Networked Improvement Community
FOR STUDENTS WITH DISABILITIES

Marshall Street

NIC Playbook Fall 2022

Our Aim: By June 15, 2023 each CMO in the network has achieved dramatic gains in the learning experiences, environment, and outcomes for Black and Latinx students with disabilities experiencing poverty.

▸ **Written For:** All Pilot Community Members

Marshall Street

Table of Contents

Purpose Statement

This Playbook provides the Networked Improvement Community an informative set of tools, examples, and best practices to learn and enact Continuous Improvement in the context of education. This document can be used to understand what each component is and why it matters with step-by-step processes, examples, and considerations throughout.

The principles and tools are intended to be broadly applicable to different types and sizes of improvement projects in various contexts. These resources are designed to build the capacity of Improvement Teams to create positive long-lasting change, holding the experience, environment, and outcomes of students and teachers at the center of the approach.

Overview

I. Whole System of Continuous Improvement 3

Improvement Tools

II. Problem Statement 4
III. Aim 9
IV. Driver Diagram 13
V. Revising the Driver Diagram 17
VI. Change Ideas 25
VII. System of Measures 28
VIII. Plan-Do-Study-Act (PDSA) 34

Second print edition, Fall 2022.

Building the improvement playbook:

Overview

▸ What it is: At its core, **Continuous Improvement (CI)** is problem-solving. It is a rigorous process predicated on the belief that every problem exists within a system. Systems are the interdependent set of elements in the context, including people, processes and structures. If there is a problem, the system is designed to produce it. Thus, we may examine the system, locate the problem, and continuously improve the whole.

▸ Why it matters: When applied in education, **CI** ensures that groups and individuals most marginalized by the system receive attention and support. In doing so, we work towards a more equitable education system for everyone.

Overview of the Continuous Improvement Process

The tools of CI can be used in any field. In education, CI is used to to increase **equity**, **effectiveness**, and **efficiency** in schools in service of students and educators.

01 Problem Statement

DEFINE THE PROBLEM. *What specifically is the problem we are trying to solve?* • Gather **Data** with key stakeholders and engage diverse voices in the process. • Avoid solutions. • Understand variation in outcomes as the core issue to address. • Define the problem from the perspective of those experiencing it. • Conduct **Root Cause Analyses** to visualize the system producing current outcomes. • Precisely articulate the Problem Statement.

02 Aim

CRAFT AIM STATEMENTS TO GUIDE AND MOTIVATE THE IMPROVEMENT. *What do we want to improve?* • Generate consensus to galvanize team commitment and enroll the community around a specific Aim. • Specify how much, by when, and for whom. • *How will we track progress towards the Aim?* Identify outcome measures and collect and review data to understand baselines and set targets.

03 Driver Diagram

DEVELOP A WORKING THEORY OF IMPROVEMENT. *What specifically are we trying to accomplish?* Build a **Driver Diagram** to visualize the theory of action. • **Primary Drivers:** What needs to change to reach the Aim? • **Secondary Drivers:** Where in the system can we make change? • **Change Ideas:** How specifically will we target change for improvement?

04 Change Idea

PLAN CHANGES ACROSS THE SYSTEM. *What change might we make and why?* • Implement changes at various levels of the system (classroom, school, network) • *How will the change happen?* • Consider changes of different size and scope. • *How will we know if this change is an improvement?* • Establish measures to evaluate the impact of changes.

05 Measurement

BUILD A MEASUREMENT SYSTEM. *How will we know that a change is actually an improvement?* • Develop a **Measurement tree** to visualize how the system is performing. • Leading and lagging **Outcome Measures** track overall progress toward the Aim. • **Primary Driver Measures** act as early indicators of progress. • **Process Measures** show whether changes are performing with quality and reliability. • **Balancing Measures** display unintended consequences. • Make a plan to collect data frequently.

06 Plan-Do-Study-Act

CONDUCT PDSA CYCLES TO TEST CHANGES. *What do we need to learn to improve? Learn fast, fail fast, improve quickly.* • Learn how to make change happen reliably across contexts. Turn ideas into action, and action into learning. • PDSA Cycles are specific tests of change that enable fast learning at low cost before implementing at scale. • Plan PDSA Ramps to ensure tests are sequenced to most effectively work towards the Aim.

References

• *The Six Core Principles of Improvement*. Carnegie Foundation for the Advancement of Teaching. https://www.carnegiefoundation.org/our-ideas/six-core-principles-improvement/.

Building the improvement playbook:

Problem Statement

▸ **What it is:** A **Problem Statement** is a single sentence that clearly defines a systemic problem experienced by students. In education, these problems highlight the inequitable experiences and outcomes for a student population often positioned furthest from opportunity. Problem Statements explicitly state failures and gaps between the current reality and the desired future. They are derived from relevant data telling a comprehensive story of how environments and experiences have directly impacted students, families, communities and the educators within the schools that serve them.

▸ **Why it matters:** Carefully considering the problem to solve can help teams avoid replicating those historical inequities built into education. A team that ensures that they are solving the "right" problem by unpacking it and collecting data and information wastes less time, effort, and will in the long run be more likely to see improvement in experiences and outcomes. Organizing and aligning teams on a specific problem focuses improvement efforts directly on both the technical and adaptive conditions of those experiencing it.

▸ **In This Guide:** Process, Examples and Checklist, Tools, References

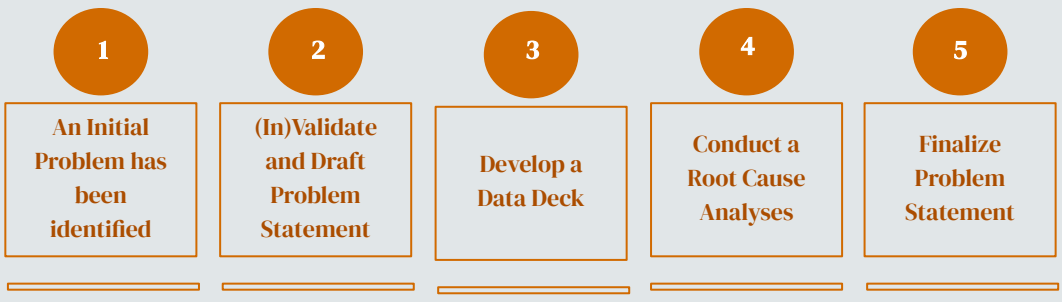
Overview

Overview Creating a Problem Statement is an initial step in launching an improvement process. Once a team has gathered, synthesized, and reviewed a set of relevant data, such as academic and cultural indicators, key stakeholders come together to define a shared understanding of the problem, leading to the development of goals and possible solutions. When approaching Problem Statements, consider the following key principles:

Every system is perfectly designed to get the results that it gets.

- Carefully **locate** your problem within the larger system, inclusive of the practices, processes, structures, policies, attitudes, norms, culture, and the physical environment in which it resides.
- Tease out the **interconnected factors** contributing to the problem.
- **Define** the problem from the perspective of those experiencing it.

Problem Statements should be grounded in research and analysis to answer the question, *what specifically is the problem we are trying to solve?* To better understand a given system and prioritize addressing the problem it is producing, a variety of steps are employed:



Process

5 Steps for Identifying a Problem Statement

Process	Example
Step 1: An initial problem has been identified Indications can come from a variety of places, sources, or personnel, including but not limited to: • School team meetings • Coaching conversations • Data reviews • PLCs • Observations • Parent/family and teacher input • Network Representatives They often begin as a hunch, a noticing or a gut feeling that necessitates further investigation.	A school leader has consistently heard in coaching conversations with multiple Special Education teachers that students in Special Education are struggling to complete and pass assignments in their general education classes.
Step 2: (In)Validate and Draft Problem Statement Following the identification of the problem, it's important to understand the scale and scope of the problem. This process takes into consideration the different dimensions that are potentially creating the identified problem and can happen in a variety of ways, including: • Reviewing student data • Comparing data from different subgroups of students • Speaking with additional stakeholders to understand multiple perspectives and how the problem is impacting them. • Conducting observations or walkthroughs Following the validation of the problem, write down the problem in a rough statement form. This is an opportunity to synthesize context on: • What the actual problem *might* be • What is known already about the problem • Who (population of stakeholders, primarily students) is directly impacted by the problem and how • Identify what may be causing it	The school leader has communicated with all Special Education teachers, some general education teachers and reviewed student grade book data to better understand the current problem. The school leader also conducted a variety of observations in both the general education and special education setting to take anecdotal notes on how students in special education are experiencing their classes. **Key Takeaways from Validation**: • The majority of students in Special Education are not passing English, Math, History, and Science courses. • English and Math teachers are providing some form of scaffolds during instruction • Based on conversations with History and Science teachers, teachers are struggling to incorporate some form of scaffolds or accommodations during instruction. **Draft Problem Statement:** The majority of students in Special Education are not passing their core classes (English, Math, Science, and History). English and Math teachers provide some form of a scaffold slightly more consistently. Science and History teachers are struggling to provide scaffolds and accommodations in general.

Process

Process for Identifying a Problem Statement

Process Steps	Example
Step 3: Develop a Data Deck and Review A Data Deck tells the coherent, data-grounded story of the current status of the learning environment, experience, and outcomes of students. It includes: • What the problem looks like **now** based on baseline data that describes that current state (e.g., MAP scores, end-of-year GPA, IEP goal progress), and • locates **where** the problem is occurring (organizational level, subject, grade, etc.) to best understand the current reality of the problem. Bring the team together to review all of the relevant data, check to see if everyone is seeing the problems in the same ways, gain support and motivation to move forward addressing the problem, and refine the problem statement.	**Examples of data collected:** • Data showing variation in outcomes or experiences over relevant groups *(student test scores on the same test, teacher survey data following PD)* • Implementation "fidelity" data *(% of lesson plans incorporating accommodations, teacher perceptions on lesson planning)* • Data showing what's happening reliably and with quality *(grade in a particular class, teacher assessment data, student culture survey data)*
Step 4: Conduct Root Cause Analyses Conduct one or more Root Cause Analyses (RCA) with the team on the particular problem identified in the validation process with those who identified and experience the problem and are committed to solving it. An RCA helps teams determine why a problem is occurring in the first place. RCAs provide a set of steps for teams to get to the core issues, articulating: • What's happening • Why it's happening • Entry points to reducing the likelihood of the problem recurring Steps 3 and 4 can be helpful in surfacing all of the smaller problems that will need to be solved along the way to the larger problem.	**Link to 5 Whys Example** *Root Cause - Network Level Teams (Academic team and Special Educations Department leads) are not co-designing PD on differentiated instruction.* **Link to Fishbone Example**

Tools for Root Cause Analysis to Support Problem Definition

Fishbone Diagram Protocol helps teams understand the multiple causes and effects of a problem from different perspectives to begin to understand where breakdowns are occurring.

5 Why Protocol presents a process and a tool for teams to identify underlying "root causes" of an observed problem by asking "why" five times.

Process Map Protocol helps unpack and visualize step-by-step processes to identify problematic sources of variation in specific steps, which can be used as a basis for designing better processes.

Process

Process for Identifying a Problem Statement

Process Steps	Example
Step 5: Finalize the Problem Statement Drawing upon targeted data and stakeholder input, precisely define the core problem to solve that is creating inequitable outcomes for students. When writing a Problem Statement there are clear guidelines for constructing the statement. The following points describe the must haves in a Problem Statement: • It is important to **remove any solutions** in the Problem Statement. This means there are no clear next steps identified. • Ensure that the **target population** is stated within the Problem Statement. These are the students directly impacted by the problem. • The Problem Statement **omits any blame or judgment** implicitly or explicitly on those affected. • The Problem Statement provides **baseline data** that describes the current state. • There is a high degree of team dedication and motivation to solve the problem. • The Problem Statement is articulated **clearly, concisely, and accurately** in one sentence. Problem with Problems Rubric (Equity Meets Design) Self-Assessment for generating a problem statement that is in service of solving an issue of equity.	**Revised Problem Statement:** 40% of students in Special Education with mild to moderate disabilities are not passing one or more of their core content classes (English, Math, History, and Science). **PROBLEM STATEMENT CHECKLIST** The Problem Statement: ❑ **Explicitly focuses** on a problem experienced by students ❑ **Has baseline data** that describes the current state ❑ **Is free from** any embedded solutions ❑ **Is motivating,** and there is organizational will for solving the problem ❑ **Is clear,** concise, and accurate

Pause and Reflect

Consider Problem Type
The type of problem(s) identified impacts how teams take action moving forward developing a Driver Diagram and Change Ideas to begin solve the problem.

Problem Types	Problems of Innovation	Problems of Implementation	Problems of Improvement	Problems of Scale
	"We don't know what to do. There is no existing system for it."	*"We know what to do but people aren't doing it."*	*"We have a system in place but there are high degrees of variation in outcomes."*	*"We know how to achieve reliable quality, and now we want to scale it."*
	The work is **discovery.**	The work is understanding and **removing barriers.**	The work is finding and **spreading best practices.**	The work is **change management.**

Examples

Additional Example Problem Statements

Example 1:

☑️ **Example**: Students with disabilities who enter our schools far below grade level in literacy and math on the NWEA MAP Test are 80% less likely to graduate on time than students who enter our schools 'below", 'on,' or 'above' grade level.

Rationale: This problem statement is **student centered** → Students far below grade level indicating target population. It is **equity focused** → students with disabilities graduating with their peers. Clearly articulates **baseline data** → 80% less likely to graduate which will lead to a outcome level measure. **Solutions** are not included allowing the team to generate change ideas. It provides **clarity and it is concise** in identifying who and what in one sentence → students with disabilities and graduation rates.

Example 2:

☒ **Non-Example**: Co-teachers need to utilize Zoom features to adapt instruction to an online environment.

Rationale: The non-example statement **offers a solution** → utilize Zoom features to adapt instruction. The problem statement does **not clearly and concisely** state what the actual problem. is There is **no baseline data** and it is **not student centered.**

☑️ **Revised Example**: Students with disabilities are engaging in online classes at 50% the rate of their peers.

Rationale: This problem statement is **student centered** → students with disabilities who are struggling to engage in the online and hybrid environment. It clearly articulates **baseline data** and is **equity focused** → 50% of students are engaging compared to their peers. **Solutions** are not included and provides a **clear and concise description** → who, what where, and is one sentence.

Example 3:

☒ **Non-Example**: Our schools needs to institute daily calls home to families of students who are absent.

Rationale: This problem statement is **not student centered**. It **includes a solution** → daily calls home. There is **no baseline data.**

☑️ **Revised Example:** 30% of students with disabilities are chronically absent as compared to their peers who are 10% chronically absent

Rationale: This problem statement is **student centered** and **equity focused**→ students with disabilities are chronically absent. It includes a **clear baseline** → 30% chronic absence. It does not include **solutions** and provides a **clear and concise description** → who is the target population, what is the problem, and is one sentence.

References

- Carnegie Foundation for the Advancement of Teaching. *Specific and Actionable Problem Statement.* (2015).
- Equity Meets Design. *Problem with Problems Rubric*. Equity Meets Design. https://courses.equitymeetsdesign.com/p/the-problem-with-problems.
- Piute County School district. *5-Whys Guide & Template*. Piute . https://www.piutek12.org/images/5_Whys_Worksheet.pdf.

Building the improvement playbook:

Aim Statement

▸ What it is: An **Aim Statement** is the ultimate desired outcome of an improvement effort. It is a specific, measurable answer to the core improvement question, *What are we trying to accomplish?* Every improvement effort requires an Aim that organizes the work of everyone involved. Aims are inspiring and ambitious, simply stated and highly specific about the problem being solved. Aim Statements **clearly define success** for the improvement effort by specifying:

- ❑ What will be improved?
- ❑ By how much?
- ❑ By when?
- ❑ For whom?

▸ Why it matters: Having an Aim Statement provides a 'north star' that guides and motivates collective effort. Having a common definition of success provides common purpose to those working towards it. Taking the time to craft and generate consensus around a well-defined Aim Statement galvanizes a team's commitment. It serves as an inspiring communication tool to get others into the work of solving the problem. An Aim that is a top-level organizational priority empowers teams and individuals to focus their efforts where it will have the greatest impact.

▸ In This Guide: Process, Examples, Checklist, Tools, and References

Overview

An Aim Statement explicitly names the **target population** for improvement efforts (defining "for whom"). Continuous Improvement (CI) is most powerfully used in service of students historically positioned furthest from opportunity, such as Students with Disabilities.

Taking a Targeted Universalism approach to CI allows solutions designed for the most vulnerable students to also improve the learning environment and outcomes for all. Aim Statements must be clearly communicated and consistently referenced amongst all stakeholders and appropriate for the time and resources dedicated to meeting it.

Defining the Aim is the most important task - everything falls from it and nothing happens without it.

Measures

Measures within an Aim Statement

Improvement teams must be able to know whether they are making progress towards an Aim and whether they have accomplished that Aim. Thus, measurement is critical when drafting an Aim Statement. **Outcome measures** are most often used to track overall progress towards an **Aim.**

- ❑ **Lagging measures** are output oriented and let teams know ***if*** the Aim has been achieved. They are easy to measure but hard to quickly influence *(e.g graduation rate, end-of-year grades, external assessments).* Lagging measures are reported infrequently and after-the-fact.
- ❑ **Leading measures** define inputs that inform whether a team is or is not on track to meeting the Aim *(e.g. increased performance on interim assessments* or *number/percentage of students moving in/out of bottom quintile from Fall --> Spring).* Leading measures are more predictive in nature and allow an organization to make adjustments based on results.

Examples

Example Aim Statements

Aim Statements are both precise and concise, capturing a single focus that is clear for all stakeholders working to achieve success. When crafting an Aim, it is crucial to capture the problem being addressed in language that does not place blame on individuals, but rather, on the system that produces those inequities. Frame the success of the improvement effort around actually making improvement for students who are furthest from opportunity.

Consider how using a **S.M.A.R.T.E. framework** provides clarity and focus to the following Aim Statement:

> *We will increase graduation rates from 56% to 90% by January 1, 2025 for students experiencing housing insecurity.*

- **S**pecific: Graduation rates will be improved
- **M**easureable: Answers *how much by when*
- **A**spirational but attainable: 90% is aspirational but attainable if broken down over the given time period (e.g. an average increase of 6% each year over 5 years)
- **R**elevant: Students experiencing housing insecurity is an important challenge to address
- **T**ime-bound: Targets growth within a specific timeframe of 5 years
- **E**quity-driven: Targets universal access to graduation within a specific student population

S.M.A.R.T.E Characteristics

Exemplar Aim Statements incorporate S.M.A.R.T.E. characteristics to provide clarity, focus, and motivation to accomplish an Aim:

- ❏ **Specific:** The statement is precise and concise about what the team hopes to achieve.
- ❏ **Measureable:** There are clear measures that inform whether or not the effort is on track to meeting the desired outcome.
- ❏ **Aspirational but attainable:** It is important enough to motivate without being so large it intimidates.
- ❏ **Relevant:** It is connected to the work the team already does.
- ❏ **Time-bound:** It should be a target for achieving within the lifetime of your improvement effort
- ❏ **Equity-driven:** It is primarily oriented to counteract effects of systemic oppression and injustice.

Consider this Example

> *By June 15, 2022, decrease the achievement gap between our students with disabilities and general education students by 50%.*

Upon an initial read, this seems like a specific (SWD and general education students), measureable (50%) and aspirational (achievement gap) desired outcome. However, this Aim Statement is problematic. Framing challenges by using broad terms like 'achievement gap' can too often locate the improvement effort on students as opposed to the systems (structures and processes) that created those results. Furthermore, if additional resources are allocated to improve outcomes for SWD and as a result, the outcomes for SWD increase while outcomes for Gen Ed students decrease, then it would be difficult to call this Aim a success. Also, if the gap is small, but overall outcomes are low, that is problematic. Revising the above Aim as written below reframes this desired outcome as something all key stakeholders can commit to and then celebrate when accomplished:

> *By June 15, 2023, we will increase the average end-of-year GPA of our Black and Latinx students with disabilities experiencing poverty by 50% (from 1.70 to 2.55) while maintaining the average GPA of our general education students.*

The revised Aim Statement makes the aspirational desired outcome more attainable by extending the deadline 1 year while still keeping it time-bound to a firm end date. It also specifically addresses equity gaps by focusing on *Black and Latinx students with disabilities experiencing poverty* as the target population. Accomplishing this Aim will result in improved outcomes for the target population while also improving systems that impact all students (Targeted Universalism). By including a baseline GPA metric of 1.70 and a target GPA goal of 2.55, the revised Aim is more specific and more measurable. Lastly, the revised Aim explicitly addresses *maintaining the average GPA of general education students* while working towards the desired outcome for the target population, thus ensuring both student groups thrive.

Dimensions

Aims, Problem Statements and Goal Statements

When defining Aim Statements, it is helpful to juxtapose them with Problem Statements and Goal Statements to develop a shared understanding among the team and in the Aim crafting process.

Aim Statement | Problem Statement

An Aim Statement is different from a Problem Statement because **the Aim Statement states the desired outcome of the improvement effort** while the **Problem Statement defines the systemic issue that needs to be addressed or changed**.

Aim Statement | Goal Statements

All Aims are goals, but not all goals are Aims. An Aim Statement is very specific, as described above. **Aim Statements can motivate the creation of additional goal statements** to help clarify and break down how the team will achieve the Aim. Additional Goal Statements can help team members further define measures of improvement, set interim milestones, prioritize initial changes to pursue, and determine levels of support(s) that may be needed.

Remember, improvement science is an organic, non-linear process. A learning stance is critical to balance commitment towards the Aim while being open to how to best reach it. If we knew how to reach the Aim, we would have done it already.

Process

Creating an Aim Statement

Step 1: Assemble a Team Based upon the problem being addressed, gather a team that is representative of individuals who are closest to the problem and will be supported and empowered to solve the problem. Ensure the team has defined shared norms and agreements for participation. Make sure everyone on the improvement team has a common understanding of the critical terms and definitions the team will be using.

Step 2: Ground in the Problem & Review Data Review the Problem Statement and outcome-level baseline data to get a clear understanding of current performance. Examine and discuss example Aims and non-example Aims (see page 2) in order to align the team's thinking around the characteristics of a S.M.A.R.T.E. Aim Statement. To get started, ground in equity by asking: *Whose needs aren't we serving as well as we could yet, and why?* From there, the team can begin to define the desired outcome. Crafting an Aim should be a learning process and there should not be an expectation of "getting it right" the first time.

Step 3: Draft the Aim When beginning to draft an Aim Statement, return to the question *What are we trying to accomplish?* Keep in mind that the Aim is not set in stone at this point and can be updated and refined as it is stress-tested (Step 4). Consider using the following sentence frame to get started:

> *By June 15, 2023, (**Name of Organization**) will [**increase / decrease**] ____ (**focus area for improvement project**) for **targeted population related to general population**) ____ from (**baseline data**) ____ to (**measurable outcome**).*

Step 4: Check for Equity It is important to stress-test the Aim by eliciting feedback from the improvement team (as well as additional stakeholders) to answer the following questions:

- *Is the Aim Statement captured in asset or deficit-based framing?*
- *If this Aim is accomplished, what changes would we expect to see in our systems, structures, and processes?*
- *What would the impact of reaching this Aim mean for the target population?*

Determine how to allocate the necessary people and resources needed to accomplish the Aim. Return to the Aim Statement to ensure the equity imperative for why this Aim matters to stakeholders is clear and agreed upon.

- *How can the Aim be recalibrated to ensure the most marginalized students are at the center?*

Define the measures that will inform whether the team *is or is not* on track to meeting the desired outcome.

AIM STATEMENT CHECKLIST

The Aim Statement is:

- ❑ **Highly specific**, clear & concise about the problem being solved
- ❑ **Measurable**
- ❑ **Aspirational** yet still achievable
- ❑ **Relevant** to what the team is already doing
- ❑ **Time-specific**
- ❑ **Equity-driven**

Step 5: Enroll the Community An Aim is the galvanizing force that brings people into the effort and catalyzes change management. Communicate the Aim Statement and why it matters at various meetings (Staff PD, Grade Level Meetings, PLCs, PTA Meetings, etc.) to enroll others into the effort. This is an opportunity for stakeholders to fully embrace the complexity of the issue and buy into collective responsibility to accomplish the Aim. A clear and compelling Aim Statement should motivate and inspire others to join the effort. It should be concise enough for any staff member in the faculty room to articulate or for a parent to recall after a PTA meeting. Inform stakeholders that Continuous Improvement is naturally iterative and agree to how those stakeholders will be involved and when progress will be reported.

Tools to Help Define an Aim Statement

Empathy Mapping Protocol

Empathy techniques allow teams to be more student centered in their thinking and see our work with a fresh set of eyes in order to use the insights to better meet your students' needs.

Drafting a S.M.A.R.T.E Aim Statement tool

Crafting an Aim Statement is an iterative process. Use this tool to co-create the Aim Statement with the Improvement Team.

Stakeholder Engagement Guide (Steps 1.3-1.7)

This tool provides strategies to engage critical stakeholders—including teachers, principals, district leaders and parents- to ensure buy-in, alignment and support for the improvement effort.

References

- Carnegie Foundation for the Advancement of Teaching. *Create an Aim Statement - Purpose, Specification*. https://carnegienetworks.zendesk.com/hc/en-us/articles/115001173967-Create-an-Aim-Statement-Purpose-Specification.
- Milder, S., & Lorr, B. (2018). (publication). (S. Courtney, J. Leopold, & L. LeFebvre, Eds.) *NYCDOE Improvement Science Handbook*. Retrieved from https://www.weteachnyc.org/resources/resource/nycdoe-improvement-science-handbook/.
- Shift. (2020). (publication). *Puget Sound Continuous Improvement Summit Series Workbook*. Retrieved from https://shift-website.s1.umbraco.io/media/sqdfio0a/psciss-workbook.pdf.

Building the improvement playbook:

Driver Diagram

▸ What it is: A **Driver Diagram** is a visual representation of an organization's working theory of improvement, providing a roadmap for the systemic changes required to accomplish the overall Aim. It is a living document that evolves as learning accumulates and changes are tested. Driver Diagrams focus improvement efforts on the parts of a system hypothesized to be most essential for reaching the Aim. A Driver Diagram represents the team's shared understanding of how to reach the Aim in common language that can be understood by all who interact with it.

▸ Why it matters: A Driver Diagram allows the team to tell their improvement story by explicitly stating what is being prioritized, who is being directly impacted, and how the Aim will be achieved. Ideally, it democratizes the change process, making what is often implicit and hidden from stakeholders explicit. A Driver Diagram helps the team stay focused on the improvement effort and helps them "place their bets" on the areas that they believe will make the greatest impact for students.

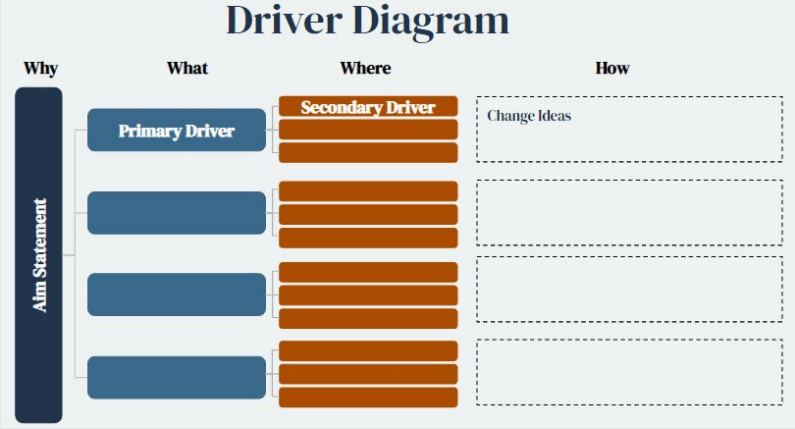
▸ In This Guide: Process, Examples and Checklist, Tools, References

Overview

Components of a Driver Diagram

The **Aim Statement** is the north star guiding the improvement effort. The Aim answers the first essential question of improvement: What specifically are we trying to accomplish?

Primary Drivers are the areas of focus that represent the team's hypotheses about **what** needs to change to reach the Aim. They are often phrased as "measurable states of the world that need to be true to reach the Aim".



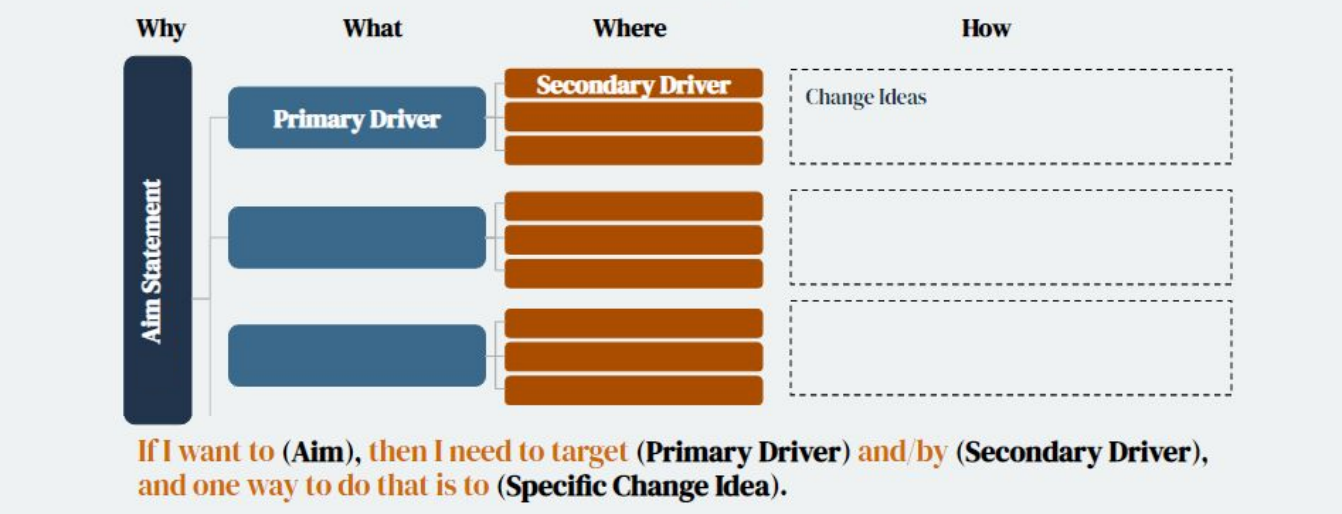
- Key components of Primary Drivers:
  - Usually between 3-5, similar in scope - they should be mutually exclusive and collectively exhaustive.
  - High Leverage - they represent critical components the Improvement Team has elevated as the most important conditions that need to be true in order to accomplish the Aim.

Secondary Drivers identify **where** a change in the system will create improvement in the Primary Driver, including structures, norms, practices and processes (e.g. department meetings, learning lab, hiring processes, student enrollment, family engagement, class placement, IEP meetings, coaching, grading practices, etc).

Change Ideas are the specific ideas the team will test to make changes to the Secondary Drivers. They should be specific and target the way the work is completed. They tell **how** the improvement will happen to test the working theory of improvement.

How to Read a Driver Diagram

The Driver Diagram is laid out in a way that tells the story of the team's working theory of improvement. It begins with an Aim Statement that is the central focus of the improvement effort. The Driver Diagram states **what** will change, **where** it will happen, and **how** to reach that Aim. The sentence frame at the bottom of the diagram (below) can be read as an "If/then statement" to show the relationship between the hypothesis of change ("If") and the Aim ("Then").



Reading **left to right**, the Driver Diagram translates a high-level improvement Aim, pointing to key drivers (leverage points) for reaching the Aim, which lead to specific changes that can be made. Reading the Driver Diagram from left to right tells the team **HOW** to make the change.

Example 1: If, by June 2023, we want to increase the average GPA of our Black and Latinx students with disabilities experiencing poverty by 50% while maintaining the GPA for all students (**Aim**), then we need to target high quality tiered (academic, behavior, social-emotional) instruction (**Primary Driver**) by ensuring educators are conducting regular 1:1 check-ins on student goals (**Secondary Driver**), and one way to do this is to provide educators with an implementation guide (**Change Idea**).

Example 2: If we want to decrease chronic absenteeism (missing more than 18 days per year) of Black and Latinx students with disabilities experiencing poverty from 25% to 10% while maintaining attendance rates for all students, by June 15, 2023 **(Aim)**, then we need to target creating trusting relationships within the school community and support a sense of belonging in safe learning environments **(Primary Driver)** by having all adults actively working to develop positive relationships with these students **(Secondary Driver)** and one way to do this is by providing culturally relevant lessons that appeal to student interests **(Change Idea)**.

Reading **right to left**, the Driver Diagram communicates hypothesized relationships between specific changes and the Aim the team plans to test. Reading from right to left tells the team **WHY** they are making the change.

Example 1: If educators are provided an implementation guide (**Change Idea**), then they will be able to conduct regular 1:1 check-ins on student goals (**Secondary Driver**), which will support high quality tiered (academic, behavior, social-emotional) instruction (**Primary Driver**), that will lead to an increased average GPA of our Black and Latinx students with disabilities experiencing poverty by 50% while maintaining the GPA for all students by June 2023 (**Aim**).

Example 2: If educators provide culturally relevant lessons that appeal to student interests **(Change Idea)**, then all adults will be actively developing positive relationships with students **(Secondary Driver)** which will support students having trusting relationships and having a sense of belonging in safe learning environments **(Primary Driver)** that will lead to a decrease in chronic absenteeism (missing more than 18 days per year) of our Black and Latinx students with disabilities experiencing poverty from 25% to 10% while maintaining attendance rates for all students, by June 15, 2023 **(Aim)**.

AIM	PRIMARY DRIVERS	SECONDARY DRIVERS	CHANGE IDEAS
If I want to ___,	then I need to focus on ___	by ___	and one way to do that is to ___.
What are we trying to accomplish?	What are the most high leverage areas?	Where in the system can we make changes?	How specifically do we make changes to structures, norms, processes, etc.?

Measures Within a Driver Diagram

Driver Diagrams require a set of measures to understand how those areas of focus are performing and provide feedback to the team for learning and decision-making. These measures illuminate what is working, for whom, under what conditions, as well as inform whether the work being done is improving the outcomes or experiences of the focus population or area targeted by the improvement process. There are different types of measures collected to inform performance of each level of the Driver Diagram and analyze progress throughout the whole system.

- **Outcome Measures** are used to measure the Aim with lagging measures reported infrequently and after-the-fact and leading measures more frequently to show progress along the way.
- **Driver Measures** help teams analyze performance of specific parts of the system to monitor progress and influence future changes, usually collected more frequently (e.g. monthly, quarterly).
- **Process Measures** are collected with greater frequency (e.g weekly) to understand if the implemented changes are happening, how they are working, and if they are leading to improvements.

Example:

Aim: By June 2023, we will increase the average GPA of our Black and Latinx students with disabilities experiencing poverty by 50% while maintaining the GPA for all students.

Outcome Measure (lagging): GPA at the end of the year for all students, disaggregated
Outcome Measure (leading): student grades, interim assessments

Primary Driver: SWD are engaged in high-quality tiered (academic, behavior, social-emotional) instruction.

Primary Driver Measures (leading): Course assessments, suspension rates, number of referrals, student survey data

Secondary Driver: Educators are conducting regular 1:1 check-ins to support students in goal setting.

Process Measures: Number of goals set, Number of goals on track, Number of goals completed; Number of students attending check-ins

Change Idea: Provide educators with an implementation guide for facilitating 1:1 check-ins.

Process Measures: Number of calls to students not attending; amount of time spent with each check-in, students not in 1:1 on-task rates

Tools to Help Create a Driver Diagram

Slide Template and Spreadsheet Template for Improvement Teams to create a working theory of improvement to solve a specific problem and reach an Aim.

Fishbone and Process Map tools and protocols for Root Cause Analysis to help identify key drivers and change ideas in a Driver Diagram..

Virtual Whiteboard (Google Drawing) provides a space to brainstorm how to solve a problem and achieve an Aim by eliciting Hypotheses and Assumptions that can be turned into Drivers.

Process

Creating a Driver Diagram

Step 1: Brainstorm ways to achieve the **Aim** *(note: the virtual whiteboard tool can be helpful).* Cluster the ideas into high level groups.

Step 2: Define headers that summarize the groups. Prioritize the headers and select 3-5 that are believed to have greatest impact and organizational will to achieve. These headers become the **Primary Drivers** and the clustered ideas become **Secondary Drivers**.

- **What** (will happen to reach the Aim) - **Primary Drivers**
- **Where** (the change will happen) - **Secondary Drivers**
- **How** (the change will happen) - **Change Ideas** (set these aside until Step 6)

Step 3: Edit the language of the drivers so they are descriptive, yet succinct:

- Describe what the factor is (not how to do it - these are the change ideas!).
- Frame the driver in the positive.
- Be descriptive without being verbose; for example, an adjective (timely, accurate, effective) with a noun.
- Ensure the drivers are in goal oriented language, the 'ideal state.'
- **Examples:**
  - Primary: Educators target high-quality tiered instruction
  - Secondary: Educators conduct regular 1:1 check-ins with students.

Step 4: Check the drivers for duplicates, clarity, and missing elements, then get team consensus.

Step 5: Generate **Change Ideas.** Change Ideas capture **how** the improvement will occur.

Step 6: Connect the components. Link the **why** to the **what** to **where** and **how** to show cause and effect relationships and to tell the story (hypothesis) of the work. Read the DD Right → Left and Left → Right to see if it makes logical sense and make any necessary updates.

Future Next Steps:

Step 7: Define an initial set of **Measures** to track progress and a system to collect and review the data regularly

Step 8: Revisit and make updates. The Driver Diagram is a living document and should evolve as learning occurs (at least quarterly).

Who should be involved:
People from various levels of the school network involved in implementation of changes, including site to central office level and other key stakeholders (e.g. families, community partners).

Prerequisite:

- ❑ Review **Problem Statements** and root cause analysis (e.g. Fishbone Diagrams, stakeholder interviews, etc.).
- ❑ Create an **Aim Statement** to guide the work.

DRIVER DIAGRAM CHECKLIST

The Driver Diagram has:

- ❑ An Aim that is SMARTE
- ❑ 3-5 Primary Drivers that represent what will be true
- ❑ Secondary Drivers that represent where change will occur in the system
- ❑ High impact Change Ideas that tell how change will happen

References

- Milder, S., & Lorr, B. (2018). (publication). (S. Courtney, J. Leopold, & L. LeFebvre, Eds.) NYCDOE Improvement Science Handbook. Retrieved from https://www.weteachnyc.org/resources/resource/nycdoe-improvement-science-handbook/.
- Shift. (2020). (publication). Puget Sound Continuous Improvement Summit Series Workbook. Retrieved from https://shift-website.s1.umbraco.io/media/sqdfio0a/psciss-workbook.pdf.
- Carnegie Foundation for the Advancement of Teaching. (2016) *Developing a Theory of Practice Improvement: Driver Diagrams* (Slides). Slideshare. Retrieved from https://www.slideshare.net/NextGenLC/carnegie-foundation-summit-on-improvement-in-education-driver-diagrams.

Building the Improvement Playbook:

Revising the Driver Diagram

▸ What it is: A **Driver Diagram** is a visual representation of an organization's working theory of improvement, providing a roadmap for the systemic changes required to accomplish its overall Aim. Ultimately, it maps out what we want to do, where in our system we want to do it, and how we're going to attempt to do it. The Driver Diagram should be revised regularly to represent the latest learnings, theory of action, and work of the Improvement Team.

▸ Why it matters: As an organization's improvement work evolves, so too should the Driver Diagram. It is a living document that allows Improvement Teams to communicate new learning, what has changed over time, and what teams are aiming to achieve. This is a critical step in engaging colleagues, peers, and the broader school community in the improvement effort.

▸ In This Guide: Process and Examples

Overview

Overview: The Driver Diagram is a tool that organizes a team's plan to reach their Aim (the ultimate desired outcome of an improvement effort). Therefore, it is important that it be revised periodically to reflect how the improvement journey evolves over time, including what is being prioritized, who is being directly impacted, and how the Aim will be achieved.

When refining the Driver Diagram, consider the following:

1. **WHETHER** the Improvement Team still **believes in the Aim**
   a. The Aim serves as a north star to direct the improvement efforts, so if it is no longer serving the need of students, change it. That change will no doubt create ripple effects across the Driver Diagram for revision.
2. **WHEN** might the Improvement Team revise the Driver Diagram
   a. Build in time to review and revise the Driver Diagram at regular intervals when data is available to review.
   b. Return to the Driver Diagram when something major is learned — for example, something is clearly showing a positive impact on students, or something is ready to spread to other contexts based on data.
   c. Revise the Driver Diagram when the Improvement Team learns something more about the research or best practices that could lead to a narrowing or shifting of focus.
3. **WHO** needs to be involved
   a. Improvement Team Members
   b. Testers
   c. School level stakeholders who know the system at the ground level
   d. Other stakeholders, including students, family or community

Why Revise the Driver Diagram? To

1. confirm belief in the Aim,
2. narrow the focus,
3. update the theory based on learning, or
4. communicate how the theory has evolved.



Steps to Revising the Driver Diagram

Step 1: Challenge the Theory of Improvement

- Start by identifying the Change Ideas the Improvement Team has worked on so far. Highlight or bold those changes.
    - Improvement Teams might discover Change Ideas are in the wrong place or need to be more specific.
    - Remove or iterate on those Change Ideas.
- Strikethrough Change Ideas and Drivers that have been tested and failed.
- Add in Change Ideas that the team is currently working on if they are not already listed.

Consider During Step 1:

- What else do we need to learn about the ideas that have been tested?
- Are we doing enough to move the Drivers that we are currently focused on? If not, what other change ideas do we need to add?

Step 2: Trim the Driver Diagram

- Using a different color, highlight Change Ideas not tested, and review and iterate Secondary Drivers.
    - Improvement Teams might find Secondary Drivers are similar to others and some need to be eliminated or reworded.
- Bold change ideas where focus should be placed next.
- Cross off Change Ideas that are not believed to make progress toward the Aim.

Consider During Step 2:

- Does the Improvement Team feel confident that these Change Ideas/Drivers are essential to reaching our Aim?
- Which of these Drivers or Change Ideas are high-leverage based on our content expertise? What is feasible for us to enact at this time?

Step 3: Reorganize the Driver Diagram

- Improvement Teams should start this step by thinking about the following questions:
    - What evidence validates or disproves the team's theory?
    - What has the team learned from content expertise and experience?
- Consolidate and move Drivers and Change Ideas to ensure alignment.
- Cross out or remove Drivers that will no longer be a focus.
- Add high leverage Drivers or Change Ideas essential to meet the Aim.
- Clarify the language, being specific to ensure the Driver Diagram clearly explains the theory of improvement.

Stop! Test the Theory Before Moving Forward to Step 4.

Do we believe that this Driver Diagram will accomplish our Aim?

Read the Driver Diagram from right to left and left to right to confirm belief in our theory.

Step 4: Prioritize the Driver Diagram

- Make a copy of the annotated (messy) version of the Driver Diagram.
- Clean up this version to have a synthesized copy (e.g., delete struck items, remove highlights).
- Confirm the Drivers are within the team's locus of control.
- Ask the Improvement Team:
  - "*What parts of our theory are most important to meeting our Aim?*"
  - *"What do we have the desire, will, and capacity to work on?"*
- Check in with those closest to the work, including team members who you might enroll to enact these changes or engage in the continuous improvement process.
- Using all the information, data, and expertise, identify the priorities to work on next, and **bold** them.

Keep in Mind:

Improvement Teams may want to focus on all of it, all at once. Even though the intention is right, that is not always the best approach in service of students and team. So, limit the team's selection of Change Ideas based on current capacity, skill, and research, as well as will and excitement.

Step 5: Share the Driver Diagram

- Cross-check the Driver Diagram with research and content expertise.
- Share the revised Driver Diagram with key stakeholders for feedback.
  - Repeat the steps above if necessary based on feedback.
- Add the revised Driver Diagram to your Project Charter (include version number or date).

Consider During Step 5:

- Who might we consult across the NIC (e.g., other CMOs, Content Experts) to confirm our theory makes sense, is rooted in science and content knowledge, and based on expertise and experience?

In Summary

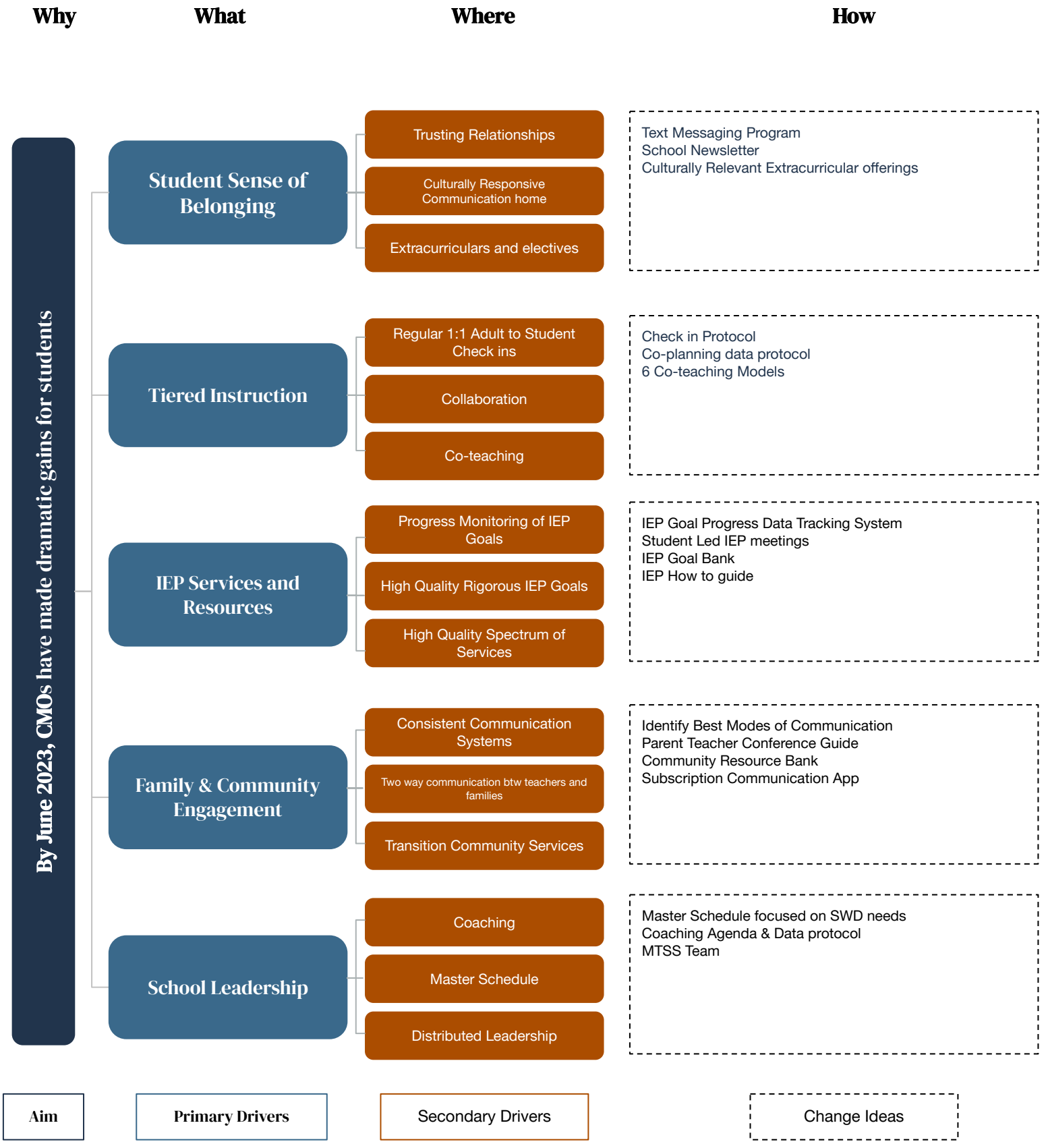
Revising the Driver Diagram is a process that takes time and effort by the entire Improvement Team. Teams may find that their initial Driver Diagrams are inaccurate or incomplete, and that's OK! Improvement efforts are a journey, and Driver Diagrams should reflect that journey. Always remember, the review and revision process is just as important as the initial creation of the Driver Diagram.

Tools for Refining a Driver Diagram

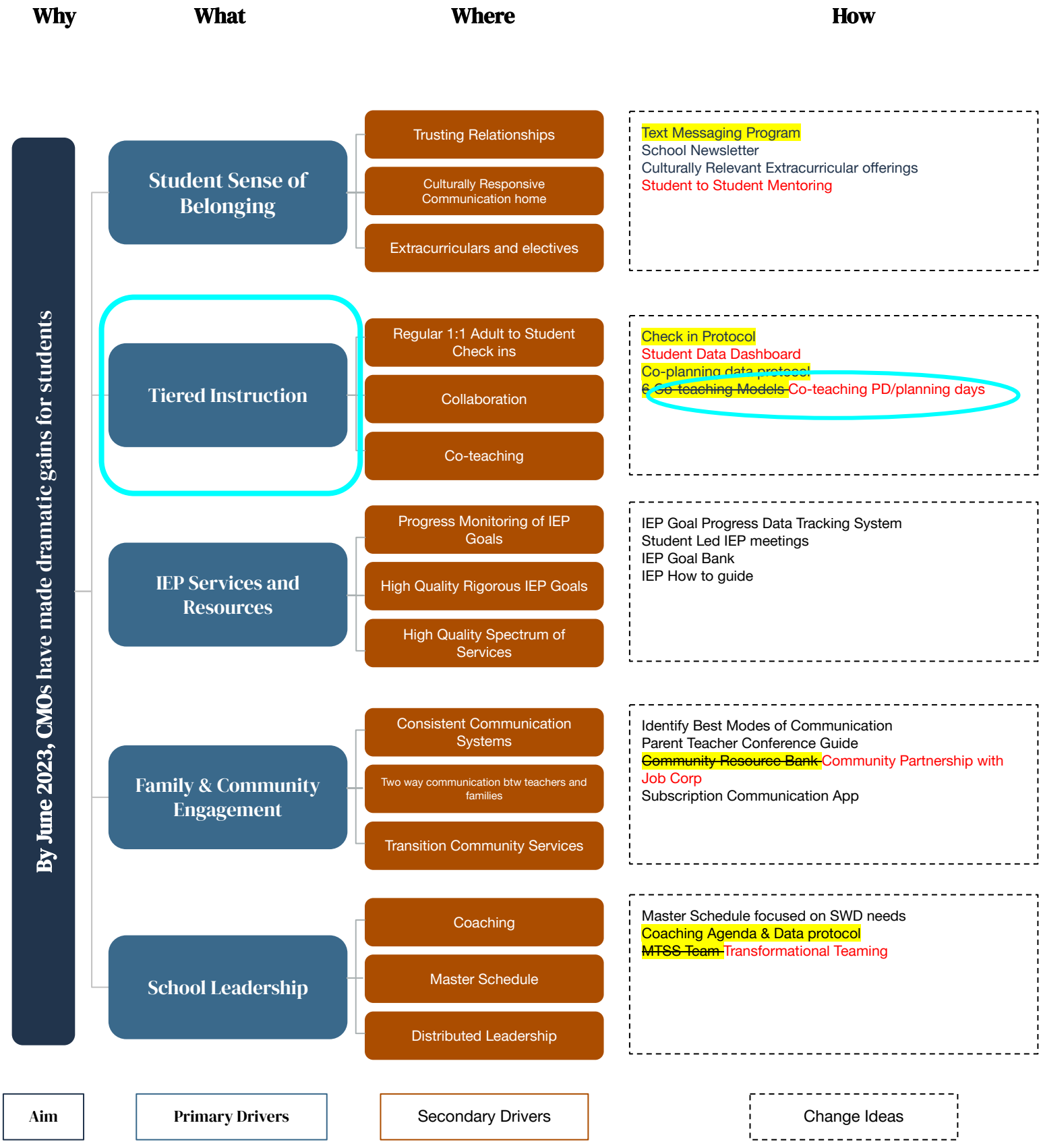
Refining our Change Process: The Driver Diagram - This session is designed to review the role of the Driver Diagram in Continuous Improvement and show how to iterate on and revise the Driver Diagram

STRIVE Prep's Revised Driver Diagram Template - CMO example of how they have structured and organized their Driver Diagram and measures.

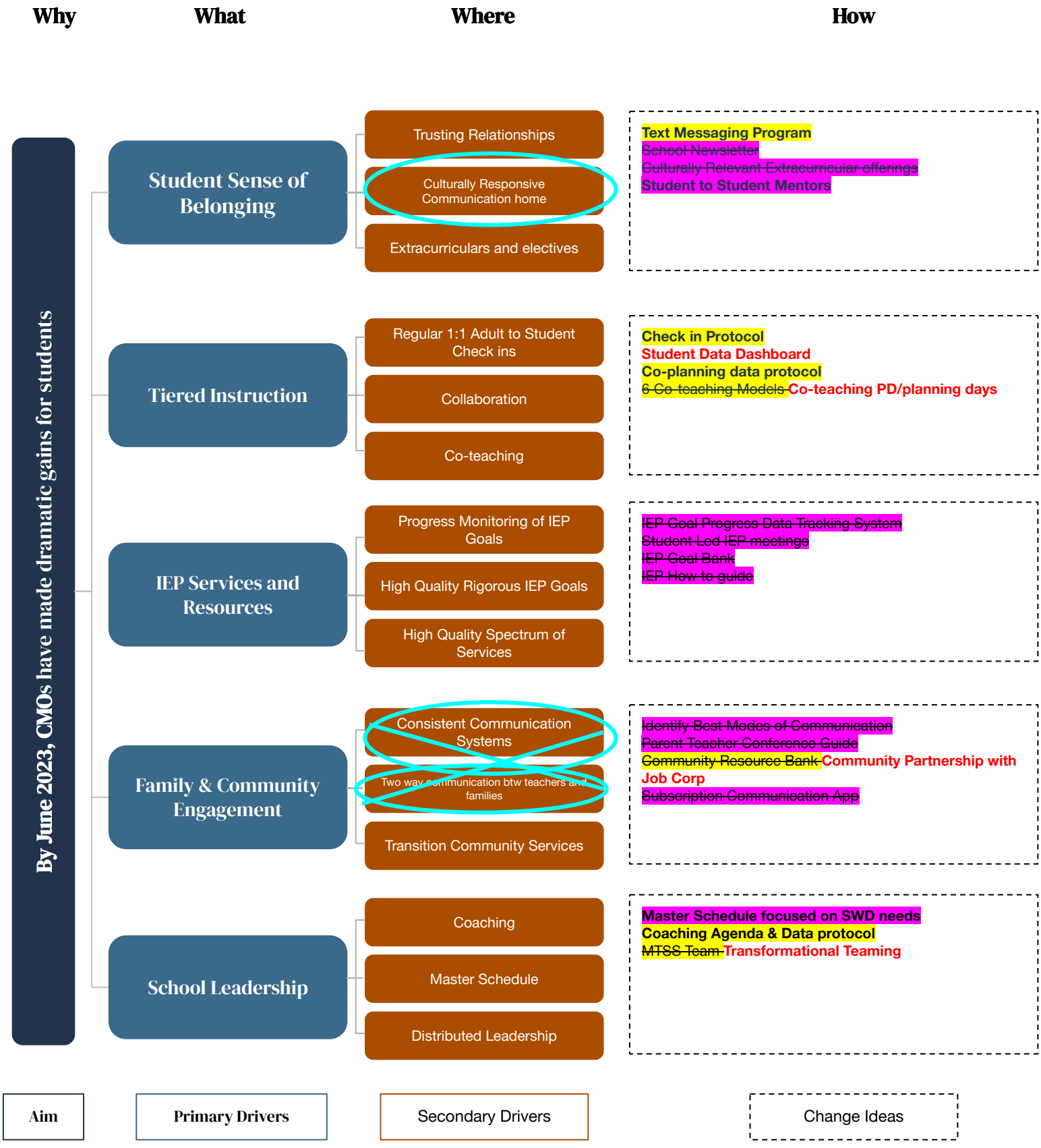
Example: Over the next pages, we highlight the steps using a template Driver Diagram.



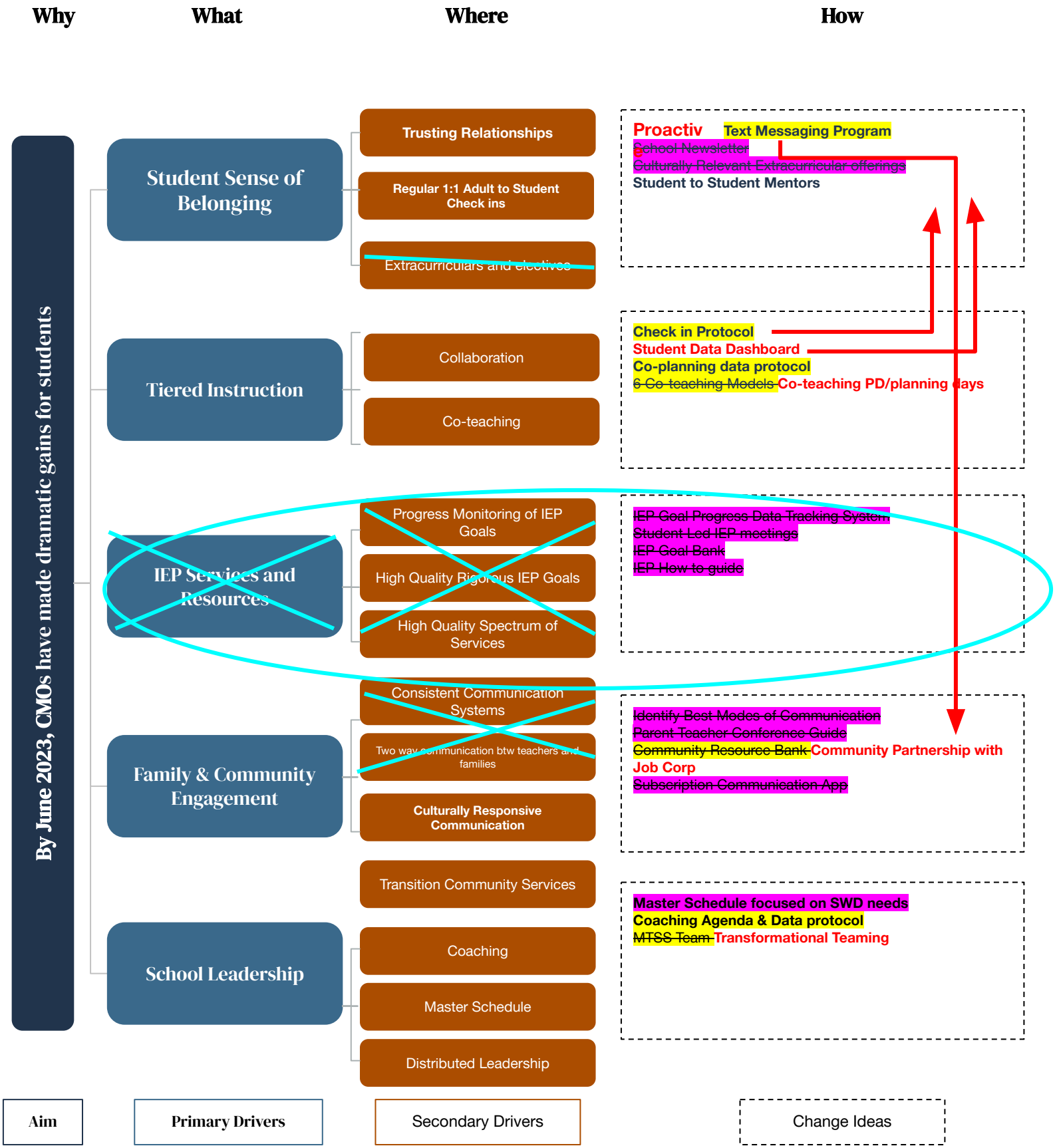
Step 1: Challenge the Theory of Improvement



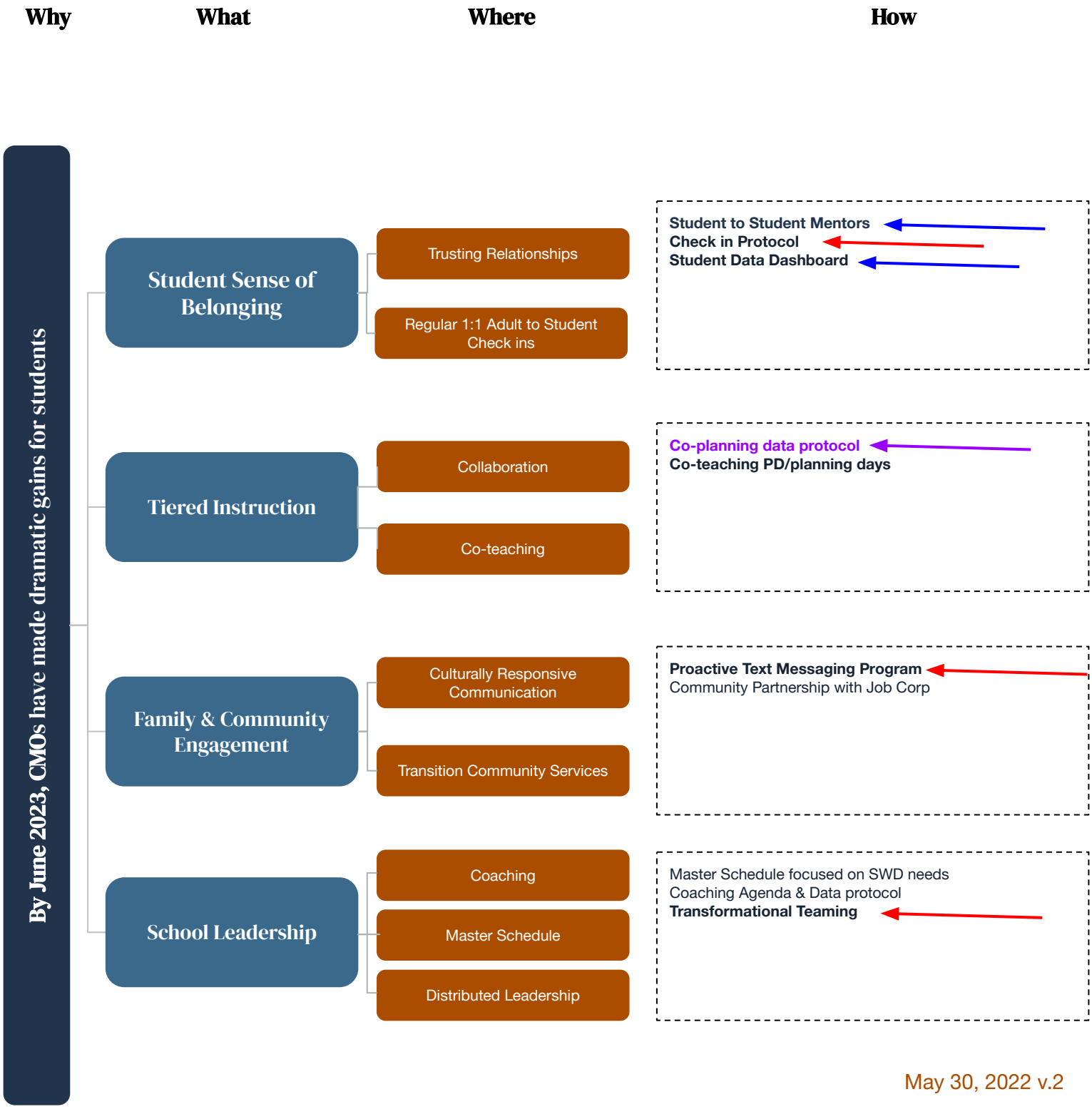
Step 2: Trim the Driver Diagram



Step 3: Reorganize the Driver Diagram



Step 4: Prioritize the Driver Diagram



Building the improvement playbook:

Change Ideas

▸ What it is: Change Ideas are the hypothesized actions, practices, and innovations generated by a team to reach their Aim. They tell ***how*** the improvement will happen by being specific about what will be done differently within the team's Driver Diagram. They are rigorously tested through Plan-Do-Study-Act (PDSA) cycles in order to determine if the idea does in fact improve the outcomes and experiences for the target group. Change Ideas can be:

- **I**mplemented at multiple levels of a system (e.g. classroom, school, network)
- **D**ifferent in size and scope
- **E**ntirely new changes to a system: new programs or structures
- **A**daptations of what currently exists within a system: small tweaks to something that is already working

▸ Why it matters: While not all changes lead to improvement, all improvement requires change. Testing Change Ideas is critical because they provide learning centered around *what is working, why, for whom and under what conditions.* Teams must orient to *learning* and consistently ask, "***what*** *might this change help us learn about* ***how*** *to solve the problem?"* Often in education reform, responses to large-scale and complex changes are implemented without knowing if they will actually work, thus reproducing inequitable outcomes. This leads to initiative fatigue and resistance to future change. Implementing Change Ideas at smaller scales equips teams to learn fast, fail fast, and improve quickly before network or school wide implementation.

▸ In This Guide: Process, Examples, Checklist, Tools, and References

Overview

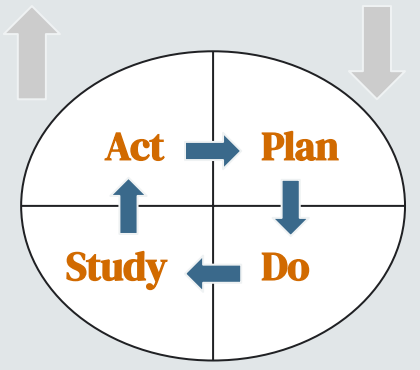
Change Ideas are the final component of a Driver Diagram.
They help teams bridge the gap between "what works in research" and **"how"** to make it work in practice.

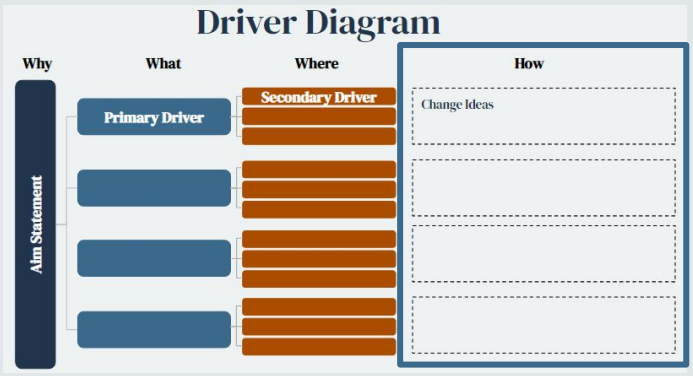
"If you want to truly understand something, try to change it."
- Kurt Lewis

What specifically are we trying to accomplish? ← Articulate your Problem Statement and Aim

What change might we make and why? ← Specific CHANGE IDEAS linked to a DRIVER DIAGRAM

How will we know that a change is an improvement? ← Establish Measures to evaluate impact of changes





Process for Identifying Change Ideas

Step 0: Enroll the Team

- Convene a small group of people who are working to solve the problem (e.g. representatives of teachers, coaches, school and network leaders) who will have a role in the development, testing and implementation of Change Ideas.
- Review the Problem Statement, Aim, and Primary and Secondary Drivers as represented in the Driver Diagram. Refer back to any root causes analyses completed because they likely will suggest promising Change Ideas.

Step 1: Individually Brainstorm Change Ideas for Each Driver

These can be "quick fixes" to existing systems ("low-hanging fruit") or entirely new programs/structures. Refer to the following questions to initiate the brainstorm:

- Where are the bright spots that are already working within *some* parts of the organization that can be built upon that could improve conditions and outcomes of the Drivers?
- What does the research suggest we should try?
- Where are things already happening reliably and with quality?
- What are innovative ideas that might improve the system?

Add all of those ideas to the Driver Diagram

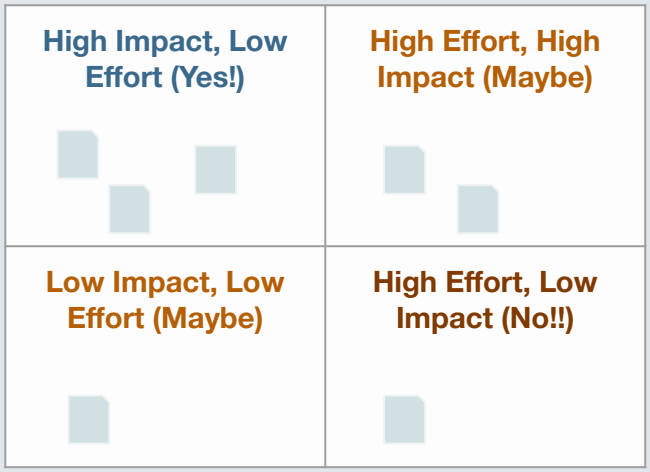
Tip! Use the following sentence stem to support teams in identifying Change Ideas:

> If I want to **(Aim)**, then I need to target **(Primary Driver)** and/by **(Secondary Driver)**, and one way to do that is to **(Specific Change Idea)**.

Step 2: Share Out

For each Primary Driver, have each person share their top 2-3 initial ideas and locate the Change Ideas on the quadrant (see in tools). Once ideas have been shared and posted on the quadrant, refer to the following questions to reorganize and cluster:

- How much effort (time, energy, resources) would it take for to test these ideas?
- If the idea is successful, what parts of the system might positively change or impact the classroom, department, school or network?



Pause for Equity

- Will these changes address issues of equity throughout the system (i.e. is it in service of those students furthest from opportunity and their needs)?
- Do these Change Ideas interrupt and address inequitable practices?

Step 3: Prioritize

- Using a consensus building process *(see Tools)*, identify at **least 1** Change Idea for each Primary Driver that is most impactful and that the team can move quickly on (generally those ideas in the top two quadrants).
- Highlight the prioritized Change Ideas on the Driver Diagram.
  - If there are Change Ideas that don't align to the team's existing drivers, this could suggest a new driver is needed.
  - If the team has a driver without any Change Ideas, the driver may not be essential to the current theory of improvement. Consider revising or removing the driver.

Process

Step 4: Stepping Back

Have each team member reflect on the completed Driver Diagram. Teams should utilize this time to identify starting points of implementing Change Ideas and opportunities for further learning. Answer the following questions:

1. What is being tested and at what scale and how does it align to the overarching Aim?
2. Does the team believe that the identified Change Ideas are likely to make substantive progress towards the Aim?
3. Why does the team believe these hypothesized Change Ideas will create more equitable outcomes?
4. What Change Idea is the team most motivated to work on?
5. What Change Ideas does the team worry might not work? Why?

Step 5: Plan Next Steps

Identify team members who are leading and monitoring the implementation of each identified Change Idea. This includes:

- Setting up a Plan-Do-Study-Act (PDSA) Cycle for each Change Ideas
- Developing complementary resources
- Identifying the dates of the PDSA cycle, and members to include and follow up with.

CHANGE IDEA CHECKLIST

Change Ideas:

- ❑ Can be clearly articulated and easily observed
- ❑ Measured by frequent data collection
- ❑ Are aligned to Primary and Secondary Drivers
- ❑ Interrupt inequitable outcomes
- ❑ Each Change Idea is assigned an "owner" with a clear next step.

Change Ideas equip teams to learn fast, fail fast, and improve quickly.

Future Steps for Ensuring Change Ideas Lead to Improvement

- Implement and monitor Change Ideas using PDSA cycles to ensure:
  - Change Ideas are being implemented reliability and with quality
  - Document learning and share it with stakeholders
- Measurement
  - Change Ideas are measured by Process Measures helping teams know if the changes are happening and actually leading to improvement in the Driver and Outcome Measures.
  - Process measures are collected frequently (daily or weekly) and help teams understand if and how the change is happening. **Examples may include:**

Change Idea: Teacher sends weekly email reminder for office hours.
Measurement: # of students attending office hours.

Change Idea: Develops student self efficacy by providing a visual representation of when students should ask questions
Measurement: Teacher keeps a tally of students needing help during a class period

Tools to Refine Change Ideas

Impact vs. Effort Quadrant Tool to prioritize and choose high leverage Change Ideas identified by the team.

Dot Voting for Simple Decision-Making to give participants voice in decision-making by identifying which Change Ideas the group perceives as most promising

SWOT Analysis to unpack and develop a specific Change Idea.

Change Idea Scorecard to assess and improve specific changes before testing them out.

References

- Bryk, A. S., Gomez, L. M., Grunow, A., & LeMahieu, P. G. (2017). *Learning to improve: how America's schools can get better at getting better*. Harvard Education Press.
- Langley, G. J., Moen, R. D., Nolan, K. M., Nolan, T. W., Norman, C. L., & Provost, L. P. (2009). *The Improvement Guide A Practical Approach to Enhancing Organizational Performance* (Second). Jossey-Bass.
- *Learning to Improve Glossary*. Carnegie Foundation for the Advancement of Teaching. https://www.carnegiefoundation.org/resources/learning-to-improve-glossary/#:~:text=Change%20Idea.in%20working%20theory%20of%20improvement.
- *Using Change Concepts for Improvement: IHI. Institute for Healthcare Improvement*. http://www.ihi.org/resources/Pages/Changes/UsingChangeConceptsforImprovement.aspx.
- Rennie Center Education Research & Policy. (2018). *Choosing a Strategy*. Retrieved from https://www.renniecenter.org/sites/default/files/Rennie%20Center_Choosing%20a%20Strategy%20Presentation.pdf.

Building the improvement playbook:
System of Measures

▸ What it is: A System of Measures for Improvement is inclusive of the full set of data points used by the Improvement Team to test their Driver Diagram, chart progress toward the Aim, and determine when a change is an improvement. A System of Measures is linked to a Driver Diagram to understand how well those key processes, structures and the changes being tested are working.

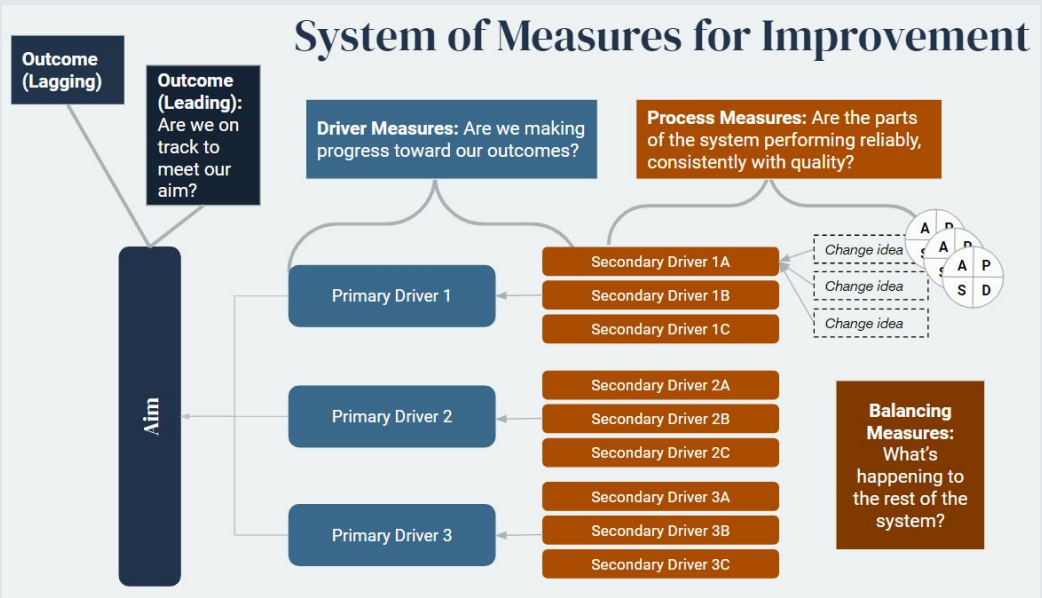
The data from the measures provides feedback for the team on both long-term outcomes and short-term processes. Measurement for Improvement flips the typical measurement paradigm of "what data do we have and what can we learn from it?" to "what do we need to learn and what data will we need to learn it?"

▸ Why it matters: Without measures in place, it is hard to know what is working for whom, and under what conditions. A System of Measures provides a comprehensive understanding of how the improvement effort is progressing toward achieving the overarching Aim. The factors contributing to problems and solutions in education are diverse. Thus, a comprehensive System of Measures must help teams to learn more about processes, norms, learning environments, perceptions, and inputs.

To achieve reliable quality at scale, teams must understand, address, and learn from variation, specifically to highlight inequities across groups. The system of measures is only as good as the faith that individuals within the school system have in the measures themselves. So, a System of Measures is important because it proactively and transparently defines success, progress, and improvement.

▸ In This Guide: Process, Examples and Checklist, Tools, References

Overview



A System of Measures helps answer the third question of Continuous Improvement:

How will we know that a change is actually an improvement?

Variation

Variation is the problem we study to understand what works, for whom, and under what conditions.

In Continuous Improvement, variation is *the* core problem to solve because the goal is quality results for all students in a target population. A detailed examination of variation helps teams to gain a deeper understanding of the systemic problems to be solved as well as what can be learned from those already experiencing a degree of success.

For example, a principal noticed that student course passage data showed that Students with Disabilities (SWD) are the subgroup struggling the most to pass their courses. The team identified a dimension (SWD) leading to variation against course passage rates, which for the most part, defines success within a secondary school system.

Next, the team studied the variation within the SWD population across other measures, and across various subgroups. In this case, survey results showed SWDs reported a high feeling of safety at school, but exhibited an especially low growth mindset. If so, some additional variation has been identified across groups: SWDs are passing fewer classes, as a group, than other student groups, and they are also reporting the lowest growth mindset across all other subgroups. Thus, the team began to adapt their Change Ideas to ensure that growth mindset was explicitly addressed to support SWD success.

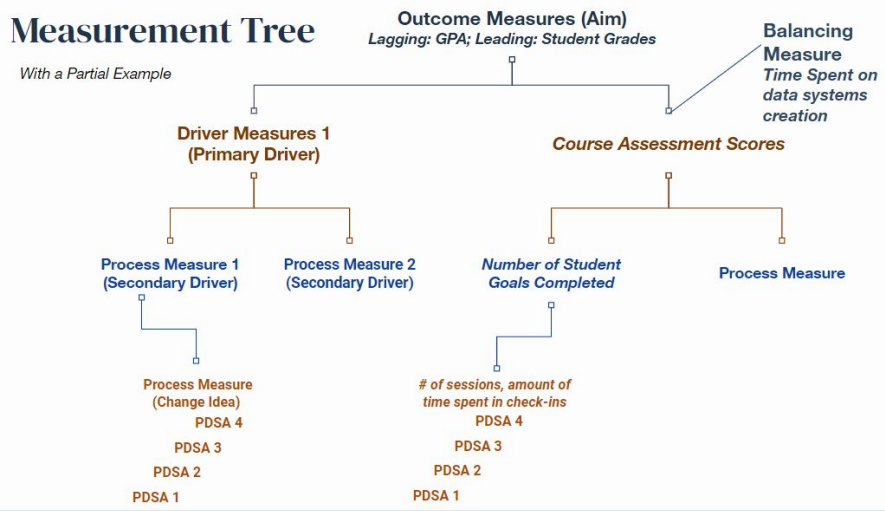
Additionally, the team looked to see if there are any courses in which SWDs were succeeding at the same rates as all other students, and in which all students are generally successful at higher rates than the network average. They found a few teachers and learned that they were more consistently and explicitly planning instruction for students' accommodations, a practice they were then able to spread to others. The team analyzed variation to find "positive deviants" - people, programs, and schools to learn from; these are places in which it appears that the school system's larger problem has been "solved." Here, variation helped not only add nuance and understanding to the problems to solve, but to also begin to understand how people within the school had already (at least partially) solved the problem.

Variation is inherent in all systems. Schools should work for everyone so it's important to deeply understand the experience and outcomes of those positioned furthest from opportunity so that teams can intentionally improve the system to reliably, consistently, and equitably meet the needs of all young people, at scale.

Process

Designing a System of Measures

A **Measurement Tree** visually tells the story of how the elements in the Driver Diagram are connected to the Aim. The focus should be on just getting the right set of measures before thinking about how to collect the data and represent it. Begin with the ultimate outcomes (Aim), build down to driver measures, and then to process measures, creating the tree. The tree shows how measures can be broken down into their components.



Ensure the Measurement Tree provides indicators of success across drivers and that the measures will actually provide insight into how the particular elements of the system are performing. The measures and data collected should align with the problems and changes being addressed to determine impact, with data points reported as frequently as possible. A System of Measures that links to the Driver Diagram helps Improvement Teams check if their theory towards their Aim is right and can help inform changes over time.

Step 1: Outcome Measures

Outcome Measures indicate how the overall system is performing and track overall movement towards an Aim.

- Identify how the **Aim** will be measured, at what frequency, and with what instrument or data. This measure should be tied to student outcomes and experiences. Outcome Measures include both:
  - **lagging measures** usually reported infrequently (e.g. annually) and usually after-the-fact.
  - **leading measures** collected more frequently (e.g. semesterly) and show progress along the way, but lack information about why progress is or is not happening and how to make changes for improvement.

Aim: By June 2023, We will increase the average GPA of our Black and Latinx students with disabilities experiencing poverty by 50% while maintaining the GPA for all students.

Outcome Measure (lagging): GPA at the end of the year for all students, disaggregated, reported through SIS grading tool.

Outcome Measure (leading): student grades, semesterly, reported through the report card grading tool

Step 2: Driver Measures

Driver Measures are early indicators (intermediaries between outcomes and process) of whether or not progress is being made on the intermediate outcomes usually connected to the **Primary Drivers** of the Aim.

- Identify measures that show the performance of specific parts of the system to monitor progress toward the Aim and influence future changes. These are usually reported more frequently than Outcome Measures (e.g. quarterly, monthly).

Primary Driver: SWD are engaged in high-quality tiered (academic, behavior, social-emotional) instruction.

Driver Measure (leading): Course assessment scores collected after each unit (approximately every 6 weeks)

Step 3: Process Measures

Process Measures indicate if the process, norms, and structures of the system are performing with quality and reliability. They answer three questions: (1) Are changes happening reliably? (2) Are changes resulting in improvement? (3) What do people think of the changes?

- Identify measures that indicate how and where the system (e.g. advisory class, policy implementation, school) is changing. These measures will attach to **Secondary Drivers** and **Change Ideas** and should determine if the changes are working reliably with quality and consistently. These actionable measures are reported frequently and are embedded in daily work.

Secondary Driver: Educators are conducting regular 1:1 check-ins to support students in goal setting.

Process Measure: Students number of goals set, number of goals on track and number of goals completed are collected by an adult advisor each week after student 1:1 check ins.

Process

Step 3a: Change Ideas/PDSAs

Measures for PDSAs are used to understand how the tests of change are working. PDSAs are used to record what is being learned in order to remove variation in implementation needed for scalability. These measures should be embedded in the daily work of enacting the test and simple to collect. The results of these data points inform which steps are essential to a change and can help build evidence for spread and scale. These measures can be collected just for the purpose of the test.

- Design and utilize PDSAs to record what is being learned. During these cycles the data answers the questions, '*What do we need to learn?*' and '*How will we know if this change is an improvement?*'

Change Idea: Provide educators with an implementation guide for facilitating 1:1 check-ins with specific guidelines for supporting student goal setting and monitoring.

Process Measure: Adult advisors track the amount of time spent with each student at each check-in and the number of goals discussed during that time in a spreadsheet, that is recorded after each session.

Step 4: Balancing Measures

Balancing measures indicate what's happening to important parts of the system that are not the focus of the improvement effort. Defining Balancing Measures ensures that changes being made are not leading to unintended consequences in other parts of the system.

- Identify where in the system the changes being made might have unintended consequences. Identify measures that will indicate how the change being made impacts other parts of the system.

Improvement Focus: increasing GPA for Black and Latinx students with disabilities experiencing poverty through increasing passing course grades by monitoring assessment scores.

Balancing Measures: Amount of time spent to collect and analyze the assessment scores. Assessment scores for students outside the target population.

Data Collection

Planning for Data Collection and Analysis

Enacting a System of Measures then requires a plan. All organizations have differences in data capacity, data systems in place, and norms and processes for how data requests get handled. Operationalizing the measures usually requires an additional level of detail (see table below). Priorities and tradeoffs may have to be made. First, determine when, how, and by whom data will be collected and analyzed. Include how the data will be presented. Data at the Change Idea level should be collected on the most frequent cadence possible (e.g. for classroom tests - weekly; for programmatic changes across a school - monthly) and be actionable. Data should be objective and test the hypothesis for improvement. Data should not place the blame on students, nor mask a problem in the system.

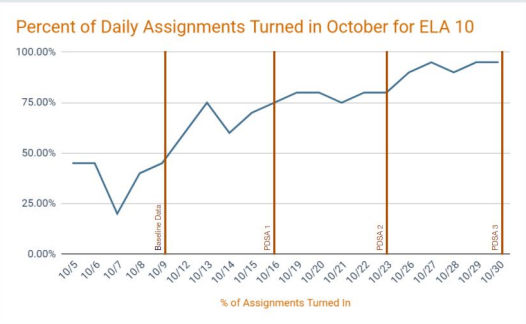
- **Define and organize the measures** as they are surfaced: outcome, driver, process or balancing.

- **Get specific** about types of data (e.g. implementation, fidelity, outcome, feedback), how data will be looked at (e.g. dashboards, protocols), and how it will be sliced in different ways (e.g. whole group, subgroups, class). Determine which quantitative (e.g. grades, attendance numbers) measures will be used and then determine the qualitative measures (e.g. student surveys, teacher interviews) to help give a greater understanding of variation in what is or is not working, under what conditions and why.

Measure Type	Aim/Driver/ Change Idea	Measure Bucket	Measure	Collection Method?	Frequency Reported	Owner	Link to report or dashboard	Priority	Notes/Actions
Outcome	Aim	GPA	Average GPA = increase 50% Black Latinx, Low-income SWD	Grading System	Annually	Counselor	Annual GPA Report	Critical	This report needs to be created by the Data Team
Outcome	Aim	GPA	Average GPA all students	Grading System	Annually	Counselor	Annual GPA Report	High	This report needs to be created by the Data Team
Outcome	Aim	Course Level Grades	# of students passing courses	Grading System	Semesterly	Counselor	SIS Grades Dashboard	High	Use this in administrator view
Driver	High-quality Tiered Instruction	Assessment	# Students passing course Assessments = 80%	Illuminate	Monthly	Teacher	Illuminate DNA Dashboard	High	Teachers need PD on this component of Illuminate
Driver	High-quality Tiered Instruction	Classwork	# Assignments turned in: student	Illuminate	Weekly	Teacher	Illuminate DNA Dashboard	Medium	
Process	Regular 1:1 Check-ins (goal setting)	Goals	# of goals set by student	Advisory Dashboard	Weekly	Advisor	Advisory Goals Report on Dashboard	High	This will need to be hand collected to start with, need to write a query to automate the report
Process	Regular 1:1 Check-ins (goal setting)	Goals	# of goals on track by student	Advisory Dashboard	Weekly	Advisor	Advisory Goals Report on Dashboard	Medium	
Process	Regular 1:1 Check-ins (goal setting)	Goals	# of goals completed by student	Advisory Dashboard	Weekly	Advisor	Advisory Goals Report on Dashboard	High	
Process	Implementation Guide	Goals	Amount of time spent at check-in on goals by student	Advisory Dashboard	Weekly	Advisor	Check in log	Medium	The link is to a spreadsheet where data can be recorded. Work with Data Team to create a way to enter into a database for automatic reporting.
Process	Implementation Guide	Goals	Number of goals discussed during advisory	Advisory Dashboard	Weekly	Advisor	Check in log	Medium	
Balancing	Aim	IEP Goals	% of students mastering IEP goals	IEP +	Annually	Case Manager	IEP +	High	We need to check with the Data team to determine if this can be pulled into a query to disaggregate by subgroup.

- **Operationalize the measure** by defining the measures being collected. This gives team members and stakeholders a common understanding of what is being analyzed. Take the system of grading for example. Providing an operationalized definition such as, “grades are determined based on mastery of concepts as measured by content assessments”, helps all stakeholders (teachers, students, parents and other faculty) understand how grades are determined. Socialize operational definitions with others (e.g. school leaders, teachers) by checking for understanding and norming on common definitions .
    - Questions to consider asking to define operationalized measures:
        - What data will be collected?
            - What are the sources of data? Does it include qualitative and quantitative, including feedback data from families and students?
            - Is the data relevant to the change being tested?
        - How will data be collected? When and where will the data be collected?
        - Who will collect the data?
        - What measures are important to view over time?

- **Interact with the measures**: Determine how people will interact with the data (how will the data be looked at) and what will they do with it to implement a change in a process or practice.
    - Questions to consider for interacting with the measures and data.
        - How will the data be reported? Who will get the reports?
        - Who will analyze the data? When will the data be analyzed?
        - How will the data be analyzed? Will it be disaggregated?
        - What will happen after the data is analyzed?



Data tools and reports will help teams interact with the data. One tool for collecting and analyzing data over time is a **Run Chart.** This simple data tool is used to study variation and trends in data. It helps determine if changes result in improvement, and if gains are sustained after changes have been implemented.

The run chart at left shows data reported on the High-quality Tiered Instruction Driver.

Data Collection

Interacting with the Driver Measure: Ms. Gonzalez, the ELA 10 teacher worked with Mr. Perez, the Grade 10 Advisor to increase the percent of students turning in daily assignments in 4th period ELA class. They ran a PDSA on supporting students with weekly goal setting and reflection towards that goal. During the week of 10/5, Ms. Gonzalez collected baseline data on the number of assignments turned in and then met with Mr. Perez to discuss. They decided to run a PDSA testing a protocol during Advisory sessions explicitly focused on goals for turning in assignments. Mr. Perez kept track of the number of students he met with during each session and the goal progress and completion of each student. He then met weekly with Ms. Gonzalez to compare his Advisory data with her assignment completion data. The two saw progress after the first week the PDSA was enacted. Mr. Perez continued to test changes to the goal-setting protocol weekly, asking students for feedback on the process. At the end of PDSA cycle 3, the team had met their goal of 90% of students turning in assignments. Mr. Perez and Ms. Gonzalez met with the rest of their Grade-Level Team to share their results to begin planning for how they can scale this change idea with other Student Advisors as well as sharing the results with their School Leader to enlist her in helping bring the change to other grade levels.

Process

- When reviewing data, pause to check for **biases and assumptions**. Examine the data with a critical eye to understand potential pitfalls, gaps and misrepresentation. Understanding how the data is collected, what it represents and how it is presented will give better understanding of the full story.
    - Questions to consider when checking for bias and assumptions.
        - What data was collected?
        - Why was it collected? Is the data being used for the intended purpose?
        - How was the data collected?
        - What does it show and what is missing?
        - How is it represented? Is it presented with asset-based language?
        - Look through a DEI lens, are there systematic biases that need to be accounted for?

Checking for assumptions: results for the English MAP test showing SWD at 30% proficiency only tells part of the story. There may be an assumption that this data represents students' actual ability to read and write. What this doesn't tell you is that the test is usually given without reading accommodations or modifications that students with disabilities may be getting during instruction. Gathering additional data, such as Lexile level, can show actual reading ability and give teachers better information on choosing accessible texts.

Tools to Help Create Systems of Measures

Measurement Tree can be used to visually attach measures to the Aim, drivers and Change Ideas.

Sample Measurement Plan shows a layout of a measurement tree both visually and in a table format.

Data Collection Plan Template (with Example) can be used to prioritize and operationalize measures for collection and analysis.

References

- Bryk, A. S. (2015). 2014 *AERA Distinguished Lecture: Accelerating How We Learn to Improve*. Educational Researcher, 44(9), 467–477. https://doi.org/10.3102/0013189X15621543.
- Huang, M. (2015, September 3). *Lessons from Paper Airplanes*. https://www.carnegiefoundation.org/blog/lessons-from-paper-airplanes/.
- Shift. (2020). (publication). *Puget Sound Continuous Improvement Summit Series Workbook*. Retrieved from https://shift-website.s1.umbraco.io/media/sqdfio0a/psciss-workbook.pdf.
- Takahashi, S. (2014, August 21). *Revisiting the Purposes of Practical Measurement for Improvement: Learning from the BTEN Measurement System* [web log]. https://www.carnegiefoundation.org/blog/revisiting-purposes-practical-measurement-improvement-learning-bten-measurement-system/.

Building the improvement playbook:
Plan-Do-Study-Act

▸ What it is: The Plan-Do-Study-Act (PDSA) cycle is a process for testing a change and determining whether that change leads to the desired improvement. It is rooted in the scientific method, and enables educators to quickly and rigorously conduct action research. The PDSA cycle is both a specific set of procedural steps (a form to track learning) and a conceptual methodology (a way of thinking and enacting change).

▸ Why it matters: The PDSA cycle lays the foundation for continuous improvement. This process helps to build new knowledge faster informing future scale-up efforts by:

Compartmentalizing risk by learning rigorously, incrementally, and quickly

- PDSAs serve as feedback loops for learning, providing the evidence of reliability and quality required to responsibly scale a practice, program, or process within a school system.
- The rapid nature of PDSA cycles allows for low risk/high reward opportunities to quickly and rigorously learn what does and does not work.

Bridging research and practice

- Leading research informs the changes and practices chosen. The PDSA cycle enables theory to be applied effectively in targeted contexts, where data helps to understand what works, for whom, under what conditions.

Exposing gaps in knowledge about the system

- PDSA cycles test the best thinking about how to improve a system or process “on the ground”. This testing can expose unknown or unrecognized gaps in the system. Learning about the system is a primary goal of PDSA testing.

Empowering stakeholders

- PDSAs can empower stakeholders by allowing them test changes they believe will lead to improvement in a bounded and disciplined way.

▸ In This Guide: Process, Examples, Tools, References

Plan. This step specifies the details of when, where, and how the idea will be tested, predictions about the testing including measure(s) of success.

Do. This step includes collecting the data and noting observations and insights along the way.

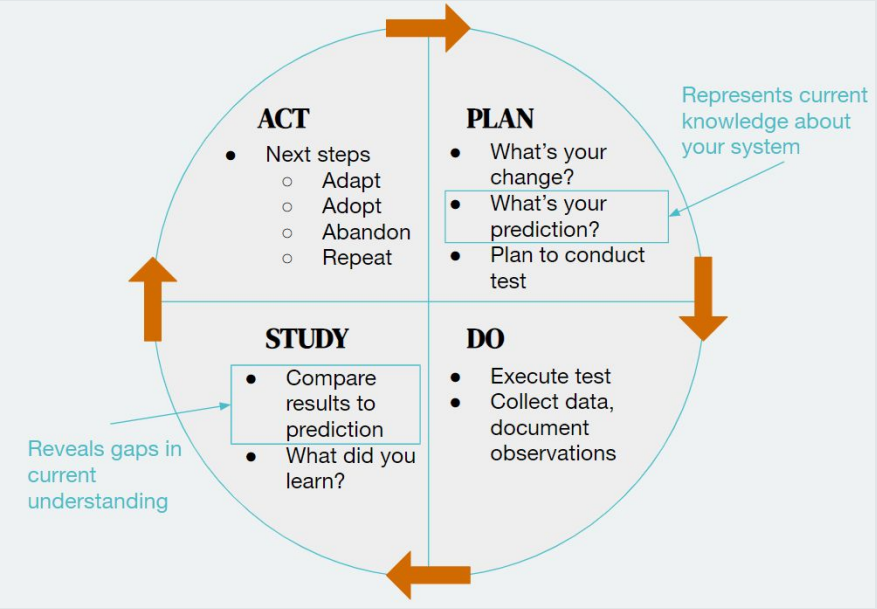
Study. This step compares the experience and data collected with Plan predictions and measure(s).

Act. This step is to decide whether the Change Idea will be adapted, adopted, or abandoned, or if the PDSA should be repeated for more data. This step usually leads into the Plan step of the next PDSA cycle.

Overview

PDSA Cycles allow for rapid testing of a Change Idea. For changes at the school or network level, such as the introduction of a new program, individuals and groups can run PDSAs focusing on improving specific steps or components. The duration of the PDSA cycle should be as short as possible while adequately testing a hypothesis - within 2-4 weeks. There are standard forms to guide teams' thinking through the process.

PDSA Ramps are a tool to plan forward from a starting point to desired end-point and define stages of progression - which problems need to be solved in what order. As a planning tool they help illustrate the building of learning. Though each stage of the PDSA Ramp seeks to answer a different set of questions appropriate for the stage, the process within each PDSA cycle or set of cycles remains consistent.



The PDSA cycle turns ideas into action and connects action to learning.

From Change Idea to PDSA

Enacting a PDSA requires a clearly defined **Change Idea** (who does what when and how) and a common understanding of how that change will be determined to be an improvement.

Determining the appropriate level of scale to start is important to learn fast, build evidence, and preserve will. Testing the change with fewer people to start if:

- There's less confidence that the idea will lead to improvement, or
- Those expected to enact the change are indifferent or resistant to it.

Determining Scale to Test

Change Tolerance & Conditions ⇨		Resistant	Indifferent	Ready
LOW CONFIDENCE that current change idea will lead to improvement	Cost of failure is LARGE	Consider other alternatives	Consider other alternatives	Consider other alternatives
	Cost of failure is SMALL	Very small scale test	Very small scale test	Small scale test
HIGH CONFIDENCE that current change idea will lead to improvement	Cost of failure is LARGE	Very small scale test	Small scale test	Large scale test
	Cost of failure is SMALL	Small scale test	Large scale test	Implement

Tools for PDSA Cycles

PDSA Form - templates and prompts to enact tests of Change Ideas, track learning, improve the reliability and quality of the change and build evidence for spread and scale.

PDSA Ramp Planning Tool (with Example) - table with prompts to stage and sequence PDSAs from a starting place to full implementation.

Scope of PDSA

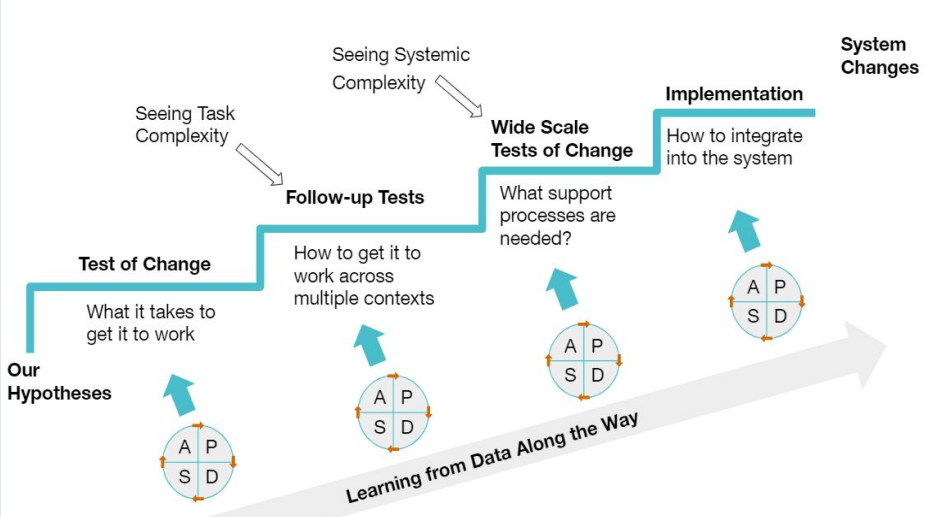
Each PDSA should be focused, resulting in a process that easily fits into the workflow of the user and allows for gathering the necessary data to inform the efficacy of the change. These dimensions are for a **single PDSA**. For a complex Change Idea, there may be multiple, simultaneous PDSAs being conducted at different levels of the system.

Dimensions of Scope:

- **Targeted Learning** - Each PDSA cycle should target what needs to be learned about a Change Idea. For Change Ideas that have many components (for example, deploying a program to all schools) there may be a specific step or process to focus on. For Change Ideas already in progress (for example, an existing Numeracy program), the PDSA process can help define a target for future learning (for example, learning about why someone does or does not participate in the program).
- **Short Duration** - Each PDSA cycle should be as brief as possible in order to quickly gain knowledge of whether or not the Change Idea works. Thus, data collection needs to be quick and simple ("scrappy") - just enough to inform how well the idea works and what people think about it.
- **Targeted Sample Size** - A PDSA cycle typically involves only a targeted sample size (a few teachers or one school, depending on the test). For complex Change Ideas, the first PDSAs can lead to "the margins" (for example, the 20% of users that are not using a program) that will be the focus of subsequent PDSAs. As the data confirms the change is leading to an improvement, it can be expanded and scaled to more teachers or schools and continue to move up the PDSA ramp.

The PDSA Ramp

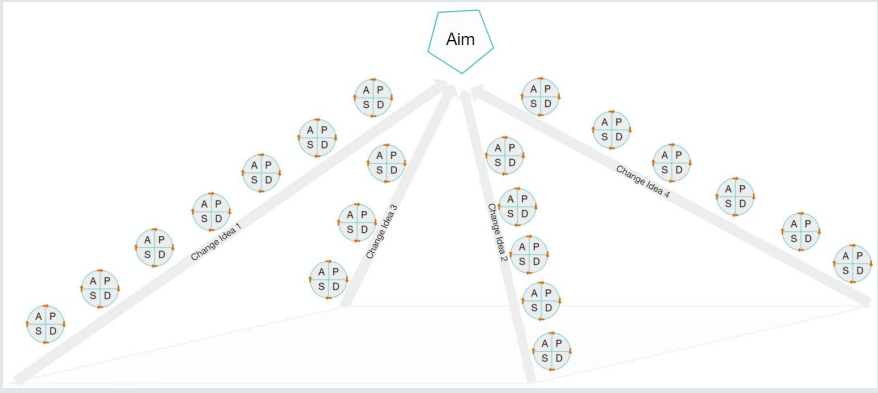
Scoping out a rough progression of a Change Idea from initial testing to the desired endpoint is an important step to continue to refine, understand, and learn about the Change Idea. The PDSA Ramp also helps chunk the Change Idea into more manageable pieces to account for the capacity and resources expected to be required and forecast what else might be needed in the future.



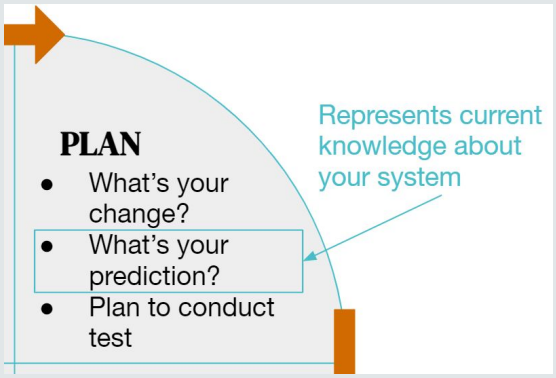
A PDSA Ramp is a plan, but it is not a rigid commitment to follow because each PDSA cycle will provide learning about the Change Idea and confidence in the Change Idea to effect improvement, all of which will inform the PDSA Ramp. Follow the rule of "1, 5, 25" - get the Change to work in one context, then multiple contexts (5), then scale it out (25).

Multiple PDSA Ramps

Each PDSA Ramp is dedicated to one Change Idea. Since there will likely be multiple, simultaneous PDSAs testing change ideas, there will be multiple PDSA Ramps moving those Change Ideas through different stages. This is an illustration of how multiple PDSA Ramps, for multiple Change Ideas across Drivers, converge in the improvement effort towards the Aim.

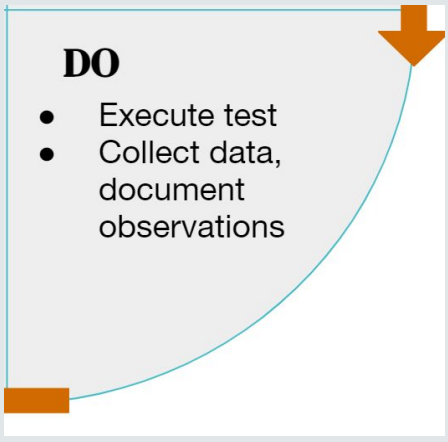


Step 1: Plan



- **Clarify the Test**
  - What is this test trying to accomplish?
  - What needs to be understood about the change?
  - What would indicate the test was successful?
  - Record the who, what, when & where of the test.
- **Record Questions & Prediction:**
  - Write down specific questions the test should be designed to answer with predicted "answers" for each question. A good format is "If I do X, then will Y happen?" The questions should connect to the data collected.
  - Specific predictions are important because they illustrate what is currently understood about the system. They are often the source of a lot of the learning, especially when they are found untrue. Be as specific as possible, for example: "2/3 of the students will write a skills-based goal."
- **Data Collection:**
  - Identify the data collection strategy so there is data to check predictions against. Data collection tools may need to be developed but remember that data collection should be quick and as simple as possible. Recommendation: Data should be able to be collected on a sticky note or clipboard rather than require a data dashboard. Ensure that it is reasonable to expect a tester to collect this type or amount of data.
- **Double-check:**
  - Does everyone have what they need to enact the test? If not, who needs what information or resources?

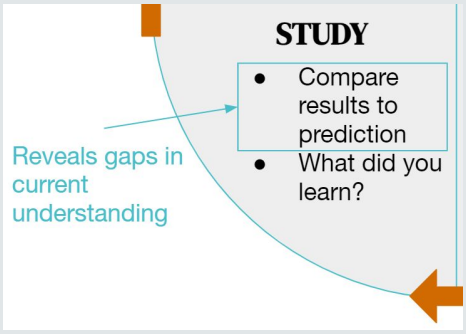
Step 2: Do



- Record the data and any additional observations, as specifically and clearly as possible. For example, a classroom teacher running a PDSA is busy, data gathering should be as quick and simple as possible.
- Describe what happened during the test, especially if it differed from the plan: anything that was unexpected, difficulties with the test or data collection, or general observations about what happened during the test.
- PDSA testers often discover new things about processes and the system in which they are operating in the Do part. These discoveries can inform both the PDSA for subsequent cycles and the Driver Diagram by revealing nuances or new drivers.
- **Resist the temptation** to begin analyzing the Do as it is described. The first step should be to capture, as objectively as possible, what happened and the data collected. The Study step will allow for analysis and reasoned interpretation. Of course, as the Do is recorded, any analysis that creeps in can and should be recorded for Study.

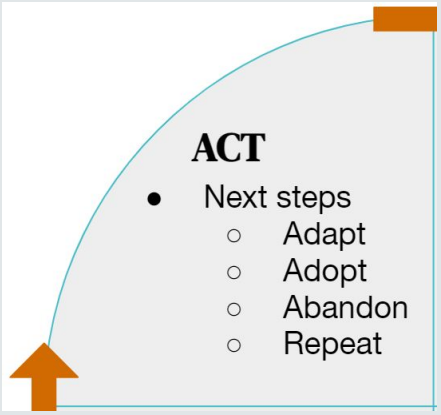
Step 3: Study

- For each learning question and prediction made, analyze what happened by asking:
  - Was each prediction correct or not?
  - What data collected supports this answer? (These data can be both the planned data (from the Plan) and impromptu data that were collected during the Do.)
  - What was learned in the gap between prediction and result?
- Record any other observations about what was learned, especially any surprises, as these usually reveal new learning about the system.



Step 4: Act

- In the Act step, review the results and documented learning from the test to decide future action in the PDSA cycle. This may be a shift in the test approach (adapt), a decision to implement a reliable change in other contexts (adopt) or a decision to discontinue a change when it has been executed reliably and proven ineffective for the desired improvement (abandon). In some cases, a cycle may be repeated if the test execution failed or proved inconclusive. For subsequent PDSA cycles the Act step is usually the foundation for the next Plan step.



Decision Guides

Adapt

- More tweaks needed to improve reliability and quality. Lack of confidence in overall impact.
- Ready to adapt the idea to other testing conditions.
- If adapting the idea and running another test, record ideas about what to do in the next cycle. This information becomes the foundation of the next cycle's Plan section.

Adopt

- High degree of confidence that the change leads to improvement.
- The Change Idea has been developed and is ready to start spreading and testing in other contexts.

Abandon

- The Change Idea has not led to improvement after several test cycles.
- Double-check both the Change Idea itself and its execution before abandoning.

Repeat

- It is possible that the execution of the test failed in some way and it can't yet be determined if the test was successful or not. Identify why it failed and try another test.

References

- Langley, G. J., Moen, R. D., Nolan, K. M., Nolan, T. W., Norman, C. L., & Provost, L. P. (2009). The Improvement Guide A Practical Approach to Enhancing Organizational Performance (Second) (p.97). Jossey-Bass.

Acknowledgements

This Playbook is a publication of the
Marshall Street Continuous Improvement Initiative.

Second Edition, printed October 2022, Redwood City, CA.

Suggested Attribution:
Marshall Street. (2022). *NIC Playbook Fall 2022.* Redwood City, CA. www.marshall.org

Contributors

Tim Burke

Mira Browne

Adam Carter

Marco Castaneda

Paula Espinoza

Stephanie Lassalle

Kyle Moyer

Heather Piccotto

Kelley Prosser

Giovanna Santimauro

Daria Zhao

This project is generously supported by the Bill and Melinda Gates Foundation.

Marshall Street

Networked Improvement Community

FOR STUDENTS WITH DISABILITIES

The **Networked Improvement Community (NIC) for Students with Disabilities** is a pilot community of 10 Charter Management Organizations (CMOs) working towards the Aim of achieving dramatic gains for Black and Latinx students with disabilities experiencing poverty. Collectively, these CMOs serve more than 75,000 students.

With support from technical assistance providers **Marshall Street**, **SWIFT Education Center**, and research organizations **NIRN**, **RTI International**, and **SRI International**, our goal is to systematically improve the way we serve students with disabilities and bring these solutions back to school systems everywhere.

This work is made possible by the **Bill & Melinda Gates Foundation**. The findings and conclusions contained within are those of the authors and do not necessarily reflect positions or policies of the foundation.

Marshall Street Initiatives
780 Broadway
Redwood City, CA 94063
www.marshall.org