



# Implementing MTSS in Biology

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A Data-Driven Approach to Student  
Growth, Tiers, and Targeted Interventions

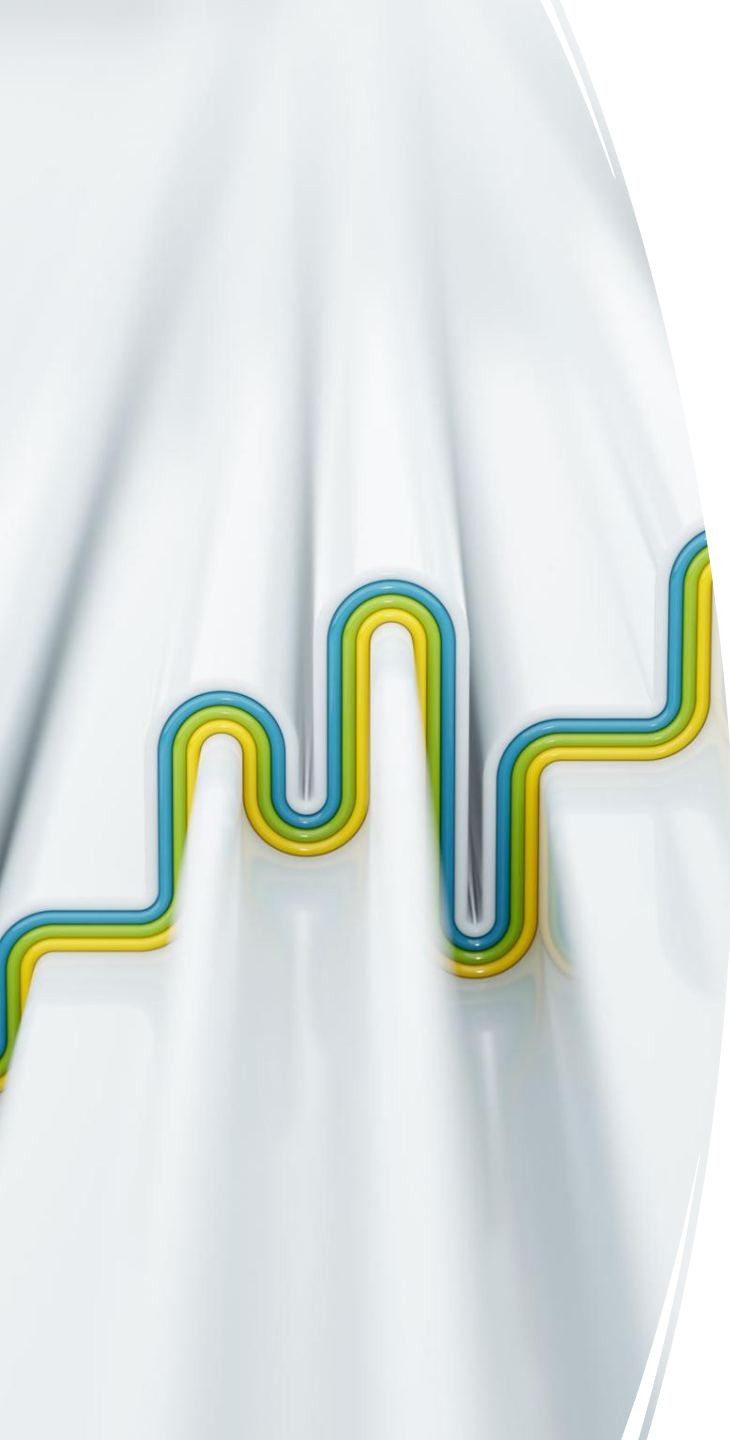
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# What is MTSS?

Multi-Tiered System of Supports (MTSS) is a proactive, data-driven framework used to provide targeted support to students.

- Tier 1 (Universal): Core instruction for all students.
- Tier 2 (Targeted): Small-group interventions for students falling behind.
- Tier 3 (Intensive): Individualized, intensive support for students with significant learning gaps.





# How MTSS Was Implemented for Biology

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- We tailored the data pipeline specifically for Biology USAs using advanced analytics:
  - Missing Data (Median Imputation): If a student missed a test but had at least one valid grade, we filled the gap with the class median for that specific standard to keep their trajectory accurate. Completely empty rows defaulted to Tier 3.
  - Sequential Growth: We calculated the step-by-step point improvement between consecutive USA tests.
  - 60% Benchmark: The standard proficiency threshold was maintained to evaluate Tier placement.
  - K-Prototypes Clustering: We grouped students inside each Tier using a Machine Learning algorithm that looks at test scores, standard mastery, and demographic profiles.



# Demystifying the Data Columns

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- Key columns in your generated Excel reports:
  - Average\_USA: Overall average percentage across all available USA assessments.
  - Growth: The sequential point difference between tests (positive number = improving).
  - Above\_Benchmark: 1 = Yes ( $\geq 60\%$  Average), 0 = No ( $< 60\%$  Average).
  - Growth\_Level: Categorized strictly as Strong ( $\geq 5$ ), Moderate (2-4.9), Weak (0-1.9), or Negative Growth.
  - Tier: Official MTSS placement (Tier 1, Tier 1 - Monitoring, Tier 2, or Tier 3).
  - Cluster: The specific sub-group inside the Tier containing students with highly similar learning gaps.

# How to Use the Excel Reports

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- Your files (e.g., RAMIREZ, KENIER\_MTSS.xlsx) are heavily formatted for ease of use:
  - Sheet Navigation: Start at the 'OVERALL' tab, review the 'Tier Distribution' summary, and then locate your specific Teacher Roster tab.
  - Frozen Panes: The top orange header row is 'frozen' so column names stay visible as you scroll down the list of students.
  - Auto-Filters: Every column has a drop-down arrow. Instantly filter your students by Tier, Cluster, Period, or Growth Level.
  - Actionable Steps: Filter down to a specific Tier and Cluster, then look at the wrapped 'Standards\_Needing\_Intervention' column to plan targeted lessons.

# Questions & Next Steps



## Turning Data into Action:

Review your specific Tier Distribution tab.

Identify the priority standards dragging down your Tier 2 and Tier 3 students.

Use the Cluster column to seat students with similar gaps together during intervention days.



Questions? Email me at  
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