Poor Fair 1 2	Good 3	NA –
❑ maintains organization of backpack or book bag to allow student to efficiently store and retrieve needed books, assignments, work materials, and personal belongings	Poor Fair 1 2	Good 3	NA –
❑ brings to class the necessary work materials expected for the course (e.g., pen, paper, calculator, etc.)	Poor Fair 1 2	Good 3	NA –
❑ is efficient in switching work materials when transitioning from one in-class learning activity to another	Poor Fair 1 2	Good 3	NA –
❑ Other: _____	Poor Fair 1 2	Good 3	NA –
Comments: _____ _____			

Homework Completion. The student:			
❑ writes down homework assignments accurately and completely	Poor Fair 1 2	Good 3	NA –
❑ makes use of available time in school (e.g., study halls, homeroom) to work on homework	Poor Fair 1 2	Good 3	NA –
❑ has an organized, non-distracting workspace available at home to do homework	Poor Fair 1 2	Good 3	NA –
❑ creates a work plan before starting homework (e.g., sequencing the order in which assignments are to be completed; selecting the most challenging assignment to start first when energy and concentration are highest)	Poor Fair 1 2	Good 3	NA –
❑ when completing homework, uses highlighters, margin notes, or other strategies to note questions or areas of confusion for later review with teacher or tutor	Poor Fair 1 2	Good 3	NA –
❑ turns in homework on time	Poor Fair 1 2	Good 3	NA –
❑ Other: _____	Poor Fair 1 2	Good 3	NA –
Comments: _____ _____			

Cooperative Learning Skills. The student:			
❑ participates in class discussion	Poor Fair 1 2	Good 3	NA –
❑ gets along with others during group/pair activities	Poor Fair 1 2	Good 3	NA –
❑ participates fully in group/pair activities	Poor Fair 1 2	Good 3	NA –
❑ does his or her 'fair share' of work during group/pair activities	Poor Fair 1 2	Good 3	NA –
❑ is willing to take a leadership position during group/pair activities	Poor Fair 1 2	Good 3	NA –
❑ Other: _____	Poor Fair 1 2	Good 3	NA –
Comments: _____ _____			

Independent Seat Work. The student:			
❑ has necessary work materials for the assignment	Poor Fair 1 2	Good 3	NA –
❑ is on-task during the assignment at a level typical for students in the class	Poor Fair 1 2	Good 3	NA –
❑ refrains from distracting behaviors (e.g., talking with peers without permission, pen tapping, vocalizations such as loud sighs or mumbling, etc.)	Poor Fair 1 2	Good 3	NA –
❑ recognizes when he or she needs teacher assistance and is willing to that assistance	Poor Fair 1 2	Good 3	NA –
❑ requests teacher assistance in an appropriate manner	Poor Fair 1 2	Good 3	NA –
❑ requests assistance from the teacher only when really needed	Poor Fair 1 2	Good 3	NA –
❑ if finished with the independent assignment before time expires, uses remaining time to check work or engage in other academic activity allowed by teacher	Poor Fair 1 2	Good 3	NA –
❑ takes care in completing work—as evidenced by the quality of the finished assignment	Poor Fair 1 2	Good 3	NA –
❑ is reliable in turning in assignments done in class.	Poor Fair 1 2	Good 3	NA –
❑ Other: _____	Poor Fair 1 2	Good 3	NA –
Comments: _____ _____			

Motivation. The student:			
❑ has a positive sense of 'self-efficacy' about the academic content area (self-efficacy can be defined as the confidence that one can be successful in the academic discipline or subject matter if one puts forth reasonable effort)	Poor Fair 1 2	Good 3	NA –
❑ displays some apparent *intrinsic* motivation to engage in course work (e.g., is motivated by topics and subject matter discussed or covered in the course; finds the act of working on course assignments to be reinforcing in its own right)	Poor Fair 1 2	Good 3	NA –
❑ displays apparent *extrinsic* motivation to engage in course work (e.g., is motivated by grades, praise, public recognition of achievement, access to privileges such as sports eligibility, or other rewarding outcomes)	Poor Fair 1 2	Good 3	NA –
❑ Other: _____	Poor Fair 1 2	Good 3	NA –
Comments: _____ _____			

Teacher-Defined Academic Enabling Skill: Skill Name: _____ Essential Subskills: The student::	
❑ _____ _____ _____	Poor Fair Good NA 1 2 3 –
❑ _____ _____ _____	Poor Fair Good NA 1 2 3 –
❑ _____ _____ _____	Poor Fair Good NA 1 2 3 –
❑ _____ _____ _____	Poor Fair Good NA 1 2 3
❑ _____ _____ _____	Poor Fair Good NA 1 2 3
Comments: _____ _____	

References

DiPerna, J. C. (2006). Academic enablers and student achievement: Implications for assessment and intervention services in the schools. Psychology *in the Schools, 43*, 7-17.

Kazdin, A. E. (1989). Behavior modification in applied settings (4th ed.). Pacific Gove, CA: Brooks/Cole.

- Behavioral Frequency Count/Behavioral Rate. In a behavioral frequency count, an observer (e.g., the teacher) watches a student's behavior and keeps a cumulative tally of the number of times that the behavior is observed during a given period. Behaviors that are best measured using frequency counts have clearly observable beginning and end points—and are of relatively short duration.

  Examples include:

  - student call-outs
  - requests for teacher help during independent seatwork.
  - raising one's hand to make a contribution to large-group discussion.

  Teachers can collect data on the frequency of observed student behaviors during a class period in several ways: (1) by keeping a cumulative mental tally of the behaviors; (2) by recording behaviors on paper (e.g., as tally marks) as they occur; or (3) using a golf counter or other simple mechanical device to record observed behaviors.

  When multiple observations are made of student behaviors, those observations often last for differing periods of time. One method to standardize the results of observations conducted over varying timespans is to convert the results of each observation to a behavioral *rate* (behaviors divided by the length of the observation). To compute a behavioral rate, the observer (1) sums the total number of behaviors observed and (2) divides the total number of behaviors observed by total minutes in the observation period. The resulting figure represents a standardized 'behaviors observed per minute' and can be compared directly to student behavior rates observed at other times. For example, an observer may have noted that a student engaged in 5 call-outs during a 10-minute observation period. The observer then divides the 5 callouts by the 10 minute observation timespan to compute a standardized behavior rate of *0.5 callouts per minute*.

  TIP: One use of the behavioral frequency count that teachers may find helpful is to tally the number of times that they need to approach and redirect an off-task, distracting, or behaviorally acting out student during an observation period (e.g., during math class). Whenever the student's identified problem behavior(s) escalate to the point at which the instructor can no longer ignore them, the teacher intervenes to redirect the student or provide other appropriate consequences. At the same time, the teacher counts this particular redirect episode toward the cumulative tally of redirects directed at the target student during the class period. While a tally of teacher redirects is not a suitable means to track all student behaviors, this approach does offer advantages. First, it recognizes that teachers typically have an informal but clear internal threshold of tolerance of student behaviors. Whenever the instructor approaches a student to redirect, the teacher does so because the student's behavior has moved above that 'tolerance threshold' and must be directly addressed. Second, teacher redirects are usually easier to measure; than other behavior targets--because the teacher has had to interrupt instruction –even briefly--to redirect the student and is thus more likely to note the incident and add it to a running tally.

  Use the attached *Behavioral Frequency Count/Behavioral Rate Worksheet* to conduct behavioral frequency counts of a student across as many as 7 sessions.

  Example: Ms. Stimson, a fourth-grade teacher, was concerned at the frequency that a student, Alice, frequently requested teacher assistance unnecessarily during independent seatwork. To address this concern, the teacher designed an intervention in which the student would first try several steps on her own to resolve issues or answer her questions before seeking help from the instructor. Prior to starting the intervention, the teacher kept a behavioral frequency count across three days of the number of times that the student approached her desk for help during a daily 20-minute independent seatwork period (baseline). Ms. Stimson discovered that, on average, the student sought requested help times 8 per period (equivalent to 0.4 requests for help per minute). Ms. Stimson set as an intervention goal that, after 4 weeks of using her self-help strategies, the student's average rate of requesting help would drop to 1 time per independent seatwork period (equivalent to 0.05 requests for help per minute).

Behavioral Frequency Count/Behavioral Rate Worksheet

Student: _____ School Yr: _____ Classroom/Course: _____

Behavior Definition: Define in clear, measureable, observable terms the behavior that will be measured using the behavioral frequency count (e.g., student call-outs during instructional activities):

_____

_____

Date: ____/___/____ Start Time: ____:____ End Time: ____:____ Setting/Activity: _____

Behavior Frequency Count: During the observation, place a tally mark ('|') in the box below whenever the student displays the target behavior:

1

Total Observed Behaviors		Minutes of Observation Time		Behavior Rate Per Minute
	Divided by		Equals	

Comments: _____

_____

Date: ____/___/____ Start Time: ____:____ End Time: ____:____ Setting/Activity: _____

Behavior Frequency Count: During the observation, place a tally mark ('|') in the box below whenever the student displays the target behavior:

2

Total Observed Behaviors		Minutes of Observation Time		Behavior Rate Per Minute
	Divided by		Equals	

Comments: _____

_____

Date: ____/___/____ Start Time: ____:____ End Time: ____:____ Setting/Activity: _____

Behavior Frequency Count: During the observation, place a tally mark ('|') in the box below whenever the student displays the target behavior:

3

Total Observed Behaviors		Minutes of Observation Time		Behavior Rate Per Minute
	Divided by		Equals	

Comments: _____

_____

Date: ____/___/____ Start Time: ____:____ End Time: ____:____ Setting/Activity: _____

Behavior Frequency Count: During the observation, place a tally mark ('|') in the box below whenever the student displays the target behavior:

Total Observed Behaviors | Minutes of Observation Time | Behavior Rate Per Minute

4 [ ] → [ ] Divided by [ ] Equals [ ]

Comments: _____

_____

Date: ____/___/____ Start Time: ____:____ End Time: ____:____ Setting/Activity: _____

Behavior Frequency Count: During the observation, place a tally mark ('|') in the box below whenever the student displays the target behavior:

Total Observed Behaviors | Minutes of Observation Time | Behavior Rate Per Minute

5 [ ] → [ ] Divided by [ ] Equals [ ]

Comments: _____

_____

Date: ____/___/____ Start Time: ____:____ End Time: ____:____ Setting/Activity: _____

Behavior Frequency Count: During the observation, place a tally mark ('|') in the box below whenever the student displays the target behavior:

Total Observed Behaviors | Minutes of Observation Time | Behavior Rate Per Minute

6 [ ] → [ ] Divided by [ ] Equals [ ]

Comments: _____

_____

Date: ____/___/____ Start Time: ____:____ End Time: ____:____ Setting/Activity: _____

Behavior Frequency Count: During the observation, place a tally mark ('|') in the box below whenever the student displays the target behavior:

Total Observed Behaviors | Minutes of Observation Time | Behavior Rate Per Minute

7 [ ] → [ ] Divided by [ ] Equals [ ]

Comments: _____

_____

- *Rating scales*. A scale is developed with one or more items that a rater can use to complete a global rating of a behavior. Often the rating scale is completed at the conclusion of a fixed observation period (e.g., after each class period; at the end of the school day).

  NOTE: One widely used example of rating scales routinely used in classrooms is the daily behavior report (DBR). The teacher completes a 3- to 4-item rating scale each day evaluating various target student behaviors. A detailed description of DBRs appears on the next page, along with a sample DBR that assesses the student's interactions with peers, compliance with adult requests, work completion, and attention to task.

  Teachers can also create their own Daily Behavior Reports online. The *Behavior Reporter* is a free web-based application that allows educators to select and edit existing behavior rating items from a database or to write their own. This application can be accessed at: http://www.jimwrightonline.com/php/tbrc/tbrc.php

  Example: All of the teachers on a 7th-grade instructional team decided to use a Daily Behavior Report to monitor classroom interventions for Brian, a student who presented challenges of inattention, incomplete work, and occasional non-compliance. They created a DBR with the following items:

  1. *Brian focused his attention on teacher instructions, classroom lessons and assigned work.*
  2. *Brian completed and turned in his assigned class work on time.*
  3. *Brian spoke respectfully and complied with adult requests without argument or complaint.*

  Each rating items was rated using this 1-9 scale:

  1 2 3 | 4 5 6 | 7 8 9

  Never/Seldom Sometimes Most/All of the Time

  Each teacher agreed to use the DBR to rate Brian's behavior daily, after each class period.Before starting an intervention, teachers on the instructional team used the DBR to rate Brian's behavior for one week and compared results. On average, Brian scored no higher than 3 ('Never/Seldom' range) on all rating items in all classrooms (baseline). The team set as an intervention goal that, by the end of a 6-week intervention to be used in all classrooms, Brian would be rated in the 7-9 range ('Most/All of the Time') in all classrooms.

RTI Daily Behavior Report: Guidelines for Use

The RTI Daily Behavior Report (RTI-DBR) is a brief form that educators can use to rate student classroom conduct and work-related behaviors on a daily basis. Daily Behavior Reports in general have several advantages that make them idea for use in monitoring student interventions (Chafouleas, Riley-Tillman, & Sugai, 2007): They are familiar and acceptable to most school staff, are a convenient assessment tool for busy teachers, and can be used both to better understand students' behavioral needs and to track student progress during a classroom intervention.

Directions. When finished working with the student each day, the educator responsible for completing the RTI-DBR completes each rating item on the form. There are sufficient rating columns on one form to rate a student each day for an entire instructional week. The rater can also write daily comments on the back of the form.
An additional option is for the educator to send a copy of the completed rating form home each week for the student's parent to review, sign, and return.

Tips to Increase the Reliability of Daily Behavior Reports. Daily Behavior Reports can be good sources of teacher information about student behaviors. When an educator's ratings on Behavior Reports are based solely on subjective impression, however, it is possible that the rater will apply inconsistent standards each day when rating student behaviors (Chafouleas, Riley-Tillman, & Sugai, 2007). This inconsistency in assessment can reduce the usefulness of Daily Behavior Report information. An approach that educators can follow to keep their ratings on the RTI-DBR consistent and objective over time is to come up with specific, objective criteria for rating each behavioral goal. In particular, the rater will want to:

- Keep in mind student developmental considerations. For example, consider this RTI-DBR item: *The student was respectful to the teacher and other adults and complied with their requests in a timely manner*. The definition of a student being " respectful to the teacher and other adults" may mean "without throwing a tantrum" for a kindergarten student but mean "without defiant talking-back" for a student in middle school.

- Tie RTI-DBR 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 an 'average' child in the classroom.

Reference

Chafouleas, S., Riley-Tillman, T. C., & Sugai, G. (2007). *School-based behavioral assessment: Informing intervention and instruction.* Guilford Press: New York.

Student Daily Behavior Report

Student Name:_____ Grade: _____

Person Completing This Report Card: _____

Directions: At the end of the school day or class period, rate the student on the behaviors below. Write your ratings into the appropriate box on the right of the page and record the *date* of each rating. You may also write daily comments about the student's behavior on the back of this sheet.

Student Behaviors	MON __/__/__	TUES __/__/__	WED __/__/__	THURS __/__/__	FRI __/__/__
The student got along with classmates and used socially appropriate behaviors. 1 2 3 | 4 5 6 | 7 8 9 Never/Seldom Sometimes Most/All of the Time					
The student was respectful to the teacher and other adults and complied with their requests in a timely manner. 1 2 3 | 4 5 6 | 7 8 9 Never/Seldom Sometimes Most/All of the Time					
The student paid attention to teacher instructions and classroom lessons and focused on his/her work assignments. 1 2 3 | 4 5 6 | 7 8 9 Never/Seldom Sometimes Most/All of the Time					
The student completed and turned in classwork and homework assignments. 0-19% 20-39% 40-59% 60-79% 80-100%					
(Optional Behavior) _____ _____ 1 2 3 | 4 5 6 | 7 8 9 Never/Seldom Sometimes Most/All of the Time					

Parent Sign-Off (Optional): I have reviewed this Behavior Report Card and discussed it with my child.

Parent Signature: _____ Date: _____

- *Academic Skills: Cumulative Mastery Log*. During academic interventions in which the student is presented with specific items such as math facts or spelling words, the instructor can track the impact of the intervention by recording and dating mastered items in a cumulative log.

  First, the instructor defines the set of academic items to be taught or reviewed during the intervention (e.g., basic multiplication facts from 1-12; pre-primer Dolch Word list; vocabulary terms for biology course). Next, the instructor sets criteria for judging when the student has mastered a particular item from the academic item set. (Example: "A math fact is considered mastered when the student successfully answers that math-fact flashcard within 3 seconds on three successive occasions during a session and repeats this performance without error across two successive sessions.").

  To collect baseline information, the instructor reviews all items from the academic-item set with the student, noting which items the student already knows. Then, throughout the intervention, the instructor logs and dates any additional items that the student masters.

  NOTE: The Academic Intervention: Cumulative Mastery Log that appears on the following pages structures the task of setting up and using a mastery log to track the cumulative results of an academic intervention.

  Example: Mrs. Ostrowski, a 1st-grade teacher, decides to provide additional intervention support for Jonah, a student in her class who does not have fluent letter recognition skills. Before starting an intervention, she inventories and records Jonah's baseline skills—noting that Jonah can fluently and accurately recognize 18 upper-case letters and 14 lower-case letters from the English alphabet. She sets as an intervention goal that Jonah will master all remaining items –8 upper-case and 12 lower-case letters—within four weeks.

  Mrs. Ostrowski then begins the daily intervention (incremental rehearsal of letters using flashcards). Whenever Jonah is able fluently and accurately to name a previously unknown letter, the teacher records and dates that item in her cumulative mastery log.

Academic Intervention: Cumulative Mastery Log

Student: _____ School Yr: _____ Classroom/Course: _____

Academic Item Set: Define the set of academic items to be measured (e.g., basic multiplication facts from 1-12; pre-primer Dolch Word list; vocabulary terms for biology course):

_____

_____

Criteria for Mastery: Describe the criteria for judging when the student has mastered a particular item from the academic item set. (Example: *"A math fact is considered mastered when the student successfully answers that math-fact flashcard within 3 seconds on three successive occasions during a session and repeats this performance without error across two successive sessions."*):

_____

_____

Baseline Skills Inventory: Prior to beginning the intervention, inventory the student's current level of mastery of the skill being measured. (NOTE: Apply the 'criteria for mastery' guidelines written above when completing the baseline skills inventory.)
Person completing the inventory: _____ Date: _____/_____/_____

Item 1: _____	Item 11: _____	Item 21: _____
Item 2: _____	Item 12: _____	Item 22: _____
Item 3: _____	Item 13: _____	Item 23: _____
Item 4: _____	Item 14: _____	Item 24: _____
Item 5: _____	Item 15: _____	Item 25: _____
Item 6: _____	Item 16: _____	Item 26: _____
Item 7: _____	Item 17: _____	Item 27: _____
Item 8: _____	Item 18: _____	Item 28: _____
Item 9: _____	Item 19: _____	Item 29: _____
Item 10: _____	Item 20: _____	Item 30: _____

Academic Intervention: Cumulative Mastery Log

Student: _____ School Yr: _____ Classroom/Course: _____

Cumulative Mastery Log: During the intervention, log each mastered item below with date of mastery. NOTE: Be sure to use the 'criteria for mastery' defined on the first page of this form when judging whether the student has mastered a particular item.

Item 1: _____ Date: ___/___/___	Item 21: _____ Date: ___/___/___
Item 2: _____ Date: ___/___/___	Item 22: _____ Date: ___/___/___
Item 3: _____ Date: ___/___/___	Item 23: _____ Date: ___/___/___
Item 4: _____ Date: ___/___/___	Item 24: _____ Date: ___/___/___
Item 5: _____ Date: ___/___/___	Item 25: _____ Date: ___/___/___
Item 6: _____ Date: ___/___/___	Item 26: _____ Date: ___/___/___
Item 7: _____ Date: ___/___/___	Item 27: _____ Date: ___/___/___
Item 8: _____ Date: ___/___/___	Item 28: _____ Date: ___/___/___
Item 9: _____ Date: ___/___/___	Item 29: _____ Date: ___/___/___
Item 10: _____ Date: ___/___/___	Item 30: _____ Date: ___/___/___
Item 11: _____ Date: ___/___/___	Item 31: _____ Date: ___/___/___
Item 12: _____ Date: ___/___/___	Item 32: _____ Date: ___/___/___
Item 13: _____ Date: ___/___/___	Item 33: _____ Date: ___/___/___
Item 14: _____ Date: ___/___/___	Item 34: _____ Date: ___/___/___
Item 15: _____ Date: ___/___/___	Item 35: _____ Date: ___/___/___
Item 16: _____ Date: ___/___/___	Item 36: _____ Date: ___/___/___
Item 17: _____ Date: ___/___/___	Item 37: _____ Date: ___/___/___
Item 18: _____ Date: ___/___/___	Item 38: _____ Date: ___/___/___
Item 19: _____ Date: ___/___/___	Item 39: _____ Date: ___/___/___
Item 20: _____ Date: ___/___/___	Item 40: _____ Date: ___/___/___

- **Work Products**. Student work products can be collected and evaluated to judge whether the student is incorporating information taught in the course, applying cognitive strategies that they have been taught, or remediating academic delays. Examples of work products are math computation worksheets, journal entries, and written responses to end-of-chapter questions from the course textbook.

  Whenever teachers collect academic performance data on a student, it is recommended that they also assess the performance of typical peers in the classroom. Peer performance information allows the teacher directly to estimate and to track the skill gap that separates the target student from others in the class who are not having academic difficulties. Teachers should select students to serve as 'comparison peers' whose skills represent the class average.

  Work products can be assessed in several ways, depending on the identified student problem. The teacher can estimate the percentage of work completed on an assignment, for example, as well as the accuracy of the work actually completed. Additionally, the instructor may decide to rate the student's work for quality, using a rubric or other qualitative evaluation approach.

  NOTE: The 'Monitoring *Student Progress Through Work Products' Worksheet* that appears on the following pages provides a guide to setting up a plan for using work products to monitor a student intervention.

  Example: Mrs. Franchione, a social studies teacher, identified her eighth-grade student, Alexandria, as having difficulty with course content. The student was taught to use question generation as a strategy to better identify the main ideas in her course readings.

  As one measure to track student progress with the intervention, Mrs. Franchione decided to assess Alexandria's student journal entries. Each week, Mrs. Franchione assigned students 5 key vocabulary terms and directed them to answer a social studies essay question while incorporating all 5 terms.

  In preparation for monitoring through work products, Mrs. Franchione selected three students in the class who were producing 'average' work to serve as peer comparisons for Alexandria's essays.. Whenever Mrs. Franchione evaluated one of Alexandria's journal entries, she would randomly select the journal entry of one of these students also and rate that entry using the same evaluation criteria.

  Mrs. Franchione decided to assess Alexandria's journal entries according to the following criteria:

  - Presence of weekly assigned vocabulary words in the student essay
  - Unambiguous, correct use of each assigned vocabulary term in context
  - Overall quality of the student essay on a scale of 1 (significantly below peers) to 4 (significantly above peers).

  To establish a **baseline** before starting the intervention, Mrs. Franchione used the above criteria to evaluate the two most recent journal entries from Alexandria's journal—and averaged the results. She found that Alexandria typically would include four of the assigned vocabulary terms in each journal entry, but that only two of those four terms were used correctly in context. She also received a global quality rating from the teacher of 1.5. In contrast, the peer journal entries evaluated for comparison purposes were found to include all five of the

assigned vocabulary terms, with at least four of the terms used correctly in context. They also received an average quality rating of 3.2.

Mrs. Franchione set an intervention goal for Alexandria that— by the end of the 5-week intervention period— the student would regularly incorporate all five vocabulary terms into her weekly journal entries, that at least 4 of the five entries would be used correctly in context, and that the student would attain a quality rating score of 3.0 or better on the entries.

'Monitoring Student Progress Through Work Products' Worksheet

Student: _____ Grade: _____

Teacher: _____ Academic Skill/Course: _____

Type(s) of Work Products. Describe the type(s) of work products to be collected (e.g., math computation worksheets; writing journal entries; written responses to end-of-chapter questions, etc.):

_____

_____

Comparison Peers. Select up to 3 typically performing class peers whose work products are to be compared to that of the student:

1. _____
2. _____
3. _____

Work Conditions. Check the conditions under which work products are to be completed:

- ❑ In-class cooperative learning activities
- ❑ In-class independent seatwork
- ❑ Other: _____
- ❑ In-class teacher-led/large-group activities
- ❑ Homework

Quality Rating Rubric.

Use this global rubric to rate the quality of each student work product collected :

1	2	3	4
Significantly below level of peers (rudimentary content, absence of ideas, and/or failure to use key strategies or steps)	Somewhat below level of peers (lacking content, inadequate development of ideas, and/or limited application of key strategies or steps)	At level of peers (e.g., average content, development of ideas, application of key strategies or steps)	Above peers in overall quality (e.g., strong content, ideas developed to an advanced degree, creative application of key strategies or steps)

1

Date: ____/____/____ Target Student

Percentage of work product completed: _____ %

[Optional] Estimated accuracy of completed work: _____ %

[Optional] Grade assigned to this work product: _____

Rate the overall quality of this work product:

1	2	3	4
Significantly below peers	Somewhat below peers	At level of peers	Above level of peers

Comments: _____

_____

Name of Comparison Peer: _____

Percentage of work product completed: _____ %

[Optional] Estimated accuracy of completed work: _____ %

[Optional] Grade assigned to this work product: _____

Rate the overall quality of this work product:

1	2	3	4
Significantly below peers	Somewhat below peers	At level of peers	Above level of peers

Comments: _____

_____

2

Date: ____/____/____ Target Student
Percentage of work product completed: _____ %
[Optional] Estimated accuracy of completed work: _____ %
[Optional] Grade assigned to this work product: _____
Rate the overall quality of this work product:

1	2	3	4
Significantly below peers	Somewhat below peers	At level of peers	Above level of peers

Comments: _____

Name of Comparison Peer: _____
Percentage of work product completed: _____ %
[Optional] Estimated accuracy of completed work: _____ %
[Optional] Grade assigned to this work product: _____
Rate the overall quality of this work product:

1	2	3	4
Significantly below peers	Somewhat below peers	At level of peers	Above level of peers

Comments: _____

3

Date: ____/____/____ Target Student
Percentage of work product completed: _____ %
[Optional] Estimated accuracy of completed work: _____ %
[Optional] Grade assigned to this work product: _____
Rate the overall quality of this work product:

1	2	3	4
Significantly below peers	Somewhat below peers	At level of peers	Above level of peers

Comments: _____

Name of Comparison Peer: _____
Percentage of work product completed: _____ %
[Optional] Estimated accuracy of completed work: _____ %
[Optional] Grade assigned to this work product: _____
Rate the overall quality of this work product:

1	2	3	4
Significantly below peers	Somewhat below peers	At level of peers	Above level of peers

Comments: _____

4

Date: ____/____/____ Target Student
Percentage of work product completed: _____ %
[Optional] Estimated accuracy of completed work: _____ %
[Optional] Grade assigned to this work product: _____
Rate the overall quality of this work product:

1	2	3	4
Significantly below peers	Somewhat below peers	At level of peers	Above level of peers

Comments: _____

Name of Comparison Peer: _____
Percentage of work product completed: _____ %
[Optional] Estimated accuracy of completed work: _____ %
[Optional] Grade assigned to this work product: _____
Rate the overall quality of this work product:

1	2	3	4
Significantly below peers	Somewhat below peers	At level of peers	Above level of peers

Comments: _____

5

Date: ____/____/____ Target Student
Percentage of work product completed: _____ %
[Optional] Estimated accuracy of completed work: _____ %
[Optional] Grade assigned to this work product: _____
Rate the overall quality of this work product:

1	2	3	4
Significantly below peers	Somewhat below peers	At level of peers	Above level of peers

Comments: _____

Name of Comparison Peer: _____
Percentage of work product completed: _____ %
[Optional] Estimated accuracy of completed work: _____ %
[Optional] Grade assigned to this work product: _____
Rate the overall quality of this work product:

1	2	3	4
Significantly below peers	Somewhat below peers	At level of peers	Above level of peers

Comments: _____

- *Behavior Log.* Behavior logs are narrative 'incident reports' that the teacher records about problem student behaviors. The teacher makes a log entry each time that a behavior is observed. An advantage of behavior logs is that they can provide information about the context within which a behavior occurs.(Disciplinary office referrals are a specialized example of a behavior log.)

  Behavior logs are most useful for tracking problem behaviors that are serious but do not occur frequently.

  NOTE: A sample Behavior Log form appears on the next page.

  Example: Mrs. Roland, a 6th-grade Science teacher, had difficulty managing the behavior of a student, Bill. While Bill was often passively non-compliant, he would occasionally escalate, become loudly defiant and confrontational, and then be sent to the principal's office.

  Because Mrs. Roland did not fully understand what factors might be triggering these student outbursts, she began to keep a behavior log. In that log, she recorded instances when Bill's behavior would escalate to become confrontational. Among other information, Mrs. Roland's behavior logs noted the date and time of each behavioral outburst, its duration and severity, what activity the class was engaged in when Bill's behavioral outburst occurred, and the disciplinary outcome. After three weeks, she had logged 4 behavioral incidents, establishing a baseline of about 1 incident every 3.75 instructional days.

  Mrs. Roland hypothesized that Bill became confrontational to escape class activities that required him to read aloud within the hearing of his classmates. As an intervention plan, she changed class activities to eliminate public readings, matched Bill to a supportive class 'buddy', and also provided Bill with additional intervention in reading comprehension 'fix up' skills. Mrs. Roland set as an intervention goal that within 4 weeks Bill's rate of serious confrontational outbursts would drop to zero.

Behavior Log & Student Behavioral Scatterplot

Directions: Record each incident of problem student behavior in the behavior log below.

Student Name: _____Observer:_____

Time: ___;___ a.m./p.m. Date: ___/___/___ Location: _____

Brief narrative of incident (including persons involved, scheduled activity, triggering event(s), outcome(s));

_____

_____

_____

How long did this incident last? _____ mins

How severe was the behavior in the incident? 1 Not Severe 2 Somewhat Severe 3 Very Severe

Student Name: _____Observer:_____

Time: ___;___ a.m./p.m. Date: ___/___/___ Location: _____

Brief narrative of incident (including persons involved, scheduled activity, triggering event(s), outcome(s));

_____

_____

_____

How long did this incident last? _____ mins

How severe was the behavior in the incident? 1 Not Severe 2 Somewhat Severe 3 Very Severe

Behavioral Scatterplot

Directions: Write the student's general daily schedule in the column labeled 'Activity/Class Schedule'. For each day during which target problems behaviors were monitored in the student's *behavioral log*, mark an 'X' in the appropriate date column at the time when the problem behavior occurred. When all behaviors have been plotted at the correct date and time of their occurrence, look for possible explanatory patterns between the activities scheduled and the behaviors observed --e.g., due to physical setting variables, academic task demands, presence or absence of adult supervision, etc.

Time	Activity / Class Schedule	*Date/Day* _____	*Date/Day* _____	*Date/Day* _____	*Date/Day* _____	*Date/Day* _____
7:30-7:45						
7:45-8:00						
8:00-8:15						
8:15-8:30						
8:30-8:45						
8:45-9:00						
9:00-9:15						
9:15-9:30						
9:30-9:45						
9:45-10:00						
10:00-10:15						
10:15-10:30						
10:30-10:45						
10:45-11:00						
11:00-11:15						
11:15-11:30						
11:30-11:45						
11:45-12:00						
12:00-12:15						
12:15-12:30						
12:30-12:45						
12:45-1:00						
1:00-1:15						
1:15-1:30						
1:30-1:45						
1:45-2:00						
2:00-2:15						
2:15-2:30						
2:30-2:45						
2:45-3:00						
3:00-3:15						
3:15-3:30						
3:30-3:45						
3:45-4:00						
4:00-4:15						
4:15-4:30						

- *Curriculum-Based Measurement*. Curriculum-Based Measurement (CBM) is a family of brief, timed measures that assess basic academic skills. CBMs have been developed to assess a considerable number of academic competencies, including phonemic awareness, oral reading fluency, number sense, math computation, spelling, and written expression. Among advantages of using CBM for classroom assessment are that these measures are quick and efficient to administer; align with the curriculum of most schools; have good 'technical adequacy' as academic assessments; and use standard procedures to prepare materials, administer, and score (Hosp, Hosp & Howell, 2007).

  NOTE: Schools can find a comprehensive web directory of free or low-cost Curriculum-Based Measurement resources on CBM Warehouse at: http://www.interventioncentral.org/index.php/cbm-warehouse

  Example: Mr. Jackson, a 3rd-grade teacher, decided to use explicit time drills to help his student, Andy, become more fluent in his multiplication math facts. Prior to starting the intervention, Mr. Jackson administered a CBM math computation probe (single-skill probe; multiplication facts from 0 to 12) on three consecutive days. Mr. Jackson used the median, or middle, score from these three assessments as baseline—finding that the student was able to compute an average of 20 correct digits in two minutes. He also set a goal that Andy would increase his computation fluency on multiplication facts by 3 digits per week across the 5-week intervention, resulting in an intervention goal of 35 correct digits.

  Reference

  Hosp, M.K., Hosp, J. L., & Howell, K. W. (2007). *The ABCs of CBM*. New York: Guilford.

RTI Classroom Progress-Monitoring Worksheet: Guidelines

Academic and behavioral interventions under RTI are incomplete without data being collected to document whether those interventions are actually benefiting students. Indeed, an RTI intervention can be viewed as 'fatally flawed' (Witt, VanDerHeyden & Gilbertson, 2004) if it lacks any one of these data elements: (1) clear definition of the presenting student problem(s), (2) calculation of the student's starting point, or baseline performance, in the identified area of concern; (3) setting of a specific goal for student improvement; or (4) selection of a method to monitor the student's progress formatively during the intervention to judge whether the intervention is successful in helping the student to attain the goal. Clearly defining the student problem and collecting data are essential to implementing any school-based intervention.

As general-education teachers are often the 'first responders' who provide classroom interventions under RTI, they need to know how to set up a data collection plan that includes baseline, goal, and progress-monitoring. Instructors, however, can find the task of data collection to be daunting—unless they are provided with a step-by-step tutorial in how to do so.

How to Use the *RTI Classroom Progress-Monitoring Worksheet*

As teachers adopt the role of RTI classroom 'first responder' interventionist, they are likely to need assistance – at least initially—with the multi-step process of setting up and implementing data collection, as well as interpreting the resulting data. A form designed to walk teachers through the data-collection process-- *RTI Classroom Progress-Monitoring Worksheet*—appears on pages 3-4 of this handout. The *Worksheet* includes a seven-step 'wizard' form to help teachers in structuring their progress-monitoring. Here are the essential steps from the *Worksheet* that teachers should follow to ensure that their data collection is adequate to the task of measuring the impact of their classroom interventions:

A. *Identify the student problem*. The teacher defines the student problem in clear, specific terms that allow the instructor to select an appropriate source of classroom assessment to measure and monitor the problem.

B. *Decide on a data collection method*. The teacher chooses a method for collecting data that can be managed in the classroom setting and that will provide useful information about the student problem. Examples of data collection methods are curriculum-based measurement (e.g., oral reading fluency; correct writing sequences), behavior-frequency counts, and direct behavior report cards. When selecting a data collection method, the teacher also decides how frequently that data will be collected during intervention progress-monitoring. In some cases, the method of data collection being used will dictate monitoring frequency. For example, if homework completion and accuracy is being tracked, the frequency of data collection will be equal to the frequency of homework assignments. In other cases, the level of severity of the student problem will dictate monitoring frequency. Students on Tier 2 (standard-protocol) interventions should be monitored 1-2 times per month, for example, while students on Tier 3 (intensive problem-solving protocol) interventions should be monitored at least weekly (Burns & Gibbons, 2008).

C. *Collect data to calculate baseline*. The teacher should collect 3-5 data-points prior to starting the intervention to calculate the student's baseline, or starting point, in the skill or behavior that is being targeted for intervention. The student's baseline performance serves as an initial marker against which to compare his or her outcome performance at the end of the intervention. (Also,--because baseline data points are collected prior to the start of the intervention--they collectively can serve as an indication of the trend, or rate of improvement, if the student's program remains unchanged and no additional interventions are attempted.). In calculating baseline, the teacher has the option of selecting the median, or middle, data-point, or calculating the mean baseline performance.

D. *Determine the timespan of the intervention*. The length of time reserved for the intervention should be sufficient to allow enough data to be collected to clearly demonstrate whether that intervention was successful. For example, it is recommended that a high-stakes intervention last at least 8 instructional weeks (e.g., Burns & Gibbons, 2008).

E. *Set an intervention goal*. The teacher calculates a goal for the student that, if attained by the end of the intervention period, will indicate that the intervention was successful.

F. *Decide how student progress is to be summarized*. A decision that the teacher must make prior to the end of the intervention period is how he or she will summarize the actual progress-monitoring data. Because of the variability present in most data, the instructor will probably not elect simply to use the final data point as the best estimate of student progress. Better choices are to select several (e.g. 3) of the final data points and either select the median value or calculate a mean value. For charted data with trendline, the teacher may calculate the student's final performance level as the value of the trendline at the point at which it intercepts the intervention end-date.

G. *Evaluate the intervention outcome*. At the conclusion of the intervention, the teacher directly compares the actual student progress (summarized in the previous step) with the goal originally set. If actual student progress meets or exceeds the goal, the intervention is judged to be successful.

References

Burns, M. K., & Gibbons, K. A. (2008). Implementing *response-to-intervention in elementary and secondary schools*. Routledge: New York.

Witt, J. C., VanDerHeyden, A. M., & Gilbertson, D. (2004). Troubleshooting behavioral interventions. A systematic process for finding and eliminating problems. *School Psychology Review, 33*, 363-383.

RTI Classroom Progress-Monitoring Worksheet

Student: Brian Jones Teacher: Mrs. Braniff Classroom or Course: Gr 3

SET-UP

A. **Identify the Student Problem:** Describe in clear, specific terms the student academic or behavioral problem:
Need to Become Fluent in Multiplication Facts: 0 to 9

B. **Select a Data Collection Method:** Choose a method of data collection to measure whether the classroom intervention actually improves the identified student problem (e.g., curriculum-based measurement, etc.).
Curriculum-Based Measurement: 2-Minute Timed Math Computation Probes

How frequently will this data be collected?: 1 times per Week

BASELINE

C. **Collect Data to Calculate Baseline:** What method from the choices below will be used to estimate the student's baseline (starting) performance? (NOTE: Generally, at least 3-5 baseline data points are recommended.)

☑ From a total of 3 observations, select the median value. ❑ Other: _____

❑ From a total of _____ observations, calculate the mean value. _____

Baseline	3. Date: 11 / 21 /2011 Obsv: 34
1. Date: 11 / 14 /2011 Obsv: 31	4. Date: ____/____/____ Obsv: _____
2. Date: 11 / 17 /2011 Obsv: 28	5. Date: ____/____/____ Obsv: _____

Baseline Performance: Based on the method selected above, it is calculated that the student's baseline performance is:
31 Correct Digits in 2 minutes

D. **Determine Intervention Timespan:** The intervention will last 6 instructional weeks and end on 1 / 13 /2012

E. **Set a Performance Goal:** What goal is the student expected to achieve if the intervention is successful?
At the end of the intervention, it is predicted that the student will reach this performance goal:
40 Correct Digits in 2 minutes

PROGRESS-MONITORING

F. **Decide How Student Progress is to Be Summarized:** Select a method for summarizing student progress ('outcome') attained when the intervention ends. S*tudent progress at the end of the intervention is to be summarized by:*

❑ Selecting the median value from the final ____ data-points (e.g.,3).

☑ Computing the mean value from the final 2 data-points (e.g.,3).

❑ [For time-series graphs]: Calculating the value on the graph trend line at the point that it intercepts the intervention end date.

G. **Evaluate the Intervention Outcome:**
At the end of the intervention, compare student progress to goal. If actual progress meets or exceeds goal, the intervention is judged successful.

The student's ACTUAL Progress (Step F) is:	42
The PERFORMANCE GOAL for improvement (Step E) is:	40

Progress-Monitoring	5. Date: 01 / 06 /2012 Obsv: 41
1. Date: 12 / 02 /2011 Obsv: 29	6. Date: 01 / 13 /2012 Obsv: 43
2. Date: 12 / 09 /2011 Obsv: 34	7. Date: ____/____/____ Obsv: _____
3. Date: 12 / 16 /2011 Obsv: 35	8. Date: ____/____/____ Obsv: _____
4. Date: 12 / 22 /2011 Obsv: 39	9. Date: ____/____/____ Obsv: _____

RTI Classroom Progress-Monitoring Worksheet

Student: _____ Teacher: _____ Classroom or Course: _____

SET-UP

A. **Identify the Student Problem:** Describe in clear, specific terms the student academic or behavioral problem:

_____

B. **Select a Data Collection Method:** Choose a method of data collection to measure whether the classroom intervention actually improves the identified student problem (e.g., curriculum-based measurement, etc.).

_____

How frequently will this data be collected?: _____ times per _____

BASELINE

C. **Collect Data to Calculate Baseline:** What method from the choices below will be used to estimate the student's baseline (starting) performance? (NOTE: Generally, at least 3-5 baseline data points are recommended.)

❑ From a total of _____ observations, select the **median** value.

❑ From a total of _____ observations, calculate the **mean** value.

❑ Other: _____

Baseline	3. Date: ____/____/____ Obsv: _____
1. Date: ____/____/____ Obsv: _____	4. Date: ____/____/____ Obsv: _____
2. Date: ____/____/____ Obsv: _____	5. Date: ____/____/____ Obsv: _____

Baseline Performance: Based on the method selected above, it is calculated that the student's baseline performance is:

_____

PROGRESS-MONITORING

D. **Determine Intervention Timespan:** The intervention will last _____ instructional weeks and end on ____/____/____.

E. **Set a Performance Goal:** What goal is the student expected to achieve if the intervention is successful?
At the end of the intervention, it is predicted that the student will reach this performance goal:

_____

F. **Decide How Student Progress is to Be Summarized:** Select a method for summarizing student progress ('outcome') attained when the intervention ends. *Student progress at the end of the intervention is to be summarized by:*

❑ Selecting the **median** value from the final ____ data-points (e.g.,3).

❑ Computing the **mean** value from the final ____ data-points (e.g.,3).

❑ [For time-series graphs]: Calculating the **value on the graph trend line** at the point that it intercepts the intervention end date.

G. **Evaluate the Intervention Outcome:** At the end of the intervention, compare student progress to goal. If **actual progress** meets or exceeds **goal**, the intervention is judged successful.

The student's ACTUAL Progress (Step F) is:	
The PERFORMANCE GOAL for improvement (Step E) is:	

Progress-Monitoring	5. Date: ____/____/____ Obsv: _____
1. Date: ____/____/____ Obsv: _____	6. Date: ____/____/____ Obsv: _____
2. Date: ____/____/____ Obsv: _____	7. Date: ____/____/____ Obsv: _____
3. Date: ____/____/____ Obsv: _____	8. Date: ____/____/____ Obsv: _____
4. Date: ____/____/____ Obsv: _____	9. Date: ____/____/____ Obsv: _____

Student: _____ Grade: _____

Teacher: School Year:

Progress-Monitoring (Cont.)

10. Date: ____/____/____ Obsv: _____
11. Date: ____/____/____ Obsv: _____
12. Date: ____/____/____ Obsv: _____
13. Date: ____/____/____ Obsv: _____
14. Date: ____/____/____ Obsv: _____
15. Date: ____/____/____ Obsv: _____
16. Date: ____/____/____ Obsv: _____
17. Date: ____/____/____ Obsv: _____
18. Date: ____/____/____ Obsv: _____
19. Date: ____/____/____ Obsv: _____
20. Date: ____/____/____ Obsv: _____
21. Date: ____/____/____ Obsv: _____
22. Date: ____/____/____ Obsv: _____
23. Date: ____/____/____ Obsv: _____
24. Date: ____/____/____ Obsv: _____
25. Date: ____/____/____ Obsv: _____
26. Date: ____/____/____ Obsv: _____
27. Date: ____/____/____ Obsv: _____
28. Date: ____/____/____ Obsv: _____
29. Date: ____/____/____ Obsv: _____

Progress-Monitoring (Cont.)

30. Date: ____/____/____ Obsv: _____
31. Date: ____/____/____ Obsv: _____
32. Date: ____/____/____ Obsv: _____
33. Date: ____/____/____ Obsv: _____
34. Date: ____/____/____ Obsv: _____
35. Date: ____/____/____ Obsv: _____
36. Date: ____/____/____ Obsv: _____
37. Date: ____/____/____ Obsv: _____
38. Date: ____/____/____ Obsv: _____
39. Date: ____/____/____ Obsv: _____
40. Date: ____/____/____ Obsv: _____
41. Date: ____/____/____ Obsv: _____
42. Date: ____/____/____ Obsv: _____
43. Date: ____/____/____ Obsv: _____
44. Date: ____/____/____ Obsv: _____
45. Date: ____/____/____ Obsv: _____
46. Date: ____/____/____ Obsv: _____
47. Date: ____/____/____ Obsv: _____
48. Date: ____/____/____ Obsv: _____
49. Date: ____/____/____ Obsv: _____

Defining Student Problems: The First Step in Effective Intervention Planning

Students who struggle with academic deficits or behavioral problems do not do so in isolation. Their difficulties are played out in the larger context of the school environment and curriculum—and often represent a 'mismatch' between the characteristics of the student and the instructional or behavioral demands of the classroom (Foorman & Torgesen, 2001). It may surprise educators to learn that the problem-identification step is the most critical for matching the student to an effective intervention (Bergan, 1995). Problem identification statements should be defined in clear and specific terms sufficient to pass 'the stranger test' (Howell, Hosp, & Kurns, 2008). That is, the student problem can be judged as adequately defined if a person with no background knowledge of the case and equipped only with the problem-identification statement can observe the student in the academic setting and know with confidence when the problem behavior is displayed and when it is not.

Here is a 3-step process for describing student problems clearly, understanding their likely causes, and matching those problems to appropriate interventions.

1. Describe the problem in specific terms (Batsche et al., 2008; Upah, 2008). Write a clear, brief description of the academic skill or performance deficit or behavioral problem. This section provides guidance in how to construct strong statements identifying student concerns in both academic and behavioral areas.

   Academic Problem Identification. An academic problem ID statement focuses on a specific skill or performance area and includes information about the conditions under which the academic problem is observed and typical or expected level of performance. It contains these 3 elements:

   - *Conditions*. Describe the environmental conditions or task demands in place when the academic problem is observed.
   - *Problem Description*. Describe the actual observable academic behavior in which the student is engaged. Include rate, accuracy, or other quantitative information of student performance.
   - *Typical or Expected Level of Performance*. Provide a typical or expected performance criterion for this skill or behavior. Typical or expected academic performance can be calculated using a variety of sources.

Academic Problems: Sample Definitions		
Environmental Conditions or Task Demands. *'What is the student supposed to do?'*	Problem Description. *'What does the student actually do?'*	Typical or Expected Level of Performance. *'What is the performance that you expect from this student?'*
When completing a beginning-level algebra word problem…	…Ann is unable to translate that word problem into an equation with variables…	…while most peers in her class have mastered this skill.
During social studies large-group	…Franklin attends to instruction an average of 45% of the time…	… while peers in the same room attend to instruction an

instruction…		average of 85% of the time.
For science - homework…	… Tye turns in assignments an average of 50% of the time…	… while the classroom median rate of homework turned in is 90%.
On weekly 30-minute in-class writing assignments…	… Angela produces compositions that average 145 words…	…while a sampling of peer compositions shows that the typical student writes an average of 254 words.

Behavior Problem Identification. A behavioral problem ID statement defines the problem behavior in clear, observable, measurable terms (Batsche et al., 2008; Upah, 2008) and avoids vague problem identification statements such as "The student is disruptive." A useful self-prompt to come up with a more detailed description of the problem is to ask, "What does <problem behavior> look like in the classroom?" A behavior problem ID statement contains these three elements:

A well-written behavioral problem definition should include three parts:

- *Conditions.* The condition(s) under which the problem is likely to occur
- *Problem Description.* A specific description of the problem behavior
- *Contextual Information.* Information about the frequency, intensity, duration, or other dimension(s) of the behavior that provide a context for estimating the degree to which the behavior presents a problem in the setting(s) in which it occurs.

Behavior Problems: Sample Definitions		
Conditions. *'Where or when does the problem behavior occur and what is going on at the time?'*	Problem Description. *'What does the behavior look like in the classroom?'*	Contextual Information About Frequency, Intensity, Duration, or Other Dimension(s) of the Behavior. *'What indicates that this behavior is challenging?'*
During 20-minute independent seatwork literacy tasks,…	…John talks with peers about non-instructional topics…	…and must be redirected by the teacher an average of 3 times per session.
In school settings such as the playground or gymnasium, when unsupervised by adults,…	…Andrea is reported by peers to use physically threatening language…	…at least once per week.
When given a verbal teacher request…	…Jay fails to comply with that request within 3 minutes…	… an average of 50% of the time.

2. Select a hypothesis to explain the academic or behavioral problem. The hypothesis states the assumed reason(s) or cause(s) for the student's academic or behavioral problem(s). Once it has been developed, the hypothesis statement acts like a compass needle, pointing toward interventions that most logically address the student concerns. The checklist below includes common reasons for academic and behavioral concerns. Note that more than one hypothesis may apply to the same student (e.g., a student may have both a skill deficit and a motivation deficit).

Likely Reason(s) for Student Academic and Behavioral Concerns	
Behavioral	Academic
❑ Lacks necessary behavioral skills ❑ Has the necessary behavioral skills but is not motivated by the instructional task/setting to comply/behave appropriately ❑ Seeks att'n from adults ❑ Seeks att'n from peers ❑ Reacts to teasing/bullying ❑ Tries to escape from instructional demands or setting ❑ Attempts to hide academic deficits through noncompliance or other misbehavior	❑ Is placed in work that is too difficult ❑ Lacks one or more crucial basic skills in the problem subject area(s) ❑ Needs drill & practice to strengthen and become more fluent in basic academic skills ❑ Has the necessary academic skills, fails to use them in the appropriate settings/situations ❑ Needs explicit guidance to connect current skills to new instructional demands ❑ Has the necessary academic skills but is not motivated by the instructional task/setting to actually do the work

3. Select interventions to match the selected hypothesis. After a 'best guess', or hypothesis, has been selected to explain the probable cause of the student's academic or behavioral concern, the teacher will then choose intervention ideas that logically address the root cause of the problem.

References

Batsche, G. M., Castillo, J. M., Dixon, D. N., & Forde, S. (2008). Best practices in designing, implementing, and evaluating quality interventions. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology V* (pp. 177-193). Bethesda, MD: National Association of School Psychologists.

Bergan, J. R. (1995). Evolution of a problem-solving model of consultation. *Journal of Educational and Psychological Consultation, 6(2),* 111-123.

Foorman, B. R., & Torgesen, J. (2001). Critical elements of classroom and small-group instruction promote reading success in all children. *Learning Disabilities Research & Practice, 16,* 203-212.

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.

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.