Module 2: Systems

In education, we are constantly immersed in systems. The systems that make up education are not only complex, but they are also changing. As school leaders, how do we address health in the context of this complexity and uncertainty? System dynamics helps.

PAGE 35

Align this module to your needs and resources

The steps in this module will help you to use system dynamics tools to learn about the systems, structures, and policies that can support implementation of the WSCC model. You may be wondering how you can do this work on top of all your other responsibilities. This module was designed so that you can choose the range and intensity of the activities that you want to complete.

The chart on the next page outlines three different options from which you can choose. Each option requires that you work through the module in its entirety. As you move from Option A to Option C, you have the opportunity to integrate additional voices and perspectives. Use the chart to understand the time, resources, and knowledge or expertise your school or district needs to accomplish each option and to select the option that is best suited to your needs and capacity.

Want to explore other ways to minimize the time needed? Consider focusing on one or a few activities at a time. No matter which option you choose, selecting a fewer number of activities (read more on pages 54–56) can reduce the amount of time you and your partners need to process information and apply learnings.

Concerned about having the right knowledge or expertise? Facilitating discussion among large groups of people can be difficult. If you want engage a larger number of people but don't feel comfortable doing so, consider holding multiple small-group discussions. An external facilitator or consultant (read more on pages 57–58) can also help you facilitate these conversations as well.

To view and select the option that works for you, TURN TO NEXT PAGE →

Select the option that works for you

	OPTION A	OPTION B	OPTION C
DESCRIPTION	Work with 1 or 2 others in your school or district to complete the processes described in this module	Collaborate with a mid-sized or existing group of people in your school or district to complete the processes described in this module	Bring together a large or new group of people in your school or district to complete the processes described in this module
ESTIMATED TIME NEEDED	1 week	1 month	2 months
ESTIMATED RESOURCES NEEDED	2–3 people to lead and participate in planning and activities (1–2 hrs/day)	2–3 people to lead and participate in planning and activities (1–2 hrs/day) 5–12 people to participate in activities (1 hr/activity) Space to accommodate 5–12 people	5–7 people to lead and participate in planning and activities (1–2 hrs/day) 12–25 people to participate in activities (1 hr/activity) Space to accommodate 12–25 people
TYPE OF EXPERTISE NEEDED	Familiarity with issues and assets of school or district	Familiarity with issues and assets of school or district Familiarity with facilitating discussion among mid-sized group (5–12 people)	Familiarity with issues and assets of school or district Familiarity with facilitating discussion among large group (12–25 people)
OUTCOMES Create a map of the systems, structures, and policies needed to implement the WSCC model			
Build common language and understanding of the factors that influence a healthy school			
Create new partnerships and connections across roles and organizations that influence a healthy school			
Review and validate your work with many others in the school or district			
READ MORE ABOUT THIS OPTION ON THE FOLLOWING PAGES	gathering leaders, p50 identifying participants, p53 assigning roles, p 57–58	gathering leaders, p50 identifying participants, p53 assigning roles, p 57–58	gathering leaders, p50 identifying participants, p53 assigning roles, p 57–58

QUICK START GUIDE

I want to use a systems approach to understand what is needed to implement the WSCC model. What are the key things I need to know and do?

1. LEARN AND PRACTICE KEY CONCEPTS

Before you start, take some time to learn how a systems approach can help create a healthy school or district. You will read about and practice applying several key concepts.

PAGE 39

2. GATHER YOUR LEADERS

Once you have learned the basics, decide who can help lead your work. This group will guide others in using a systems approach to understand what it takes to implement the WSCC model.

PAGE 50

3. DEFINE YOUR PROBLEM AND PROCESS

Figuring out what specific problem you are solving is important. It is equally important to determine whose input and what activities will help you explore that problem more deeply.

PAGE 51

4. MODEL THE SYSTEM DRIVING YOUR PROBLEM

Now, you are ready to facilitate a workshop to explore how your school or district supports health and well-being. You will learn about how to set up and execute a workshop and document insights from it.

PAGE 59

5. BUILD CONFIDENCE IN YOUR SYSTEM MODEL

Once you have a good idea of how your system functions — or doesn't function — to support health and well-being, it is time to check your understanding with others and take what you have learned to the next step.

PAGE 61

6. APPLY YOUR NEW THINKING

There are many ways to apply what you have learned. You will see examples of how a systems approach can change the way you relate with others, organize your systems, make decisions, and prioritize actions.

PAGE 62

7. READ ABOUT THIS WORK IN ST. LOUIS

Read the case study to learn how a team of researchers, educators, and community partners in two school districts in the St. Louis region used a systems approach to understand the factors that create healthy schools.

PAGE 64

LEARN AND PRACTICE KEY CONCEPTS

Systems matter

To provide the high-quality education that students will need to lead productive lives, schools must constantly adapt to change. Many individuals and groups within school buildings and in the broader community must work together to give students the solid foundation that they need.

Several factors will determine whether students come to school ready to learn. Did they sleep well the night before? Did they eat breakfast? Do they suffer from chronic illnesses like asthma, trauma, or depression? Do they live in substandard housing? Do their families have sufficient income? Are they safe? Educators and health professionals working to implement the WSCC model need to consider these factors to make sure students have their best chance to succeed.

But trying to address any one of these issues alone is rarely successful, because no one's life is just about one thing. Our lives are characterized by complexity. Unfortunately, we don't always have a full enough picture of that complexity — of how things actually work — to come up with the best solutions.

That's where thinking in terms of systems can help. Rather than asking which program or service can fix some single, isolated problem, systems thinking asks how the various issues and activities within a school or district are connected and how the process that emerges from those connections leads to specific outcomes. And a method called **group model building** uses the wisdom of people from multiple perspectives to explain how the systems work. Thinking together about systems can help you reach better outcomes because your actions are based on a realistic picture of how things actually work.

This module of the toolkit will help you understand the key concepts involved in a system. Then, you will learn how your school or district can use a systems approach to explore and solve complex problems as a group.

This module also describes how two school districts in the St. Louis, Missouri, region used a systems approach to advance efforts to implement the WSCC model.

Throughout the module, we provide examples of how you can adapt tools and activities to meet your specific needs and capacities. We also give guidance on how you can take action with the resources you already have.

Let's start with a story inspired by our work in St. Louis. This story could take place in any school and demonstrates how understanding and aligning systems in a school can make a big difference in creating healthy environments for learning and development.

TURN TO NEXT PAGE →

> "A system is a set of things — people, cells, molecules or whatever — interconnected in such a way that they produce their own pattern of behavior over time."
>
> — **DONELLA MEADOWS,** THINKING IN SYSTEMS: A PRIMER[12]

POSSIBLE IMPACTS

TEACHERS AND ADMINISTRATORS AT PARKVIEW MIDDLE SCHOOL

are dealing with complex mental health concerns among their students.

Some students are anxious and withdrawn. Others can hardly sit still through an entire class period or act out in ways that disrupt instruction. Still others have mental health and behavioral concerns that require the help of professionals and administering of medication. Parkview staff has tried to put programs in place to help students cope and be successful, but all of the problems still seem overwhelming.

Dr. Robinson, Parkview's principal, heard about "systems thinking" at a recent district-wide principals' meeting. The presenter suggested that instead of tackling problems one by one, a systems perspective looks at the ways in which problems are connected to one another, and ultimately can be alleviated. She realizes that a collection of programs isn't going to be enough to address the issues that her school is confronting. She needs to understand how the system of her school is operating, and how it might be reimagined to be more effective.

Dr. Robinson makes understanding systems the topic of the next professional development day. But on this day, she's also invited parents, students, support staff, and community partners to be part of the discussion. Their task is to uncover how anxiety, stress, depression, and disruptive behavior play out at Parkview. Students talk about the pressures of taking care of younger siblings when parents are busy working. Parents say they feel stretched by all of the demands on their time. Teachers have their own stresses, coming to school every morning knowing that in addition to the instruction they are held accountable for, they will have to deal with problems that seem outside the bounds of their training. The school counselor also feels like he is the single resource that everyone in the school turns to, but he can't keep up with the demand on his own. Community partners say they want to help, but some only see students once a week and many don't know what other partners are doing to support them.

Throughout the discussion, themes emerge around expectations, relationships, and resources. The outlines of a system begin to emerge.

If teachers had more support in caring for their own emotional wellness, they could show up with more energy and enthusiasm, which would lead to better interactions in the classroom. But so would a school-wide set of practices that everyone shares when confronting mental health and behavioral problems.

Regular, daily check-ins with students and staff, breaks throughout the day, and positive methods for creating a safe and supportive school environment, are among the ideas that the group suggests.

When emotional wellness is everyone's job, it relieves the school counselor to deal with the most complex and pressing issues.

Now at Parkview Middle, these ideas and more are helping to make the school a place where problems can be faced, support can be found, and students and teachers can perform at their very best.

Stories like this imagine the potential that systems thinking offers to educators as they address challenges.

System dynamics for education

In education, we all deal with systems: A parent navigates how to register a child for a new school year. A teacher tries to figure out which behavioral services students should be receiving outside of the classroom. A principal builds a positive environment that supports students, families, and staff. A superintendent keeps track of attendance rates and standardized test scores. Whatever role we play, we are constantly immersed in systems.

The systems that make up education are not only complex, but they are also changing. Students transition. Staff members leave or change positions. Curriculum develops. Policies adapt.

As school leaders, how do we address health in the context of this complexity and uncertainty?

System dynamics can help us to:

- Recognize problems as dynamic, or changing over time
- Explore where problems come from
- Understand the structures that generate problems
- Tell a more complete story about how problems work

The next few pages provide an overview of how system dynamics accomplishes these goals.

KEY CONCEPT: RECOGNIZING PROBLEMS AS DYNAMIC

System dynamics help us see problems as dynamic, or changing over time. This recognition is an important first step in solving problems in our system. Seeing a problem as dynamic allows us to consider the history of the problem. For example, **"How has the problem changed over the past five years?"**

Seeing a problem as dynamic also allows us to imagine what the problem might look like in the future. **"What will happen if we intervene? What will happen if we take no action?"**

Take, for example, the issue of chronic absenteeism. If we were to view student attendance as a problem that is static and does not change over time, we would see only the current state of the problem. Often, we see this reported as a number, but this number does not tell us how student attendance looked one month or one year earlier.

SYSTEM DYNAMICS

System dynamics is a method for understanding, designing, and managing change. It helps us explore the relationships between factors in a system and how these relationships influence the behavior of the system over time.

Learn more about system dynamics from the Social System Design Lab, a team that works with partners around the world.[13]

CHRONIC ABSENTEEISM AS A STATIC NUMBER

on average, 1 IN 6 students miss 15 or more days of school per year[14]

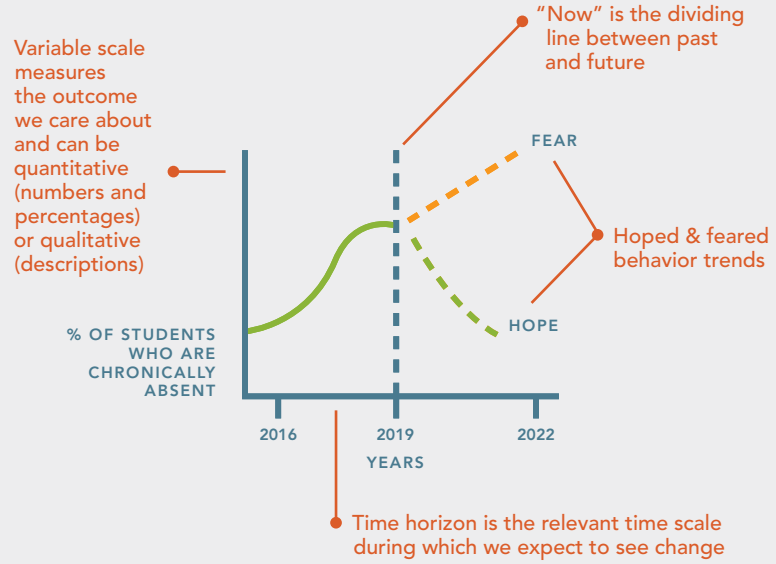
In reality, absenteeism is a highly dynamic problem. Looking further back, we may realize that student attendance changed drastically three years ago, perhaps when the district shifted its start time by 15 minutes, from 8:05 a.m. to 7:50 a.m. Since that change, attendance has declined.

Reframing absenteeism as a dynamic problem allows us to see a more complete picture of its history. It also helps us think through what may happen to the problem in the future.

As a solution, the school may want to bring on a new staff member to reach out to families when students miss school. It may take a few months to build trust with families, but eventually we may see a gradual improvement in student attendance. If no staff member is hired, student attendance may continue to fall.

This change over time can be illustrated using a graph.

CHRONIC ABSENTEEISM AT OUR SCHOOL



Many problems in education systems can be reframed as dynamic problems. Some additional examples are provided in the call out to the right.

On the next page, you have the opportunity to practice creating a graph that illustrates how a problem changes over time. You can work by yourself or with a colleague to fill out this graph.

REFRAMING A PROBLEM AS DYNAMIC

STATIC PROBLEM: Two students got in a fight on the playground

DYNAMIC PROBLEM: There has been an increase in the number of fights on the playground over the past 6 months. The hope is to decrease the number of fights, but the fear is that the number of fights will continue to rise

STATIC PROBLEM: 20,000 students are enrolled in the district, which is not enough

DYNAMIC PROBLEM: Student enrollment has been declining over the past 10 years. The district hopes it increases and fears it will stay the same or continue to decline

STATIC PROBLEM: A new district initiative has low support from teachers

DYNAMIC PROBLEM: In the past 5 years, the number of new initiatives introduced has increased, while the amount of implementation support has decreased. The hope is to increase the amount of implementation support in order to decrease the number of failed new initiatives

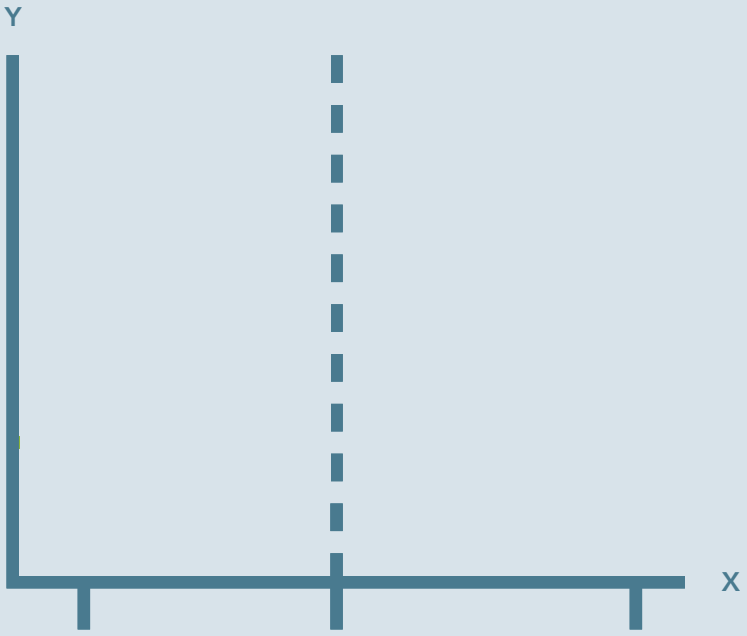
ACTION ITEM

THINK ABOUT A PROBLEM that you or your school is currently experiencing. Help yourself frame that problem as dynamic by answering the following questions:

1. How has the problem changed (for good or bad)?
2. How do you hope the problem will change?
3. How do you fear the problem will change?

Draw your answers to these questions in the graph below. Add a time scale on the x-axis (hours, months, years) and a variable scale that makes sense for your problem on the y-axis.

In system dynamics, this graph is called a "**reference mode**." It helps you understand how your problem behaves now and illustrates how you want the problem to behave in the future.



KEY CONCEPT: EXPLORING WHERE PROBLEMS COME FROM

Once we have a sense of how our problem changes over time, we can begin to think about where we can exert some influence to change it. System dynamics helps us to look within a system to identify the structures that can bring about changes in those problems.

By looking *within*, we move beyond solving for one-off events and begin to address the underlying structures that affect problems over time.

Our problems are like an iceberg. What we see is only a fraction of what makes up the problem. Problems are just symptoms of underlying patterns of behavior, which are determined by system structures. Furthermore, system structures are a product of our underlying beliefs, mindsets, and goals.

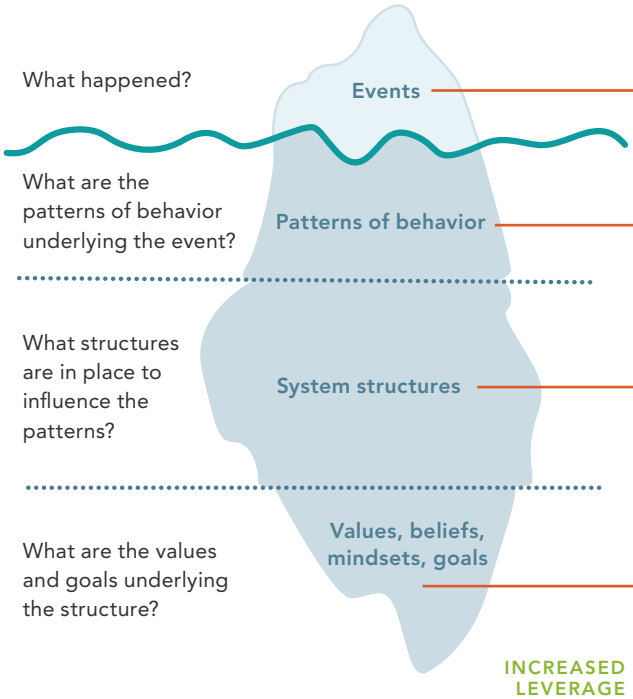
It is tempting to react to individual, time-limited events and see problems as external to our system. But the deeper our change efforts reach, the more effective and sustained they will be.

Let's explore this concept using our example of chronic absenteeism. The event — frequent unexcused and excused absences among a handful of students — has a few observable patterns: Absenteeism is worse when school start time is earlier and occurs more frequently with students who are in transition or experiencing mental health crises. Absenteeism can decline when a school takes the time to reach out to students and families and understand their challenges. These patterns are influenced by various system structures, including the district's policy about start time and the resources the school has to support students and families.

In turn, these structures are influenced by our values and goals. A school that values families' input and has built a positive and welcoming environment for students and their families will gravitate toward positive student and family engagement. But schools are also held accountable for attendance, and their funding depends upon it. So, schools have a great incentive to decrease absenteeism even beyond the educational effect of attendance on learning. Being guided by a model like WSCC while uncovering the structure of systems can help make explicit a set of values and goals that support a holistic approach to health in the school setting.

What lies beneath the problem your school deals with? Working by yourself or with a colleague, fill out the iceberg on the next page to understand your problem better.

CHRONIC ABSENTEEISM ICEBERG



Students are missing school more frequently.

Chronic absenteeism is worse when school start time is earlier and occurs more frequently with students in transition or who are experiencing mental health crises.

The problem of students missing school has gotten worse over the past few years after the district shifted its start time from 8:05 a.m. to 7:50 a.m.

Family engagement specialists and other positive engagement practices decrease chronic absenteeism. Early start times increase chronic absenteeism.

When a student misses class, the school intervenes by calling a family member. By default, family involvement increases. More family involvement usually helps to decrease chronic absenteeism.

It is important to engage families and students in positive ways and there are pressures to maintain high attendance.

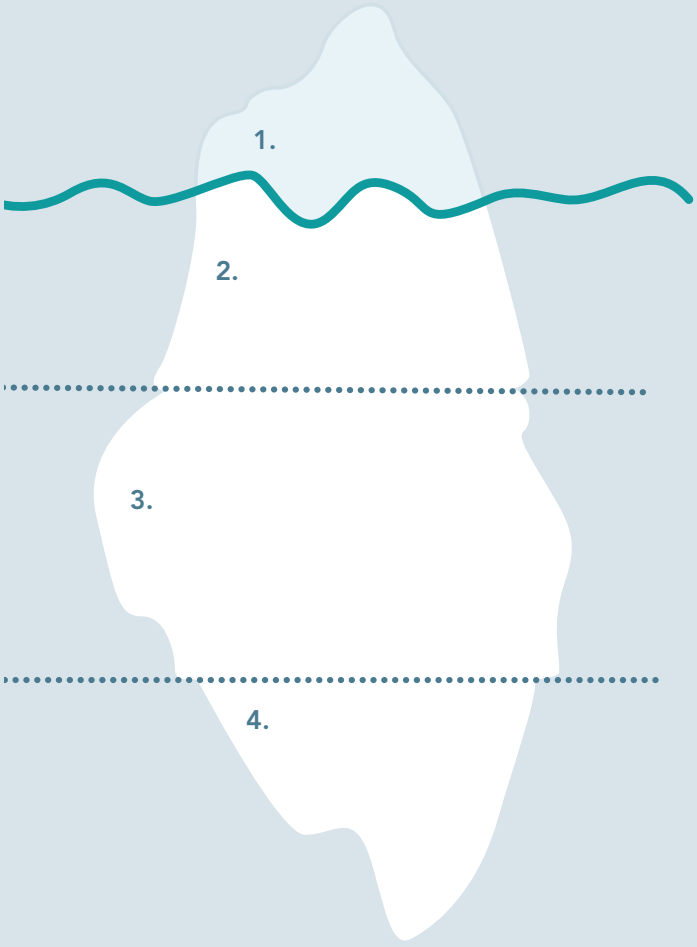
But this story is not yet complete. Simply calling families when a student misses class does not build relationships or trust between the school and families. Schools must also value the quality of those relationships.

ACTION ITEM

CONSIDERING THE DYNAMIC PROBLEM that you identified on page 43, what are some potential underlying factors that influence it?

1. How does that problem show up?
2. What are the underlying patterns?
3. What structures influence those patterns?
4. What beliefs, values, or goals drive those structures?

Add your answers to these questions on or near the iceberg below.



KEY CONCEPT: UNDERSTANDING THE STRUCTURES THAT GENERATE PROBLEMS

Uncovering the patterns, structures, and values that drive our problem helps us draw connections between these factors. It also helps us solve problems in a way that accounts for how factors are related and how they affect each other. This type of thinking — **feedback thinking** — is another benefit of system dynamics.

We can explore the concept of feedback thinking using the example of chronic absenteeism.

Many factors influence chronic absenteeism, and chronic absenteeism also impacts various other factors. We can look at each relationship as if it were independent, or we can start to uncover the interconnections — or feedback — among those relationships.

For example (Figure 1), students' motivation to learn has a large impact on whether or not they are chronically absent. In turn, a chronically absent student will achieve less. As a result, the student is less motivated to learn and may begin to fall behind.

In this same scenario (Figure 2), a school might choose to intervene by calling a family member whenever the student is absent. By default, family involvement increases, and more family involvement usually helps to decrease chronic absenteeism.

But this story is not yet complete (Figure 3). When we dig deeper, we realize that simply calling families when a student is absent does not build relationships or trust between the school and families. The quality of those relationships matters.

In fact, the quality of relationships also influences students' motivation to learn. High quality, trusting relationships can be built only if students attend school regularly.

FIGURE 1: MOTIVATION TO LEARN

Motivation to learn impacts school attendance. Students who are absent are less likely to be successful, and as a result, are less motivated to learn.

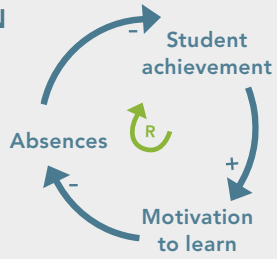


FIGURE 2: FAMILY INVOLVEMENT

Family involvement can help reduce absences.

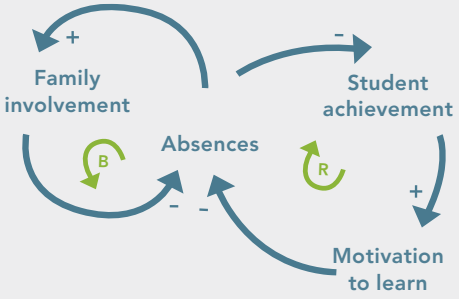
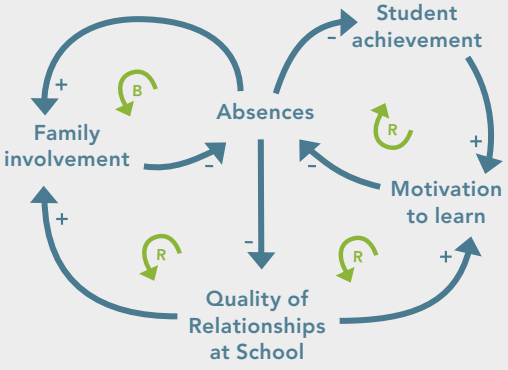


FIGURE 3: QUALITY OF RELATIONSHIPS

Family involvement, however, is only as effective as the quality of relationships that are built between the school, families, and students.



Using feedback thinking helps us to identify the true nature of relationships among factors and to develop interventions that account for feedback among factors.

Connections among factors can be illustrated using a feedback loop. Such loops represent the relationships between two factors or among many factors. You can also put multiple feedback loops together in what is called a "causal loop diagram."

All of these figures use similar elements to describe the direction and nature of relationships.

Loop type:

- **Reinforcing Loops "R"** are commonly known as virtuous cycles or vicious cycles. In other words, a change in an initial variable amplifies change in another variable.
- **Balancing Loops "B"** create stabilizing or goal-seeking behavior. These loops mitigate or slow down change, preventing a system from spiraling out of control.

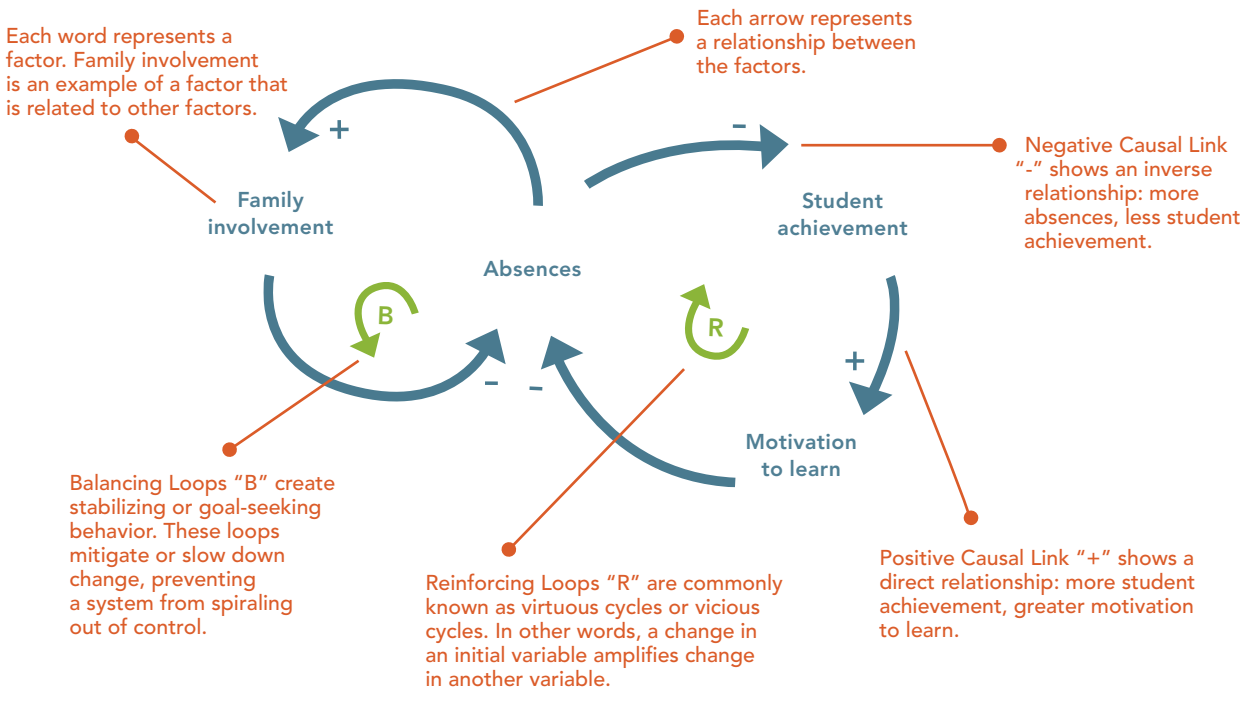
Polarity:

- **Positive Causal Link "+"** shows a direct relationship: In the example below, more student achievement leads to greater motivation to learn; less student achievement leads to less motivation to learn.
- **Negative Causal Link "-"** shows an inverse relationship: In the example below, more absences lead to less student achievement; fewer absences lead to more student achievement.

It's your turn to try out feedback thinking. On the next page, draw out a feedback loop to represent the relationship between different factors in your system. Use the symbols in the legend to label your feedback loop.

HOW TO READ A FEEDBACK LOOP

Feedback loops and causal loop diagrams use similar elements to describe the direction and nature of relationships.



ACTION ITEM

CONSIDERING THE DYNAMIC PROBLEM that you identified on page 43, how is it related to other factors in the system?

1. As the problem increases, does the related factor increase or decrease?
2. Are there intermediary factors or variables that stand between the problem and other factors?

LEGEND

Direction of Relationship

Balancing Loops

Reinforcing Loops

Positive Causal Link

Negative Causal Link

Using the space below draw your own feedback loop by referencing the items in the legend above.

KEY CONCEPT: TELLING A MORE COMPLETE STORY ABOUT HOW PROBLEMS WORK

At this point, you have a better understanding of your problem. You see it as dynamic, and you are starting to see the underlying factors and structures that drive your problem.

But up to this point, you've been working alone. System dynamics helps us tackle complex problems, but it's difficult for us to fully understand the nature of a complex problem from our limited point of view. Teachers, students, administrators, parents, policymakers — members of each group may define the same problem differently based on their experience, role, power, or biases.

Alone or with like-minded others, we resemble the blindfolded people approaching an elephant in the classic parable.

Each of these individuals builds a different "mental model" to help them make sense of what an elephant is.

And just as each person understands the shape and form of the elephant based solely on the part of the elephant they touch, we each understand a complex problem based on our unique experience in the system.

Our "mental models" are the beliefs and assumptions we have formed about why things are the way they are, and we use our mental models to make decisions and take actions to address the problem.

We often treat our mental models as truth, but it is important to remember that they are informed by our perception of reality and can be flawed or incomplete.

System dynamics helps us form more complete models of reality by providing a process that guides us in:

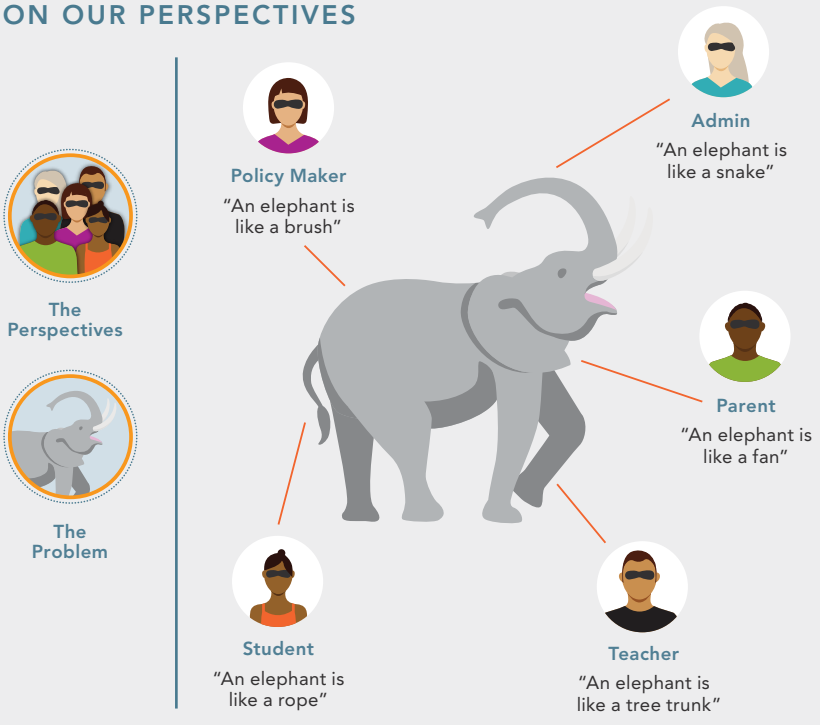
- Sharing our mental models, or our story of the way things work
- Developing more complete stories about the way things work
- Building consensus about the way things work

The process is called **group model building**.

Now that you have learned and practiced key concepts from system dynamics, you are ready to start using group model building to address health and well-being in your school or district.

The next few pages describe the steps needed for group model building.

OUR UNDERSTANDING IS BASED ON OUR PERSPECTIVES



GROUP MODEL BUILDING

Group model building is a process that brings people together to develop a model of their system, and to create shared insights, mental models, and consensus for implementing change.

Group model building takes place through workshops where people who are impacted by a problem explore that problem together using a variety of activities.

Learn more about group model building, and read on to learn about how to plan a group model building workshop.[15]

GATHER YOUR LEADERS

*Building a **core modeling team** that can lead group model building in your school or district is the first step. The primary task of this team is to plan all the details of the group model building workshops. The core modeling team will set the agendas, invite people to the table, and decide which activities the group will complete. The team makes these decisions in a series of meetings, discussing different planning topics in each meeting.*

The ideal core modeling team is small, usually five to seven people, and includes those who are knowledgeable about the school or district. In particular, core modeling team members should be able to help the team prepare for and navigate any potential challenges related to a topic, power dynamics between people, or cultural norms of a school or district. It is also helpful for the core modeling team to include people with different skills and perspectives. Usually, but not always, this means that people who hold a variety of roles in a school or district will be invited to join the core modeling team. It is also helpful, but not necessary, for the core modeling team to include someone who has experience with system dynamics or facilitating a group model building workshop.

If you plan to work with 1 or 2 others in your school or district to complete the processes described in this module, then you won't need to designate a core modeling team.

If you plan to collaborate with a mid-sized or existing group of people in your school or district to complete the processes described in this module, then your core modeling team can be slightly smaller.

If you have completed the People module and have developed a SNA roster, survey, or map, the key influencers you identified through those processes are also good candidates for your core modeling team.

Learn more about how you can identify the key influencers in your school or district.

CORE MODELING TEAM

A core modeling team is the group responsible for designing a group model building project.

It consists of people representing multiple perspectives. This includes facilitators and systems dynamics modelers, community voices, subject matter experts, and those involved and impacted by the system. Sometimes one person can fulfill multiple roles, but it is important to be as inclusive as possible.

The core modeling team typically meets over the course of 2 to 4 face-to-face meetings or calls, to make decisions about the design, feel, and facilitation of workshops.

The primary responsibilities of the team are to:

- Develop common language and problem scope
- Develop a detailed agenda
- Raise questions
- Challenge assumptions

Read the Case Study to learn more about how to invite your core modeling team to participate.

DEFINE YOUR PROBLEM AND PROCESS

Once you have a core modeling team in place, you are ready to define the problem that you will address to achieve a healthier school environment in line with the WSCC model. You will need to identify the precise objectives of your group model building workshop(s) and the people who can help you achieve those objectives, through a variety of activities.

Define your problem

Defining the scope or boundaries of a project is always an important first step, and this is especially true when planning a group model building workshop. Spending time exploring the nature of your problem and defining specific workshop objectives can help ensure that the workshop you design meets your needs.

To get started, ask yourself the following questions:

- What is the problem?
- Is the problem dynamic?
- Does the problem involve feedback?
- What is the objective of creating a model of the problem?

The first question might seem obvious. But when it comes to building a healthy school or district, you may address a variety of problems or use a different way to frame a single problem.

The second question considers the idea that problems change over time. This key concept was introduced earlier. If you need to refresh your understanding of this concept, return to the Learn and Practice Key Concepts section. A "reference mode" graph can help you determine how your problem changes over time.

The third question asks you to consider "feedback thinking," or the idea that the factors that affect a problem are connected and influence one another. Review this key concept in the Learn and Practice Key Concepts section, and use a "feedback loop" diagram to help you answer the question.

The final question prompts you to think about how the information gained from group model building will be used. How you answer this question will depend on your objective: you might be interested in learning about a problem or building capacity and coordination to address it. Or you might want to analyze a problem and identify root causes, structural drivers, or the consequences of proposed solutions.

Your core modeling team can help answer these questions, or they can review and revise the answers. Either way, you will want to write down your answers in a brief project description.

Download an example of a project description.

On the next page, you have the opportunity to get started planning your workshop. Use the space provided to think about what your workshop can accomplish.

ACTION ITEM

WORKING WITH YOUR CORE MODELING TEAM, answer a few questions to help define the problem your team is addressing.

1. What is the problem?
2. Is the problem dynamic?
3. Does the problem involve feedback?
4. What is the objective of creating a model of the problem?

Using your answers, write a few objectives for your group model building workshop. When writing your objectives, make sure you include **what is being done** for **what purpose**. The more specific you are, the more you will be able to measure whether you were successful.

A few examples of objectives are provided below:

- *Build relationships among stakeholders across schools so that we are prepared to implement the WSCC model*
- *Learn about the factors that determine healthy school environments so that we can develop a causal map to identify connections between factors and changes, policies, and innovations that can promote healthy and successful schools*

Identify participants

The next step is to identify who should participate in a group model building workshop. The core modeling team can help answer this question.

Start by listing the types of potential participants — teachers, administrators, staff members, service providers, community members and/or partners, parents, students, board members, district leaders or more.

After the core modeling team creates this list, they should identify three to four individuals to represent each participant type and use this list to determine the final list of individuals to invite to the workshop.

Ideally, this final list will include between 15 and 20 people and will represent all the participant types mentioned above.

If you plan to work with 1 or 2 others in your school or district to complete these processes, then you won't need to identify participants beyond those with whom you're working.

If you plan to collaborate with a mid-sized or existing group of people, then your participant list can be slightly shorter.

Group model building workshops can look and feel different depending on who is invited. One workshop with a group of students and another with multi-lingual parents may use different terms or examples. A workshop that combines these two groups would also need to be modified to accommodate differences.

Read more tips on how to adapt group model building to accommodate differences among participant groups.

ACTION ITEM

WORKING WITH YOUR CORE MODELING TEAM, brainstorm characteristics that are important for you to consider as you identify participants for your group model building workshop. Add to the list below to make sure your participants represent characteristics important to your school or district.

Group model building participants should:

1. Represent each role within the school or district
2. Hold expertise in or be an advocate of one of the 10 components of the WSCC model
3. Reflect demographic characteristics (race, gender, age) of our students, their families, and the community
4. Be knowledgeable about our school or district
5. Be willing to share their perspective

6. _____

_____

7. _____

_____

8. _____

_____

9. _____

_____

10. _____

_____

11. _____

_____

12. _____

_____

Read the Case Study to learn more about how to invite people to participate in the workshop.

Select activities

After participants are identified, the next step for the core modeling team is to determine the best way to organize the workshop. In general, workshops are organized around a series of activities or standardized exercises that help participants explore the problem at hand.

Each activity has a well-defined input and output. Sometimes, the output of an exercise is the generation of a lot of new or different ideas. Other times, the output involves narrowing, prioritizing, or categorizing ideas. Effective workshops create outputs at least every 2 hours and use the outputs from one activity as the inputs to the next activity.

Many activities have been created for use in group model building workshops. For ease of navigation and selection, the seven most frequently used activities are outlined on page 55 (Figure 4).

The core modeling team should select and combine activities according to the goals and format of their workshop. A workshop might incorporate all seven activities, or only a few activities. A few examples of workshop sequences are provided in the table on page 56 (Figure 5).

If the goal is to bring together a group of people to define a problem that changes over time, a shorter workshop that involves only a few activities would suffice (see Sequence A).

If the goal is to build common understanding of a complex problem, however, a longer workshop that involves more activities is a better option (see Sequence D).

The sequences listed on the next page (Figure 5) are just a few of the options available. In fact, group model building activities are meant to be flexible to the needs of each group, and adaptation is encouraged. Even though detailed instructions are provided for each activity, facilitators should be wary of following instructions too closely or scrapping instructions altogether.

Group model building activities are not a precise mathematical formula that will yield a predictable result if a facilitator or modeler follows each step carefully. On the other end of the spectrum, activity instructions provide guidance about estimated times, key points to make, and sequencing based on significant experience in diverse contexts. Teams have much room for professional judgment and improvisation, but they can only go "off script" if there is a script that grounds them.

GROUP MODEL BUILDING ACTIVITIES

Group model building uses a set of structured, replicable activities to explore a dynamic problem. Experts in the field of system dynamics call these activities "scripts", and they have documented detailed instructions for each activity in an online resource called *Scriptapedia*.

Read more about the activities listed in Figure 4 and many others.[16]

FIGURE 4: GROUP MODEL BUILDING WORKSHOP ACTIVITIES

ACTIVITY	THE PURPOSE OF THIS ACTIVITY IS TO . . .	THIS ACTIVITY ASKS PARTICIPANTS TO . . .	AS A RESULT OF THIS ACTIVITY, THERE IS . . .
HOPES AND FEARS	Establish expectations for the group model building workshop	Write down their hopes and fears for the workshop	Recognition of themes in expectations as well as potential challenges and opportunities
PRESENTING THE REFERENCE MODE	Propose and develop consensus on a reference mode, which is a diagram that illustrates how the problem at hand changes over time	Discuss whether the reference mode is correct and should be the focus of the workshop	Agreement about what the problem of interest is and how it changes over time
GRAPHS OVER TIME	Engage participants in framing the problem of interest or eliciting factors that affect it	Draw multiple graphs that illustrate how factors that affect the problem of interest change over time	Better understanding of the various factors that affect the problem of interest
DOTS	Identify ideas that are most important	Place a dot next to a limited number of ideas (or items) that are important	Prioritizing ideas
CONNECTION CIRCLES	Identify the factors that affect the problem of interest and understand the connections between them	Draw and discuss "connection circles," a visual tool used to identify and understand problems and connections	Preliminary understanding of the causal relationships and feedback in a system
CAUSAL MAPPING	Identify individual linkages between factors that affect a problem, the causal direction of those linkages, and how those linkages contribute to feedback loops	Draw and discuss causal loop diagrams, a visual tool used to map out a system	Deeper understanding of the causal relationships and feedback in a system
REFLECTION	Summarize insights, clarify ideas, and identify next steps	Respond to an interpretation of ideas and questions posed	Clarity and shared sense of achievements, insights, and next steps

Information about activities in this table have been adapted from Scriptapedia.[16]

FIGURE 5: POTENTIAL SEQUENCES FOR GROUP MODEL BUILDING WORKSHOP ACTIVITIES

SEQUENCE	PURPOSE	FORMAT	ACTIVITIES
A	Get a group of people to define a problem that changes over time	Short workshop, meeting, or small group discussion (1 hour)	1. Hopes and Fears 2. Presenting the Reference Mode 3. Reflection
B	Examine different mental models about a problem, and start to see larger, underlying themes	Short workshop or facilitated meeting (1–2 hours)	1. Presenting the Reference Mode 2. Graphs over Time 3. Dots 4. Reflection
C	Reorient understanding of a problem from linear, cause-effect thinking to a systems or feedback perspective	Discussion, small workshop (1–2 hours)	1. Presenting the Reference Mode 2. Connection Circles 3. Causal Mapping
D	Build a common understanding of the structure of a complex problem	Short workshop or several shorter meetings (3–4 hours)	1. Presenting the Reference Mode 2. Graphs over Time 3. Dots 4. Causal Mapping 5. Reflection

Assign roles

At its core, group model building is a "team sport." The cognitive and emotional load of engaging with diverse groups and communities around complex issues means that one person rarely has what it takes to perform all roles at once. So, after the core modeling team has selected activities, its next step is to determine who from the core modeling team or participants will facilitate each aspect of the workshop. This process of fine-tuning workshop logistics requires close attention to detail and an understanding of how people in a school or district are perceived by others.

In general, the number and complexity of roles to be filled will depend on the number and complexity of activities you have selected. Not all roles will be employed in all workshops. Some individuals may play multiple roles during a workshop, depending on the timing of contributions.

There are a few common facilitator roles that are needed to carry out a group model building workshop. Together, these individuals create a facilitation team that support one another as activities are introduced, completed, and reviewed.

The people who are assigned to these roles may be part of the core modeling team, or they may be others who are well-respected and trusted in the school or district.

The responsibilities and capabilities of each role are described on the next page (Figure 6). Sometimes, one person can fill multiple roles, but more often, each role will need to be filled by a different person.

Good group facilitation is an important aspect of a successful group model building workshop, but not everyone who plays a role in the workshop needs to be a skilled or experienced group facilitator. If you are new to facilitating a group, keep in mind that your main purpose is to encourage conversation and participation and help the group manage complex ideas and conflicts, if they arise. That said, everyone will have a different facilitation approach and style.

If you plan to work with 1 or 2 others in your school or district to complete the processes described in this module, then you won't need to assign specific roles. Each of you will rotate leading and participating in activities.

If you plan to collaborate with a mid-sized or existing group of people in your school or district to complete the processes described in this module, then you may need to adjust your approach to assigning roles. For example, if you're working with an existing group, they may have already established roles.

FACILITATING A GROUP MODEL BUILDING WORKSHOP

Group model building requires the support of many different facilitator roles. Each role plays a different part in creating a successful workshop.

Read more about the facilitator roles listed in Figure 6 and a few others.[17]

Looking for more tips on group facilitation?

Read an overview of some of the most important aspects of good group facilitation.[18]

FIGURE 6: FACILITATOR ROLES FOR GROUP MODEL BUILDING WORKSHOPS

ROLE	RESPONSIBLE FOR . . .	NEEDS TO HAVE . . .
CONVENER/ CLOSER	• Starting the session • Introducing participants to the exercise • Making sure that participants understand the purpose of the exercise within the context of their organization or community • Introducing the facilitators • Bringing the session to a close and thanking participants for their time	• Familiarity with community context • Trust and status within the participant group • Convening authority • Familiarity with the objectives and activities of the group model building process
COMMUNITY FACILITATOR	• Using social capital to help participants trust and engage in the workshop	• Familiarity with community context and substantive topic • Trust and status within the participant group • Familiarity with the objectives and activities of the group model building process • Group facilitation capabilities
MODELER FACILITATOR	• Leading the system dynamics modeling and group model building process	• System dynamics modeling capabilities • Group facilitation capabilities
WALL BUILDER	• Organizing results of an exercise into thematic clusters • Explaining the clusters to the participants in order to elicit feedback	• Familiarity with community context and substantive topic
NOTE TAKER/ TIME KEEPER	• Taking notes about what is said in the workshop • Notifying the facilitation team when time is short	• Familiarity with community context and substantive topic • Organizational capabilities
REFLECTOR	• Helping the group reflect on what it has done so far and recognize the issues and insights that have been developed during the modeling • Relating the relevance of the activities and insights to a larger substantive context, or to system dynamics modeling more generally	• Familiarity with community context and substantive topic • Trust and status within the participant group • Familiarity with the objectives and activities of the group model building process

Information about facilitator roles in this table have been adapted from Scriptapedia.[17]

MODEL THE SYSTEM DRIVING YOUR PROBLEM

With your problem and processes defined, you are ready to host a group model building workshop. You will put into action everything that you have prepared so far. All that remains is to ensure that your space is ready to accommodate a workshop and that you and your team are ready to document ideas and insights created by your participants.

Set up your space

The best space for a workshop is one that is accessible and available.

If you have the option to select a room, here are a few characteristics that will help your workshop run smoothly and create an inviting environment:

- Natural light (preferred) or a comfortable level of lighting
- Ample space for participants to sit and walk around
- Unobstructed wall space for facilitators to post chart paper
- Tables that can be set up in small working "pods"
- Access to a projector, screen, and white/chalk board

Outside of these accommodations most activities can be completed with relatively simple materials. The activities described previously require three different colors of regular-sized paper (about 10 pieces of paper per participant), large flip chart paper, dry erase and flip chart markers, blue painter's tape, and small dot stickers (like the ones at a yard sale). It also helps to have name tags for participants to fill out.

In arranging your room, consider what you want participants to do and what you want them to see. If you are asking them to participate in small working groups, arrange your tables in small pods. If you are also asking them to look toward a screen, make sure the chairs are situated so that everyone is facing in the right direction. After you arrange the room, divide the materials you prepared earlier among table pods. This ensures that people who arrive late aren't scrambling to collect the materials they need.

Last but not least is the food. Providing a meal, or at least some snacks and refreshments, is a good way to demonstrate your gratitude for the time and participation of workshop attendees. Make sure you place any food in a convenient location so participants can easily access it during the workshop.

Document your insights

Recall that a Note Taker is a critical role in group model building workshops. This is because the documentation of insights and learnings is an essential part of group model building. Much of the learning takes place through dialogue and the process of activities, and it is important to have at least one individual who is in charge of recording conversations for the group.

There are three strategies to capture information. Together these documentation strategies help to create a complete story of learning among participants.

Take pictures: Pictures of participants taking part in activities help document who was there, who worked with whom, and how participants interacted with their space. Capturing the visual feel of the room and the visual feelings of participants helps remind everyone of the tone of the activities.

Collect artifacts: Artifacts, or the paper products that participants create and leave behind, are also important to capture. Collecting artifacts helps to document the ideas (complete or incomplete) that participants shared.

Take notes: More traditional note-taking, or scribing, is also an important element of documentation. Notes from each activity help to create layers of information, including group discussion, that may not be captured in either the pictures or the artifacts.

CAPTURING INFORMATION AT A GROUP MODEL BUILDING WORKSHOP

Take Pictures

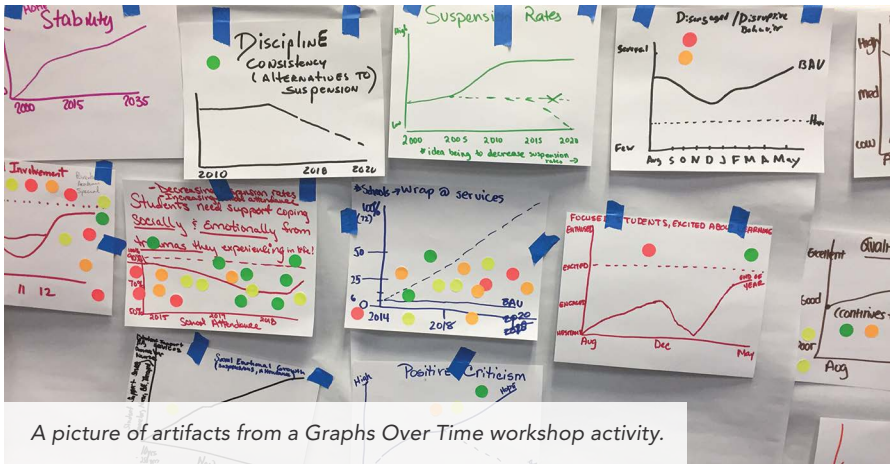
Capture the visual feel of the room and the visual feelings of participants

Collect Artifacts

Collect artifacts to help to document the ideas that participants shared

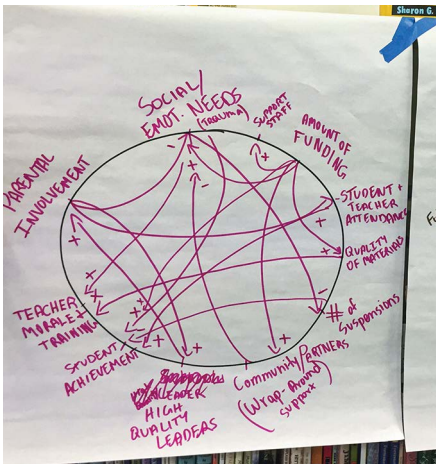
Take Notes

Capture notes from each activity help to create layers of information



A picture of artifacts from a Graphs Over Time workshop activity.

Documenting insights does not take a lot of resources or skill. It does, however, require a team member (or team members) dedicated to taking and organizing notes throughout the group model building process. One way to make it easier on the Note Taker is to create templates for each activity ahead of the workshop. Templates will help save time during the workshop and make it easier for different Note Takers to combine their notes after the workshop.



A picture of an artifact from a Connections Circle workshop activity.

BUILD CONFIDENCE IN YOUR SYSTEM MODEL

After hosting your workshop, your next step is to build confidence in the model you built by reviewing your work, answering any remaining questions, and revising your model as needed.

The process of building confidence in your model can take place in a variety of formats. You can reconvene participants at additional group model building workshops. Alternatively, your core modeling team can complete an internal review of the products created in the first round of workshops. It is also possible to combine both of these options.

The main goal of either process is to build confidence in the system model your participants created in the first group model building workshop. Recall that this model is called a causal loop diagram and it represents the system that supports school health as it is experienced by workshop participants.

Regardless of your approach, a helpful first step is to draw your causal loop diagram. You can do this by hand, or you can use one of a few online tools. Depending on which tool you choose, you can draw and re-organize your model, create simulations and presentations, and complete other systems analyses.

Explore tools that help you draw and organize your system model.[19]

In the simplest terms building confidence means identifying where the causal loop diagram is unclear or incomplete and clarifying or filling in those sections.

At a minimum, this requires your core modeling team to review the causal loop diagram and discuss each factor, relationship, and feedback loop. One helpful approach is to create a description for each feedback loop included in the diagram. This ensures that everyone is reading the diagram in a similar way.

A more complex approach to building confidence in your system model involves consulting the objectives you developed for your workshop. Does your causal loop diagram help you address your goal? Are you able to use the diagram in the way that you had planned? If not, what else do you need in order to do so?

It is important to remember that you bring a specific perspective to your evaluation of a system model. If you are a member of the school or district, then your perspective is that of a participant. If you are a member of an external group, then your perspective is that of a researcher or reviewer. Similar to the lesson introduced earlier in the parable of the blindfolded people approaching an elephant, the perspective you bring to assessing your system model is informed by your experiences and assumptions.

Read the Case Study to learn more about how to share your work and download templates to help you create a presentation.

APPLY YOUR NEW THINKING

After you complete your structured activities and core modeling team meetings, how can you and your school put your new thinking to work? Thinking in terms of systems is a lifelong process that can help you in many ways. You will find many opportunities to apply both the processes and the techniques you have learned here.

The examples below capture how you can apply what you learn by using a systems approach to change how you relate with others, organize your systems, make decisions, and prioritize actions. These experiences are not based solely on our team's experience in St. Louis. Rather, they are inspired by the work of educators whose engagement with system dynamics are documented elsewhere.[20]

An "aha!" moment

Group model building in one school district led leaders to realize that while they had a shared understanding about how academic, physical, and emotional well-being were connected, the structures for supporting these aspects of student functioning did not work together.

For example, the academic team met separately from the teams that addressed issues of physical and behavioral health. After the district recognized the disconnect, it began a three-year process to restructure its central office to better integrate the systems. In the meantime, members of all three teams were invited to sit in on meetings of the other groups.

At first it was difficult for those who did not participate in the group model building workshops to understand why this sudden shift was needed. District leaders used the causal loop diagrams from the workshops to explain why their current organization was not working and make the case for a new, revitalized system.

Digging deeper

A school that participated in a series of group model building workshops uncovered an interesting feedback loop in its system.

It found that teachers and staff were leaving due to secondary trauma, stress, and burnout. Teacher turnover, in turn, affected students' behavior, leading to a less stable, more volatile environment. Discussions during the workshops centered on how the school and district could intervene in this vicious cycle, but the school felt it needed more time and input from more individuals to fully understand the issue.

As a result, the district sponsored a series of discussion sessions on the topic. These sessions included many of the same activities that were completed in the initial workshops, but they focused specifically on teacher and staff stress. Participants built on the artifacts from the previous workshops but pushed ideas further. They also modified many of the activities to accommodate the literacy needs of parents who attended the sessions.

After they felt that they had a more complete picture of what was going on, school and district leaders worked with a local university to take their findings one step further. Through this partnership, the school identified evidence-based strategies to address the issues that were surfaced and used computer system dynamics simulation modeling to simulate the relative impact of each potential strategy. The school presented this information to district leaders, who in turn met with community partner organizations. After a full year of work, the district engaged a partner to deliver a new program aimed at supporting teacher and staff well-being and reducing stress and turnover.

Define, model, build confidence, repeat!

A community partner organization that participated in a group model building workshop with one of the districts it supports was impressed by the effect the workshop had on learning and problem solving.

The organization felt that it may not have time in its day-to-day schedule to facilitate an entire workshop, but it wanted to use some aspects of the workshop activities to spark better conversations with its school partners. The organization identified three key techniques that it wanted to use: graphs over time, connection circles, and action ideas.

The organization set up a meeting with one of the district leaders to engage in group model building. Together, the organization and district talked through how they could use these activities.

The organization then trained a few key staff members in the activities and began using them whenever they needed to define or model a problem or identify potential solutions. Over time, staff became more comfortable working with these tools and found it easier to talk through problems with their school partners.

FINAL THOUGHTS

There are various factors and systems that contribute to a school's or district's ability to provide a healthy and safe environment for learning and development. Using system dynamics and group model building, you have mapped out the causal relationships in your system that drive health and well-being. You also have identified opportunities where you can improve the system to more fully support the WSCC model and whole child health.

Read Part I (especially pages 12–21) of NACDD's The WSCC Model: A Guide to Implementation for additional ideas about the school- and district-level policies and actions that you can leverage to bring the WSCC model to life in your school or district.[4]

A team of researchers, educators, and community partners led a series of group model building workshops between January and April 2018 in two districts in the St. Louis region.

To read more about their process, TURN TO NEXT PAGE →

Gathering leaders in St. Louis

At the prompting of the research team, each district invited a core modeling team to lead planning processes for the workshops.

In one district the core modeling team consisted of 3 members: two district leaders (a director of curriculum and instruction and a grants coordinator) and a community partner who served as the wellness coordinator for the district. The other district's core modeling team included 4 members: an assistant superintendent assistant superintendent in the area of student support services along with representatives from each of the three participating schools in the district. School-level representatives held various roles: one was a teacher, another was a book clerk, and the third was a school secretary. Additionally, three members of the research team participated in planning. One member of the research team was an expert in system dynamics and group model building.

Each core modeling team held weekly 45-minute planning calls for one month. During these calls, the team discussed different topics to help design every aspect of the group model building workshops.

- Planning meeting one: The core modeling team built consensus around the workshop objectives.
- Planning meetings two and three: Used to identify those people who would participate in the workshops and which activities would be completed. And the fourth planning call was used to finalize workshop logistics, including who would facilitate which activities during the workshops.

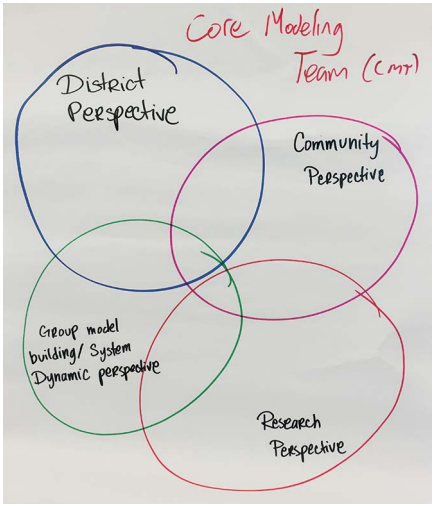
The research team scheduled and coordinated the planning meetings, but the district and building representatives led the conversation and made the critical decisions along the way. It wasn't always easy to find a time to meet, especially given that core modeling team members had different roles, responsibilities, and schedules. Modifications were made, like scheduling calls with individual team members, addressing multiple topics in a single planning call, and gathering feedback through email. They helped ensure that everyone could provide input regardless of their availability.

Having a core modeling team that meets regularly is helpful, but if you don't have the time or capacity to meet as a group regularly, consider making adjustments. The most important piece of planning, in our experience, was to seek input from diverse perspectives. In our work, this meant gaining insights from both the school and district levels. It was also important that core modeling team members had deep background information about current and past efforts to address health and well-being. They felt comfortable to raise questions and identify challenges or assumptions that might get in the way of a successful group model building workshop.

MESSAGES MATTER

Finding the right group of core modeling team members to lead the planning of group model building workshops is critical. The first step to bringing this group together is to invite core modeling team members to participate. This invitation is an important messaging opportunity. It may be the first time you communicate what group model building is and how it can help your school or district. It is also a good time to set expectations for what the core modeling team is being asked to do.

See an example of an email you can use to invite members of the core modeling team to participate.



Artifact from core modeling team planning meeting, depicting the perspectives that core modeling teams members offer.

Defining problems and processes in St. Louis

DEFINING PROBLEMS

The core modeling teams in St. Louis were ultimately interested in understanding how the WSCC model might be implemented in their district. However, during their initial planning meeting, the teams decided that they first needed better understanding and agreement about the factors that contribute to a healthy, safe, and successful school environment.

This new focus on understanding the system factors related to health and well-being in schools became the primary objective of the group model building workshops. The teams agreed that they would build a diagram (known as a causal map) to illustrate which factors affect the system that supports health and well-being. This diagram would also identify how factors are related to one another as well as potential opportunities to improve the system. The process of building this diagram would help participants negotiate differences in how they think and talk about health and well-being in schools.

Additional objectives for the workshops included building and nurturing relationships among participants and developing a group of champions who could support this work in the future.

After the core modeling team identified their goals and objectives, they created a one-page project statement that described what group model building is and how it would be used in their districts.

MESSAGES MATTER

A project statement is a good way to bring together your core modeling team's ideas about the goals and objectives of group model building workshops. This statement can be shared with others as a way of explaining group model building and developing expectations about what will be achieved.

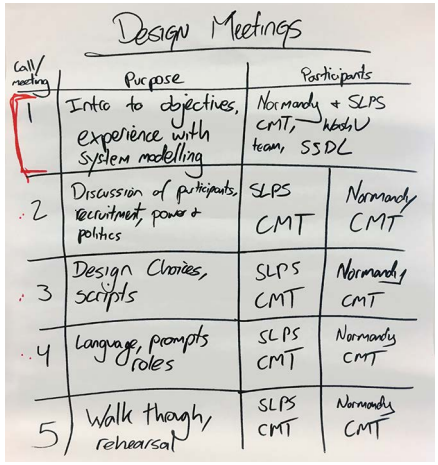
See an example of a project description the core modeling teams in St. Louis developed.

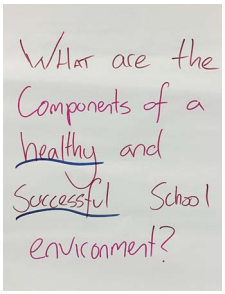
Team members found it helpful to set aside specific planning time to define their workshop objectives. But if you are unable to do this, you can also circulate objectives via email or by posting them in a shared space.

IDENTIFYING PARTICIPANTS

With their objectives defined, the core modeling teams in St. Louis turned their attention to identifying potential participants for the group model building workshops. Because the objectives were focused on creating a shared understanding and exploration of the WSCC model, the core modeling teams wanted to invite participants whose day-to-day work and expertise aligned with various aspects of school health, ranging from nutrition to mental health to family involvement. It was important that participants be able to shed light on school health from different perspectives.

To start, the core modeling teams in each district identified the participant groups that might bring a diverse understanding of the factors that contribute to a healthy school. These groups included parents, students, teachers, staff, building and district leaders, board members, and community partners.





Artifacts from core modeling team planning meetings, outlining the timeline of preparation activities and the key problem on which the workshops would focus.

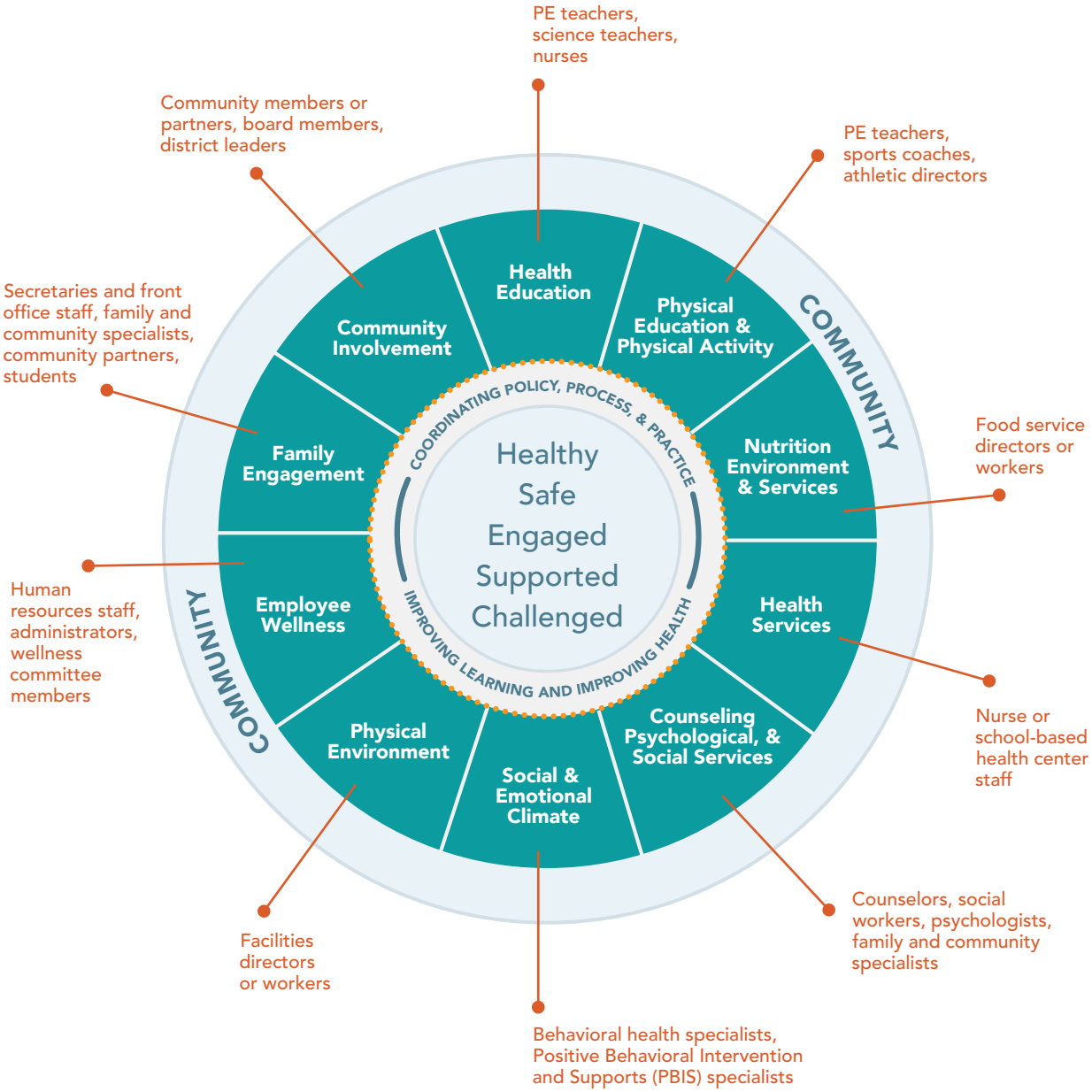
Because staff and community partners are such broad categories, the core modeling teams identified specific roles that overlapped with key aspects of the WSCC model. These included nurses, social workers, counselors, cafeteria workers, and staff who worked directly with families, to name a few.

IDENTIFYING ROLES THAT ALIGN WITH COMPONENTS OF THE WSCC MODEL

Some roles are aligned with a specific component of the WSCC model because of the nature of that role. For example, physical education (PE) teachers know a lot about Health Education because this is a core part of what they teach.

Examples of roles that may naturally align with components of the WSCC model are listed below.

Keep in mind that individuals in your school or district may have an affinity for or expertise within a component of the WSCC model that isn't based on their role. Use this list as a tool to help you brainstorm who you might ask to represent different aspects of health.



Next, the core modeling teams brainstormed to identify three to four individuals in each role of interest. The teams took care to include those individuals who are often included in conversations as well as those who are more often overlooked. For example, one district's core modeling team included on its list a 20-year veteran teacher who served as the union representative, a first-year teacher, and a teacher who had taught for six years but was new to the district. Similarly, the core modeling teams identified parents who were highly engaged and regularly attended district meetings as well as those who were not engaged and were rarely involved in school events.

Beyond length of tenure and level of engagement, the core modeling teams also tried to balance participants in terms of demographic characteristics, such as age, race, and gender. They also focused on creating a dynamic mix of individuals who were strong champions for healthy schools but might have different styles of communication and levels of power within the school hierarchy. For example, they wanted to include individuals who were assertive as well as those who were more reserved.

These efforts to create a balanced and diverse participant group were designed to ensure that a variety of perspectives was represented. The teams also wanted to create rich dialogue among people who do not often get the chance to work together. Among the benefits of this approach is helping those who may not be involved in decision making feel comfortable sharing their ideas as well as informing those who are in leadership positions about aspects of the system that they cannot readily see.

In total, approximately 35 individuals in each district were invited to participate in two four-hour long workshops. Between 20 and 25 individuals attended each workshop. We found that the task of identifying participants to invite could be completed within a 45-minute planning call, and issuing personal invitations and following up with potential participants took several calls and emails.

Having a trusted individual invite participants goes a long way to ensure participation. For example, the superintendent of each district sent a Workshop Invite Email to all potential participants on behalf of the core modeling team. The team then followed up with each participant until they recruited a well-balanced group.

Workshop scheduling is almost as important as having the right person to invite workshop participants. For many schools and districts, bringing together 20 to 30 people during "out of school" time can be complicated. As much as possible, our team in St. Louis worked with district leaders to integrate group model building activities into professional development days in order to minimize the impact on schedules and maximize participation. When this option wasn't available, we identified other ways to ensure that participants were able to join. Scheduling workshops over the lunch hour and ending by 3 p.m. (when students needed to be picked up) seemed to be the option that worked best for us.

MESSAGES MATTER

How you communicate about the value of group model building can determine who participates in workshops and how engaged they are.

If you have developed a project statement, this can serve as a basis for how you describe the goals of the workshop and what participants will be asked to do.

It is also important to consider who is inviting people to participate in the workshops. Is that person highly regarded in the school or district? If so, then participants may be more likely or willing to respond and participate.

See an example of a Workshop Invite Email that the team in St. Louis used when inviting people to participate.

SELECTING ACTIVITIES

The core modeling teams in St. Louis identified and selected the activities for their group model building workshops across two different planning meetings.

In the first meeting, they started by reviewing the list of activities introduced earlier in the Define Your Problem and Process section. Then, the core modeling team member who was a system dynamics expert led a conversation about which activities were needed to help participants create a causal map of the factors affecting the system of health and well-being.

In one school district, a member of the core modeling team had previously participated in a group model building workshop and helped explain activities (Figure 4) for those who had not experienced a workshop before. In the other district, the system dynamics expert provided in-depth examples from previous work with schools and other organizations to explain activities and what they accomplished.

The core modeling teams then reviewed the list of options for sequencing activities (Figure 5), also introduced in the previous section. Both core modeling teams felt that more than one of the purposes listed in the sequence table were important. After some discussion, however, they each settled on Sequence D, which helps participants, "build a common understanding of the structure of a complex problem."

Following the activities in this sequence, participants start by exploring their problem of interest using the **Presenting the Reference Mode** activity. They then identify and prioritize factors that affect the problem of interest through the **Graphs over Time** and **Dots** activities, respectively. Finally, participants create a causal map of the factors affecting the system of school health, then reflect on their conclusions in the **Causal Mapping** and **Reflection** activities.

Using this sequence as a starting point, the core modeling teams developed an agenda that balanced the desire to develop a common model with an interest in providing a safe and intimate space for parents, students, teachers, district leaders, and representatives of affiliated organizations to interact. They did this by creating opportunities for more informal connections, such as an ice breaker and lunch, in between other activities. An example of the draft agenda is below (Figure 7).

FIGURE 7: DRAFT AGENDA FOR ST. LOUIS GROUP MODEL BUILDING WORKSHOP

ACTIVITY	DURATION
PARTICIPANTS ARRIVE	30 min
WELCOME, INTRODUCTIONS, AND ICE BREAKER	15 min
PRESENTING THE REFERENCE MODE	15 min
GRAPHS OVER TIME	30 min
DOTS	5 min
LUNCH	25 min
CAUSAL MAPPING	30 min
REFLECTION	20 min

In their second planning meeting, the core modeling teams reviewed the agendas they drafted and reflected on what else might be needed to reach the workshop objectives. A few team members in one district were concerned that participants would not be prepared to make the jump to causal mapping after only a short introduction to system dynamics. For that reason, the core modeling team decided to add a **Connection Circles** activity to help build capacity for feedback thinking.

A team member in the other district felt that some participants might feel wary about sharing their ideas in front of others. As a result, that core modeling team decided to make Connection Circles into a small group activity. They also added the **Hopes and Fears** activity at the beginning of the workshop to help set expectations and air concerns about what would take place. An example of the revised agenda is to the right (Figure 8).

These "public" agendas were provided to workshop attendees. Detailed agendas and facilitation guides were developed and shared among the core modeling team and workshop facilitators.

FIGURE 8: REVISED AGENDA FOR ST. LOUIS GROUP MODEL BUILDING WORKSHOP

ACTIVITY	DURATION
PARTICIPANTS ARRIVE	30 min
WELCOME, INTRODUCTIONS, AND ICE BREAKER	15 min
HOPES AND FEARS	15 min
PRESENTING THE REFERENCE MODE	15 min
GRAPHS OVER TIME	30 min
DOTS	5 min
LUNCH	25 min
CONNECTION CIRCLES IN SMALL GROUPS	30 min
PRESENTATION OF CONNECTION CIRCLES TO LARGE GROUP	20 min
BREAK	10 min
CAUSAL MAPPING	30 min
REFLECTION	20 min

GROUP MODEL BUILDING WORKSHOP AGENDAS

Looking for more examples of workshop agendas? Scroll to the bottom of the page to explore examples of 90, 120, and 180-minute workshops.[16]

View templates to build a Public Agenda and Detailed Agenda that you can share with workshop attendees and your core modeling team, respectively.[21]

View a template to build a Facilitation Guide that you can share with your core modeling and facilitation teams.[22]

ASSIGNING ROLES

In the last of their planning meetings, the core modeling teams in St. Louis defined who from their team and each district would serve as facilitators during the workshops. They started by reviewing the facilitator roles introduced earlier in the Define Your Problem and Process section. Then, they discussed potential candidates who had the capabilities to fulfill each role.

The team decided that the individuals in the table to the right would be invited to fulfill facilitator roles (Figure 9).

We found that it was helpful to develop talking points for facilitators, especially those who served as Convener/Closer, Community Facilitator, and Reflector. This helped them feel comfortable in their role, especially if they hadn't been a part of the core modeling team.

See an example of the talking points we prepared for our facilitators.

A rehearsal might also help your facilitators feel prepared for the workshop day. In St. Louis, members of the core modeling teams who were available gathered a few days before each workshop to run through activities and refine talking points, examples, and transitions.

FIGURE 9: FACILITATOR ROLES FOR ST. LOUIS GROUP MODEL BUILDING WORKSHOP

FACILITATOR ROLES	DESCRIPTION
CONVENER/CLOSER AND REFLECTOR	The Superintendent was asked to fulfill both the Convener/Closer and Reflector roles in each district. In both districts, the Superintendents were well-respected and trusted by their communities. Neither had been part of the core modeling team, but were brought up to speed about the specific objectives so that at the end of the workshop they could make connections to the goals of the project and other work going on in the district.
COMMUNITY FACILITATOR	In one school district, the Assistant Superintendent for Student Supports and Services was asked to fulfill the role of Community Facilitator. The Director of Curriculum and Instruction was the Community Facilitator in the other district. Both were members of their respective core modeling teams and were involved with defining the workshop's objectives, identifying participants, and selecting activities.
MODELER FACILITATOR	A team member from the group model building facilitator team was selected to fill the Modeler Facilitator role in each district's workshops. This individual had many years of experience facilitating group model building activities in various community settings. They were considered an outsider to most of the participants, but they were able to build trust with participants by taking part in activities.
WALL BUILDER	Multiple members of the core modeling team fulfilled the role of Wall Builder throughout the districts' workshops. Before each workshop, the team designated a Wall Builder for each activity that needed one, and these individuals summarized information shared during each activity.
NOTE TAKER/TIME KEEPER	Members of the research team served as note takers and time keepers. Throughout the workshops, they documented insights, collected artifacts, and kept track of the time so that all activities could be completed.

Modeling the system in St. Louis

SETTING UP SPACE

Our team in St. Louis tried many different spaces for group model building workshops. In one district, we were able to host the workshops in an elementary school's library, which proved to be a very positive and welcoming environment for participants. This space had natural light, access to a projector and screen, and close proximity to restrooms. We were able to set up tables and chairs in small working pods and used the low-standing bookshelves for a food and refreshment area.

The only issues experienced were that the tables and chairs were smaller (being made for elementary-age children), and the walls were already covered with posters, book shelves, and other materials. We adjusted to this by using flip chart paper to create "clear" space on the walls where we could tape up artifacts. In the end, the smaller tables and chairs helped to create a close-knit feeling among the group.

In the other district, we used a board room and a high school cafeteria to host the workshops. Both rooms presented challenges. The board room was located in an area of the district offices that was less familiar to participants, so some people had trouble finding it. The cafeteria, on the other hand, was rarely used for large presentations, and it took some time to figure out the audio/visual and technical components there.

Through all of our experiences, we learned that it is important to visit the room in advance of the workshop and scope out how to set up to accommodate activities and facilitators. Write down notes about how people will access the room, in particular where they can park, check in, and how they will navigate to the workshop room. Providing detailed instructions a few days ahead of the workshop is helpful. Clarifying this information also minimizes the burden on school staff if they are hosting the workshop.

DOCUMENTING INSIGHTS

The teams in St. Louis used each of the note-taking strategies listed above to capture the look, feel, learnings, and dialogue of the workshop. In addition, each district's core modeling team reconvened twice in the weeks following the first group model building workshop to discuss what did and did not work well in the first workshop and to review workshop notes and artifacts.

The discussion focused on these questions: *"If you could design the workshop again, what would you change? What would you keep?"*

With these questions in mind, members tackled workshop design in the following key areas:

- Level of participant engagement
- Equity of participant engagement
- Level of understanding of key concepts
- Gaps in understanding of key concepts
- Efficiency of workshop logistics (e.g., room, sound, materials, food, etc.)

Notes from these debriefing sessions were added to the notes from the workshop. The sessions also helped solidify the major insights from the workshop and prepare for the next session, as described in the following section.

Building confidence in St. Louis

The core modeling teams in St. Louis used an additional workshop and internal review to build confidence in the system models they created.

As a first step, core modeling teams met a few times in the weeks following the first workshop to discuss how things went and review materials that participants created. Among the products that we reviewed were the causal loop diagrams created in the final workshop activity. These diagrams included all factors identified as having an impact on healthy, safe, and successful schools. It also included the relationships, identified as arrows, and polarity of those relationships, identified as plus (+) and minus (-) signs.

Our teams talked through these diagrams, identifying factors and relationships that made sense as well as those that were puzzling, questionable, or missing. As needed, we consulted workshop notes and other artifacts to recall important contextual information.

Using these reflections, the teams developed a list of points to clarify with workshop participants. These points included both general and specific questions. An example of a general question is: are there any factors or relationships not yet represented in the diagram? A specific question might prompt workshop participants to consider whether a specific factor (say, teacher stress) intervened in the relationship between student behavior and teacher turnover.

Because the objectives of the workshop focused specifically on understanding WSCC implementation, the core modeling teams also identified areas of the diagram that applied to the 10 components of the WSCC model, making special note of those components that were not reflected in the diagram.

In their second meeting, our teams designed a follow-up session where participants could review the causal loop diagrams and respond to the questions and gaps that we identified. We also structured the workshops so that participants could begin to identify opportunities to intervene in the system.

As we did in previous workshop planning meetings, our teams selected activities that met their objectives. The first major activity of the second workshop was **Model Review**, where participants could review the causal loop diagram they created and critique or discuss missing and inaccurate information. After lunch, participants then completed the **Places to Intervene** and **Action Ideas** activities, which prompted participants to begin to see where in their system model they could take action and what those actions might be. For ease of navigation and selection, a description of the activities the teams selected are outlined in the table on the next page (Figure 10).

Similar to the first workshops, the agenda on the next page (Figure 11) allowed for small and large group activities as well as informal activities to provide a variety of opportunities for participants to exchange information. We again scheduled the second workshops as a session of four to five hours over the lunch hour.

GROUP MODEL BUILDING ACTIVITIES

Group model building uses a set of structured, replicable activities to explore a dynamic problem. Experts in the field of system dynamics call these activities "scripts", and they have documented detailed instructions for each activity in an online resource called Scriptapedia.

Read more about the activities listed here and many others.[16]

FIGURE 10: ADDITIONAL GROUP MODEL BUILDING WORKSHOP ACTIVITIES

ACTIVITY	THE PURPOSE OF THIS ACTIVITY IS TO . . .	THIS ACTIVITY ASKS PARTICIPANTS TO . . .	AS A RESULT OF THIS ACTIVITY, THERE IS . . .
MODEL REVIEW	Review key insights illustrated in the causal loop diagram and refine the model	Review the causal loop diagram and identify any missing factors and relationships	Agreement around a more refined causal loop diagram that more accurately represents the system that drives the problem at hand
PLACES TO INTERVENE	Identify potential opportunities to intervene and change how the existing system functions	Use the causal loop diagram to identify system loops where a change could impact the problem of interest	Better understanding of what factors and relationships in the system provide effective opportunities to change outcomes
ACTION IDEAS	Identify as many action ideas as possible to intervene in the system	Use the causal loop diagram to identify, sort, and prioritize specific actions that could impact system variables, connections, or the strength or direction of connections	Prioritizing action ideas according to feasibility (how easy or hard the action idea is) and impact (how much impact the action idea has on the system)

Information about activities in this table have been adapted from Scriptapedia.[16]

FIGURE 11: DRAFT AGENDA FOR SECOND ST. LOUIS GROUP MODEL BUILDING WORKSHOP

ACTIVITY	DURATION
PARTICIPANTS ARRIVE	30 min
WELCOME AND REVIEW OF LAST WORKSHOP	20 min
MODEL REVIEW	60 min
LUNCH	30 min
PLACES TO INTERVENE	20 min
ACTION IDEAS IN SMALL GROUPS	30 min
BREAK	10 min
PRESENTATION OF ACTION IDEAS BY SMALL GROUPS	45 min
REFLECTIONS AND CLOSING	15 min

One consideration to keep in mind: We found that facilitating a critique of a causal loop diagram to be challenging. When participants see their system reflected back to them, they often want to begin revisions immediately. Such enthusiasm is good, but it requires a strong facilitator to keep the conversation focused and organized.

Consider relying on a team of facilitators to help you keep your group on track.

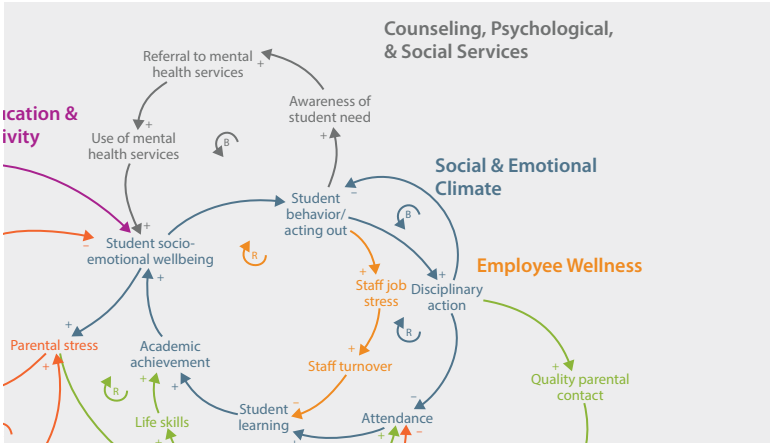
Following the second group model building workshops, the core modeling teams convened a final time to debrief, share reflections about what did and did not work, and discuss what members saw as next steps.

A few next steps were identified: first, we wanted to follow up with workshop participants to share high-level findings. To do this, the teams used an online tool, called Vensim, to create a visual representation of both the preliminary causal loop diagram and the revised diagram, which included participant-generated ideas for intervening in the system.

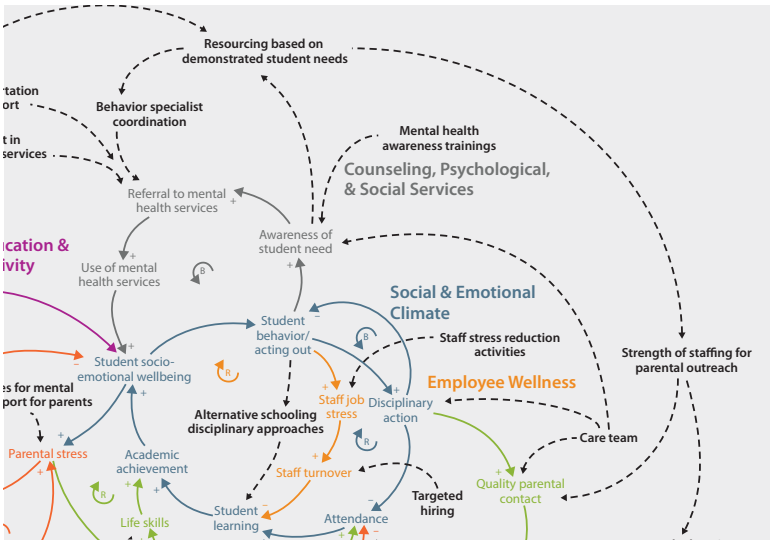
MESSAGES MATTER

Causal loop diagrams contain a lot of information, and they are not always easy to make sense of on their own, especially if someone did not participate in the development of the diagram.

One way to help make sense of the diagram is to apply different colors to factors and relationships that represent the different component of the WSCC model. An example of a color-coded causal loop diagram is shared below.



You can also incorporate action ideas into this model to show where people identified opportunities to intervene in the system. An example of a causal loop diagram with action ideas included is shared below.



Learn more about programs and tools that help you draw out a system model.[19]

Download a template to present the diagram to stakeholders in your school or district.

After this, we sent a Workshop Follow-Up Email to participants that included the visuals and contact information for core modeling team members, in case any workshop participants wanted to share ideas or ask questions.

In addition to this, the core modeling teams completed an internal review of workshop notes, artifacts, and the causal loop diagrams. Two members of our team led this task and spent the next few months reviewing materials and summarizing content. The final product of their analysis was a report and accompanying PowerPoint slides.

The slides outlined the discussion points of highest interest, including:

- **Feedback narratives**, meaning descriptions of the major feedback loops illustrated in the causal loop diagrams
- **Action idea narratives**, meaning descriptions of the impact that action ideas might have in a system and the resources required to realize action ideas

The team members who led the internal review were part of the modeling and research team and were able to commit substantial time to this effort. If you are not working with an external or university-based partner who can commit time and resources to analyzing findings, there are still many ways for you to interpret your work and create meaningful summaries. At minimum, carry the causal loop diagram with you to meetings, and make a few quick notes whenever a factor on the diagram comes up. After a month or two, look back at your notes to see how the diagram applies to your day-to-day experience.

MESSAGES MATTER

The Workshop Follow-Up Email is another important messaging opportunity. In this email, you want to make sure that you thank participants for joining the workshops and provide an overview of next steps. As much as possible, let participants know how the information they helped create will be used and how you will follow up in the future.

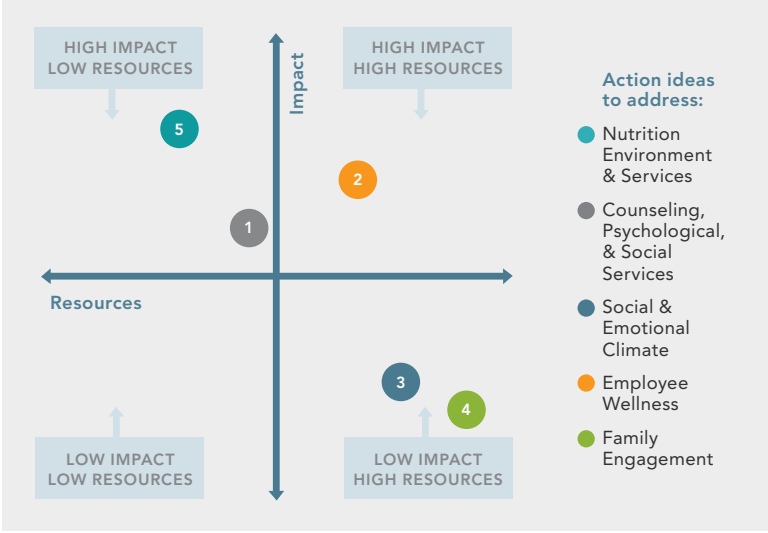
Similar to all other emails, it's important to select a messenger who is known and respected by participants. A member of your core modeling team is probably a good messenger.

See an example of a Workshop Follow-Up Email used by the team in St. Louis.

The way that data and information are presented is important, especially when the data is as complex as a causal loop diagram. One way to break down these diagrams into manageable pieces is to review the individual feedback loops that make up a diagram. Using a narrative or story-driven approach to describing what is occurring in each feedback loop helps people understand the information.

Download a template to present a feedback narrative in your school or district.

A useful way to talk about action ideas is to describe each idea in terms of the impact it will have in your system and the resources needed to make the action idea work. You can organize this information in a list or plot it using a matrix graph, as shared in the example below.



Download a template to create your own action idea list.

Download a template to create your own action idea matrix graph.