Chapter 5: Set Targets and Trajectories

In previous chapters, you developed an aspiration related to the NGSS and identified strategies you expected would help you achieve that aspiration. This chapter will help you establish specific targets for each of the goals under that aspiration and estimate the impact that each of your strategies will have on those targets. In short, it will help you connect your planned actions to expected outcomes. Being able to share this with stakeholders during the adoption and planning phases will help show that your state has a clear picture of where you are trying to go and a clear expectation for how the NGSS will improve student performance.

Before you get started, it will help to understand how key terms are defined for the purposes of this chapter. Keep in mind that the terms you use in your own state may vary based on previous context and use. Key terms in this chapter include:

Goal: As noted in Chapter 2, a goal is a more specific piece of your overall aspiration. For example, your aspiration may be that all students are college and career ready, but your goal may be improving the number of students taking more rigorous science courses in high school.

Metric: Your metric is the quantitative measure you will use to determine progress on your goal (you came up with some of these in Exercise 6 in Chapter 3). For example, in the goal of improving the number of students taking a series of at least three science courses that reflect the full set of content and performance expectations of the NGSS standards, the metric is the number of students taking three lab science courses.

Target: A target is the specific level of your metric that your state intends to reach by a given point in time. For example, if your metric is the percentage of students taking three lab science courses, your target might be that 65 percent of all students meet this benchmark in 2015. This target should be based on past performance (see Chapter 3) and other evidence of what is possible.

Trajectory: A trajectory is a projection of a metric's path over time from its current level to the level suggested by the target. It is your best estimate of the how your system will perform at each point in time en route to achieving its overall target. For example, if your target is 65 percent of all students taking three lab science courses in 2015 and the baseline indicates that 56 percent of students met this target in 2012, your trajectory would map the targets for the years in between. How you get those estimates is the subject of the remainder of this chapter.

Why is translating the goals in your aspiration to metrics, targets and trajectories important? In particular, why make year-to-year estimates of progress that are likely to be wrong? As noted above, a trajectory estimates the expected impact of your strategies on your student outcome goals. As such, it proposes a direct relationship between the actions you take and outcomes (results for students) — one that can be tested by the data that come in over time. The important thing is not that you get the trajectory exactly right but that you compare it with the actual data to understand why you over- or

underperformed. A trajectory, then, is a tool for monitoring progress that you can use to hold yourself accountable for the expected impact of your work.

Action Steps
Step 1: Establish a performance target. **Step 2:** Connect your strategies to expected outcomes. **Step 3:** Create more detailed trajectories to monitor implementation progress.

Step 1: Establish a Performance Target

The first step is to establish a metric and performance target for each of your high-priority student outcome goals — that is, to decide how you will measure progress and at what level your state should perform by a certain point in time.

Use the data you explored in Chapter 3 to inform your target, and keep in mind that targets should be SMART:

Specific: A target must leave nobody guessing as to its meaning and implications for the expected change.

Measurable: A concrete and agreed-upon standard should be established for measuring progress.

Ambitious: A good target should feel like a stretch from the current level of performance and inspire your system to rise to a new challenge.

Realistic: A target should be grounded concretely in the internal and external affecting factors — otherwise a target is little more than a guess.

Time limited: Your target should have a defined deadline, both to create a sense of urgency and allow for accountability.

Establishing a target that is both ambitious and realistic can be challenging, but it is vitally important. If the target is not ambitious enough, it will not do enough to inspire and drive improvements in your state. But if the target is not realistic, it will not be seen as achievable and will also not drive improvements. To find the balance between ambitious and feasible, look at benchmarking across other states and nations and within your own state. There are four types of benchmarking to consider:

Historical performance: How have levels of the target metric moved in the past? To what extent should you expect your state or its subgroups to outperform history?

Districts within state: Within your state, how does performance differ across districts? What does the performance of some districts suggest about what others (particularly those with similar characteristics) should be able to attain?

Against other states: How does your state's performance compare, both now and historically, to that of other states? How do students, teachers or districts in your state compare to their peers with similar characteristics in other states?

International: How does your state's performance compare with the performance of systems in other countries, both now and historically? How do students, teachers and districts in your state compare to their peers with similar characteristics in systems around the world?

Based on your own state's past performance and the performance of others, establish your target.

For example, when you examine high school students' course-taking patterns, you may find that students, on average, take biology and chemistry in high school (per the state's existing graduation course requirements), but you want to move toward a goal of all students taking courses that reflect the full set of content and performance expectations of the NGSS standards and at least three science courses. An analysis of course-taking patterns is more than just the number or names of required courses; more important are the content and rigor of those courses and their alignment to the state standards. To complete this comprehensive review, your state will need to identify the levers you will use to ensure that courses taught in high schools throughout the state are consistently rigorous and aligned with the state standards. Otherwise, the content or instruction in these courses, particularly in the more advanced ones, may become watered down as more students enroll in them.

Looking across the districts in your state, you may find variations in course-taking patterns despite the state course-taking minimums: Students in most middle- and high-income districts in your state may be taking at least three science courses, but students in low-income schools may be taking the state minimum. This discrepancy could be a result of a number of factors, including students' access to courses as well as the tendency of higher-income districts to require students to exceed the state minimum course requirements. You also may find that while some students currently are exposed to content-rich and stimulating classes that build college- and career-ready skills in high school, many others have access to courses that are rigorous in name alone. Your state decides to dig a bit deeper into the middle- and high-income districts and finds disparities in the science course-taking patterns of specific subgroups of students. You determine that improving science course-taking in the lowest-income districts to match the rates in middle-income districts and closing the course-taking gaps between subgroups within high-income districts would have a large impact on your overall state target.

Lastly, include a date or deadline for accomplishing that target. By setting a time limit, you will create a sense of urgency around the work.

EXERCISE 15: Determine a Metric and Target for Each Goal

Objective(s) for participants:
- Identify how to measure success for the established goals.
- Use benchmarking data to establish a target for each goal.

Instructions:
- For each goal established earlier, identify the key metric that will be used to measure success. Record each goal/metric on the flipchart.
- Explore benchmarking data, including historical, district-to-district, state-to-state and international comparisons, for each goal/metric set. Record findings on the flipchart.
- Using the benchmarking data, decide on a potential target for each goal/metric and record it on the flipchart.
- For each target, set a date when it should be reached and record the date on the flipchart.
- Discuss the targets. Particularly consider:
  - Do the targets meet the SMART characteristics — particularly, are they ambitious and realistic?
  - Are the targets tied to the benchmarks?
  - Do they make sense given what we know about historical performance of our state as a whole, our individual districts, and other states and nations?

Materials needed:
- List of identified goals
- Flipchart
- Markers
- Benchmarking data

Exercise notes:
- Deeper data analysis will likely need to be done ahead of time to prepare for the discussion about how certain changes to state and district performance would affect the overall outcome.
- Encourage participants to establish targets that strike the delicate balance between ambitious and realistic.

Template for Exercise 15

Goal	Metric	Benchmarking Findings	Target	Target Date

Step 2: Connect Your Strategies to Expected Outcomes

Next, consider each of the strategies you identified in Chapter 4. Each strategy was connected to one or more of your goals (and the associated targets) in Exercise 15. What do you expect that the impact of each will be over time on these goals? You will want to feel confident that the strategies you identified will help your state reach its established target and that these strategies are emphasized (and funded) according to their expected impact.

EXERCISE 16: Evaluate the Expected Impact of Strategies on Established Goals

Objective(s) for participants:
- Determine the order of expected impact of strategies from highest to lowest.

Instructions:
- For one goal, gather the list of priority strategies you identified in Chapter 4.
- Taking the full list into account, record the strategy expected to have the highest impact on the goal at the top of the flipchart.
- Record the strategy expected to have the least impact on the goal on the bottom of the flipchart.
- Continue evaluating each of the strategies and recording them on the flipchart where they fall along the spectrum from high to low impact.
- Reflect on and discuss the ordered list:
    - Based on their expected impacts, are the identified strategies enough to help us reach our target? If not, do we need to adjust the strategies so they affect more students? Or do we need to add more strategies?
    - Do funding priorities align with expected impact? That is, are those strategies that are expected to have the highest impact those that are most heavily funded or resourced? If not, does this need to change?

Materials needed:
- List of priority strategies
- Flipchart
- Markers

Exercise notes:
- When considering potential impact, consider the number of students affected by the strategy and the degree to which the metric will be affected.
- Complete this exercise for the key strategies for one goal first. Repeat with additional goals if it is useful.

Template for Exercise 16

	Strategies
Highest impact	
Other	
Lowest impact	

This prioritization will give you an initial estimate of the impact of each of your strategies on your goal or goals. This estimate can be used to determine strategic and funding priorities as you make the case for adoption. Step 3 takes this estimate to the next level so that it can be used in implementation planning and monitoring.

Step 3: Create More Detailed Trajectories To Monitor Implementation Progress

A more detailed trajectory makes use of past and present performance (Chapter 3) and the estimated impact of your strategies (Chapter 4) to map expected future performance over time.

Begin by establishing a baseline. The baseline helps you determine, given the trends you have seen in past data, the path of the metric in the coming years if you did nothing at all. Understanding the baseline will help you begin to map your expected path, taking into account the strategies you identified. To map the baseline, focus on the trends of your metric over time and consider where you would expect performance to move in the next few years without the focus on implementation. Specifically, consider:

- Has past progress been linear?
- If there were peaks and dips, what caused them?
- Do you expect peaks or dips in the future due to other major events?

States may naturally gravitate toward assessment results as an outcome, but caution should be taken before choosing to use an existing state assessment as an indicator, as severe limitations exist on what these data will be able to tell you. For example, using assessment data benchmarked to previous versions of state standards — or using old state assessments to set trajectories on new standards and new assessments — cannot capture the conceptual shifts of the NGSS and may create mixed messaging and communications challenges. Data will not be able to provide insight or serve as a proxy for evidence of NGSS implementation successes or areas of challenges. Districts and schools working to implement the NGSS will also likely be contending with being held accountable for existing standards and state assessments. They also may be phasing in new teacher and leader effectiveness systems. Be sure to consider the more creative inputs and outcomes your state discussed in Chapter 3. Figure 11 illustrates an example of an estimated baseline.

FIGURE 11: Estimated Baseline

Metric	2009	2010	2011	2012	2013	2014	2015	2016
Percentage of students taking three lab science courses	55%	55%	56%	59%	59%	60%	65%	70%
Potential events						New graduation course requirements begin for entering freshmen: 3 lab sciences		

EXERCISE 17: Establish a Baseline for Performance

Objective(s) for participants:
- Understand the expected baseline for performance.

Instructions:
- Using one of the metrics identified in Exercise 15, plot the historical data over the past several years on the flipchart.
- Consider any potential future events that may affect performance and make note of those in their associated years on the flipchart.
- Taking into account the historical performance trend and the future events, estimate performance for the next several years, assuming the strategies identified in the previous chapter are not implemented.
- In a few sentences, describe the rationale behind this baseline. That is, why do we expect performance to be the way we have mapped?

Materials needed:
- Flipchart
- Markers
- Historical data

Exercise notes:
- Remind participants that this is intended to be an estimate, using the data available — this is not a perfect science.
- Keep in mind that for the purposes of this exercise, you are plotting performance without the strategies you identified previously. In the next exercise, you will begin to take those strategies into account.

Template for Exercise 17

Metric	Historic	Historic	Historic	Current	Future	Future	Future	Future
Potential events								
Rationale								

Once you have established your baseline, consider the impact of your strategies along the way to help you reach your intended target. In Step 1 you established a target, and in Step 2 you ordered your strategies according to their expected impact. Now you will take that one step further and estimate the number or percentage of students affected each year (or other time period) by a given strategy.

Start by identifying whether each strategy will have a high, medium or low impact on the target metric each year. Use your timeline from Chapter 1 to estimate when each level of impact will occur for each strategy. For example, consider whether proposed professional development for teachers will yield a high impact on student proficiency immediately or whether this impact will be seen a few years down the road, once teachers have been able to truly adjust their practice to better align with the standards. Exercise 18 will help you consider the expected impact of each strategy each year.

EXERCISE 18: Classify Your Strategies as Having a High, Medium or Low Impact Over Time

Objective(s) for participants:
- Identify the potential impact of the identified strategies.

Instructions:
- Using the ordered list of strategies created in Exercise 16, identify whether each will have high, medium or low impact on the target metric in the next year.
- Repeat this for the next several years, keeping in mind that the impact of a given strategy will likely change over time.

Materials needed:
- Flipchart
- Markers
- List of strategies in order of expected impact

Exercise notes:
- Remind participants that this is intended to be an estimate, using the data and evidence available — this is not a perfect science.
- Push participants to be really thoughtful about which strategies will be high impact and when. Keep in mind that some strategies will show impact nearly immediately, while others will take a few years to show their true impact.

Template for Exercise 18

Strategy	Year 1	Year 2	Year 3	Year 4

Next, put numbers on your judgments of high, medium and low. For each level, associate it with an approximate number or percentage point of additional students who will be affected. Keep in mind the number of students in the group receiving the strategy to make these estimates realistic. You might use the distance between your baseline and your target as a benchmark. For example, if you have to gain 15 points in five years, you would want to average three points per year. So one to two points would be low impact, three points would be medium impact and four to five points would be high impact. While we know progress typically does not follow a straight line, you can set your "medium" at the straight line level and use it to put numbers for each strategy in each year.

Based on those numbers, you can add up each of the strategies to project the overall number of additional students affected each year. This summation will provide annual targets that should lead you to the end target, and your team will be able to monitor progress on these each year. The estimates of high, medium and low that you made in the last exercise will help you create the shape of your trajectory.

EXERCISE 19: Use the Projected Impacts of Strategies To Map Your Trajectory

Objective(s) for participants:
- Understand the expected baseline for performance.

Instructions:
- Decide on the preferred method for associating numbers with the high, medium and low impacts described earlier.
- Using the results from Exercise 18, change the high, medium and low judgments into percentage points or numbers and record those on a new flipchart template.
- Add up the expected impact of all of the strategies for each year and record the total impact by year on the flipchart.
- As in Step 2, reflect on whether these estimates make sense, given the context in the state. In particular, consider the following and adjust the estimates as necessary:
  - Does the trajectory have implications for the strategies we identified? Are resources appropriately allocated to high-impact strategies? Do the strategy impacts add up to our target?
  - Does our target seem ambitious and feasible given the strategies we expect to affect it?
  - Have we taken into account changes in assessments, changes in the number of students assessed, or other major events that may cause dips or otherwise unusual changes in the data we are measuring?

Materials needed:
- Flipchart
- Markers
- High, medium and low ratings from Exercise 18

Exercise notes:
- Remind participants that this is intended to be an estimate, using the data available — this is not a perfect science.
- It may be useful to convert proficiency rates (percentages) into the actual number of proficient students and consider impact in terms of number of students rather than percentages.

Template for Exercise 19

Strategy	Year 1	Year 2	Year 3	Year 4
Baseline				
Total				

Based on your answers to these questions, adjust the trajectory as necessary to ensure that it is a useful tool that is reflective of the expected impact of your work.

Conclusion

You have now created targets and trajectories for each of your key goals. The final two chapters of this workbook will help you to communicate about and monitor this plan. Specifically, the next chapter will outline strategies for engaging stakeholders and getting buy-in and support for your plan, while the chapter after that will help you establish routines for regularly monitoring progress on your trajectories and problem-solving when off course.