Modify Interventions

Screen & Identify Students ▷ Implement SRBI ▷ Monitor Progress ▷ Modify Interventions ▷
Suspect Disability ▷ Gather Data ▷ Interpret Data ▷ Decide Eligibility

6. Modifying Interventions

Contents of Chapter 6

Chapter Overview

This chapter will assist teams, including the parents, review the efficacy of the intervention and deduce the next step in intervention planning. Many resources and tools are provided for reviewing data, including intervention questions, a matrix for documenting sources of data used in analyzing instruction, curriculum, environment, and learner (*ICEL*) domains and an example problem solving form. Discussions with resources for gathering additional data from parents and gathering data through observations are also included. The chapter also provides specific guidance on strengthening interventions, selection of tertiary interventions, intervention cycling and issues related to information processing. For those who are interested in addressing potential information processing concerns in tertiary intervention, the chapter provides guidance on planning interventions, with particular attention to structuring observations to identify information processing issues, i.e., listening comprehension and oral expression.

Regulations and Rules

Note: Regulations, statutes, and rules form the basis for legal compliance and are provided below to help readers understand the requirements of law.

The Code of Federal Regulations, title 34, section 300.308 requires that the qualified professionals who determine if a child has a specific learning disability must:

a) Use observation data from routine classroom instruction and monitoring of performance that was done before the child was referred for a special education evaluation.

OR

b) Conduct an observation of academic performance in the regular classroom after the child is referred for a special education evaluation and appropriate parental consent is obtained.

AND

c) Document the relevant behavior, if any, noted during the observation and the relationship of that behavior to the child's academic functioning.

Minnesota Statutes section 125A.56 covers rules for Early Intervening Services, which require the following:

- A nondisabled pupil must participate in small group instruction in 60-day periods.

- During each 60-day period, teachers must examine the pupil's progress monitoring data to determine if progress was made.

- If progress was not made, teachers must change the intervention strategy or make a special education evaluation referral.

Minnesota Rule states that prior to evaluation, an observation of the child must occur in the pupil's learning environment, including the regular classroom setting. The documentation must report on the child's academic performance and behavior in the areas of difficulty. For a child not yet school age or schooled at a location other than a public school setting, a team member must observe the child in an age-appropriate environment.

Quality Practices in Problem Analysis and Data Analysis

The group determining how to modify an intervention, which may consist of the school psychologist, content coach, parents, and/or others, is responsible for communicating with teachers who track progress monitoring data.

If the data indicate that students are not making progress or if they fail to meet established growth goals outlined in the written intervention plan, the group should modify or redesign the intervention. Groups responsible for this decision should start by revisiting the existing intervention plan and description of the learning problem and expected outcome.

Repeating the problem solving protocol outlined in Chapter 4 will help in reviewing the efficacy of the previous intervention plan and determining the appropriate next step in intervention:

1. **Define the Problem (re-define).** At this stage defining the problem includes verifying that the intervention plan was implemented with fidelity as well as trigger a re-examination of the previous assumptions regarding what the learning problem is and why it is happening.

   o Clarify what is known about the student, his performance, and expectations.

   o Identify relevant information to help reformulate a hypothesis of what the learning problem is and strengthen the intervention.

   o Involve parents in reviewing data and drafting a new intervention plan. As parents gain greater understanding, they may contribute additional relevant information.

2. **Analyze the Problem (re-analyze):** Review existing and use relevant parent and observation data to further clarify the learning problem. Identify factors such as instruction, curriculum, and learner characteristics that may be altered to increase the likelihood that an intervention will be successful.

3. **Implement the Plan:** Modify, change or adjust and carry out the tertiary intervention as designed. Be sure that the frequency, duration and intensity of intervention is in proportion to the learning need. Depending on the urgency of the need, the decision to make a referral for comprehensive evaluation may be appropriate (individual district practices may vary). Interventions may continue to be carried out during a comprehensive evaluation.

4. **Evaluate the Plan:** Document changes to interventions and ongoing findings while implementing progress monitoring procedures.

Resources to Redefine the Learning Problem

When progress monitoring data indicate that an intervention is not effective, parents and school staff should re-analyze what is known about the learning problem. This analysis should focus on those variables within the instructional staff's control. These variables include instruction, curriculum, environment, as well as factors specific to the learner.

Illustrative Example

Sam, a second grader is supposed to receive 20 minutes of decoding and spelling intervention daily according to the written intervention plan. The progress monitoring data that his teacher collects indicates that he receives only 65 percent of the assigned intervention time. After an investigation, Sam's parents, Sam's teacher, and intervention delivery staff, discover that absenteeism, tardiness and school assemblies are responsible for curtailing Sam's intervention time.

The team then compares this data to the progress monitoring data on days when Sam received the full intervention. After analysis, the team determines that when Sam does receive the full intervention, it is effective. The team agrees to add supports to improve Sam's attendance as well as the integrity of the intervention time.

Resource Descriptions

Use the following resources to re-define and re-analyze a student's performance prior to re-designing interventions. The first resource includes three tools that help teams review and analyze relevant data, gather information from parents through questions and observations, and a template to document findings. These tools help to review relevant data and topics of discussion.

The second resource helps instructional staff integrate and analyze data in a manner that will help determine what is working while changing what isn't working. The third resource lists research-based practices for strengthening interventions.

Resource for Re-defining the Learning Problem

The following questions may help deepen teams' understanding of the student's needs leading to a more accurate identification of the learning problem.

Important: Implementation with fidelity leads the team to greater confidence that student progress is attributable to the intervention and not inconsistent or ineffective implementation. School-wide fidelity checks are more complex than those conducted for a single intervention delivery staff.

Although fidelity may exist in the structure and routine of school-wide programs, individual teachers may adapt materials and routines for their own needs. Therefore, fidelity checks must occur at the individual and system level. Determining if the student received the recommended dose and frequency of intervention is as important as establishing the frequency and dose to be administered. Analysis of minutes of intervention the student received should be part of judging the effectiveness of an intervention.

Table 6-1

Re-defining the Learning Problem

Question	Options for Collecting Data
Was intervention implemented as intended? How does the team know?	Check fidelity: • Observe instruction in the intervention delivery setting. • Review progress monitoring data and compare with permanent products. • Follow up with teacher delivering intervention, interview instructional staff for: consistent implementation of intervention plan, attendance for intervention sessions, and additional insights.
What are the student's needs in the areas of instruction, curriculum, and environment?	• Review the description of the learning problem and what student is/is not doing that is problematic (look for learning issue, context under which issue occurs, compare performance with peers).
Was intervention well matched to the identified needs? What if anything from the previous intervention plan worked?	• Conduct Instruction, Curriculum, Environment, Learner (ICEL) analysis. • Analyze sequence of proficiency (Acquisition, Accuracy, Fluency, Generalization /Application). • Analyze responses for sequence, patterns, or consistencies and inconsistencies. • Observe student during instruction in multiple contexts. Identify when, why, and under what conditions to use skill/behavior.
What additions/changes to instructional strategies, curriculum, or environment are needed to accelerate performance?	• Conduct error analysis. • Draw upon research to intensify or strengthen interventions.
What possible issues may, in part, explain underlying persistence in poor achievement?	• Interview for educational/medical/developmental history. • Identify areas of strength and situations or conditions where performance improves. • Observe student during instruction. • Conduct prescriptive assessment (error analysis). • Select the most likely, simple, and alterable explanation to start (instruction, curriculum, and environment then learner).

Question	Options for Collecting Data
To what extent do exclusionary factors contribute to the learning need? How can these issues be addressed through intervention or other means to reduce adverse impact on performance?	Use the Review, Interview, Observe, Test (**RIOT)** Model to evaluate the effect behavior; academics, language, and instruction have on each other. • **R**ecord review including screening data when available (for resources see pages 6-8). • **I**nterview for educational/medical/developmental history (for resources see pages 8-10). • **O**bserve student during instruction (for resources see pages 10-14). • **T**est/prescriptive assessment (error analysis). Specific questions for each exclusionary factor that RIOT may be applied to can be found in Chapter 7.

--Best Practices. Review, Interview, Observe, Test (Riot) and I., C., E., Learner matrix, p.169.

Resource for Re-analyzing the Problem—Record Reviews

Table 6-2

Tool 2: Record Reviews using ICEL Domains

This table provides a scaffold to review records in the Instruction, Curriculum, Environment, Learner (ICEL) domains. Parents are included as a source of information for record review.

Note: See problem-solving sample worksheet based on RIOT and ICEL after notes on ELL students below.

Domain	Source	Data Outcomes

Instruction	Permanent products	• Nature of instructional demands reflected in paper-pencil tasks (e.g., style demands of the task, difficulty levels, skill requirements).
		
		• Teacher records of:
		  o How expectations are communicated and the criteria for success.
		  o How content delivery is structured.
		  o Specificity of feedback on performance.
		  o Student response to directions.
		  o Teacher response to students request for clarification or assistance.
		  o Opportunities and methods of practice.

Curriculum	Permanent products
	
	(e.g., books, worksheets, curricular guides)
		• Nature of instructional demands reflected in:
		  o Stated outcomes, standards and benchmarks.
		  o Scope and sequence of instruction.
		  o Arrangement and timing of curriculum sequence.
		  o In curriculum and instructional materials.
		  o Instructional approaches.
		  o Learning tasks and pre-requisite skills.
		Pacing for stages of learning (acquisition, accuracy, fluency, generalization/application).

Domain	Source	Data Outcomes
Environment	School and classroom procedures	• Discipline policies and procedures that define what is deemed as "situationally appropriate." • Positive behavioral supports, e.g., explicit instruction in expectations (task, classroom, school) and routines. • Relational influences (peer to peer, student to instructor, student to family). • Physical arrangement of the classroom (noise, position relative to focus of instruction, etc.).
Learner	Permanent products, peers' work	• Standard performance of peers.
	Cumulative records	• Patterns of behavior as reflected in teacher reports (teacher perception of the problem) and discipline records. • Onset and duration of the problem. • Interference with personal, interpersonal, and academic adjustment. • Settings where behavior of concern has occurred.
	Health records	• Existence of heath, vision, and/or hearing problems potentially related to the academic and/or social behavior concern.
	Permanent products and student work	• Patterns of performance errors reflecting skill deficits. • Patterns of performance in achievement, language acquisition, prior knowledge, relational and conceptual understandings. • Interference with ability to profit from general education instruction. • Consistent skill and/or performance problems over time. • Settings where behavior of concern is evident.
	Teacher's grade book	• Student performance in relationship to setting demands (e.g., teacher expectations, focus on achievement vs. focus on task completion).
	Intervention data	• Response to intervention as reflected in "Intervention Plans" and progress monitoring (academic and/or behavioral).

Domain	Source	Data Outcomes
Parent and Community	Records of communications or interview notes Independent Evaluation Results	• Student's strengths and weaknesses. • Personal/social cultural history. • Exposure to English Language. • Documentation of performance or achievement in pre-school or daycare settings. • Evaluation, tutoring, or test results.

Adapted from Using Response to Intervention (RtI) for Washington's Students (2006). A publication of Special Education, Washington State Office of Superintendent of Public Instruction. Content added to Data Outcomes for Curriculum.

Language Acquisition for ELL Students

Specific behaviors common to students engaged in language acquisition should be recognized as normal. Just like native English speakers, progress monitoring of ELL learners is necessary to determine the effectiveness of intervention.

Inadequate progress without sufficient consideration of prior knowledge, opportunities to access equivalent grade level content, materials, and expectations, exposure to vocabulary and language acquisition does not justify suspicion of a disability. Suspicion is justified if the educational trajectory of an LEP student across time is notably different from his/her LEP classmates who have been educated in a similar instructional setting for approximately the same number of years.

Cultural Behavior

Teams should consider the degree to which the core and/or intervention curriculum is culturally representative of the student.

Resource for Re-analyzing the Learning Problem: Interviewing Parents

Prior to beginning the meeting, the interviewer should review the system of scientific research-based intervention (SRBI) process and where in the process lies the student's case. The parent should understand why more answers are needed (e.g., the student's progress was not sufficient to achieve the targeted goal).

During the meeting, summarize and review any previous discussions with the parent as well as any activities and results gathered since the last interview. Explain the need to increase the intensity of the interventions because the student continues to have difficulty in the specified area. Explain why more in-depth information may help improve the effectiveness of the intervention.

One way to build and increase rapport with parents is to refer to their comments from the last interview.

Show evidence of data collected, such as graphs and work samples as well as the intervention that was carried out. Share data collected during interventions to support your rationale for increasing intensity. Discuss what instruction the student will need to miss, especially core instruction in another area, in order to receive the intervention.

Questions Asked Prior to Beginning Tertiary Interventions

1. For younger students and/or if the following information is not in the student's file, ask:

    a. When did your child begin to walk?

        i.   By 12 months   12-18 months   18-24 months   after 24 months

    b. Has your doctor said that your child should not participate in a specific physical activity? Please explain.

    c. When did your child begin using single words? How does this child's language compare to siblings.

        i.   By 12 months   12-18 months   18-24 months   after 24 months

    d. When did your child begin using short sentences? (e.g., "I want juice." "My toy.")

        i.   12-18 months 18-24 months   24-36 months   after 36 months

        ii.   Have you ever worried about your child's language development? Please add your child's first/native language development for ELL students. Please explain.

        iii. Do you understand your child when he/she talks to you?

        iv.   Do you understand your child's language? Give examples of leaving out words, leaving off endings of words.

        v.   Do people outside of your home understand your child's speech? Do you interpret what your child is saying because he/she may leave out words or phrases or watch body language the child uses to interpret what the child is saying?

        vi.   Does your child understand what you say in the language used in the home?

        vii. My child chooses to speak to:

            1. Family members   yes   no   explain
            2. Other adults   yes   no   explain
            3. Other children   yes   no   explain

    e. How much does your child read independently at home? What does your child read at home? For pleasure? Homework?

2. Have you noticed any changes in attitude, behavior, etc. in (name the area of concern)? Have you and your child discussed anything about the area of concern?

    a. You mentioned the last time we met that your child's attitude in school was (fill in blank). Have you noticed anything different? The last time we met you mentioned (fill in the blank with comments made by parents during the last interview) was your

child's behavior? Have you noticed anything different? What have you noticed about any difficulties or struggles your child experiences with school work?

b. Have you noticed any difficulty with friends?

c. Have you or your child discovered any tricks or tips that have helped your child learn either something in the area of concern or in other areas?

d. Summarize the information provided by the parent during the Tier II interview. Re-ask the home work questions from Tier II and get updated information. Refer back to what parent said last time. Are they trying anything different?

3. Are there things you or another family member are doing at home to help your child learn?

4. About how much time is your child spending doing homework? Is this in the area of concern? Another area?

5. Do you have any questions about what the school is doing?

6. Is there anything else you feel the school should be doing to help your child?

7. May we contact your child care provider and involve them in the school communication and planning? Any information will be shared with the parent. The parent is welcome to be part of that interview.

a. If the parent provides written permission for the dialogue with the child care provider then the interviewer can communicate with child care provider to see if they are willing to communicate with school. Be sure to follow all data privacy procedures.

Re-analyzing the Learning Problem: Quality Practices in Observation Procedures

Observation generally refers to an information gathering process via the senses (i.e., visual, auditory) for a designated period of time (Salvia & Ysseldyke, 2004). While both qualitative and quantitative approaches to observation exist (Salvia & Ysseldyke, 2004), research supports quantitative or systematic observation to produce a reliable and valid record of specific academic or social behavior over time (Chafouleas, Riley-Tillman, & Sugai, 2007). Systematic observation allows for simultaneous documentation of the student's behavior and instructional environment.

Quality practices indicate that a systematic observation should meet the following criteria (Salvia & Ysseldyke, 2004):

- Conducted by trained personnel.

- Measures specific behaviors of concern, which have been defined in observable and measurable terms.

- Collects data under standardized procedures that allow for a high level of objectivity.

- Conducted at a time and place where student's response to intervention can be observed and any behavior related to the referral concern documented.

- Scores and summarizes data in a standardized fashion to decrease variability between observers.

Purposes of observation include:

- Checking the fidelity of an intervention.

- Gathering data to improve instruction and document ongoing needs:

  o Determine if interventions are matched to student need and any potential instructional or curricular factors that could be altered to increase rate of learning.

  o Describe the student's functioning level in relation to peers in large and small group settings.

  o Determines the accessibility of instruction whether the instruction is designed to accelerate achievement to reach grade level expectations.

  o Provide context for achievement data.

  o Provide context for observations made by specialists or teachers in other settings.

  o Identify the student's possible information processing weaknesses related to the academic concern that requires modification or accommodations.

- Focusing the data collection process to inform the design of the comprehensive evaluation:

  o Assist in identifying needs that require further investigation and testing.

  o Assist in documenting performance related to exclusionary factors.

  o Relate observed behavior to the student's academic functioning for meeting requirement in SLD criteria.

  o Inform selection of tests administered by specialists during the comprehensive evaluation process.

- Designing instruction after an eligibility determination is made

Many methods of paper-pencil and computer-based applications collect systematic observation data. To increase the accuracy of data gathered through observations consider using Published Semi-Structured/Structured Observations. Complex observation systems are generally less accurate than simple ones (Saliva & Ysseldyke, 2004). Be sure to undergo training prior to employing any direct observation form and interpreting the data derived from its use.

Observations conducted by specialists are prime opportunities to gather information about how the student responds to instruction, the curriculum, and the environment. The matrix below explains how to chunk the observation into the ICEL categories, and is derived from research-

based literature. Such an observation may occur at one of two points in the intervention process, i.e., during the intervention process, or after the initiation of a comprehensive evaluation.

Table 6-3

Domain, Source, Data Outcomes

Domain	Source	Data Outcomes
Instruction	Setting analysis	• Effective teaching practices, teacher expectations.
	Systematic observation	• Antecedents, consequences.
	Anecdotal recording checklists	• Effective teaching practices.
Curriculum		• Curricular and content demands, accessibility of curriculum.
Environment	Setting analysis	• Physical environment (e.g., seating arrangement, equipment, lighting, furniture, temperature, noise levels). • Classroom routines and behavior management. • Demographics of peer group.
	Systematic observation	• Peer performance for performance standard of "situational and developmentally appropriate." • Interaction patterns.
Learner	Anecdotal recording checklists	• Nature of behavior of concern. • Patterns of behavior of concern. • Response to interventions as reflected in progress monitoring.
	Systematic observations	• Nature and dimensions (e.g., frequency, duration, latency, intensity) of target behaviors • Response to interventions as reflected in systematic progress monitoring

Adapted from *Using Response to Intervention (RTI) for Washington's Students* (2006), a publication of Special Education, Washington State Office of Superintendent of Public Instruction. Content added to Data Outcomes for Curriculum.

Examples of Published Semi-Structured/Structured Observations include:

- Washington Observation System.

- DENO K-12 Observation System.

- Classroom Assessment Scoring System (CLASS).

- Systematic Observation System (SOS).

- Behavioral Observation of Students in School (BOSS).

- Attention Deficit Hyperactivity Disorder School Observation Code (ADHD SOC).

- Behavior Assessment System for Children-2 (BASC-2).

- Ecobehavioral Assessment System Software (EBASS).

- Test Observation Form (TOF).

Figure 6-1: Classroom Management Checklist

In Place Status			Essential Practices	
Full	**Partial**	**Not**		
2	**1**	**3**	**Classroom Management**	
			1. 5 to 1 positive to negative interactions (# observed below)	
			#Positive	# Negative
			2. Classroom rules and expectations are posted, taught directly, practiced and positively reinforced.	
			3. Efficient transition procedures taught, practiced, and positively reinforced.	
			a. Entering classroom Y N	
			b. Lining up Y N	
			c. Changing activities Y N	
			d. Exiting classroom Y N	
			4. Typical classroom routines taught directly, practiced and positively reinforced.	
			a. Start of day Y N	
			b. Group work Y N	
			c. Independent seat work Y N	
			d. Obtaining materials Y N	
			e. Seeking help Y N	
			f. End of day Y N	
			5. Attention getting cue/rule taught directly, practiced and positively reinforced.	
			6. Continuous active supervision across settings and activities, including moving throughout setting and scanning.	
			7. Desks/room arranged so that all students are easily accessible by the teacher.	
			8. Necessary materials and supplies are accessible to students in an orderly fashion.	
			9. Minor problem behaviors managed positively, consistently, and quickly.	
			10. Chronic problem behaviors anticipated and precorrected.	
			11. Students are provided with activities to engage in if they complete work before	

			other students in the class.
			Instructional Management
			12. Majority of time allocated and scheduled for instruction.
			13. Allocated instructional time involved active academic engagement with quick paced instruction.
			14. Asks clear questions and provides clear direction of assignments.
			15. Active academic engagement results in high rates of student success (90%+).
			16. Actively involves all/majority of students in lesson, this includes providing activities/instruction to students of varying skill levels.
			17. Instructional activities linked directly to measurable short and long term academic outcomes.
Total Sum **/34 =** **% in place**			

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Resource for Re-analyzing the Problem: Sample Forms
(Use with problem analysis questions.)

Sample1: Example Problem-Solving Form

Student: _____

Step 1: List all hypothesis regarding cause or function of prioritized problem		Step 2: List all relevant data to support or refute each hypothesis listed			
	HYPOTHESIZE	**R** **REVIEW**	**I** **INTERVIEW**	**O** **OBSERVE**	**T** **TEST**
Instruction	• •				
Curriculum	• •				
Environment	• •				
Learner	• •				
Step 3: Indicate selected hypothesis (circle or bold type). **Note:** Convergent data, including quantitative data, must support selected hypothesis.					

Sample 2: Re-analyzing the Problem Form

The form below may help teams analyze the extent to which data gathered from each domain facilitates or constrains learning. Teams list all evidence in one form to help facilitate analysis.

Facilitating factors should promote or assist a student in acquiring and performing skills. For example, when the student:

- Completes assignments that are broken into manageable parts.

- Follows directions when the student can look at the speaker's face.

- Remembers what she read when allowed to use notes to summarize ideas in the text.

- Improves attention to lectures when exposed to pre-teaching vocabulary.

Constraining factors may adversely influence acquisition of skills or performance, for example, when the student:

- Complains that eye glasses cause headache.

- Sits near a pencil sharpener during "quiet" studying.

- Is given vague or implied instructions, such as: "let's pick up where we left off yesterday."

Table 6-4

Evidence

List all evidence that would promote or limit the student's skill acquisition.		
Domains	**Facilitating Factor**	**Constraining Factor**
Instructional		
Curriculum		
Environmental		
Settings/Resources		
Other: Medical/Physical		
Revised description of what is known about the learning concern(s):		

Note: Table and examples used with permission from Jennifer Mascolo (2008) S.M.A.R.T Intervention Planning Workbook and training.

Tertiary Interventions

After the problem is re-analyzed the group responsible for revising the intervention plan is ready to use the data to determine the next step. These meetings should result in either:

Some students may need multiple discrete interventions to improve sub-skills that support broad academic deficits.

- A modified intervention (continuation of intervention and progress monitoring routine documented and approved by instructional staff and parents).

OR

- A decision to stop interventions altogether (because the student is performing at a level that no longer requires supplemental interventions).

OR

- Trigger suspicion of a disability, which leads to a comprehensive evaluation and implementation of due process procedures (for more on suspecting a disability see Chapter 7).

Resource for Modifying and Strengthening Interventions

The following table includes additional research-based recommendations for strengthening interventions. Instructional staff should always consider facilitating and constraining factors when modifying interventions.

Table 6-5

Recommendations for Strengthening Interventions

Recommendation	Why	How
1. Use measurement to diagnose response		
1a. Examine correct and incorrect responses (Howell & Nolet, 2000; Wolery, et. al., 1998).	To determine appropriate stage of learning and if modeling, prompting and feedback can be gradually withdrawn or faded.	Monitor number or percentage of corrects and amount of assistance given.
1b. Examine rate through fluency probes (Chard et al., 2002; Howell & Nolet, 2000; Shinn, 1989).	Fluency indicates if practice is sufficient or if other forms of assistance are necessary.	Use curriculum-based and other fluency measures.
1c. Examine maintenance and generalization (Daly et al., 1999; Martens, et. al., 2007).	Results will indicate whether the student is able to apply the skills broadly.	Use functional fluency criteria based on: • word overlap, • attaining fluency thresholds, and/or • retention, endurance or stability over time. • examine permanent products or application in other classes/ contexts.
2. Determine if the instructional materials are appropriate.	Do instructional materials meet student's stage of learning? Are Instructional materials accessible?	Conduct readability study. Observe student using instructional materials.

Recommendation	Why	How
2a. Examine instructional materials to ensure they promote both stimulus control and generalization (Carnine et al., 1997; Vargas 1984).	Clear and unambiguous materials make critical features of the instructional task prominent for the learner. Use of the skill across a variety of contexts is essential to promoting generalized use of the skill.	Evaluate the clarity of instructions and materials and frequency of opportunities to practice and reject materials that: • Contain irrelevant stimuli that distract and/or provide unnecessary clues to the student. • Yield too few practice opportunities across a variety of examples.
2b. Examine if the student is progressing when the skill is taught in the natural context (Daly & Martens, 1994; Howell & Nolet, 2004).	Natural context generally creates the best conditions for applying the skill and learning. However, the natural context may contain too much stimulation and it may be necessary to teach the skill in isolation first.	Define the natural context for skill and have student practice with appropriate assistance. If accuracy and rate do not improve, teach the skill in isolation before embedding the skill in the natural context.
3. Devote a significant portion of instructional time to practice with sequentially matched materials (Chard et al., 2002; Martens et al., 2007).	More rapid gains in generalized performance are more likely and students will probably require less overall assistance.	Choose materials at an appropriate instructional match. Provide brief, repeated practice opportunities with appropriate forms of assistance. Monitor student performance. Use performance goals to decide when to change materials.
4. Design interventions to ensure productive practice time (Martens et al., 2007).	As cumulative practice time increases, students are more likely to progress more rapidly through higher difficulty levels.	Use productive practice time to evaluate the amount of academic skill training provided.

Recommendation	Why	How
5. Change reinforcement contingencies sequentially over the course of skill instruction (Freeland (& Noell, 2002; Lannie & Martens, 2004; McGinnis et al., 1999; Skinner, 2002).	Reinforcement and feedback in fluency-building activities strengthen responding through greater stimulus control. Timing reinforcement schedules (without altogether withdrawing them) will promote maintenance and generalization.	Provide reinforcement for responding correctly initially. Use fluency aims on successively more difficult materials. Use accuracy-based and time-based contingencies differentially to support student engagement. Interspersed easy items may improve motivation. As fluency increases, use intermittent, indiscriminate contingencies and/or lottery schedules.

Adapted from: Daly, E. Martens, B. Barnett, D. Witt, J. & Olson, S. (2007). *Varying Intervention Delivery Response to Intervention: Confronting & Resolving Challenges with Measurement, Instruction, & Intensity.* School Psychology Review. Vol. 36 (4) pp. 562-581.

Additional Tips for Strengthening Interventions

- Provide immediate elaborated feedback.

- Teach to mastery prior to moving on.

- Provide more instructional time on targeted skill.

- Increase opportunities to respond ratio 1:3 teacher to student.

- Decrease the number of transitions between activities.

- Set goals and have student self-monitor progress.

- Flex the group time to focus on the lowest skill area while still providing time to address all remaining areas of concern.

- Use 20-30 minutes per day, which includes review.

- Promote generalization and transfer by working interventions and language used in interventions into class routines.

- Highlight relationship of the new information to student's existing knowledge.

- Decrease number of stimuli student must be attending to at a given time.

- Explicitly teach strategies (cue-do-review).

Once the plan is put in place, the process of progress monitoring, checking for fidelity, sharing of progress with parents, etc. should begin again. Team members need to meet regularly to review and analyze intervention data as district policy and rules dictate.

"Intervention Cycling"

Students cycling in and out of interventions may or may not have a disability. Students continuing to succeed with intervention support may require additional cycles of intervention to overcome deficits in prior knowledge or appropriate instruction in basic skills.

Some students may move in and out of interventions and up and down the intervention ladder in order to make incremental improvements in acquisition of complex skills. It is possible that some students with low average abilities may need sustained supports to reach and maintain grade level skills. As long as their achievement continues in the direction of becoming proficient in grade level standards and the instructional supports are sustainable, a comprehensive evaluation may not be necessary.

Continuing interventions is not the same as tracking as long as the student:

- Participates in interventions that supplement core instruction.

- Shows acceleration in acquisition of skills.

- Stays on track to become proficient in grade level standards.

Considering Basic Psychological Processing Abilities in Interventions

Some districts may find it reasonable and efficient to use tertiary interventions to screen for constraints in basic psychological processes.   This section discusses these considerations.

A hallmark of specific learning disabilities is poor academic achievement and low social competence attributable to underlying deficits in basic psychological processes. While lack of achievement and performance are believed to be attributable to deficits in basic psychological processes, they are not the result of sensory or intellectual impairments.

In the previous version of the SLD Manual, the framework for understanding deficits in basic psychological processes was constructed around interference with input, integrated and output functions. These functions were further broken into areas of specific interference, **s**torage, **o**rganization, **a**cquisition, **re**trieval and **m**emory (SOAR'EM).

While the premise that deficits in basic psychological processes can continue to be categorized into interference with input, integration or output functions, the SOAR'EM framework is being replaced with terminology that reflects current research. While terminology is not always consistent across research disciplines that study specific learning disabilities, the terms selected for the SLD Manual represent those that have been linked to adverse impact on academic achievement, performance, social competence and self-regulation.

Terms in the Minnesota rule and in the following chapters are not exhaustive and are supported by varying degrees by research literature. Readers will also find that the terms selected are represented in a range of standardized measures that meet requirements for technical adequacy (see Chapter 8 for more information).

To help the transition between frameworks, a comparison of terms is provided below.

Table 6-6

Comparison of Frameworks

SOAREM Model		New Terminology

Acquisition
 	
Accurately, gaining, receiving, and/or perceiving information
	Input function	• Attention
		  ○ Orienting
		  ○ Selective and Sustained Attention
		  ○ Attention Span
		  ○ Inhibitory Control
		• Speed of Processing/ (processing speed)
		• Short-term Memory
		• Phonological Processing
		  ○ Phonological Awareness
		  ○ Phonological Memory

Organizing
 	
Structuring information, categorization, sequencing
 	
Storage
 	
Adding information to existing information
 	
Manipulation
 	
Applying, using or altering information
 	
Retrieval
 	
Locating or recalling stored information
	Integrated functions listed as information processing components	• Executive Functions (e.g. organizing, planning, self-monitoring, meta-cognition)
		• Working memory
		  ○ Sequencing, Successive, and Simultaneous Processing;
		  ○ Visual Processing (Orthographic Processing)
		  ○ Auditory Processing
		• Long-Term Retrieval
		  ○ Associative Memory (also Rapid Naming)
		  ○ Morphographic processing

Expression • Communicating Information	Output function	• Verbal and Nonverbal • Oral-Motor Production Processing • Transfer of Information and Motor Control

Constrained performance in basic psychological processes may include:

- Attention.

- Executive functions (e.g., organizing, planning, self-monitoring, meta-cognition).

- Working memory (e.g., visual, auditory, successive, and simultaneous processing; short-term memory; fluid reasoning).

- Speed of processing.

- Retrieval from long-term memory.

- Motor coordination.

> *"Basic psychological processes" is referred to in Minnesota Rule as information processing.*

Basic psychological weaknesses are likely to cause difficulty in acquiring specific academic skills for many students, not just those with SLD. Learners with the following conditions may also have low average or normative weaknesses in short-term memory, processing speed, executive functions, and working memory:

- Tourette's Syndrome.

- Obsessive Compulsive Disorder.

- Attention Deficit Disorder.

- Language disorders.

- Autism Spectrum Disorders, Non-verbal Learning Disorder.

- Traumatic Brain Injury.

- Medical disorders such as seizure disorders, diabetes, cancer, etc.

Screening for executive function and working memory weaknesses may provide useful data for adjusting interventions and differentiating within core-curriculum for improved performance.

Illustrative Example

Joey presented as needing intervention in reading and math. Initial interventions aimed at decoding and fact fluency were not successful in improving Joey's performance. The team developed a hypothesis that a weakness in working memory may contribute to his slow rates of growth. They wanted to obtain data to determine if a more general modification of instruction accommodating working memory could be added to strengthen his performance. The team discussed their hypothesis with Joey's parents and obtained permission to assess his working memory and executive functions.

The subsequent assessment data indicated that Joey's auditory working memory was in the bottom of the average range. While not a normative weakness that would imply a specific learning disability, the team considered that poor auditory memory contributed to the slow rate of growth.

The regular classroom teacher and intervention teacher added more visual cues for processing and encouraged visualization during rehearsal. Performance in both the core curriculum and interventions began to improve.

An information processing deficit impairs a student's ability to effectively use and interpret the information the senses have gathered. This deficit is not the result of a sensory impairment or cognitive deficit.

Depending on the disorder, a student with a SLD may have difficulty:

- Discriminating between similar but unlike symbols, sounds or words.
- Attending to cognitive activities.
- Refraining from impulsive acts.
- Organizing and sequencing information to solve a problem.
- Synthesizing separate elements to solve a problem.
- Making decisions about how to approach a task.
- Retaining information heard or seen.
- Listening and taking notes, getting materials ready, etc.
- Expressing orally or in writing what is known.

Age of Identification

Information processing abilities develop from birth through approximately age 25, thus students may be identified at various ages. Identification of students with auditory processing deficits may occur early because the development of literacy skills relies heavily on this psychological process. Identification of students with deficits in executive processing may not occur until middle school/junior high or high school when curricular demands on executive processes increases dramatically.

While genetics in part influence how the brain develops, appropriate and well-timed instruction can have a positive impact on brain plasticity and functioning. Stages of development should influence selection of assessment techniques as well as intervention strategies.

Table 6-7

Information Processing Abilities and Maturation by Stage

Pre-K-2	Early elementary	Early Adolescence	Late Adolescence
Object permanence: • Beginning of self-regulation • Short term memory • Visual processing • Episodic memory	• Long-term retrieval, auditory and visual processing nearing peak performance • Semantic memory	• Processing speed, short-term memory, fluid reasoning, executive functioning beginning to develop	• Executive functions nearing full development by 25 years. • Inductive and deductive reasoning

Planning Interventions

Single-case research and neuropsychological studies show that matching interventions to a student's area of information processing weakness positively influences their effectiveness (Shaywitz, 2003), despite mixed results in research literature. A hypothesis, which includes suspected information processing deficits, allows for a more targeted match between a student's needs that may be addressed with an effective intervention and those that require accommodation.

Examples include:

- A student with an auditory processing deficit specific to phonetic coding would most likely benefit from a phonemic awareness intervention.

- Explicit instruction in strategy instruction using graphic organizers to organize content for a student with strengths in visual processing and weaknesses in reading comprehension and working memory.

Non-examples include:

- A student with a deficit in semantic processing may initially present as having difficulty in the area of reading fluency and comprehension. Providing the student with a fluency intervention is not likely to result in improved reading skills.

- A student with an auditory processing, specifically, a discrimination problem, would not likely benefit from an intervention in phonemic awareness. Given that auditory discrimination impairs an individual's ability to locate and orient to a particular sound, an accommodation of seating the student where the speaker's mouth can be seen is more appropriate.

When designing intensive interventions, quality practices suggest that the team collect data from observations, relevant medical reports, and professional judgment based on anecdotal records, and parent interviews in order to form a hypothesis about information processing conditions. In recording data, include all sources of information processing deficits evidence on a single grid so that it shows the multiple areas where performance is impacted.

Patterns of convergence or divergence also help teams assess narrow processing abilities most relevant for interventions or accommodations. A logical connection between the hypothesis of the learning difficulty and the referral concern is imperative.

During the intervention phase, teachers may wish to collect data from the following sources in order to help develop a hypothesis for the information processing deficit that may be an underlying cause of academic weakness:

- Parent interview questions specific to basic psychological processes.

- Student work/self-report.

- Formal observation data.

- Psychological Processing Checklist (PPC) – Do not use as a sole source of data. PPC is a screener for developing interventions.

As long as the team obtains parent consent, schools may elect to use standardized assessments targeting areas of suspected information processing weakness; for example, Behavior Rating Inventory of Executive Functions (BRIEF), Comprehensive Test of Phonological Processing (CTOPP), Learning Disabilities Diagnostic Inventory (LDDI) as a means to tailor interventions.

> **Important:** At this point in the determination process, the team may decide to conduct a standardized assessment measuring information processing in order to better match instructional strategies used in interventions to student needs. The assessment is not for gaining consent for a special education evaluation.
>
> Identifying strategies to address information processing conditions should occur throughout the process, from planning interventions to designing Individual Education Program (IEP) after a student is identified as having a SLD.

Structuring Observations to Inform Hypothesized Information Processing Issues

Federal regulations require that observed behaviors link up to the student's academic functioning; therefore, include information processing in an observation when SLD is suspected.

A hypothesis helps teams direct what to observe a student doing when scheduling the observation. If the team has not gathered any observation data documenting the presence of an information processing deficit, develop a hypothesis about the areas of suspected strength and weakness. A good hypothesis is a starting place to structure observations and relate observed behaviors to the area(s) of academic weakness.

Ask what processing must take place in order for a student to accomplish the task. Take observation notes on what the student does. For example, the hypothesis is difficulty in organizing information. If observing the student's writing, see how the student constructs, brainstorms and organizes thoughts or constructs a paragraph.

Note: Make sure that the area of information processing weakness relates to the area of academic concern.

The following tables show the referral concern or category of difficulty and questions that may help to identify the underlying information processing deficits, and what to look for in the student's work and grades for reading, math, and writing.

Table 6-8

Listening Comprehension and Oral Expression

Referral Concern/ Category of Difficulty	Questions to identify underlying information processing deficits	Observe in student work and grades

Listening Comprehension	• Does student accurately discriminate between sounds or does student mis-hear similar sounding words?
	
	• Does the student perform better when he/she can watch the mouth of the person who is talking? Does the student perform worse when the environment is noisy or bustling?
	
	• Does student follow one, two or multi-step directions?
		• Student has a delayed response time to questions, pauses for two seconds or more
		
		• Student has difficulty following oral directions when:
		
		  o It is not possible to see the speaker's mouth.
		
		  o The environment is noisy.
		
		• Student shows difficulty comprehending vocabulary that indicates relationships, sequences.
		
		• Student does not understand jokes, inferences, or puns.

Listening Comprehension (continued)	• Are there qualitative differences in the types of directions the student can follow e.g. simple vs. complex, with/out directional language, with/out temporal language, following a sequence of steps? • Does student point to a common object when named? • Does student understand that pictures or words reference real things? • Does student make inferences from information presented orally?	• Student requires multiple repetitions of questions or comments that are not particularly difficult for peers of the same age. • Directional concepts. Student has difficulty remembering or repeating information that is presented orally. • Difficulty comprehending academic vocabulary and concepts used to understand or acquire academics. • Difficulty attending to a task. • Difficulty with cause/effect relationships, time concepts, prepositions.

Referral Concern/ Category of Difficulty	Questions to identify underlying information processing deficits	Observe in student work and grades
Oral Expression	• Does student have the ability to comprehend more than he/she can express? • Does the student have difficulties in retaining and maintaining newly learned vocabulary? • Does the student have difficulty with segmenting, phoneme deletion, blending or rhyming tasks? • Does the student seem to experience a delay in extracting meaning from oral directions? • Is there a significant delay, beyond what his typical of peers, in responding to questions? • Can the student retell complex or multiple sentences?	• Limited spontaneous speech flow. • Uses grammatical forms that are "immature for age." • Limited vocabulary or limited understanding of the multiple meanings of words given his/her age despite systematic and explicit instruction. • Vocabulary appropriate for casual conversation but lacks ability to use language to convey academic learning or understanding of concepts. • Difficulty using language to express relationships e.g. directionality, sequence, causality, time. • Discrepancy in the quality of spontaneous vs. speech on demand. • Difficulty selecting the appropriate vocabulary word to use in context. • Revises oral responses, e.g. multiple false starts, interruptions to self, and/or starting over. • Changes topics so suddenly that the listener has difficulty following the conversation. • Oral language fluency is disrupted by repetitions, unusual pauses, and hesitations.

Table 6-9

Reading

Referral Concern/ Category of Difficulty	Questions to identify underlying information processing deficits	Observe in student work and grades
Poor Phonological Awareness	Is student having persistent issues: • Hearing rhyme, segmenting, blending? • Differentiating/hearing mistakes when presented with minimal pairs of words? • Hearing different vowel sounds unrelated to LEP?	• Confuses similar sounding words. • Has problems associating letters and sounds, understanding the sounds in words, or blending the sounds into words.
Poor Decoding	Is student having persistent issues: • Retaining sound symbol relationships? • With decoding and spelling? • Seeing spaces between words or experiencing difficulty with spatial relationships when writing? • Visualizing or discriminating letters based on unique features? • Recalling and sequencing skills? • Developing automatic phoneme production skills?	• Confuses similar looking letters and numbers. • Confuses similar looking words such as beard/bread. • Reverses letter order and words (e.g., saw/was).
Poor Fluency	Is student having persistent issues: • Retaining what is taught? • With spelling but not decoding? • Processing information slower than peers?	• Decoding words in isolation has become automatic; however skills don't translate to connected text. • Difficulty recognizing and remembering sight words. • Demonstrates poor memory for printed words.

Referral Concern/ Category of Difficulty	Questions to identify underlying information processing deficits	Observe in student work and grades
Poor Comprehension	Does the student: • Recall and sequence adequately? • Process information more slowly than peers? • Categorize information? • Have inner speech or internal voice during reading? • Have difficulty with inferring from information presented orally? • Have difficulty with humor or interpretation of non-verbal skills?	

Table 6-10

Math

Referral Concern/ Category of Difficulty	Questions to identify underlying information processing deficits	What to observe or look for in student work
Poor math fact retrieval Frequent fact errors	• Is student experiencing difficulty retrieving math facts, poor accuracy of fluency? • Is problem related to prior learning or lack of practice? • Does student have corresponding difficulty with sound symbol associations? • Does student show immature counting strategies? Is student focusing on irrelevant features of counting? • Does this student have difficulty visualizing or seeing number? • Does this student experience difficulties storing and retrieving information in other academic areas? • Can student repeat digits backwards from memory? (holding in working memory)	• Makes significant errors in retrieving facts (near misses, inconsistent performance despite continuous practice). • Takes significantly longer to memorize facts and facts previously mastered retrieved with errors. • Late developing identification of number concepts. • Poor ability to associate meaning with symbols (e.g. 4 means IIII). • Difficulty estimating and carrying out complex calculations. • Difficulty with mental calculations (high error rate). Student uses fingers or external strategy for keeping track.

Referral Concern/ Category of Difficulty	Questions to identify underlying information processing deficits	What to observe or look for in student work
Poor strategy use and errors in computing algorithms Operational errors Algorithm errors Regrouping errors	Does student have: • Difficulty remembering or following multi-step directions? • Failure to recognize operational symbols or select operations that come to mind? • Difficulty repeating digits backwards from memory? • Slow retrieval with facts and/or procedural steps? • Difficulties in attending or maintaining attention to the task? Is he/she impulsive? • Grade-level reasoning abilities?	• Doesn't pay attention to the operation sign or show idiosyncratic errors. • Displays immature counting strategies such as counting-on and counting-all despite explicit instruction (for more information see Geary, D., Hoard, M., Nugent, L., Byrd-Craven, J. (2007)). • Makes irrelevant associations or steps. • Slow processing of calculations and with calculation errors. • Difficulty with mental math requiring multiple steps in calculations.
Problems in aligning numbers, maintaining place value, operational errors, regrouping errors, translation errors	Does student have: • Poor handwriting? • Difficulty in aligning, spacing and transferring math problems? • Difficulty visualizing or seeing number? • Ability to estimate? • Grade-level reasoning abilities?	• Work shows poor number alignment (numbers not transferred within place value). • Difficulty with approximations and estimation.

Table 6-10

Writing

Referral Concern/ Category of Difficulty	Questions to identify IP	What to observe or look for in student work
Written expression		**Products:** Handwriting and spelling are poor. Overall writing is literal and focused on details at expense of overall message/coherence. Writing product is functional, grammatically and syntactically correct, but semantically simple. Fewer alternative words and sentence structures. Writing samples are predictable, routinized/formulaic, and concrete, lacking in creativity or novel perspective. **Observation**: Student is more likely to do a better job with expository text than narrative as information is pulled from a different location in the brain.
Spelling, organization, and monitoring of writing	Does the student have poor motor coordination skills or poor pencil grip?	**Student work:** Overall piece lacks organization of ideas. Conventions are missing. **Observation:** Student does not brainstorm or plan for writing. Self-monitoring of writing process is lacking. Limited writing samples given the amount of time and direction for the task. Student may seem to bottleneck when initially starting a writing task.
Poor handwriting or distorted writing	Does student have age appropriate visual/spatial skills? Does student have age appropriate fine motor skills?	**Student work:** Poor spelling and handwriting, inappropriately sized letters or spaced letters, produces words that are not correct or near misses (e.g., woman for mother).

Next Steps

This chapter discussed the process of re-examining the learning problem as well as how to modify and intensify interventions. A discussion of quality practices revealed how teams should use a review of data, parent interviews and observations to further refine and match interventions to student's ongoing needs.

This chapter showed how documenting what is known, what is working, and what is not working is vital so that special education staff receiving data from these systems are able to integrate this information into the request for comprehensive evaluation and eligibility determination process.

The following assessment process graphic indicates the next step for using the data. Teams should document each step as students move through the pre-referral or system of SRBI process.
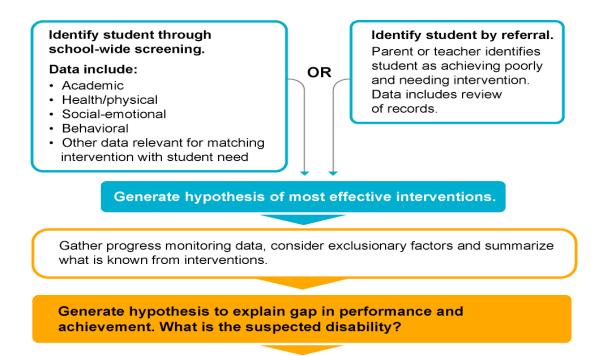

Figure 6-2. *Process Flow.*

At this point, steps should have been taken to inform and involve parents in the intervention process so that all parties are aware of how the student is performing, and what the next step will include. According to Minnesota Rule 3525.1341, these steps must be documented if criteria A, B, D is used to make the eligibility determination.

If not already in process, the data gathered from previous steps in the problem-solving process should be integrated into the guiding questions template below. Data may include screening, record reviews, teacher interviews and documentation, intervention, progress monitoring, observation, and parent interviews.

Table 6-11

Guiding Questions, Existing Data and Information Needed

Guiding Question	Existing Data	Information Needed
How has the team determined the student has had sufficient access to high quality instruction and the opportunity to perform within grade-level standards?		
What supplemental efforts aligned with grade-level standards, were implemented to accelerate the student's rate of learning and level of performance?		
What, if any, modifications or accommodations are being made within core instruction to enable the student to access content standards?		
What educational achievement/performance continues to be below grade-level expectations?		
How is the student functionally limited from making progress towards grade-level standards?		

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