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Mathematics **LEADERSHIP INSTITUTE**



Participant Manual

MOREL

DAY TWO

Notes:

INTRODUCTION

Today's topics include

- Using assessment data to inform instruction
- Managing transitions through the use of video cases
- Strategies for increasing collective efficacy
- Supporting administrators in improving mathematics education

As a result of today's activities you will:

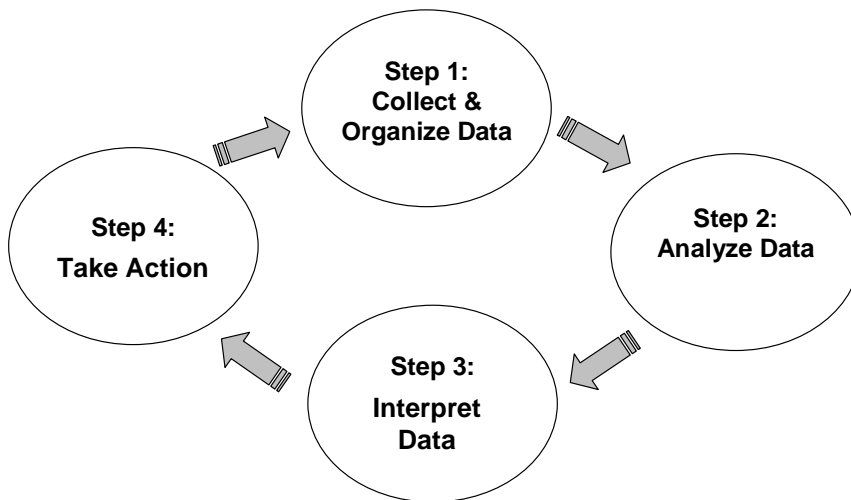
- Know how to use assessment data to inform instruction
- Know strategies for increasing collective efficacy
- Know how to use video cases to support teacher learning

USING ASSESSMENT DATA TO INFORM INSTRUCTION

Collecting data about student learning is important, but it is only the first step. To reap the benefits of data collection, teachers can examine their data to identify instructional needs of individual students and groups of students and generate actions to improve student performance.

The process that will guide this discussion is comprised of four steps as shown in the diagram below.

Figure 1: General Process for Data-Driven Decision Making



Notes:

Collecting and Organizing Data

The actions for Step 1 include:

- Define specific questions about student achievement
- Determine the types of data needed
- Develop a data collection plan

The focus of the process might be a broad question or a specific one. A broad question is appropriate when investigating student achievement at the school or district level. Examples of broad questions include:

- Are we meeting our school improvement goals for mathematics?
- Is mathematics achievement increasing over time?
- What are students' relative strengths and weaknesses by content strand by grade level?
- How well is our mathematics curriculum serving all students?

At the classroom level, teachers will have more specific questions, such as, "What are students' relative strengths and weaknesses related to the learning goals for the Data Analysis and Probability standard?"

Teachers have multiple sources and types of data available to them to use in making instructional decisions. Table 2 provides examples of different types of data. As you think about collecting data to answer your question, consider which form of data will be most useful for addressing your question. Remember, the key is to be intentional about the data you choose to inform your decisions.

Table 2: Examples of Different Types of Data

Outcome Data	Demographic Data	Program Data	Perception Data
<ul style="list-style-type: none"> • Selected response assessments • Constructed response assessments • Performance tasks • Observations • Grade book summaries • Behavior data (e.g., suspensions) 	<ul style="list-style-type: none"> • Ethnicity • English language proficiency • Participation in special programs • Attendance • Migrant rate 	<ul style="list-style-type: none"> • Evidence of use of sound instructional strategies • Curriculum implementation/consistency • Nature and frequency of classroom assessment • Nature and frequency of communication with parents • Student/teacher ratio 	<ul style="list-style-type: none"> • Student attitudes toward school or specific content areas • Student perceptions of personal safety • Student and parent expectations

Notes:

Analyzing Data

Step 2 is about looking for meaningful patterns and relationships in the data. At the classroom level, teachers will want to:

- Make observations based on individual student data
- Make observations based on group data

Some questions teachers can ask to guide their analysis of individual student data include:

- Are these results consistent with what I expected? Why or why not?
- Are these results an accurate representation of what the student knows and can do?
- In what areas did the student do well?
 - What did the student show that she or he knows and can do?
 - In what ways does this work meet or fail to meet a particular set of standards?
 - What initial understandings do I see emerging in this work?
- In what areas did the student have difficulty?
 - Does the same area of difficulty show up on other assessments the student has completed?
 - Have other teachers seen this student having difficulty in the same area?
- What aspects of the assignment intrigued the student?
 - Into which parts of the assignment did the student put the most effort?
 - In what ways is the student challenging himself or herself?
- Does this students' collection of work demonstrate growth over time?

Teachers also might want to examine assessment results for the class as a whole. Doing so will help them gain insights into discrepancies in performance among subgroups. It also can shed light on the effectiveness of the instructional unit on which the assessment was based or the appropriateness of grouping assignments. Teachers can use the following questions to guide analysis of group data:

- Did all students complete the assignment? If not, which students didn't and why?
- How many students performed at a proficient or better level? What percentage of the group is this?
- Are the results consistent with what I expected, given this group's performance on other assessments?
 - If no, did I use consistent scoring criteria?
 - What other data do I have about this group that might shed additional light on this group's performance?
- Did this group perform differently from other groups (e.g., other classes in my grade level, other classes taking this course)?

Notes:

- Did any subgroups (e.g., boys/girls, ethnic subgroups, at-risk, ELL) perform better than others?

If you are examining data for a group of less than 10 students, it is important to look at individual student results. Otherwise, one student who is making significant progress or one student making no progress might skew the information for the rest of the group.

Interpreting Data

Once some observations have been made about student performance in Step 2, teachers can proceed to Step 3 and think about the reasons for the student performance they are seeing. Teachers should consider a number of factors that might have affected the results. These factors include

- the instructional strategies used
- the materials (e.g., texts, primary sources, problems) used
- other people
- time devoted to instruction on the topic of the assessment

The following questions are also useful for guiding teachers' thinking about the reasons for the observed results:

- What does the pattern of errors reveal about the student or group of students (e.g., are the errors simple ones or a reflection of deeper misunderstandings)?
- To what might the improvement in performance be attributed?
- To what might the decline in performance be attributed?

Taking Action

In Step 4, teachers use the data by translating their hypotheses about the reasons for student performance into specific strategies or action steps. The following questions can guide teachers through this process:

- What's working now?
 - What areas in my instruction are most effective and should be continued?
 - How can I make sure the improvement I see continues?
- What should I change regarding my instruction?
 - Who is in need of additional instruction?
 - Do I see anything about the student's performance that could be addressed with minor adjustments in instruction (e.g., simple errors or common misunderstandings)?
 - Which instructional practices will I use and why?
 - How can I support student growth more effectively?
 - In what areas do I need to make changes to remediate weaknesses?
 - How can I remove barriers to this student's/group's achievement?

- Are there groups of students with similar needs to whom I can target specific instruction?
- If some subgroups are performing better than others, what can I learn about planning more effective instruction for these groups by looking at patterns in the higher achieving groups?
- What else can I do to help meet the needs of my students?
 - How can I use the assessment results to show the student his or her strengths as well as what he or she needs to do to improve?
 - Do my findings suggest that I need more professional development?

Notes:

Once strategies have been identified, the teacher implements them and monitors how well the strategies are working. If necessary, the teacher makes adjustments to the strategies to increase their effectiveness.

Activity: Making Observations, Posing Hypotheses, and Generating Action Steps



Direction:

1. Solve the problem provided by the facilitator.
2. The facilitator will provide a packet for this activity. In the packet is some information about a teacher, her class, and student responses to the problem that you solved. Read the information and examine the samples of student responses.
3. As a group, make observations about the samples of student work. Remember that observations should be statements of facts, not interpretations or inferences. Record the observations on the form on pages 38-39, using a separate box for each observation.
4. Pose some hypotheses about why the students performed the way they did. Use the information in the activity packet and the questions provided above to guide your discussion of possible hypotheses for each observation. Record the hypotheses on the form on pages 38-39.
5. Propose some strategies the teacher might use to address the causes for weaknesses in student performance.
6. Discuss as a group what you learned from this activity and how you might use it in your district. **Record ideas from the discussion in the space below.**