SOUTH CAROLINA
DEPARTMENT OF EDUCATION

ICEL/RIOT Matrix (SC Version)

Step one of the Four-Step Problem-Solving Process guides MTSS Leadership Teams through defining problems identified while reviewing data. During the second step of the process, teams focus on analyzing why problems are occurring. The ICEL/RIOT Matrix is a tool teams can use to identify root causes before moving to step three where interventions are put in place.

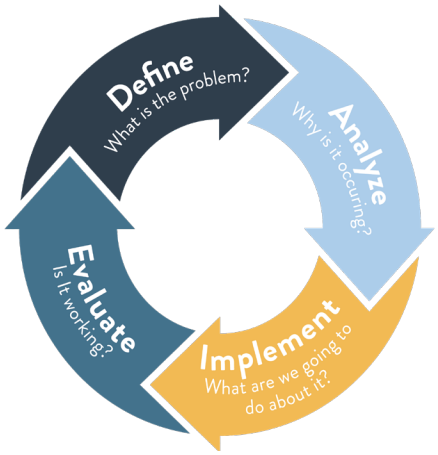
Four-Step Problem-Solving Model:

Step 1: Define the Problem: What is the problem?

Step 2: Analyze the Problem: Why is it occurring?

Step 3: Implement a Plan: What are we going to do about it?

Step 4: Evaluate the Effectiveness of the Instruction/Intervention: Is it working?



Using the ICEL/Riot Matrix

The ICEL/RIOT Matrix supports the analysis of identified problems as teams work through the problem-solving process. This tool guides MTSS Leadership Teams as they examine various sources of information to determine why learning gaps exist. The matrix leads teams on a quest to discover the root cause of the identified problem while recognizing the integrated academic and behavioral factors that affect student outcomes.

The organization of the ICEL/RIOT Matrix facilitates a flexible cognitive strategy to help teams ask the right questions in order to correctly understand the problem based on a broad range of data sources. The matrix is not a data collection instrument. Instead, it is an organizational framework to increase a school's confidence in both the quality of the data they collect and the findings that emerge from the data (Hosp, 2006).

The ICEL/RIOT Matrix

Instead of jumping to the conclusion that the learner has a problem, the matrix helps problem-solving teams examine the entire learning system. The vertical column on the left side of the matrix includes four key domains that influence learning: Instruction, Curriculum, Environment, and Learner (ICEL). Schools often assume that learning problems exist primarily in the learner and underestimate the degree to which teacher instructional strategies, curriculum demands, and environmental influences impact the learner's academic performance. The horizontal row of the matrix includes four potential sources of information: Review, Interview, Observation, and Test (RIOT), These ideas help the team consider a broad collection of information from various perspectives.

I	Instruction	Instruction is **how** the curriculum is taught. Instruction can vary in many ways including method of instruction, routines, pace and presentation of new content, evidence-based strategies, groupings, differentiation, and frequency of embedded checks for understanding.
C	Curriculum	Curriculum refers to **what** is taught. This includes the use of High-Quality Instructional Materials (HQIM) aligned to state standards. Use of HQIM involves the use of grade appropriate content, systematic sequencing of content, pacing within and between topics, appropriateness and complexity of included resources, stated outcomes for units and lessons, and embedded assessments.
E	Environment	The environment is **where** the instruction takes place. This includes the creation and instruction of clear expectations and predictable routines. The environment should be positive with limited distractions and interruptions to routines. Classroom management should allow students to feel safe, supported, and loved.
L	Learner	The learner is **who** is being taught. If available, the team would review health records, historical patterns, grades, and intervention data. If attendance is an issue, determine the pattern and/or cause.

R	Review	Review of records and products.
I	Interview	Interview key stakeholders.
O	Observe	Observe performance in real settings.
T	Test	Test performance through assessments.

	R *Review*	I *Interview*	O *Observe*	T *Test*
I ***Instruction*** *Instruction is **how** the curriculum is taught. Instruction can vary in many ways including method of instruction, routines, pace and presentation of new content, evidence-based strategies, groupings, differentiation, and frequency of embedded checks for understanding.*	• Expected rigor and complexity of grade level standards • Record of professional development in evidence-based instructional strategies • Student work (writing samples, projects, etc.) for expectations of skill/degree of difficulty • Completion of assignments • Length/time planned for to complete assignments • Master schedule (time allotted for core instruction, intervention, and special services)	• Evidence-based teaching practices • Instructional decision making and protocols for differentiation • Protocols for accommodations and modifications to instruction • Engagement strategies • Protocol for reteaching to reach mastery • Teacher perception of why problem exists • Expectations of pacing for district benchmarks, etc. • Protocol for determining who provides Tier 2 & 3 interventions • Are all students participating in Tier 1 instruction? If not, why? • How is technology integrated into instruction?	• Communication of expectations/ standards (verbal & written) • Clarity of Instruction/ directions • Evidence of teacher content knowledge • Numerous opportunities for students to respond • Questions regularly require active responses (e.g., whole class signaling, choral responses, written and shared responses, or group and individual answers). • Wait time (3-5 seconds) is consistently provided. • The teacher calls on volunteers and non-volunteers • Academic engaged time (time on task) is protected • Instructional grouping arrangements (either whole class, small groups, pairs, individual) consistently maximize student understanding and learning efficiency. • Length/time planned for vs. required to complete assignments	• Review data from instructional walkthroughs with “look fors” for effective instruction

	R *Review*	**I** *Interview*	**O** *Observe*	**T** *Test*
C ***Curriculum*** *Curriculum refers to **what** is taught. This includes the use of High-Quality Instructional Materials (HQIM) aligned to state standards. Use of HQIM involves the use of grade appropriate content, systematic sequencing of content, pacing within and between topics, appropriateness and complexity of included resources, stated outcomes for units and lessons, and embedded assessments.*	• Expectations regarding the use of HQIM • Record of curriculum-based professional learning. • Evidence of unit and lesson internalization. • Integrity of supplemental materials used in Tier 1, 2, or 3 • Correlation of supplemental materials with the HQIM pacing guide	• Knowledge with using HQIM • Support embedding district supplemental materials into HQIM pacing • Ask if any adjustments have been made to the systematic sequence of the HQIM • When does unit/lesson internalization occur? • How do you differentiate instruction to ensure all students can access grade level text in HQIM? • Prerequisite skills/prior understanding needed for success • Allowable repetition for mastery/understanding	• Review data collected from HQIM observation tools to determine level of implementation. • Peer group response to curricular demands • Target student group response to curricular demands • Variety of practice opportunities • Types of student performance options: how are students expected to demonstrate the skill/standards?	• Student performance on unit assessments • Student performance on benchmark assessments aligned to state standards • Data collected from HQIM observation tools

	R *Review*	**I** *Interview*	**O** *Observe*	**T** *Test*
E ***Environment*** *The environment is **where** the instruction takes place. This includes the creation and instruction of clear expectations and predictable routines. The environment should be positive with limited distractions and interruptions to routines. Classroom management should allow students to feel safe, supported, and loved.*	• Physical layout of campus, school, and classroom • School and classroom expectations are defined and there is a plan for explicit instruction (modeling, practicing with feedback, prompting) and reinforcement and corrective, instructional responses when expectations are not followed • Daily schedule (amount of time allocated for instruction) • Active supervision to allow opportunities to continuously scan, move, and provide feedback • Appropriate and frequent use of opportunities to respond • Plan for evidence-based behavioral interventions (Tiers 1, 2, and 3)	• Engagement strategies • Is there a limited distractions area? If so, what is the protocol for using it?	• Transitions • How teacher gains/maintains students' attention • External supports to sustain engagement • Resources to support learning • Lighting/sound sources, temperature, noise level, strong odors, etc. • Percentage of time students are engaged in learning • Posted schedule and clock • Posted expectations	• Classroom environment survey • Classroom mapping • Teacher survey • Student survey

	R *Review*	**I** *Interview*	**O** *Observe*	**T** *Test*
L ***Learner*** The learner is **who** is being taught. If available, the team would review health records, historical patterns, grades, and intervention data. If attendance is an issue, determine the pattern and/or cause.	• Cumulative records (patterns of performance, attendance, behavior history) • Retention • Frequent moves/transition to multiple schools • Health records including vision and hearing • Gradebook/grades • Record of interventions and progress monitoring	• Organizational habits • Level of family/school engagement • Nutrition/eating habits • Sleep habits • Participation in extracurricular events (sports, musical instruments, etc.) • Community involvement • Student's self-perceived strengths/areas for growth in school • Health issues impacting learning	• Level of support needed to complete tasks • Use of supportive technology • Wakefulness • Peer interactions in various settings (whole group, small group, transitions,	• Attendance records • Discipline records • Interest inventories • Progress monitoring data

Resources:

Elliott, J. (2024). Four-Step Problem Solving Protocol Resources. Retrieved from: https://www.youtube.com/watch?v=2Bm2Aj1J38U

Harlacher, J. E., Potter, J., & Collins, A. (2024). Untangling data-based decision making: A problem-solving model to enhance MTSS. Marzano Resources. Retrieved from: https://mtss4success.org/sites/default/files/2023-12/riot-icel-matrix.pdf

Hosp, J. L. (2006) Implementing RTI: Assessment practices and response to intervention. NASP Communiqué, 34(7).

South Carolina Department of Education. (2026). SC Teaching Standards 4.0 Rubric Updated with Qualifying Measures. Retrieved from: https://ed.sc.gov/educators/educator-effectiveness/south-carolina-teaching-standards-4-0/scts-40-rubric-with-qualifying-measures/

Wright, J. (2010). The RIOT/ICEL Matrix: Organizing Data to Answer Questions About Student Academic Performance & Behavior. Retrieved from: https://www.interventioncentral.org/sites/default/files/rti_riot_icel_data_collection.pdf