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

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Activate & Engage

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)

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?

Inquiry ⬤ Problem ⬤ Causation ⬤ Intervention ⬤ Implementation ⬤ Sustainability ➤

WHY is the problem occurring and sustaining?

HOW will we educate, support and monitor efforts?

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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?

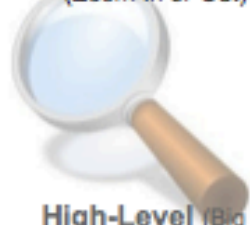1. Locate your progress on the map.

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)

"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." (60)

Triangulate
(Perspective)
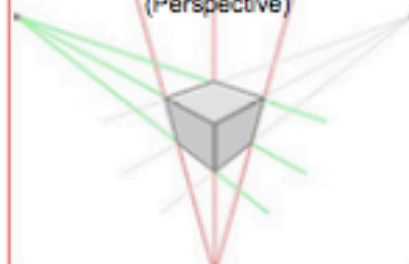
QUANTITATIVE

- 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

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

Disaggregation
(Part of the Whole)

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

"Making the Invisible Visible."

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

Lead & Lag
(Prevention vs. Reaction)

Lead Indicators
(Predictive)
Systems and Practices

- Teachers
- Students
- Curriculum
- Instruction
- Assessments
- Infrastructure

Lagging Indicators
(Results)

- Student Outcomes

"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

How Do You Begin?

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 <u>not</u> paying attention to?

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Explore & Discover

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)

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Data Analysis Map

Inquiry ➡ Problem

Who do I need to be as a coach?

Be Specific: Pose questions that push for specificity.

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Discussion

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

Action Steps

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

Data

✓ Information Altitude Data that inform the inquiry

✓ Triangulated Data that inform the inquiry

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:_____

Activate & Engage Predict what the data looks like compared to… • Peers • Desired State • Previous State	

Pause to Read the Data

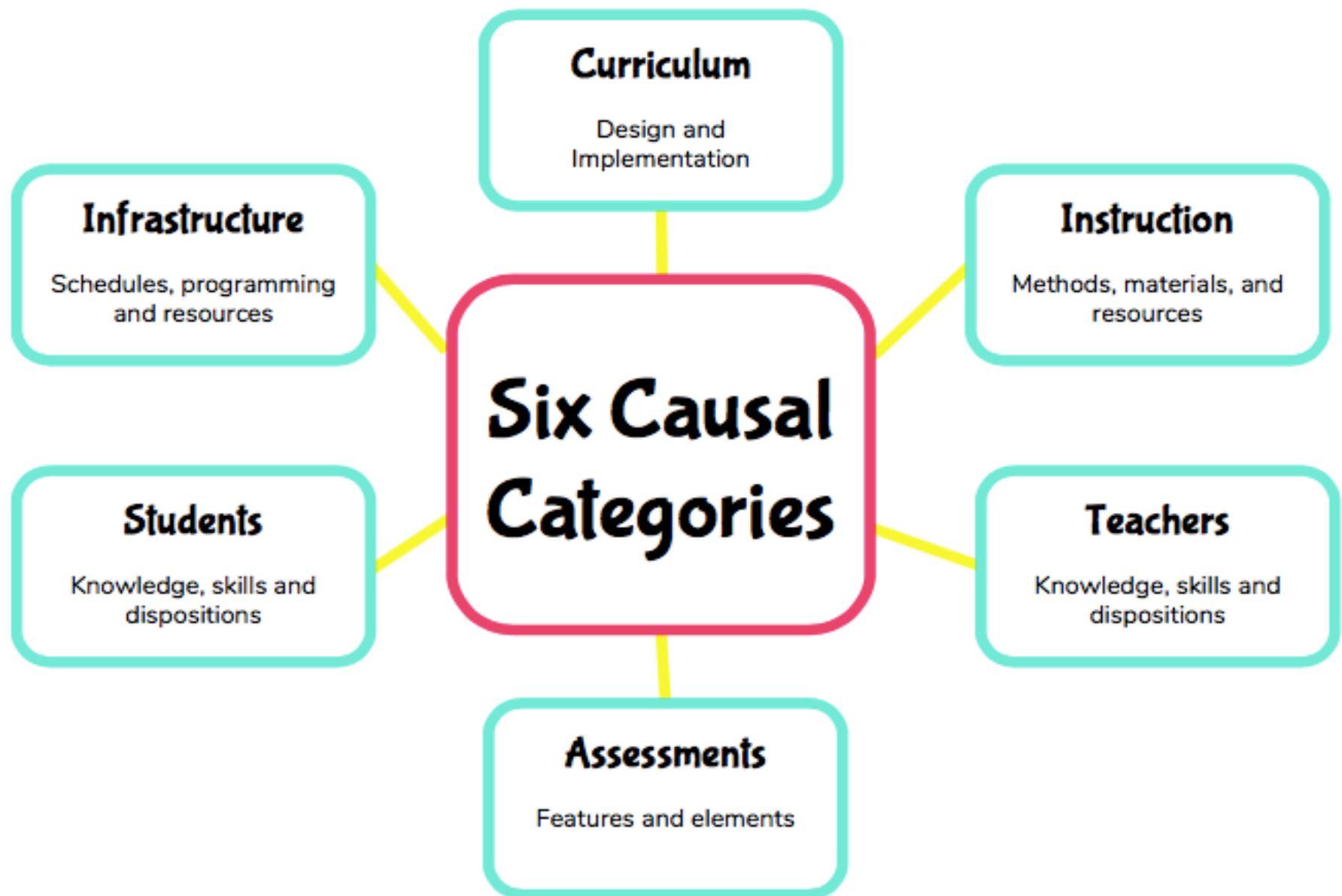|	
Explore & Discover When comparing the data… • What are some of the areas of concern? • Where is the concern(s) most likely to occur? • When is the concern(s) most likely to occur? • How often is the concern occurring? • Who might be contributing to the concern? • Who might be effected by the concern?	

Organize & Integrate *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:

Problem:_____

Curriculum

Design and Implementation

Infrastructure

Schedules, programming and resources

Instruction

Methods, materials, and resources

Six Causal Categories

Students

Knowledge, skills and dispositions

Teachers

Knowledge, skills and dispositions

Assessments

Features and elements

Inquiry:_____

Curriculum		
Strengths	**Barriers**	

Instruction		
Strengths	**Barriers**	

Assessment		
Strengths	**Barriers**	

Teachers		
Strengths	**Barriers**	

Students		
Strengths	**Barriers**	

Infrastructure		
Strengths	**Barriers**	

Causal Categories as Data for Comparison

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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?

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?

Inquiry ⬤ Problem ⬤ Causation ⬤ Intervention ⬤ Implementation ⬤ Sustainability

WHY is the problem occurring and sustaining?

HOW will we educate, support and monitor efforts?

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Problem → Causation

Who do I need to be as a coach?

Solution Centered: What is within their Locus of Control?

Discussion
WHY is the problem occurring and sustaining?

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

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

Tools
☐ Collaborative Cycle of Learning: Problem
☐ 6 Causal Categories
☐ Root Cause Analysis Tools (Fishbone, 5 Whys?, etc.)

Team Development
• Team Roles
• Norms for Collaboration
• Balanced Participation
• Level of Empowerment

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Collaborative Cycle of Learning

Problem:_____

Activate & Engage

- What opportunities for learning does this data present to us?

Pause to Read the Data

Explore & Discover

In what ways do/does …
- Teachers
- Students
- Curriculum
- Instruction
- Assessments
- Infrastructure
contribute to the problem?

What might be some other leading indicators? (Fishbone)

-What might be some evidence-based interventions to consider?

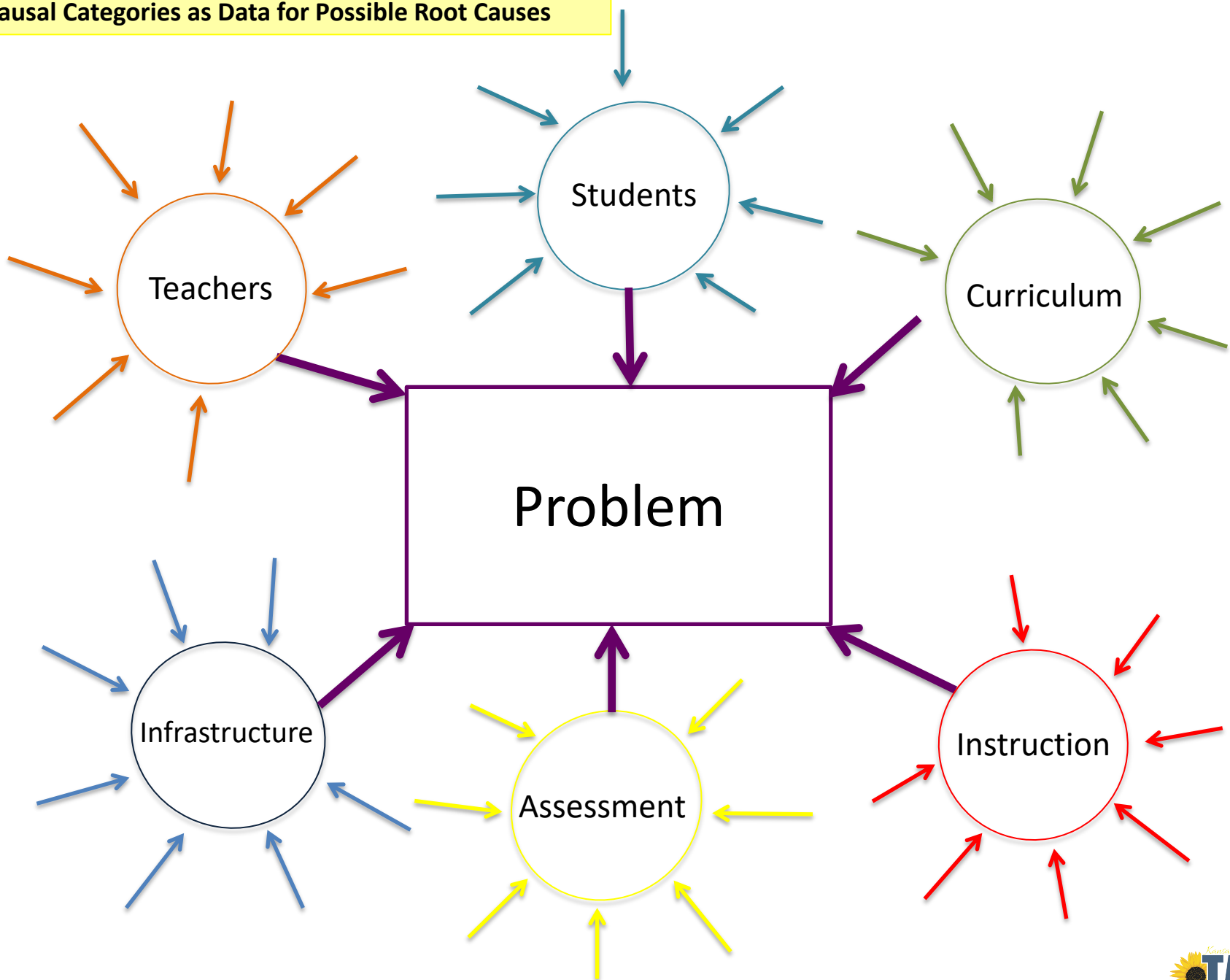What have you had success with that you want to see continued or consistent?

Organize & Integrate

Why is the problem sustaining?

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

Theory of Causation:

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Causal Categories as Data for Possible Root Causes

Teachers

Students

Curriculum

Infrastructure

Assessment

Instruction

Problem

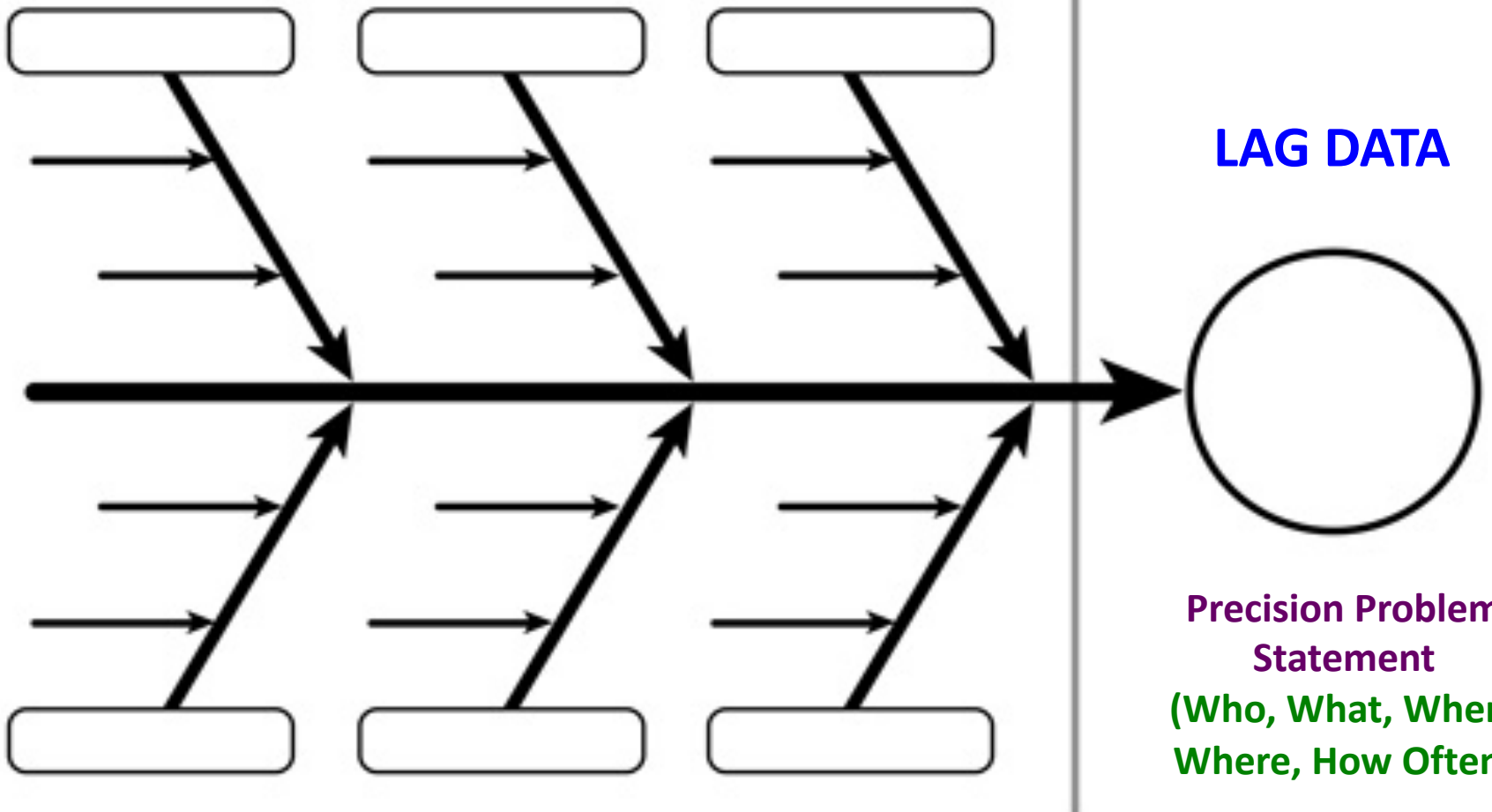# Problem:_____

Fishbone Diagram

WHY is the problem sustaining?

Cause   **LEAD DATA**

Effect

Theories of Causation

LAG DATA

Possible Root Causes

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)

Causation ➡ Intervention

Discussion

WHAT system and/or practice will impact the outcome?

Action Steps

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

Data

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

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

Who do I need to be as a coach?

Systems Thinking: Pose questions encourage systems thinking.

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Collaborative Cycle of Learning

Causation:_____

### 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:

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Data Analysis Map

Intervention ➡ Implementation

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.

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Discussion

WHAT will we educate, support, and monitor efforts?

Action Steps

o Prioritize Implementation Action Steps for Educating, Supporting and Modeling

o Gather Fidelity Data and Outcome Data

Data

✓ Qualitative: Needs Assessments that inform the current state

✓ Quantitative: Baseline Data that inform the current state (Lead and Lag)

Data Analysis Focus

➢ Implementation Progress

Tools

❑ Implementation Framework
❑ NIRN

Team Development

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

Implementation Framework

Focus Area

EDUCATE

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

MONITOR

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

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?

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CAUSATION:_____

CURRICULUM		
EDUCATE	SUPPORT	MONITOR
What skills are necessary? How will teachers acquire the necessary skills?	What support (coaching and/or resources) might be needed?	What might internal accountability look like? What will external accountability look like?

INSTRUCTION		
EDUCATE	SUPPORT	MONITOR
What skills are necessary? How will teachers acquire the necessary skills?	What support (coaching and/or resources) might be needed?	What might internal accountability look like? What will external accountability look like?

ASSESSMENT		
EDUCATE	SUPPORT	MONITOR
What skills are necessary? How will teachers acquire the necessary skills?	What support (coaching and/or resources) might be needed?	What might internal accountability look like? What will external accountability look like?

TEACHERS		
EDUCATE	SUPPORT	MONITOR
What is the teacher's role and responsibility in this work? What are the values and beliefs you want all educators to hold?	How might you support individuals/groups when values, beliefs, assumptions and/or biases conflict?	What might internal accountability look like? What will external accountability look like?

STUDENTS		
EDUCATE	SUPPORT	MONITOR
What is the student's role and responsibility in this work? What are the values and beliefs you want all students to hold?	How might you support individuals/groups when values, beliefs, assumptions and/or biases conflict?	What might internal accountability look like? What will external accountability look like?

INFRASTRUCTURE		
EDUCATE	SUPPORT	MONITOR
What do educators/students need to know about the changes in infrastructure?	What support (coaching and/or resources) might be needed?	What might internal accountability look like? What will external accountability look like?

6 Causal Categories: Implementation Framework (with Guiding Questions)

CAUSATION:_____

CURRICULUM		
EDUCATE	SUPPORT	MONITOR

INSTRUCTION		
EDUCATE	SUPPORT	MONITOR

ASSESSMENT		
EDUCATE	SUPPORT	MONITOR

TEACHERS		
EDUCATE	SUPPORT	MONITOR

STUDENTS		
EDUCATE	SUPPORT	MONITOR

INFRASTRUCTURE		
EDUCATE	SUPPORT	MONITOR

6 Causal Categories: Implementation Framework (Blank Template)

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Implementation Drivers

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

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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?)*

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?

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.)?

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?

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?

COMPETENCY

ORGANIZATION

Goal

LEADERSHIP

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?

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.

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?
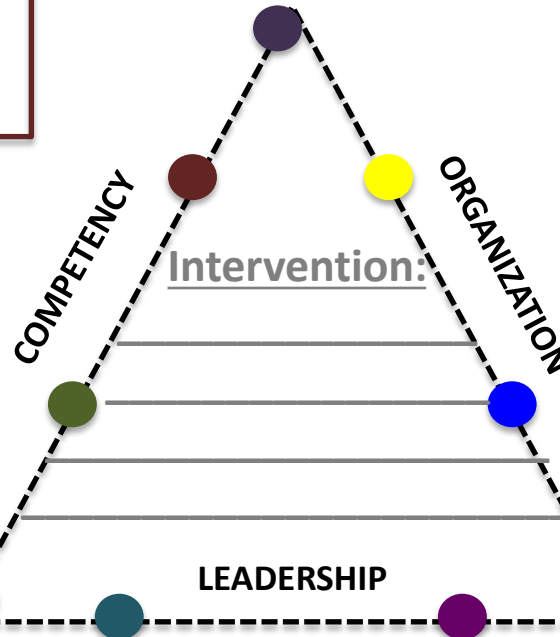
Implementation Drivers

Adapted from NIRN framework

(This process will focus on building the capacity of the leadership team first.)

Performance Assessment:

Coaching:

Systems Intervention:

Training

Facilitative Administration:

COMPETENCY

ORGANIZATION

Intervention:

LEADERSHIP

Selection:

Technical:

Adaptive:

Decision Support Data System:

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?

Inquiry — Problem — Causation — Intervention — Implementation — Sustainability

WHY is the problem occurring and sustaining?

HOW will we educate, support and monitor efforts?

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Implementation ➡ Sustainability

Discussion

HOW well is our intervention impacting our outcomes?

HOW well are we implementing with fidelity?

Action Steps

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

Data

✓ Lead Data: Fidelity Measures
✓ Lag Data: Outcome Measures

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

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.

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Intervention Decision-Making Flowchart

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

YES

NO

SUSTAIN EFFORTS: What might you need to do in order to sustain your efforts?

FIDELITY DATA: Does that data show that you are implementing with at least 80% fidelity?

YES

NO

ROOT CAUSES: What other intervention (Leading Indicators) might influence the problem?

IMPROVE FIDELITY: How might you improve the fidelity of Implementation through Educating/Supporting/Monitoring Adult Behavior?

Hypothesis:_____

STAGES OF IMPLEMENTATION →

	IMPLEMENTATION DRIVERS ↓	No Evidence	Exploration	Installation	Initial Implementation	Full Implementation
COMPETENCY	Selection					
	Training					
	Coaching					
	Performance Assessment					
ORGANIZATION	**Decision Support Data System**					
	Facilitative Administration					
	Systems Intervention					
LEADERSHIP	Technical					
	Adaptive					

Implementation Progress Assessment

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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)

QUESTIONS?

Coaching Support Questions:
Kacie Olson
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Kansas Learning Network or TASN Questions:
Michele Hayes, Director of the Kansas Learning Network
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TASN Evaluation:
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<u>**Additional Resources:**</u>
Kansas Learning Network: www.ksdetasn.org/KLN

KSDE: Technical System Assistance Network: www.ksdetasn.org