**Analyzing Data for Root Causes**

Conducting Sessions to Analyze Key Performance Data;

Using the Results in the District or School Planning Process

**What is a Root Cause?** The Massachusetts Department of Elementary and Secondary Education’s *District Data Team Toolkit* defines root cause as “an underlying factor or condition that creates a problem and that, if addressed, would eliminate or dramatically alleviate the problem. A root cause analysis can help a group with widely varying opinions narrow the field of contributing factors until it agrees on what one(s) will yield the biggest bang for the buck if it acts on it”*(District Data Team Toolkit*, Module 4, p. 4).

**Why This Step is Important:** Root cause analysis of current performance is an important early step in the planning process for districts and schools. District and school plans should be grounded in an analysis of performance that helps communities develop an understanding of current barriers and of what needs to change in the current context to support achievement of their vision. The results from a root cause analysis of the current context, when combined with the results from community visioning of the future and with research of effective practices, provides the information the planning team needs to identify strategic objectives and initiatives for the plan.

**Data to Consider for Analysis:** A wide range of data can be useful in this analysis, including community feedback, educator evaluation data, social-emotional data, and student achievement data, particularly overall performance, growth, and gaps between student groups. DESE has produced several new data tools that may be useful, beyond the Edwin Analytics, Profiles, and DART tools you are probably already familiar with. DESE’s Student Learning Experience (SLE) reports are particularly useful as districts analyze disparities for historically marginalized student groups, and DESE’s Resource Allocation and District Action Reports (RADAR) are particularly useful as districts analyze their current practices in allocating resources of people, time, and money. For additional information about data sources that may be useful in planning, see the PfS resource “Selecting Outcome Measures and Setting Targets.”

**Root Cause Analysis Protocols:** Districts and schools can use a number of protocols to analyze data and unearth root causes. The 5 Whys Protocol is a simple, accessible, and time efficient protocol commonly used for this purpose. The Department’s *District Data Team Toolkit*, Module 4, includes several root cause protocols, including the 5 Whys.

The 5 Whys Protocol is included in the “Text for Facilitator Presentation Slides” section of this resource. In essence, a group asks “Why?” five times or so, as it progressively digs deeper into data, until the group arrives at what it believes to be the root cause of that data. A Root Cause Worksheet is included in this resource that groups can use to record their work. If groups identify multiple “whys” at any stage in their analysis, they may choose to pursue only one of these “whys” as a path of analysis or pursue more than one “why,” customizing the Root Cause Worksheet to reflect these multiple pathways or completing a worksheet for each pathway.

**The Root Cause Analysis Process:** The root cause analysis of key data points or trends should be conducted after the planning team has reviewed a range of data, developed a shared understanding of current performance, and selected areas of interest for the root cause work. It is most effective, therefore, if a data presentation precedes the root cause analysis activity, with data presented by a knowledgeable and credible representative such as members of the administrative team or a data specialist. Steps in the data and root cause analysis process are presented below.

1. After the data presentation, identify 4 to 6 data points that will be the focus of root cause analysis (depending on the data and the size of your planning team). The root cause analysis activity is most effective if planning team members have the opportunity to participate in the selection of data points for analysis.
2. Organize into small mixed groups of 4 to 6 participants or so, depending on the size of your planning team. If possible, ensure that each group includes participants with different roles in the district or school. Ask each group to focus on a different data point; ask the recorder of each group to record the group’s work on the Root Cause Analysis Worksheet; and ask all groups to follow the 5 Whys Protocol.
3. Reconvene as a whole group. Ask the facilitator of each small group to share their group’s whys and ultimate root cause. Discuss root causes as a whole group.
4. Collect the Root Cause Analysis Worksheet from all recorders. Type up the results of each group’s work on a Root Cause Analysis Worksheet.

**Time Required**: Root cause analysis requires approximately 1.5 hours to complete, depending on the number of data points analyzed and the number of participants/number of small groups that will report out. Allow approximately 40 minutes for small groups to conduct the protocol; approximately 5-7 minutes for each group to report out; and approximately 15 to 20 minutes for whole group discussion.

**Note to Facilitators,** **Maintaining Focus on What is Within District or School Control:** In framing the root cause analysis work, it is helpful to address the need for participants to focus on what is within the district’s or school’s control rather than on what is outside it. For example, if an initial “why?” in a 5 Whys analysis focuses on students’ lack of readiness for school, it is essential that participants recognize that they must dig deeper to unearth causes that are within district or school control.

A simple and effective tool that can assist in framing this conversation with the planning team is the Dimensions Bullseye of Improvement, from Module 4 of the *District Data Team Toolkit.* This graphic representation of what is within the district’s or school’s control is extremely useful during the root cause analysis discussion. The Bullseye is included with this resource.

In addition to reviewing the Bullseye and discussing its implications with the team, facilitators may also find it helpful to review a simple example of a root cause analysis in which a team did not focus on what was within their control but instead remained focused on external causes. One such example is included in the text for presentation slide 3 below.

As facilitators will note, in this example of root cause analysis of low attendance, the team’s focus remains external, appearing to credit or blame families as the root cause rather than focusing on the actions or inaction of educators and schools. Such an example can be helpful for communities to discuss as they prepare to unearth and push past their own existing assumptions and biases about why the current context is as it is. The facilitator plays a critical role in assuring that root cause analysis work is, in the end, a true learning opportunity for the community.

**Text for Facilitator Presentation Slides:** Some suggested text for root cause analysis presentation slides is included below. This text also includes a root cause analysis example that helps illustrate the importance of focusing on and taking responsibility for what is within district or school control during root cause analysis, rather than blaming others or external conditions. This example (slide 3) is best discussed in conjunction with the Dimensions Bullseye of Improvement, from Module 4 of the *District Data Team Toolkit.* Facilitators can use this example to illustrate the need to have difficult conversations and challenge our own biases and assumptions during the root cause process, in order to develop a clear and honest understanding of barriers to success in the current context.

**Slide 1: Root Cause Analysis of Data**

What is a root cause?

“an underlying factor or condition that creates a problem and that, if addressed, would eliminate or dramatically alleviate the problem. A root cause analysis can help a group with widely varying opinions narrow the field of contributing factors until it agrees on what one(s) will yield the biggest bang for the buck if it acts on it.”

*DESE District Data Team Toolkit*, Module 4, p. 4

**Slide 2: Five Whys Protocol**

1. Write the problem being addressed
2. Ask the group to give a reason why this is happening (the first cause)
3. Record the answer
4. Ask the group why the first cause is happening
5. Record the answer
6. Repeat five times or until reaching the root cause

*DESE District Data Team Toolkit*, Module 4

**Slide 3: Root Cause Example**

Attendance rate is poor for those struggling to graduate

1. Students aren’t engaged in school
2. Parents are disengaged
3. There is a lack of family pressure to attend

**Slide 4: Group Presentations**

* Share your group’s root cause analysis
* What actions do we need to take to respond to the identified root cause(s)?

**Root Cause Analysis Worksheet**

*Purpose:* Use this worksheet to document the results of a root cause analysis using the 5 Whys Protocol. State the problem, for example: “Student growth in math has continued to decline across the district since 2016.” Document each “Why” you identify. *If the team identifies more than one “why” at any stage of analysis, you may create columns on this sheet to document multiple pathways or complete a worksheet for each pathway of analysis.* When you arrive at the root cause, state it in the “Cause” section below.

**Problem:**

***Why?***

***Why?***

***Why?***

***Why?***

**Cause:**

Demensions Bullseyd of Improvement:

Core ream; Contains factors that most directly affect student outcomes; instruction , curriculum, and assessments.

Enabling realm: contains conditions that must be in place in order to make the core elements successful in affecting student outcomes.

Supporting realm: contains conditions that are helpful toward making the core elements successful.

Chart of dimensions bulleye of improvement:

Most inner cirlcle is Core Realm - Instruction, curriculum, and Assessments

Middle circle is enabling Realm -  Such as: Materials, Schedules, Professional development, Organizational structures, school Leadership, Supervision, and Staff accountability for performance

The most outter circle is supporting realm - such as: parents, governance, personnel, funding, community resources, and student readiness to learn

