MODULE 8
Data-Based Decision Making

Participant Workbook

ARKANSAS
RESPONSE TO INTERVENTION
MODULE SERIES

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Module 8: Data-Based Decision Making

Activity 1: Understanding Different Types of Assessments
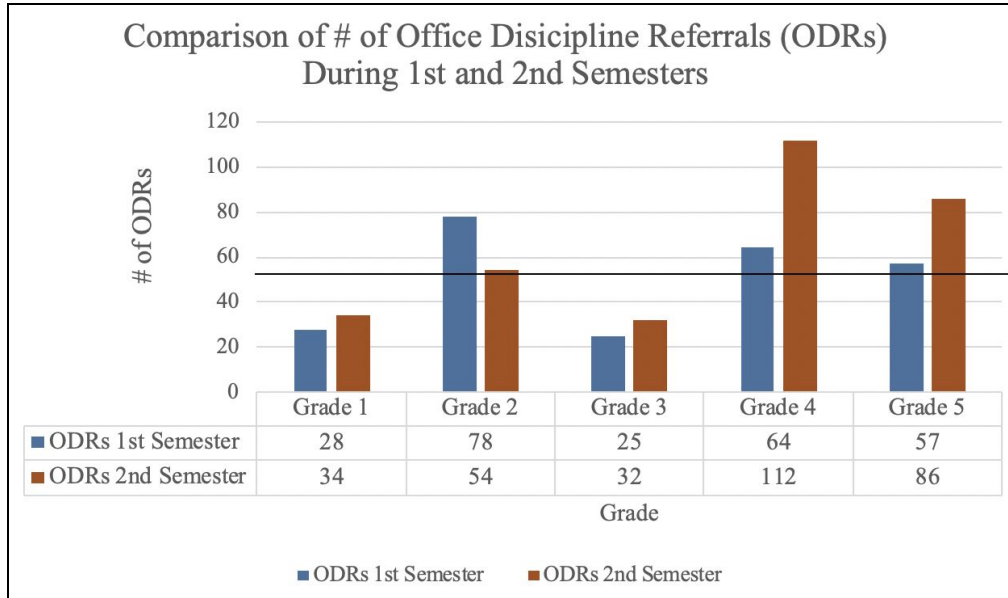
Directions: Review the types of assessments listed in the first column. With a partner, complete each column to the best of your ability. If you are unsure or do not know, leave it blank. You will have several opportunities to complete each column during the next section.

Type of Assessment	Description (when administered, target audience)	Purposes, Uses, Educational Decisions	Examples
Diagnostic			
Formative (formal)			
Formative (informal)			
Summative			

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Activity 2: Defining the Problem

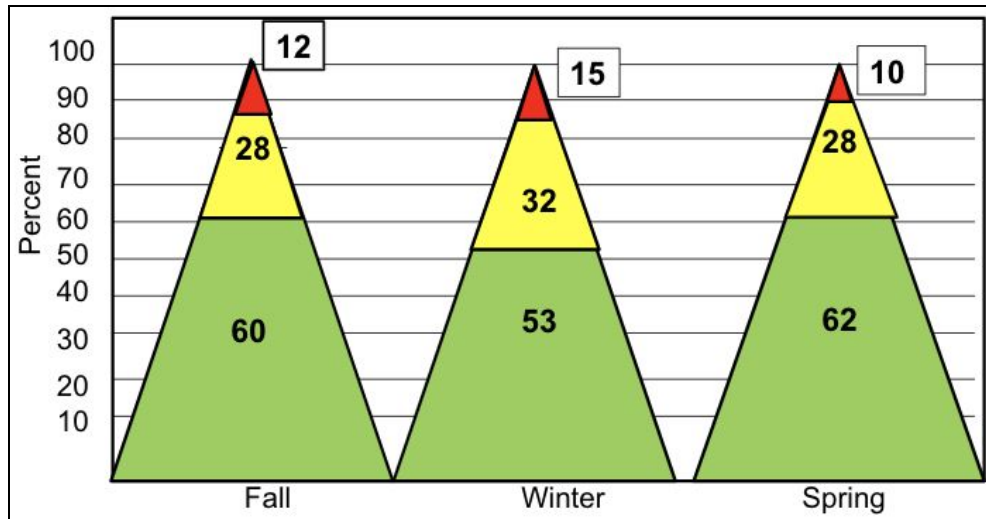**Directions:** With your team, examine the data and collaboratively answer the corresponding questions.

Data Set #1

Comparison of # of Office Disicipline Referrals (ODRs) During 1st and 2nd Semesters

	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
ODRs 1st Semester	28	78	25	64	57
ODRs 2nd Semester	34	54	32	112	86

As a school team, review the behavior data (# of office discipline referrals, or ODRs) provided by this school. At the beginning of the school year, the school set a goal of less than 40 ODRs per grade per semester. How would you describe the grade level behavior data for 1st and 2nd semester? Take time to discuss the results with your team. Use the data to answer the following questions.

1. What do the data tell us about how the Tier I behavior supports (e.g., core curriculum and instruction) are working in this school?

2. What problem areas do you see? What evidence supports your thinking?

3. Which grades appear to be doing well? What evidence supports your thinking?

4. What types of decisions might the school team make with these data (e.g., who might need additional support, resources, or further analysis)?
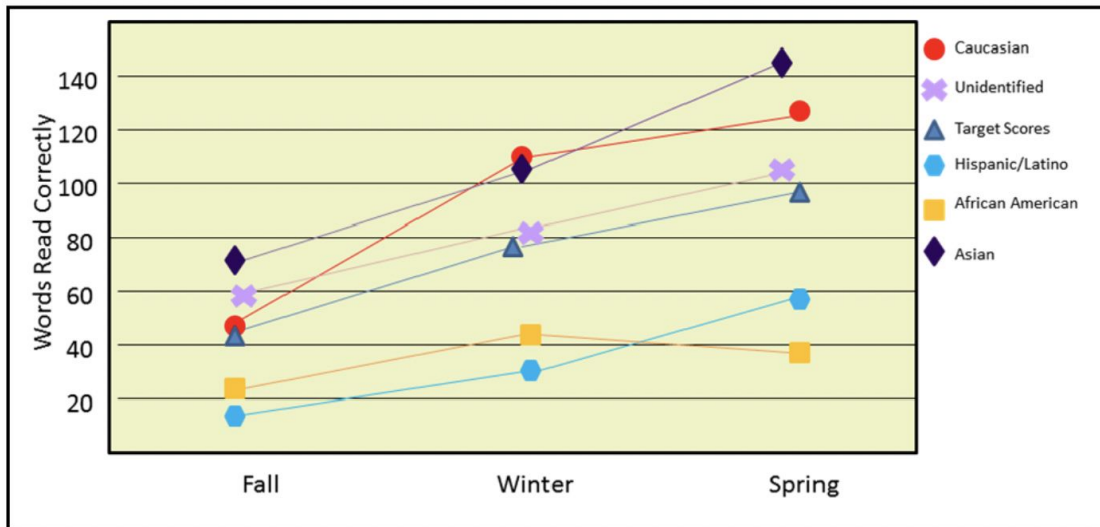
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Data Set #2

Review the summary of results from the 2nd grade reading screening data for fall, winter, and spring. In the graph, students are grouped by their risk status: green - not at risk, yellow – at some risk, and red – at high risk. The expected goal is 80% at or above target, or not at risk, for each benchmark period. Use the data to answer the following questions.

1. Overall, how did the students in this grade do in the spring? How did this change across the year?

2. Based on the expectations, what areas of concern do you see in these data?

3. Define the problem (measure, target population, timeframe, expectation).

4. Based on the data, what questions might you ask to gather more information about why the data looks this way?

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Data Set #3

Review the results of the school's average score per benchmark by ethnic group. What differences do you see among the performances of different ethnic groups? Use the data to answer the following questions.

1. Which ethnic groups are performing above the target score?

2. What problem areas do you see in these data?

3. Define the problem (measure, target population, time frame, expectation).

4. If these data represented your school, what questions might your team ask?

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Activity 3: Identify Root Causes

Directions: Use the ICEL by RIOT framework and school data or the data sets provided in Activity 2 to brainstorm possible root causes. Write each root cause on a separate post-it note.

Problem-Solving using the ICEL/RIOT Matrix

One tool that can assist schools in their quest to sample information from a broad range of sources and to investigate all likely explanations for academic or behavioral problems is the ICEL/RIOT matrix. This matrix helps schools to work efficiently and quickly to decide what relevant information to collect on academic performance and behavior—and also how to organize that information to identify probable reasons why the student groups are not experiencing academic or behavioral success.

The ICEL/RIOT matrix is not itself a data collection instrument. Instead, it is an organizing framework that increases schools' confidence both in the quality of the data that they collect and the findings that emerge from the data (Hosp, 2006, May). The leftmost vertical column of the ICEL/RIOT table includes four key domains of learning to be assessed: **Instruction, Curriculum, Environment, and Learner** (ICEL). A common mistake that schools often make is to assume that student learning problems exist primarily in the learner and to underestimate the degree to which teacher instructional strategies, curriculum demands, and environmental influences impact the learner's academic performance. The ICEL elements ensure that a full range of relevant explanations for student problems are examined.

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

The power of the ICEL/RIOT matrix lies in its use as a cognitive strategy, one that helps educators to verify that they have asked the right questions and sampled from a sufficiently broad range of data sources to increase the probability that they will correctly understand the student's presenting concern(s). Viewed in this way, the matrix is not a rigid approach but rather serves as a flexible framework for exploratory problem-solving.

Key Domains of Learning

I	Instruction	Instruction is how the curriculum is taught and can vary in many different ways including: level of instruction, rate of instruction, and presentation of instruction
C	Curriculum	Curriculum refers to what is taught. Curriculum would include scope, sequencing, pacing, materials, rigor, format, relevance
E	Environment	The environment is where the instruction takes place. Variables in the environment include classroom expectations, beliefs/attitudes, peers, school culture, facilities, class size, attendance/tardies, management
L	Learner	The learner is who is being taught. This is the last domain that is considered and is only addressed when the curriculum and instruction are found to appropriate and the environment accommodating. Variables include motivation prerequisite skills, organization/study habits, abilities, impairments, and history of instruction.

Potential Sources of Information

R	Review	Review of historical records and products
I	Interview	Interview of key stakeholders
O	Observation	Observe performance in real time functional settings
T	Test	Test student through careful use of appropriately matched measurement technologies

Problem-Solving using the ICEL/RIOT Matrix

Instruction

Domain	Variables	Review	Interview	Observe	Test
Instruction is how curriculum is taught. How content is presented to students can vary in many different ways: • Level of Instruction • Rate of Instruction • Presentation of Instruction Is the curriculum being differentiated to meet the needs of the learners? Consider: • instructional techniques • presentation style • clarity of instruction • questioning • feedback technique • cooperative learning • use of graphic organizers • instructional conversations • development of academic language/ vocabulary	**Group/System** • Instructional decision making regarding selection and use of materials • Use of progress monitoring • Explicit Instruction • Differentiated Instruction • Sequencing of lesson designs to promote success • Use of a variety of practice and application activities • Pace and presentation of new content • Block of time allotted per subject **Individual** • Instructional decision making regarding placement of the student • Use of progress monitoring • Communication of expectations and criteria for success • Differentiated Instruction • Direct instruction with explanations and cues • Use of a variety of practice and application activities • Pace and presentation of new content	• Unit/Lessons Plans • Permanent products (e.g. written pieces, worksheets, projects) for skill/degree of difficulty requirements • Benchmarks / standards • Assignments (calculate % of assign turned in, average amount-%- of assignments completed), • Length/time required to complete assignments	Stakeholders about: • Effective teaching practices • Instructional decision making regarding choice of materials, placement of students, instructional strategies • Sequencing/pacing of instruction • Choice of screening, diagnostic and formative assessments • Product methods (e.g. dictation, oral retell, paper pencil, projects) • Accommodations/ modifications used • Reinforcement management/ engagement strategies • Allowable repetition for mastery/ understanding • Who is providing the supplemental/ intensive instruction • Use of supportive technology • Student/group performance compared to peers • Patterns of performance errors/ behavior • Setting(s) where behavior is problematic • Significance of academic, speech, social, task or motor difficulties • Onset and duration of problem • Consistency from day to day, subject to subject • Interference with personal, interpersonal, and academic adjustment • Performance using different modes of expression (e.g. verbal, written, kinesthetic) • Teacher perceptions/hypotheses regarding why the student is unable to demonstrate the desired behaviors- academic and/or behavioral • Philosophical orientation of curriculum (e.g. whole language, phonics) • Expectations of district for pacing/coverage of curriculum	• Teachers' instructional styles/preferred styles of presenting • Clarity of instructions/ directions • Effective teaching practices • Communication of benchmarks/expectations and criteria for success • How new information is presented • Percent of time with direct instruction, whole group instruction, practice time, differentiated instruction, etc. • How teachers gain/ maintain student attention • Academic engaged time • Transitions • Large group instruction • Small group instruction • Independent work time • Group work time • Teachers use of positive reinforcement, student-teacher interaction • Performance quality/quantity, (use of direct observation protocols) • Time on task • External supports necessary to sustain engagement	• Classroom environment survey • Develop checklists on effective instruction • "Things to Look For" and "Ask About"

Problem-Solving using the ICEL/RIOT Matrix

Curriculum

Domain	Variables	Review	Interview	Observe	Test
Curriculum refers to what is taught. Scope and sequence would be included here as well as pacing within and between topics. Is curriculum appropriate for student? Consider: • sequencing of objectives • difficulty • presentation • length • format • relevance	**Group/System** • Presence of Core Curriculum • Universal behavior expectations/PBIS • Staff training in curriculum • Percentage of students at benchmark/meeting grade level expectations • Long-range direction for instruction • Alignment to standards • Instructional philosophy/approaches • Instructional materials • Stated outcomes for the course of study **Individual** • Accommodations • Supplementary instruction • Interventions • Access to instruction (time, attention, behavior, attendance) • Instructional materials • Arrangement of the content/instruction • teaching methods • materials provided	Curriculum selected • scientific researched based • implemented with integrity • integration of supplemental and intensive curriculum, as appropriate Scope and sequence of textbooks and other resources Permanent products (e.g. books, worksheets, curriculum guides) Benchmarks/ Standards	Stakeholders about: • Core curriculum • Support curricula used for supplemental and intensive instruction • Supplemental teaching materials • Expanded core curriculum (e.g. community skills, study skills) • Flexibility for teacher to modify curriculum • Use of data-based decision making • Philosophical orientation of curriculum (e.g. whole language, phonics, direct instruction) • Expectations of district for pacing /coverage of curriculum • Content/outcomes of course • Modifications of benchmarks made for students • Readability of textbook and other resources • Prerequisite skills/prior understanding needed for success • Allowable repetition for mastery/understanding • Technology integration • Cultural competency/relevance of the curricular content to student demographics	• Peer group response to curricular demands • Target student group response to curricular demands • Variety of practice opportunities • Allowance for peer sharing/ mentoring during work time • Student/peer response to curricular materials • Types of student performance options: how are students expected to demonstrate the skill/standards?	Readability/ level of text books and other resources Readability level/difficulties of tests "Things to Look For" and "Ask About"

Environment

Domain	Variables	Review	Interview	Observe	Test
Classroom/School The classroom/school environment is where instruction takes place. How is the environment impacting learning? Consider: • classroom/school • peers • expectations • beliefs/attitudes • attendance/tardies • class size	• Physical arrangement of the classroom or other problem location • Furniture/equipment • Rules • Management Plans • Routines • Expectations • Peer context • Peer and family influence • Task pressure • Adult supervision	• School/ classroom rules • Physical layouts of school, classrooms, property, and buses as appropriate • Daily schedule-amount of time allocated to instruction in areas of concern. • Out of classroom time for other instruction/ supports	Stakeholders about: • Classroom routines, rules, behavior management plans, situational expectations (e.g. classroom vs. hallway, PE, recess) and how rules were developed • Make-up of peers • (Re)organization of room's layout (e.g. desk location selection, changes) • Limited distractions area School-based personnel: • School wide discipline • In-school behavior • Peer to peer mentoring programs • Adult to peer mentoring • Counselors, school psychologists supports • Teachers • Level of family/school engagement	• The physical layout/arrangement of learning spaces • Lighting/sound sources, temperature, noise levels • Environmental/other student distractions • Posting of rules, clocks, and/or daily schedule • Signal for transitions • Social expectations • Established routines versus new/novel expectations • Peer makeup • Interaction patterns • How students handle transitions in schedule	Classroom mapping Systematic Observation Teacher Working Conditions Survey Student Surveys "Things to Look For" and "Ask About"
Family/Community The family/community environment is where student spends time outside of the classroom environment. How is the environment impacting learning? Consider: • what may distract or inhibit student learning • home/family support • expectations • beliefs/attitudes • transience • attendance/tardies	• Resources to support learning • Parent involvement including talking to students about school, checking homework, attending events, and volunteering at school • Rules and expectations at home • Routines • Peer and family influence • Adult supervision • Cultural factors	• Student attendance record • Parent/guardian participation in school open house, parent conferences, volunteer opportunities • Mobility rate • Transportation from home to school (e.g., time on bus) • Discipline records • Student support services being delivered (e.g., integrated, coordinated, offered) • Parent availability for support (parent work schedule) • Other siblings in the home and their performance at school and availability to support/mentor target student	Parents about: • Sleep habits • Nutrition/eating habits • Homework space/time allocation • Supervision • Use of out of school time (e.g., physical activity) • Home responsibilities • Peers • Siblings • Out of school mentoring (e.g., Big Brother/Sister, church involvement, clubs) • Interference of identified difficulty on outside of school activities • Social expectations at home • Cultural factors influencing child • Consistency between parent expectations for performance and school performance • Consistency between levels of support to complete homework and levels of support in class • Level of family/school engagement	• Community Activities • Club/Sports Activities • Peer interactions • Adult-student interactions	NOTE: Direct assessments may not be available for this Domain

Problem-Solving using the ICEL/RIOT Matrix

Environment

Peers

Domain	Variables	Review	Interview	Observe	Test
The peer environment is where the instruction takes place. How is the peer environment impacting learning? Consider: • what may distract or inhibit student learning • peers • expectations • beliefs/attitudes • transience • attendance/tardies	• Belonging at school: feeling accepted, respected, and included at school • Resources and structures to support achievement • Rules and social expectations • Peer pressure • Routines • Peer and family influence • Cultural factors	• Attendance records (e.g., tardy to school/classes, absences) • Discipline records • Academic performance and proficiency of peers (similar demographics) • Identify peer supports, friends, problem relationships	Peers about: • Beliefs, self-determination • Peer group/friends • Mentoring opportunities • Club involvement • Community Involvement • Home responsibility • Goals and aspirations • Self-perceived strengths/talents • Self-perceived challenges Teacher about: • Perception of student/peer group interaction • Peer reinforcement of compliance or noncompliance Student about Peer Factors: • The degree to which peers influence work completion, compliance, motivation, target behavior	• Classroom behavior (e.g., class participation, work completion, engagement) • Social Settings (e.g., in-school/hall/Cafeteria behavior and interactions • Interaction of peer to peer • Interaction of target student with peers • Observation protocols to compare performance (e.g., on task, work completed, questions asked, compliance) to same demographic peers. • Compare peer time to complete work to target student time to complete work.	Note: Direct assessments may not be available for this Domain

Problem-Solving using the ICEL/RIOT Matrix

Learner

Domain	Variables	Review	Interview	Observe	Test
The learner is who is being taught. This is the last domain that is considered and is only addressed when the curriculum and instruction are found to be appropriate and the environment is accommodating. Variables include motivation, prerequisite skills, organization/study habits, abilities, impairments, and history of instruction.	• Student's current knowledge, or 'prior knowledge' • Academic performance data • Attendance record • Social/behavioral performance data • Student's skills and motivation • Curriculum and instruction are appropriate • Student's 'ability', race, gender or family history	• Product vs. peer product • Cumulative file/ records • Health records, including vision and hearing • Teacher's grade book • Assignment notebook • Previous interventions if available • Patterns of performance, including attendance, retention, and moves • Error analysis of permanent product • Response to interventions as reflected by systematic progress monitoring • Behavior history	Student about: • Self-perceived strengths/talents • Self-perceived challenges • Ideas about what s/he needs • Personal adjustment • Beliefs, self-determination • Peer group/friends • Mentoring opportunities • Club involvement • Community Involvement • Home responsibility • Goals and aspirations Parents about: • Health issues impacting learning • Orthopedic or neurological issues • Hearing/vision checks • Perceptions on learning, behavior, speech, or motor difficulties • Family engagement in school activities (e.g., homework support)	• Student's learning style • Use of supportive technology • Target behavior, antecedents, conditions, consequences • Dimensions and nature of the problem • Student/group transitions • Large group instruction • Small group instruction • Independent work time • Response to interventions • Time on task • External supports necessary to sustain engagement • Processing directions • Cultural factors • Access barriers • Interactions	• "Things to Look For" and "Ask About" • Standardized academic assessments • Cognitive assessments • Preference/ interest inventories • Motivation scales • Personal adjustment & behavior rating scales • Progress monitoring • Response to interventions • FBA - nature and dimensions of behavior (frequency, duration, latency, intensity), including anecdotal notes • Physical fitness • Physical health • Social emotional well-being • Student effort checklist

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Resource: Arkansas Problem Solving Worksheet

Date:	School:
Team Members:	
Meeting Purpose:	

Step 1: Define the Problem and Set the Goal
The team will analyze primary data sources to identify problem areas and set a goal.

1. What is the benchmark or expected level of performance?

2. What is the students' current level of performance?

3. What is the comparison peer level of performance (e.g., district, school, national)?

Conduct a gap analysis.

Benchmark and Students	
Benchmark and Peers	
Peers and Students	

Identify the replacement behavior and set a goal (time frame, measure, target population).

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Step 2: Analyze the Problem and Hypothesize

The team will develop root cause hypotheses using the ICEL by RIOT Framework and activities with secondary data to validate or invalidate hypotheses. Below, record each hypothesis for why the replacement behavior is not occurring, along with its matched prediction statement. Provide any data used to validate or refute each hypothesis, and check Yes to indicate that the data supported the hypothesis or No to indicate that they did not.

Hypothesis: *What are the most likely reasons this problem is occurring? Address potential domains of curriculum, instruction, curriculum, environment, and learner.*

Prediction Statement: *Based upon what we've learned, what must be changed about the instruction, curriculum, and/or environment in order to enable the student(s) to meet the expectation?*

Hypothesis 1: The problem is occurring because _____.
Prediction Statement: If _____ would occur, then _____.
Relevant Supporting Data:

Validated (circle):   YES   NO

Hypothesis 2: The problem is occurring because _____.
Prediction Statement: If _____ would occur, then _____.
Relevant Supporting Data:

Validated (circle):   YES   NO

Hypothesis 3: The problem is occurring because _____.
Prediction Statement: If _____ would occur, then _____.
Relevant Supporting Data:

Validated (circle):   YES   NO

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Step 3: Develop and Implement the Plan
Teams will select the intervention and or strategy that will address the problem and meet the goal. Next, they will develop a plan to implement the strategy.

Expected outcome of intervention or strategy (see goal from Step 1):

| |
| |

Verified hypotheses (copy from Step 2):

| |
| |

Develop an action plan:

Description of Strategy or Intervention: Tier Focus: 1   2   3
<u>Implementation:</u> ● Frequency (how often) ● Duration (amount of time) ● When (timeline) ● Who
<u>Support:</u> ● Who ● How often ● Description/type
<u>Data Collection:</u> ● Type ● Frequency ● Review dates performance expectations ● Responsible party

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Step 4: Evaluate the Plan

Review date(s).

Evaluate impact of action plan.

Circle one and complete the related section below: *Positive   Questionable   Poor*

Positive	
Next Steps (circle): 1. Continue with strategy or intervention. 2. Increase goal. 3. Fade strategy or intervention. 4. Other: Please describe.	*Comments/Actions/Evidence*

Questionable	
Next Steps (circle): 1. Evaluate fidelity of implementation. 2. Continue strategy or intervention. 3. Refine strategy or intervention. 4. Other: Please describe.	*Comments/Actions/Evidence*

Poor	
Next Steps (circle): 1. Evaluate fidelity of implementation. 2. Evaluate alignment of strategy or intervention with hypothesis. 3. Consider other hypothesis (return to Step 2). 4. Evaluate validity of data. 5. Consider revising problem statement (return to Step 1). 6. Other: Please describe.	*Comments/Actions/Evidence*