Data Analysis Map: A Scientific Approach to Data-Based Decision Making

Kacie Olson
Implementation Coach
Kansas Learning Network
Kansas State Department of Education: Technical Assistance System Network
Think about a team that you support with making data-based decisions.

**Reflection:** What are some common barriers this team faces when making data-based decisions?

(Post one of the identified barriers into the chat box)
**WHAT** is the precise problem that needs to be attended to?

**WHY** is the problem occurring and sustaining?

**WHAT** system and/or practice will impact the outcome?

**HOW** is our intervention impacting our outcomes?

**HOW** well are we implementing with fidelity?

**HOW** will we educate, support and monitor efforts?

**Inquiry**  
**Problem**  
**Causation**  
**Intervention**  
**Implementation**  
**Sustainability**
How Do You Begin?

1. Locate your progress on the map.

Who do I need to be as a coach?

Push for Evidence: What has been attended to? Not attended to?
How Do You Begin?

1. Locate your progress on the map.
2. Select appropriate data.

Who do I need to be as a coach?

Pose questions that allow teams to think flexibly.
What other influences/perspectives might they need to consider?
How Might We Look at Our Data?

**Information Altitudes**
(Zoom In or Out)
- High-Level (Big Picture)
  - National
    - MAP
    - AimsWeb
    - FastBridge
  - State
    - KAP
    - KELPA
    - KESA
  - District
    - Walkthroughs
    - ODRs
    - Risk Factor Data
  - School
    - Mastery Connect
    - Culture Survey
    - Walkthroughs
  - Classroom
    - Grades
    - Formative
    - Summative
- Low-Level (Detailed)

**Triangulate**
(Perspective)

**Disaggregation**
(Part of the Whole)

**Lead & Lag**
(Prediction vs. Reaction)

**Quantitative**
- Expressed numerically and statistically
- Intended for comparison
- Organized based on frequency distributions, central tendencies, variabilities, and dispersions
- Objective

**Qualitative**
- Descriptive
- Reviewed holistically through examining anecdotes and artifact
- Look for categories or topics that emerge from the individual items
- Can be relative and subjective

**Possible Ways to Disaggregate Data**
- Gender
- Race
- Socioeconomics
- Academic Programs
- Geographic Area
- Feeder Schools
- Classroom Teachers
- Specific Skills
- Subjects
- Age/Grade Level
- Time
- Instructional Strategies

**Lead Indicators**
(Predictive)
- Systems and Practices
  - Teachers
  - Students
  - Curriculum
  - Instruction
  - Assessments
  - Infrastructure

**Lagging Indicators**
(Results)
- Student Outcomes

"Just as the vista from the top of the mountain is quite different than the view from the valley, varied data offer varied lenses on the world of learning." (50)

"Using multiple data sources compensates for the deficits in individual tools and provides a comprehensive picture of the topic under study." (50)

"Making the Invisible Visible."

"Addresses important questions about what is working (or not) and for whom." (58)

"Every system is perfectly designed to get the results it gets" - Attribution Disputed

Adapted from: Got Data? Now What? Written by: Laura Lipton and Bruce Wellman © 2012
1. Locate your progress on the map.
2. Select appropriate data.
3. Create a Triple Track Agenda

- Clarity of Focus
- Tools & Techniques
- Team Development

Who do I need to be as a coach?

Raise group consciousness... What are teams not paying attention to?
Check-In

From a *big picture* perspective, what have you heard so far that might help address any of the barriers listed?

(Post reflections into the chat box)
WHAT is the precise problem that needs to be attended to?

WHAT system and/or practice will impact the outcome?

HOW is our intervention impacting our outcomes?

WHY is the problem occurring and sustaining?

HOW will we educate, support and monitor efforts?

HOW well are we implementing with fidelity?
Who do I need to be as a coach?

Be Specific: Pose questions that push for specificity.

Inquiry → Problem

**Discussion**

*WHAT* is the precise problem that needs to be attended to?

**Data**

- Information Altitude Data that inform the inquiry
- Triangulated Data that inform the inquiry

**Action Steps**

- Write a Precision Problem Statement
- Gather Data to Inform the Problem

**Data Analysis Focus**

- Comparison
- Problem Identification

**Tools**

- Collaborative Cycle of Learning: Inquiry
- Current/Desired State Map
- Causal Categories as comparison data
- Precision Problem Statement Essential 5

**Team Development**

- Team Roles
- Norms for Collaboration
- Balanced Participation
- Level of Empowerment
Collaborative Cycle of Learning

**Inquiry:**

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<tr>
<th><strong>Activate &amp; Engage</strong></th>
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<td>Predict what the data looks like compared to...</td>
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<td>• Peers</td>
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<td>• Desired State</td>
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<td>• Previous State</td>
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<table>
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<tr>
<th><strong>Pause to Read the Data</strong></th>
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<table>
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<tr>
<th><strong>Explore &amp; Discover</strong></th>
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<tr>
<td>When comparing the data...</td>
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<td>• What are some of the areas of concern?</td>
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<td>• Where is the concern(s) most likely to occur?</td>
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<tr>
<td>• When is the concern(s) most likely to occur?</td>
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<tr>
<td>• How often is the concern occurring?</td>
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<tr>
<td>• Who might be contributing to the concern?</td>
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<tr>
<td>• Who might be effected by the concern?</td>
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</table>

<table>
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<tr>
<th><strong>Organize &amp; Integrate</strong></th>
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*What* is the exact problem that needs to be attended to?

What data might we need to collect to inform the problem?

| **Precision Problem Statement:** |  |
## Inquiry:______________________________

<table>
<thead>
<tr>
<th>Curriculum</th>
<th>Instruction</th>
<th>Assessment</th>
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<tbody>
<tr>
<td>Strengths</td>
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<td>Barriers</td>
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<th>Teachers</th>
<th>Students</th>
<th>Infrastructure</th>
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<td>Strengths</td>
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<tr>
<td>Barriers</td>
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<td>Barriers</td>
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Causal Categories as Data for Comparison
Precision Problem Statement

Precise Problem Statements include information about the following 5 Essential Questions.

- WHAT is the concern?
- HOW often is it occurring?
- WHERE is it happening?
- WHO is contributing to the concern? Who is being effected by the concern?
- WHEN is the concern most likely to occur?
**WHAT** is the precise problem that needs to be attended to?

**WHAT** system and/or practice will impact the outcome?

**HOW** is our intervention impacting our outcomes?

**HOW** well are we implementing with fidelity?

**WHY** is the problem occurring and sustaining?

**HOW** will we educate, support and monitor efforts?

**Inquiry** Problem Causation Intervention Implementation Sustainability
Who do I need to be as a coach?

Solution Centered: What is within their Locus of Control?

Problem ➔ Causation

Discussion

WHY is the problem occurring and sustaining?

Data

- Precision Problem Statement
- Aggregated & Disaggregated that inform the problem area
- Lead and Lag Data that inform the problem area

Data Analysis Focus

- Root Cause Analysis
- Dependence

Action Steps

- Prioritize foundational sustaining factors
- Gather Research and Evidence-based practices that address the problem

Team Development

- Team Roles
- Norms for Collaboration
- Balanced Participation
- Level of Empowerment

Tools

- Collaborative Cycle of Learning: Problem
- 6 Causal Categories
- Root Cause Analysis Tools (Fishbone, 5 Whys?, etc.)
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<th>Problem:</th>
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<td><strong>Activate &amp; Engage</strong></td>
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<tr>
<td>• What opportunities for learning does this data present to us?</td>
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<td><strong>Pause to Read the Data</strong></td>
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<td><strong>Explore &amp; Discover</strong></td>
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<td>In what ways do/does ...</td>
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<tr>
<td>• Teachers</td>
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<td>• Students</td>
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<tr>
<td>• Curriculum</td>
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<tr>
<td>• Instruction</td>
<td></td>
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<tr>
<td>• Assessments</td>
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<tr>
<td>• Infrastructure</td>
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<td>contribute to the problem?</td>
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<td>What might be some other leading indicators? (Fishbone)</td>
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<td>-What might be some evidence-based interventions to consider?</td>
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<td>What have you had success with that you want to see continued or consistent?</td>
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<tr>
<td><strong>Organize &amp; Integrate</strong></td>
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<tr>
<td>Why is the problem sustaining?</td>
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<tr>
<td>What data might we need to collect to inform the intervention?</td>
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<tr>
<td><strong>Theory of Causation:</strong></td>
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</tbody>
</table>
Causal Categories as Data for Possible Root Causes

- Teachers
- Students
- Curriculum
- Infrastructure
- Assessment
- Instruction

Problem
Problem: ____________________________

**WHY** is the problem sustaining?

**Possible Root Causes**

**Theories of Causation**

**LEAD DATA**

**Effect**

**LAG DATA**

Precision Problem Statement
(Who, What, When, Where, How Often)
Explore & Discover

Harvest Collective Wisdom

What tools, techniques or coaching tips have you used or seen used that you might add to these first 2 phases?

(Post ideas into the chat box)
WHAT is the precise problem that needs to be attended to?

WHAT system and/or practice will impact the outcome?

HOW is our intervention impacting our outcomes?

HOW well are we implementing with fidelity?

WHY is the problem occurring and sustaining?

HOW will we educate, support and monitor efforts?

Inquiry → Problem → Causation → Intervention → Implementation → Sustainability
Who do I need to be as a coach?

Systems Thinking: Pose questions encourage systems thinking.

Causation → Intervention

Discussion

What system and/or practice will impact the outcome?

Data

- Evidence-Based Practices that inform the theory of causation
- Effect-Size Research that inform the theory of causation

Action Steps

- Identify appropriate Intervention
- Gather Implementation Data (Needs Assessments & Fidelity Measures)

Data Analysis Focus

- Meta-Analysis Study
- Alignment

Tools

- Collaborative Cycle of Learning: Causation
- KansaStar Wise Ways (Indistar)
- John Hattie’s Effect Size Report
- What Works Clearinghouse

Team Development

- Team Roles
- Norms for Collaboration
- Balanced Participation
- Level of Empowerment
Collaborative Cycle of Learning

<table>
<thead>
<tr>
<th>Causation: __________________________________________</th>
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Activate & Engage

What biases might we be holding that could impact our decision?

Pause to Read the Data

Explore & Discover

When exploring each intervention...
- What is the overall effect size? (Reference John Hattie’s Work)
- Was the research conducted in a similar setting/needs as yours?
- Will you be able to obtain the necessary resources?
- Is it in conflict with any current state/district/school initiatives?

Organize & Integrate

*What* system and/or practice will most likely impact the system?

What data might we need to collect to inform implementation practices and progress?

Intervention Hypothesis:
**What** is the precise problem that needs to be attended to?

**Why** is the problem occurring and sustaining?

**What** system and/or practice will impact the outcome?

**How** is our intervention impacting our outcomes?

**How** well are we implementing with fidelity?

**How** will we educate, support and monitor efforts?

**Inquiry**  ➔ **Problem**  ➔ **Causation**  ➔ **Intervention**  ➔ **Implementation**  ➔ **Sustainability**

*Data Analysis Map*
Who do I need to be as a coach?

Dilts’s Logical Levels of Learning:
Pose flexibility questions about possible beliefs, values and assumptions that might be held by others.

Discussion

**WHAT** will we educate, support, and monitor efforts?

Data

- Qualitative: Needs Assessments that inform the current state
- Quantitative: Baseline Data that inform the current state (Lead and Lag)

Action Steps

- Prioritize Implementation Action Steps for Educating, Supporting and Modeling
- Gather Fidelity Data and Outcome Data

Data Analysis Focus

- Implementation Progress

Team Development

- Team Roles
- Norms for Collaboration
- Balanced Participation
- Level of Empowerment

Tools

- Implementation Framework
- NIRN
**EDUCATE**
- What are the expectations?
- What skills might be necessary for adults?
- Who specifically needs each skill?
- Where might teachers gain this professional learning?

**SUPPORT**
- What needs might staff have?
- What barriers might be getting in the way?
- In what ways might you ensure staff have opportunities to practice new skills needed?

**MONITOR**
- Internal
  - Peer Observations & Feedback, Self-Assessments
- External
  - Fidelity Data, Coaching Observations & Feedback

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**Implementation Framework**
### 6 Causal Categories: Implementation Framework (with Guiding Questions)

<table>
<thead>
<tr>
<th>CURRICULUM</th>
<th>INSTRUCTION</th>
<th>ASSESSMENT</th>
<th>TEACHERS</th>
<th>STUDENTS</th>
<th>INFRASTRUCTURE</th>
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<tr>
<td>What skills are necessary?</td>
<td>What skills are necessary?</td>
<td>What skills are necessary?</td>
<td>What is the teacher’s role and responsibility in this work?</td>
<td>What is the student’s role and responsibility in this work?</td>
<td>What do educators/students need to know about the changes in infrastructure?</td>
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<tr>
<td>How will teachers acquire the necessary skills?</td>
<td>How will teachers acquire the necessary skills?</td>
<td>How will teachers acquire the necessary skills?</td>
<td>How might you support individuals/groups when values, beliefs, assumptions and/or biases conflict?</td>
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<td>What support (coaching and/or resources) might be needed?</td>
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<td>What support (coaching and/or resources) might be needed?</td>
<td>What are the values and beliefs you want all educators to hold?</td>
<td>What are the values and beliefs you want all students to hold?</td>
<td>What support (coaching and/or resources) might be needed?</td>
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## CAUSATION:

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6 Causal Categories: Implementation Framework (Blank Template)
**Goal**

Selection:
- Who will be the leaders going out to observe and provide feedback?
- Is this within your time capacity (12 to 1 or less?)
- How safe are the relationships between the selected leaders and staff?

Training:
- What skills and behaviors might be necessary for...
  - data collection?
  - teacher’s goal selection?
  - feedback (reflective/planning) conversations?
- How will training be provided to everyone?
- How might you ensure all leaders have had an opportunity to acquire the needed skills?

Coaching:
- How might you provide coaching* for each other in order to gain fluency in your skills acquired through training?
  * Internally and Externally through reflection, planning, problem-solving
- In what ways will you give/receive professional, personal and emotional support during this process?

Technical:
- In what ways is this goal technical?
- * All team members have a clear understanding of what needs to be done and a reasonable certainty of how to do it.

Adaptive:
- In what ways is this goal adaptive?
- * All team members have a different belief of what needs to be done and less certainty of how to do it.

Performance Assessment:
- How will you know if you are successful?
  - Context Measures (Does your infrastructure support your goal?)
  - Compliance Measures (Did you do what you said you were going to do?)
  - Competence Measures (To what extent was the observation and feedback delivered with skill and attention to the craft when interacting with teachers?)

Systems Intervention:
- How does this goal align with state and district initiatives?
- In what ways could this goal help you maintain your focus as a building?
- How might you stay connected to ‘champions’ in the field for guidance and sustainability?
- In what ways might you need support from your district (policies, access to resources, etc.?)

Facilitative Administration:
- What might be some potential barriers for leaders?
- How might this goal be “in replace of…” instead of “in addition to…”? (What can be taken off the plate?)
- How can you ensure your environment is hospitable to this new practice?
- What procedural changes might need to take place?

Decision Support Data System:
- What data will you collect?
- How will you consistently input and access the data?
- When/How will you analyze and monitor the data?
- How will you calibrate your process among leaders?

Implementation Drivers
Adapted from NIRN framework
(This process will focus on building the capacity of the leadership team first.)

In what ways is this goal technical?
* All team members have a clear understanding of what needs to be done and a reasonable certainty of how to do it.

In what ways is this goal adaptive?
* All team members have a different belief of what needs to be done and less certainty of how to do it.

Technical:
In what ways is this goal technical?

Adaptive:
In what ways is this goal adaptive?
Implementation Drivers
Adapted from NIRN framework
(This process will focus on building the capacity of the leadership team first.)
Data Analysis Map

**WHAT** is the precise problem that needs to be attended to?

**WHAT** system and/or practice will impact the outcome?

**HOW** is our intervention impacting our outcomes?

**HOW** well are we implementing with fidelity?

**WHY** is the problem occurring and sustaining?

**HOW** will we educate, support and monitor efforts?

Inquiry  Problem  Causation  Intervention  Implementation  Sustainability
Implementation          Sustainability

Who do I need to be as a coach?

Implementation Drivers:
Raise consciousness about what has been attended to and what hasn’t been attended to.

Discussion

**How** well is our intervention impacting our outcomes?

**How** well are we implementing with fidelity?

Data

- Lead Data: Fidelity Measures
- Lag Data: Outcome Measures

Action Steps

- Determine if the intervention is having an impact on the outcome.
- If no, assess fidelity
- If yes, determine next steps of implementation

Data Analysis Focus

- Progress Monitoring
- Implementation Progress

Tools

- Collaborative Cycle of Learning: Implementation
- Implementation Decision-Making Flowchart
- Implementation Framework
- NIRN Drivers and Stages

Team Development

- Team Roles
- Norms for Collaboration
- Balanced Participation
- Level of Empowerment
Intervention Decision-Making Flowchart

Do the outcome data (Lagging Indicators) show evidence of significant growth?

- **YES**
  - SUSTAIN EFFORTS: What might you need to do in order to sustain your efforts?
  - **YES**
    - ROOT CAUSES: What other intervention (Leading Indicators) might influence the problem?
  - **NO**
    - FIDELITY DATA: Does that data show that you are implementing with at least 80% fidelity?
    - **YES**
      - IMPROVE FIDELITY: How might you improve the fidelity of Implementation through Educating/Supporting/Monitoring Adult Behavior?
    - **NO**
<table>
<thead>
<tr>
<th>IMPLEMENTATION DRIVERS</th>
<th>No Evidence</th>
<th>Exploration</th>
<th>Installation</th>
<th>Initial Implementation</th>
<th>Full Implementation</th>
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<tbody>
<tr>
<td>Selection</td>
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<td>Training</td>
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<td>Performance Assessment</td>
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<td>Decision Support Data System</td>
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<td>Facilitative Administration</td>
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<td>Systems Intervention</td>
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<td>Technical</td>
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<td>Adaptive</td>
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**Hypothesis:**

**STAGES OF IMPLEMENTATION**

**Implementation Progress Assessment**
Explore & Discover

Harvest Collective Wisdom

What tools, techniques or coaching tips have you used or seen used that you might add to these phases?

(Post ideas into the chat box)
Organize & Integrate

Most Important Point (MIP)
Think back to the original team you identified. What is one take away from this learning that you want to be sure to remember and possibly apply with this team?

(Post MIP into the chat box)
Coaching Support Questions:
Kacie Olson
Kacie.olson@swplains.org

Kansas Learning Network or TASN Questions:
Michele Hayes, Director of the Kansas Learning Network
Michele.hayes@swplains.org

TASN Evaluation:
Dr. Amy Gaumer-Erickson
agaumer@ku.edu

Additional Resources:
Kansas Learning Network: www.ksdetASN.org/KLN
KSDE: Technical System Assistance Network: www.ksdetASN.org