

5DS for Making Decisions Using Data and Evidence



DEFINE

Define a focus for inquiry using data or evidence based on the need or problem to be solved. Formulate questions within the focus area whose answers can be informed by data and evidence.



DIG

Dig for data and evidence. Take inventory of available data and evidence that are related to your defined need or question. If you do not have data related to your need, you may need to develop a tool or process to gather the data.



DISTILL

Find the data and evidence that are most relevant to the need or question. Your initial search will likely result in more data or evidence than you can reasonably process or may yield data that need to be cleaned, prepared, or displayed in particular ways based on the need or question. Prioritize spending time with studies or data sources that are most useful in making decisions.



DISCOVER

Discover patterns and findings in the data and evidence you are using. This requires both analysis and interpretation. Analysis is defined in this context as noticing and defining patterns or findings that are in the data. Interpretation is applying experience and professional judgment to make sense of those patterns and findings.



DECIDE

Data interpretation should ultimately yield decisions about next steps—either for action or for further inquiry. When decisions have been made, systematic change processes can be used to act on those decisions.

Data Literacy

“The ability to collect, manage, evaluate, and apply data in a critical manner”

Ridsdale et al., (2015).

Collecting, managing, evaluating, and applying data critically means using data purposefully. To be purposeful in using data, it is necessary to **DEFINE** the questions you want data to answer. As you define the question, it may lead to additional questions for inquiry that you will want to prioritize later. By putting these questions aside, this continuous cycle will allow you to pose questions for potential use in upcoming data cycles and continue to inspire inquiry and improvement.

Use the space and the tool below to ensure you have defined a useful question for inquiry.



DEFINE

This is your opportunity to personalize your inquiry and interpretation of the data to your own interests or those of your school, district, or team. Use the space below to record your focus for inquiring into data and some possible questions you want to answer.

Priority Question:		
1. Does the question address an issue that is significant to the individual, group, or school?	☐ Yes ☐ No	If no, refine the question or choose a different question that will result in more significant new insight.
2. Is it a question with a dichotomous answer (e.g., yes/no or improving/not improving)	☐ Yes ☐ No	If yes, refine the question to be one with a more informative answer or choose a different question.
3. Is the question related to a decision the team needs to make?	☐ Yes ☐ No	If no, refine the question or choose a different question that will lead to making data-informed decisions.
4. Is it possible to address the question in the available time?	☐ Yes ☐ No	If no, narrow the scope of the question to be more manageable in the time allotted.
5. Is the question narrow, clear, and straightforward?	☐ Yes ☐ No	If no, narrow the scope or refine the question to clarify.
6. Are the data necessary for answering the question accessible prior to the time of inquiry?	☐ Yes ☐ No	If no, either modify the question to one that can be answered with available data or set the date of study when necessary data can be collected.
Final Defined Question: 		

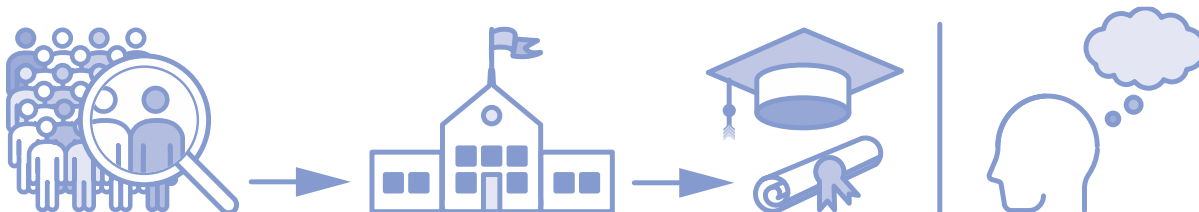
Being data literate includes understanding and drawing from different types of data. As we DIG for data, it is important to consider multiple types and sources of data.

Demographic

Program

Outcome

Perception



Directions:

1. In teams of two or three, label each of four sticky notes with one of the following:
 - a. Outcome Data, Demographic Data, Program Data, Perception Data.
2. Sort the Types of Data cards into these four categories.
3. Check your answers against those provided in the key by your facilitators and discuss how your groupings compare to those in the answer key.



DIG

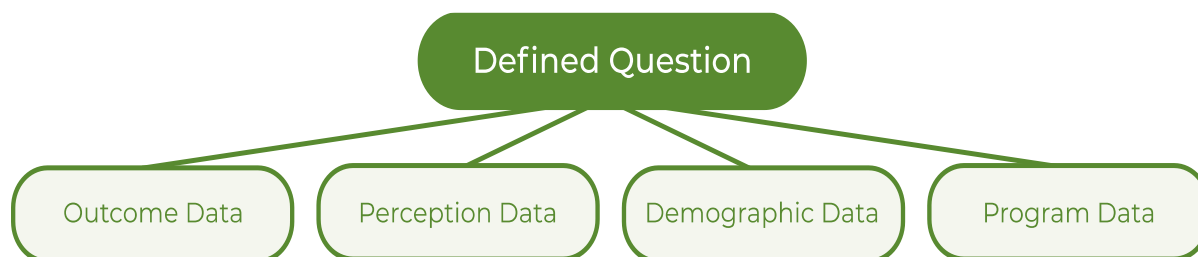
Digging for data includes taking inventory of available sources and types of data and gathering all data sources that may help answer the question the team has defined. Drawing from different types and sources of data can strengthen the team's trust in the findings from the data; it can also add nuance and depth to the understanding gained from data.

Consider the following example:

- results from a state-provided benchmark assessment showed students performed well overall
- data from classroom-based assessments gathered around the same time showed that many students had not mastered some key concepts being taught
- when data were disaggregated by the demographic factor of students involved in activities, the team observed that student-athletes had performed worse on both assessments
- attendance data showed that students involved in fall sports had missed multiple days of class during which foundational concepts had been taught
- program data showed that some teachers had retaught the key concepts while others had continued forward to stay on track with the district's curriculum pacing guide

Had the team examined only the benchmark assessment data, they might not have noticed that there were certain concepts students were missing, despite the fact that the group had performed well overall. They might also have made unsupported guesses as to why certain students and groups had performed at lower levels.

Use the graphic below and your cards from the card sort to think about different types and sources of data that could inform your defined question.



For future data inquiries, you may use a data collection tool like the one below to organize your DIGGING and ensure you draw from multiple types and sources of data.

What type of data needs to be collected?	What sources of data will help the investigation?	Are the data available or does new data need to be collected?	Where are these data located?	Who will be responsible for collecting these data?	When will these data be collected?



DISTILL

With guidance from your facilitators, review the available data and analyses and use the space below to note figures and displays that are related to your focus and may help answer the questions you recorded in the previous table.



DISCOVER

Use the spaces below to record observations, patterns, and findings from the reports that relate to your focus and questions. Note the figure or table number, title, and page reference. As you work, pay attention to when you are noting facts from the data (analysis) and when you are using your expertise and experience to make sense of those facts (interpretation).

Observations should be:

S – Specific
U – Understandable
R – Related
F – Factual

Test: Could someone not involved in the analysis read the statement and understand it?

Practice writing your own SURF statement based on the example question.

Initial SURF Statement:

Specific	Does the statement consider numerous ideas and data sources?	☐ Yes ☐ No	If yes, consider pairing down the statement to a specific, single fact.
Understandable	Does the statement include references to data and graphs that are <i>not</i> known to individuals outside of the group? Is it missing specific statements of fact?	☐ Yes ☐ No	If yes, consider referencing different data and graphs that are more familiar to individuals, both inside and outside of the group. Make sure to include statements of fact.
Related	Does the statement provide a fact with relevance to the focus, defined question?	☐ Yes ☐ No	If no, revise the statement to include specific facts that are related to the focus question.
Factual	Does the statement introduce additional interpretations of the data? Does it provide reasons for the facts presented in the data?	☐ Yes ☐ No	If yes, delete any interpretations or reasons for the facts in the data. Ensure the statement is solely factual.

Revised Final SURF Statement:

Now that you have practiced writing and revising a SURF statement, here is a General Process for Analysis in the *DISCOVER* Step. Note, this process will require time to truly discover the factual observations in the data; make sure to set aside enough time for this step.

1. Select your source of outcome data.
2. Start with the report that provides the most general layer of information.
3. Given your focus question, decide what information would be most helpful for making observations.
4. Discuss and record factual observations.

Kindergarten to Grade 6
Table or Figure Number _____ Title _____ Page _____
Key Facts, Observations, or Patterns

Grades 7-12
Table or Figure Number _____ Title _____ Page _____
Key Facts, Observations, or Patterns

Kindergarten to Grade 12		
Table or Figure Number _____	Title _____	Page _____
Key Facts, Observations, or Patterns		

During the Discover step, you will move from observation—what we call *analysis*—to interpretation—making sense of facts and patterns you have observed in the data. By making meaning from the data, you naturally move up the ladder of inference. However, your goal should remain staying low on the ladder of inference. There are three key actions to interpretation during the Discover step.

1. **Summarize observations.** After systematically analyzing all data relevant to the question you defined, take some time to summarize your statements. It is important to summarize both patterns of strength and areas of concern.
2. **Celebrate successes.** Articulate what is working well and celebrate those strengths. Consider the factors that led to the successes, as they will help inform the actions you take to address your concerns.
3. **Prioritize challenges.** You will have likely had several areas of concern; however, some will be more pressing than others. Look over your areas of concern and come to a consensus on which ones are your highest priorities.

Discover: Summary of Analysis	
Strengths	Challenges
Priority Challenge	

Discover: Interpretation

1. Prioritize one of the synthesized problem statements above as a starting point.
2. Ask, “Why is this problem occurring?” Link hypothesis to earlier data analysis, as well as to professional experience and insight.
3. Use the answer to the first “Why?” to ask “Why?” again until you have completed five rounds or arrived at an answer that may be a root cause of the problem. Stop if you arrive at a cause that is outside the influence of the school. Record the final answer at the bottom of column one.
4. In column two, repeat the process to arrive at an alternative underlying cause for the problem. Record the final answer at the bottom of column two. Repeat additional times if desired.
5. Choose up to three potential specific student learning challenges. Record them, as well as the evidence or knowledge that led to the conclusion that this gap is a major contributor to the broad student learning challenge.

Five Whys: Root cause(s) of the priority problem	
What are the root causes or contributing factors to our priority problem?	
	Priority challenge:
	or
Why?	
Why?	
Why?	
Why?	
Why?	
	 
	Root cause (s) for problem:

Five Whys: Root cause(s) of the priority problem			
Priority challenge:			
	We see students specifically struggling with ... <i>(Note: This step may require additional analysis of classroom-level student performance data)</i>	Classroom-level factors that may be contributing to this specific student learning challenge. Teachers may or may not be ... <i>(One or more possible explanations)</i>	School-level factors that may be contributing to this specific student learning challenge. As a school, we may or may not be ... <i>(One or more possible explanations)</i>
		or	or
Why?			
Why?			
Why?			
Why?			
Why?			
	↓	↓	↓
	Learning level root cause:	Classroom-level root cause(s) the priority problem:	School-level root cause(s) for the priority problem:

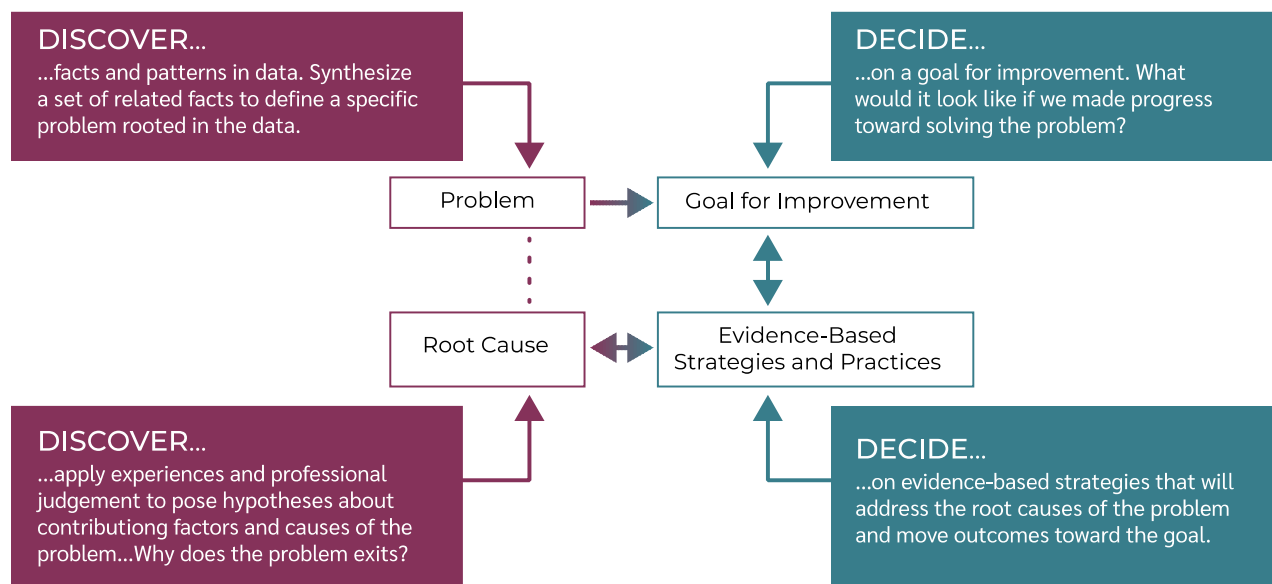
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		or	or
Why?			
Why?			
Why?			
Why?			
Why?			
	↓	↓	↓
	Learning level root cause:	Classroom-level root cause(s) for the priority problem:	School-level root cause(s) for the priority problem:

The 5 Ds process produces key ingredients for planning improvement efforts. During the DISCOVER step, you should have identified a priority challenge or problem. Working from your priority challenge, you worked to develop your understanding of the root cause(s) of the problem. One of the key decisions to make after identifying and prioritizing challenges is a goal for improvement. Data sources have helped you understand the nature and scope of the problem. To set a goal for improvement, you may use the level of performance detailed in your problem statement and describe what *better* looks like. Data sources similar to those used in identifying the priority challenge may be used in setting a SMART goal. See the example below.

Priority Challenge: According to fall screening data, 47% of 7th graders and 51% of 8th graders are reading at level 3 or above in the domain of informational text.

Goal for Improvement: By the winter administration of the reading screener, we will increase the proportion of 7th and 8th-grade students by 5% in each grade (from 47% to 52% for 7th grade and from 51% to 56% for 8th grade) who score at level 3 or above in informational text. The figure below shows how priority challenges and root causes are determined in the DISCOVER step and how goals and strategies are products of the DECIDE step.



5D's Process Check Questions

- ✓ **DEFINE:** Did you define a focus or question for inquiry that is relevant to your current situation, efforts, or priorities?
- ✓ **DIG/DISTILL:** Did you take inventory of the available data and evidence and select specific sources that help to inform your defined focus or questions? Were the data organized and displayed in a way that was conducive to answering your questions?
- ✓ **DISCOVER:** Did you make clear, factual, and specific observations from the selected data? Are your interpretations of the data reasonable and rooted in facts?
- ✓ **DECIDE:** Did your data and evidence inquiry result in any decisions? Were the decisions you made informed by the data and evidence?

	Priority Challenge	Root Cause	Goal for Improvement	Strategy and Practice
K-6 ELA				
7-12 ELA				
K-12 ELA				