See the System and Be Problem-Specific

Every system is perfectly designed to get exactly the results it gets. - Paul Batalden

A critical principle of any improvement model is to see the system that produces the current outcomes. Seeing the system is not a one-time event. Nor does it require one specific tool (although there are lots of fun tools to use). Rather, seeing the system is a way of thinking, visualizing, and understanding the system you are trying to improve.

Systems-thinking can help you avoid these three major missteps in improvement efforts:

Misstep 1: Blame the people. All too often, those designing improvements blame people's behavior as the problem, and not the environments that enabled those behaviors to happen. Erika Harano of Creative Reaction Lab experienced this in health care. To avoid this misstep, she encourages teams to include diverse perspectives and take a look at every part of the system - including our own role.

Misstep 2. Solutionitis. Too often, in a rush to solve problems quickly, solutions are thrown at a problem that actually don't match the needs. Often, these solutions add one more process, product, or policy to the existing system, rather than changing the system itself.

Misstep 3. Believe the barriers. There are so many perceived structures and rules that stand in the way of improvement. When we believe that all obstacles are immobile, improvement is limited from the beginning.

To avoid these missteps, we must seek to understand the big picture and resist the urge for quick solutions at scale. We must examine of our own role in the current system and how we might be part of the power structures that perpetuate the status quo. And, it is imperative that we include diverse perspectives from the community who have had different experiences in the system. After all:

By the very nature of systems, each of us only sees a part of the system. The problem is that the part we see is very compelling. - Peter Senge

SYSTEM is an interdependent group of processes (composed of structures, tools and materials, people, norms/policies, relationships, etc.) that join together to accomplish a specific purpose.

SYSTEMS CHANGE means making changes to one or more parts of the system and how the parts interact.

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Be Problem-Specific

If I had an hour to solve a problem I'd spend 55 minutes thinking about the problem and 5 minutes thinking about solutions. - Unknown

A systems perspective starts with understanding the problem you are trying to solve. There are an array of tools that can help understand different perspectives and possible causes of a problem. But before we get to the tools, what do we mean by a problem? And isn't that a negative way to approach improvement?

A problem means an issue or outcome that is negative - something that you want to improve. A good problem statement is critical to guide and focus the work as well as create a shared understanding of what we hope to improve.

"Possibly wrong and definitely incomplete."
This saying helps teams acknowledge that we never get it right the first try, or even the second or third try. Whether applied to a root cause analysis, improvement theory, or solution, possibly wrong and definitely incomplete can help a team get unstuck and bias towards action.

There is not a single "right way" to identify and study problems. Sometimes, groups are already charged with a specific problem to solve but need to understand the causes of the problem more deeply. Other times, groups come together to address a specific issue but have not identified the specific problem within that issue that they want to tackle. Whatever your context, it is critical to understand that identifying and understanding a problem does not mean applying a certain number of tools in a certain order. Rather, your team must embrace a systems perspective and use the tools best matched to your context and need. This includes:

Build an inclusive team

Put community values at the center of the process

Start with strengths

Don't assign blame; people themselves are not the problem

Gently put aside solutions until later

Give your team permission to be *possibly wrong and definitely incomplete*

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The remainder of this section includes some of the approaches and tools your team might use to identify a problem, understand it deeply, and see the system. These are not steps in a rigid process. Rather, they are tools and approaches to use in a combination that matches your needs and context.

- Start with strengths

- Examine local data + empathy data

- Identify a problem statement

- Conduct a root cause analysis

- Consult research

- Map your current system

- Prevent paralysis by analysis

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Start with Strengths
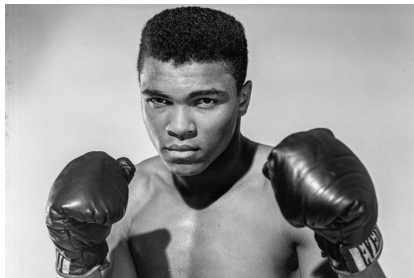
I am the greatest, I said that even before I knew I was. - Muhammad Ali
Many people are hardwired to analyze problems. But what happens when we start our improvement efforts with an analysis of *success*? Starting with the positive and identifying assets, rather than deficits, is important for team building and for setting the route of your improvement path. It helps team members feel valued and can provide a shared motivation and vision.

There are many ways to start with strengths. If you don't have a process already in place, one option is for your team to create a **Bright Spots Chart**.

How to Chart Bright Spots

1 Identify the issue you're working on. Is it student success? Attendance? Equity and inclusion? School environment? Professional learning? Look for bright spots related to that issue.

2 Bring together many voices who can offer varied perspectives *(see the section: How to Build an Inclusive Table)*

3 Ask each person to think about where they've seen or experienced bright spots and write each example on a separate post-it note. Their examples should:
- Focus on outcomes for the people in the system, not programs. For example, your bright spot would be, "Students in second grade had high attendance last year," and not, "We have a new family-notification attendance system."
- Use enough detail for an outsider to understand
- Consider any size of bright spot, from a system-wide bright spot to individuals in the system
- Include names only if your team agrees
- Include many indicators of bright spots, not just traditional things like test scores and graduation rates. Student health and well-being, strong relationships, family satisfaction, and so many more things that might indicate a bright spot is happening.

4 Ask people to share and post their bright spots.

5 Look for overlap, clusters, and repetition in the bright spots. You can do this informally, or give people stickers to label the change ideas with labels such as: most exciting; chance for biggest impact; easy to spread.

6 Discuss the Bright Spots Chart. Use questions such as:
- What do you notice?
- How does this map make you feel? Why?
- What makes you most excited?

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Document and save your bright spots chart. You can return to it at many times in your improvement process. For example, the chart might be a great place to look for change ideas - what is already happening in the system that you can test in a new context. The chart can also continue to serve as hope and motivation when things are rough.

7 If your team is already well into your improvement journey, you might identify one bright spot to immediately study through an inquiry process or a continuous improvement cycle.

Note: This exercise can extend into an entire approach to improvement called positive deviance. The model uses a strategic search to find and then learn from positive deviants - or outliers - in a system.

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Examine Local Data & Empathy Data

Historically educators have turned to data - such as school report cards, attendance records, graduation rates - to set improvement goals. Such data can expose inequities, create transparency, and help drive improvement. Most schools and districts already have protocols such as SRI's Data-Driven Dialogue, National School Reform Faculty's Examining Data protocol, or High Tech High's Digging into Data protocol.

But don't stop there. To go deeper, make sure you:

Focus on variation. An important improvement principle is to constantly examine the the variation in both outcomes and inputs. What do data show for students with different racial and ethnic backgrounds? Where are the bright spots in the data and what can we learn from them?

Recognize the limits of the data. For one thing, data are often limited by what they measure - and what they measure it not always what matters most. What other data can you bring to the table? Do you have data about students' relationships with adults and each other? About the school environment? About families? (For more on that topic, read this blog post).

Expand with empathy data. Analysis of local data only tell part of the story. What questions do the data raise about the root causes of the problem? How can you investigate those questions by collecting empathy data (see previous section for the what and how of collecting empathy data).

In this article about tackling a problem of low math achievement among African American Boys, the staff knew that looking at disaggregated math scores was not enough to understand what was going on behind the numbers. They employed an empathy approach to study the problem far beyond the numbers. As the principal said:

> "I need to talk to these students. I need to know what is going on that is preventing them from improving. Is it me? Is it something going on with them individually? Is it something they are missing?"

Not only did the staff talk to students, but they practiced the empathy approaches of observation and immersion. The principal ate lunch with the boys, played flag football at recess, and sat with them in classes. These empathy data uncovered issues that lay behind the numbers: issues of safety, boredom, and lack of materials where black boys felt seen or heard. It transformed their understanding of the problem and improved their solutions.

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Identify a Problem Statement

Your team will identify one problem statement before you begin to investigate the causes of that problem. There is not a single path to develop a problem statement. Some teams may identify a problem quickly and early and move on to a root cause analysis. Other teams may need to spend more time investigating local data, empathy data, and research before identifying a specific problem.

It is critical that diverse voices are included in the process in order to see the system from many perspectives. Remember that the *process* of creating a shared problem statement can be more important for your team than the problem statement itself. An open and safe space for discussion can surface different perspectives on what the most pressing problem actually is. An inclusive process requires a sincere consideration of all perspectives.

Consider these problem statements that teams identified at the beginning of their improvement process:

Students - especially students of color and students from other cultures - do not feel connected to or welcomed in the school community.

Most professional learning does not impact teacher practice.

Ten percent of students are chronically absent.

The majority of community college students in development math fail to acquire college-level math credit.

Thirty-five percent of new teachers leave our district in their first three years of teaching.

While diverse, all of these problem statements examples are:
- A statement, not a question
- Simple and short
- Negative (see page 2 for a discussion of negativity)
- Free of acronyms and jargon

When your team is considering various problems, ask the following questions:

Is the problem blame-free? A problem such as, "Kids don't care about coming to school," assumes that young people themselves are at fault. Make sure to employ strategies, norms, or discussions that can help keep the discussion focused on the *system* and not on the individuals.

Is the problem solution-free? A problem such as, "We don't have enough recess," assumes that the solution is recess. In this case, ask your team: what problem is recess trying to solve?

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Who is experiencing this problem? It is rare that a problem affects everyone in the same way. Who are we considering in our problem statement and why? Are we actively seeking to understand the problems of historically excluded groups?

Is the problem a reasonable size and level of complexity for our team to tackle? A problem that is too broad (for example, low graduation rates) might sound compelling, but in reality it may be overwhelming to tackle without narrowing it down further. On the other hand, a problem that is too narrow may limit your ability to see the larger system around the problem.

How do you know if the problem you've identified is a reasonable size and level of complexity? First of all, *you might not know right away*. In the classic improvement example of community college math, the team started with the larger problem of community college graduation rates. It was only through their root cause analysis of that problem that they decided to narrow their work to math. Their problem went from "graduation rates are low" to "few students in developmental math ever achieve college math credits."

It is also very important to *consider your group's size, resources, and sphere of influence*. A three-year statewide collective impact initiative might be able to address the issue of homelessness, for example. While a grade-level teacher team might tackle low math achievement - or even a sub-problem within the issue of low math achievement.

A final hint: Don't spend a lot of time debating the specific wording in your problem statement *if* there is a shared understanding of the problem. Instead, embrace *possibly wrong and definitely incomplete* and move on to a root cause analysis. If, however, a disagreement over language stems from different opinions about what the problem actually is, you'll want to step away from the language of crafting a statement and return to a discussion of the problem itself.

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Conduct a Root Cause Analysis

A root cause analysis means gaining deep understanding of the problem you want to solve and the reasons why that problem exists. The process is most effective when the entire community helps identify the root causes. Make sure to discuss or revisit your team's norms prior to this activity.

There are several tools that can be used to conduct a root cause analysis. It's not the tool that always matters, but how to choose and apply a tool that moves the team most deeply into understanding the problem. One root cause analysis tool is the fishbone diagram which we describe below. Another tool is called 5 Whys.

How to create fishbone diagram

1 Draw a fish with bones on chart paper. Here is an electronic Fishbone diagram template, although many use post-it notes and poster board.

2 Make sure everyone has a shared understanding of the problem statement. Then, write the problem statement in the head of the fish.

3 Individually brainstorm as many causes as you can that might contribute to the problem. The facilitator should model some examples and remind participants to:
- Avoid placing blame on individuals
- List one reason per post-it
- See the system from different points of view
- For big causes, ask "why" to get more specific
- Embrace "Yes and"… the goal is to generate lots of ideas, and not fixate on one

4 Share and categorize the post-it notes
- One person shares one cause and others cluster their similar ideas until you have exhausted the category
- Move to the next cause and repeat the process until all ideas have been posted
- As a group examine the "bones" that have been created on the first draft of the fishbone. What can be collapsed? Are there causes that aren't really causes? What needs to be broken apart? Is there anything missing?

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- Give each bone a short, negative description (e.g., "Principal leadership is insufficient" or "Textbooks are antiquated"). Labels should be descriptive enough that people outside your group can understand what they mean.

5 Examine importance and relevance by voting with *hearts* and *stars*. (optional)
- High Leverage: Put a heart by the factor, that if addressed, you think would have a significant impact on the problem.
- Practical: Put a star by the factor that is within your control, that your team could address with little effort.

Document, save, and return to your fishbone. Your fishbone is a type of system map and, as such, can change over time as your understanding of the system deepens. For example, you might read some research or talk to more people in the community who provide new information about causes of the problem. You might also return to the fishbone if you are creating a theory of change or when you are iterating change ideas.

Fishbone Examples
Learning to Improve, page 69
Equity Fishbone
High Tech High on participation in student groups

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Conduct Research

You have to do the research. If you don't know about something, then you ask the right people who do.

- Spike Lee

So far, our approach to understanding the problem and seeing the system has been strongly grounded in local context. That is, we look at local data, collect empathy data from people in the system, and provide our own ideas for the root causes of a problem.

At the same time, external research can play is an important role in all stages of an improvement process. Quality research can help your team:

- Create understanding and shared language around an issue before identifying a problem of practice
- Understand and broaden the root causes of a problem
- Inform your theory of improvement
- Inform and broaden the change ideas you consider
- Avoid or adapt change ideas that have failed elsewhere
- Confirm or challenge the team's perspective on an issue

In other words, turn to research early and as often as possible. Without an emphasis on the importance of research from the beginning, experience shows that it will often fall to the side, increasing the changes of reinventing the wheel or "best guessing." On the other hand, watch out for solutionitis (copying a research-based idea without considering context) during any research review. And don't get stuck in the research space for so long that you jeopardize your team's momentum.

When you look at research, consider:

Is it research? There are many articles in education that summarize opinions or experiences but aren't actually research. Those articles can play a role in your investigation, but make sure your team is clear about the difference between research and other kinds of information.

Amount of research. Some questions or topic areas do not have much research behind them or the research that is there is not aligned with what we need. On the other hand, sometimes the amount of research can be overwhelming and teams need help narrowing the focus or identifying where to turn (see below).

Source. Who conducted the research? With whom? Who is making the meaning of the results? Who is not?

Rigor and methodology. Did the researchers use a rigorous design like a randomized control trial? Or a case study approach with two participants? What are the flaws in the methodology? In what ways is it incomplete? Consider these issues when deciding how much trust to place in the study's findings.

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Context. Who participated in the research? Who didn't? When? Where? How are those answers similar to or different from our community? What can we still learn?

Examining all of the above considerations can lead teams to simply give up on research. You might hear, "That doesn't apply to us because [we're smaller, we're bigger, those aren't our students, we're just different]." Or, "That study is too old/big/small." How can you help your team shift their perspective through questions such as, "How is our context different? What can we still learn? What different assumptions or questions would we need to ask in our own context?"

Research can also be hard to find and time-consuming to read and digest, especially since our current systems are not built to adequately support the examination and application of research. Often, a research review is left up to one person in the system, or one hour of one meeting, or nothing at all. You may need to study your system to understand how it currently works and where you can change the how, when, where, and who of research.

To make research more accessible and/or digestible for your team consider these strategies:

1. Invite a content expert or two to be part of your team and represent the research

2. Provide tips for reading research like these

3. Curate readings that are less difficult to read and/or not as lengthy. For example, often there are summaries of a body of research that are presented in more user-friendly language. (For example, these Practice Guides from the Institute of Education Sciences.)

4. Digest the information for your team by providing summaries

5. Provide reading lesson-designs (like jigsaws, highlighting protocols, summarizing main ideas, etc.) or "in-class" reading time so team members can talk about what they read or digest it with other people and their understandings can be formatively assessed; etc.

Hints for finding research:

1. Understand why you are looking for information. Are you finding information to start a conversation? Looking for an overview of a topic area? Trying to design the details of a program? The *why* of your search will help identify the types of publications and types of studies that you need.

2. Be specific about what you are looking for. "Mentoring," or "math instruction" or "is school reform effective" are big asks of a search engine. How could you be more specific? What do you want to know about that topic? What is your question?

3. Limit your search. Consider limiting your search to only the past 5-10 years. Include terms in your search such as names of well-known researchers in that field. Consider limiting your search to only peer-reviewed journals. Start by looking for a meta-analysis.

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4. Start smart. A general google search can yield good results, but can also yield too many irrelevant hits. Try starting with one of the following:

- What Works Clearinghouse http://ies.ed.gov/ncee/wwc/
- ERIC http://eric.ed.gov/
- Google scholar http://scholar.google.com/
- The web site of a well-known researcher or research institution (e.g., Harvard, Stanford, Council of Great City Schools, etc.)
- Find What Works (about specific programs) http://ies.ed.gov/ncee/wwc/findwhatworks.aspx
- The free service at ask-a-REL https://ies.ed.gov/ncee/edlabs/regions/northwest/askarel/
- Reference lists from key article(s)

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Map Your System

A map does not just chart, it unlocks and formulates meaning; it forms bridges between here and there, between disparate ideas that we didn't know were previously connected. -Reif Larsen
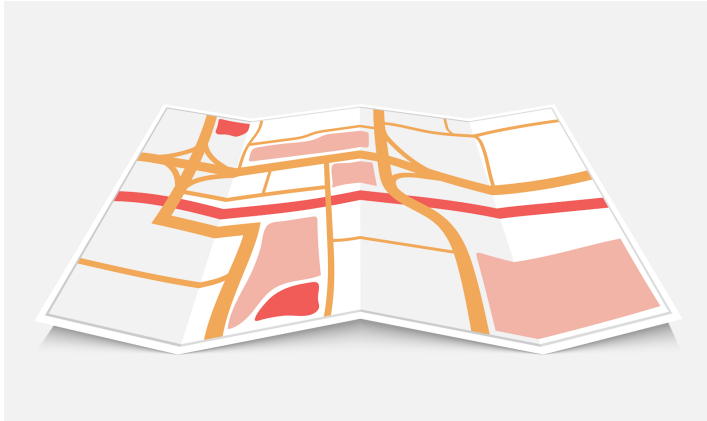
Think about a small, common activity in your life. Let's say, making toast. It seems fairly straightforward, doesn't it? But let's say you want your family to have better, faster, healthier toast. You could throw out an idea like "buy healthier bread" and, sure enough, you might see some improvement. But to truly meet your goal of better, faster, healthier toast you need to see all the places in your toast process where you might make a change: the shopping, the storage, the tools, the steps in the process. What's more, you need to understand what is most important to your family members about toast, rather than assuming your ideas are best. By mapping your toast process, you can see all the parts of the system, the way they are interconnected, and where the most important improvements might take place. (Check out toast-mapping activities on http://www.drawtoast.com/.)

While we are all working in systems much more complex than toast, the same mantra applies: **See the system**. System mapping can help you:

- See all the parts of the system - not just the people in the system - and how they connect. This helps avoid the "work harder and longer" solution
- Develop a shared understanding of the system among team members
- Expand each person's understanding of how the system works by inviting diverse voices to share their view of how the system works
- Identify specific parts of the system that are working well and those that might provide a great opportunity for change
- Identify potential change ideas
- Narrow down your focus

As you think about mapping the system, keep in mind:

Know your why. Mapping should not be done for the sake of mapping. Why are you system mapping? How does mapping connect to your approach and your other activities?

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Multiple perspectives are critical. What values and perspectives do people bring to this process? Are there people engaged with different viewpoints? In most mapping exercises, there should be disagreement and discussion, not straightforward drawing.

There are many types of maps. There are many different types of maps: journey maps, process maps, swimlane maps, resource maps, social networking maps, and more. There are even maps that don't exist but you'll invent to match your why.

It's not about the product. *Process* is often just as important as the final product. Healthy discussion and sharing among team members is critical. Think of the African proverb: *If you wish to go fast, go alone. If you wish to go far, go together.*

Below are some diverse examples of system maps. They range from simple pencil and paper sketches to system representations with fancy graphic design. The look of the map doesn't matter; it is the purpose the map serves. As you look at the examples by following the links below, **focus on the *why*** behind the maps.

Process map This math teacher wanted to improve how students revise their work on quizzes. He mapped what usually happened after he handed back quizzes with grades and used the map to identify where he might try to change the process.

Journey map This Smithsonian journey map - complete with fancy graphics - illustrates everything that goes into a visitor's experience at the Smithsonian. It was created in order to understand the current visitor's experience before tackling improvements across the entire system.

Resource map This simple pencil and paper map illustrates the support/professional learning a first-year teacher receives. The team was trying to make explicit what types of supports/professional learning were currently offered to teachers to see if they could find gaps in the system or questions to ask teachers.

Role map This beehive visualization was a team's starting point for systems thinking. It was one team's response to the question, "what are the most important parts of your school district system and how do they relate to one another." Other teams created different visual maps and the group compared their maps to each other and to the existing district map.

Social network map These maps show how the people in the system interact with one another. Both examples were part of an effort to understand roles and information flow.
There are other types of maps, too. What's your purpose?

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Prevent Paralysis by Analysis (a.k.a. Bias Toward Action)

Too much analysis can doom the effort. - Dan Heath, <u>Switch</u>

To see the system and be problem-specific are incredibly important to the ultimate success of your improvement efforts. But they can also lead to paralysis by analysis; getting stuck in a perpetual need to understand more details before taking action.

Instead of viewing improvement as a step-by-step process where one thing must be completed before the next can start, think about overlapping entry and action points. In other words, you can **bias towards action** when the opportunity presents itself. For example:

When a team of educators set out to understand chronic absenteeism, empathy data highlighted how stressful it was for students to re-enter classrooms after an absence. Classroom teachers immediately implemented and tested small change ideas related to how they welcomed students back to class and what they expected in terms of make-up work. This happened while the design team continued to study the problem and the system. Their change ideas weren't the only changes necessary to solve the problem, but they also didn't have to wait to try them out.

The tension between bias towards action and be problem-specific is eased when your early actions:

- Start small. Not big. Small.
- Collect data about whether the change was an improvement
- Are responsive to what you understand about the problem
- Are not a result of solutionitis
- Embrace the improvement mantra: possibly wrong and definitely incomplete
- Allow investigation of the problem and system to continue

If the criteria about are there, go for it. Try it. Encourage it. As you continue to more deeply understand your problem and the system that surrounds it.

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