Children's Healthy Living
Food Systems

Group Model Building Facilitation Guide

February 2025

Contents

Overview

How to Use this Guide

This group model building facilitation guide represents a distillation of the experience from piloting, conducting, and evaluating a series of workshops with communities across the US-Affiliated Pacific focused on improving children's nutrition and health as part of the Children's Healthy Living Food Systems (CHL-FS) study. The guide is written with the goal of providing a general framework for adapting and tailoring the CHL-FS group model building exercises to cover a wide range of topics, from children's diets and food systems to other topics in public health and nutrition.

This guide is organized into different sections beginning with an overview of the different workshop designs. Each workshop design provides a draft agenda along with a sequence of group model building exercises or scripts. The next section provides details on each group model building facilitated exercises or "scripts", which can be adapted and tailored to the specific topic and context. The scripts draw on a set of group model building team roles. This is followed by a section that provides a set of checklists that may be helpful for planning and organizing facilitation teams. The final section includes an evaluation that was conducted at each workshop.

The Process Behind Our Workshops

The guide was initially developed by a core modeling team as part of the CHL-FS project and introduced to members at the 2022 CHL-FS annual meeting. Workshop agendas were revised and tailored to each jurisdiction starting with Hawaiʻi in October 2022 and finishing with American Samoa in March 2023. Each workshop was evaluated using a participant survey where results from one workshop could be used to refine the design of the next workshop.

The goal of the workshops was to understand the local socioecological context of child nutrition and health as a complex adaptive system, introduce system dynamics and build local capacity for future group model building workshops and applications of system dynamics. The workshops in each jurisdiction varied by their scope, number of participants, and capabilities for community outreach and group facilitation in addition to cultural context, language, representation by indigenous community members, logistics, and characteristics of the food systems.

Results from workshops can be used to inform local and regional program design, planning and implementation of initiatives to improving child nutrition and health, help conceptualize food systems for further system dynamics modeling, introduce system thinking/system dynamics, and building capacity for group model building for future projects in a community, jurisdiction or region.

A Note on Group Model Building

Group model building (GMB) is a facilitated approach to engaging and working with people in the framing of an issue and understanding a system based in principles of system dynamics. This guide was developed using principles from community-based system dynamics, which includes the formation of a core modeling team to design, plan, and interpret the results and the use of a set of structured small group exercises or "scripts" and a facilitation team with defined roles and skills.

A key distinction between conventional approaches to GMB and community-based system dynamics (CBSD) is the emphasis on building capacity and a community of practice over time and multiple projects. This supports the development and retention of local contextual knowledge, adaption and tailoring of group model building methods, and provides resources for guiding and interpreting the results.

This means that for CBSD, it is less important to have all the decision makers in the room at the first workshop than to have people who are already engaged in outreach and extension activities embedded within community social networks. First community workshops typically build on an existing set of relationships and social ties, and then can expand over time through multiple workshops on a variety of topics driven by participants' interests and priorities to form a community of practice in group model building. However, CBSD is not a substitute for relationship building in the absence of community connections and should not be viewed as an expedient way to engage communities at the expense of capacity building and trust.

This guide provides the basis for a first set of workshops in a community with participants who may have had no prior exposure to systems thinking, system dynamics or group model building. The exercises can also be repeated with participants on new topics of interest and used to explore and unpack in more detail specific aspects of a system.

The scripts selected also provide opportunities to involve participants in facilitating subsequent workshops and for facilitation team members to rotate roles. For example, a participant in one workshop can be a community facilitator in a subsequent workshop; or a member of the facilitation team who was a community facilitator in one workshop might move to being a wall builder or even a modeler facilitator in the next workshop depending on the exercise and experience.

As facilitation teams gain more experience and communities of practice emerge, there will be a need to move beyond the exercises in this guide to include additional exercises including interpreting and using the results from system dynamics simulation models.

While group model building can be applied to a wide range of topics and has been adapted and used across a wide range of contexts, languages, cultural and environmental contexts, and group model building can help a community find a new way to talk about difficult issues and develop a shared understanding, there are times when group model building is not the best tool.

CBSD places an emphasis on building capacity in system dynamics through a series of experiential exercises. This entails learning new conventions and developing a new way of describing and understanding a system. This involves time and when action is a necessity such as a disaster or organizational crisis, getting people together to decide on a course of action is more urgent than capability building. CBSD is also inappropriate if there is already a clear sense that a problem does not benefit from or involve feedback relationships. Lastly, CBSD should not be seen as a recipe or substitute for training and experience in small group facilitation, but instead draws on the existing training and experience in facilitation small and large groups common to teachers, clergy, social workers, extension workers, and community organizers.

Workshop Agenda

Workshops following this guide of group model building scripts can be completed over a single full-day workshop or over 2-3 sessions. The decision on which format works best depends on a number of factors. For example, due to logistics, it may be easier to convene participants on a single day versus trying to reconvene participants for a second or third session. Or, it may simply not be possible to get participants to attend a workshop longer than two hours. There are also some benefits and limitations of each format to consider (see Table 1).

The CHL FS workshops included, for every workshop, a run-through of the scripts the day before the actual workshop to finalize choices of scripts and clarify facilitation team member roles and a debrief after the workshop to identify what went well and what could be improved. For each activity colored dots are used to ask the group to prioritize ideas.

Table 1. Overview of benefits and limitations of three workshop designs

Design	1 session	2 sessions	3 sessions
Benefits	● Often easier to convene participants for single session ● Continuity of themes within session	● Lower level of time commitment for a session increases likelihood of participating in first session ● Opportunity to learn from experience from first session and adjust for second session ● Easier to facilitate than full day session	● Lower level of time commitment for a session increases likelihood of participating in first session ● Greatest opportunity to learn from experience sessions and adjust for next sessions ● Easier to facilitate than full day session
Limitations	● Full day session is more demanding on facilitation team ● Limited opportunities to learn from experience to improve facilitation or team roles	● Tendency to forget between sessions, especially if separated by more than 2 weeks ● Moderate issues with continuity in participation across sessions ● Adds time to sessions to introduce new members and review results from previous session	● Tendency to forget between sessions, especially if separated by more than 2 weeks ● Greatest risk of issues with continuity in participation across sessions ● Adds time to sessions to introduce new members and review results from previous sessions

The agenda for each workshop can be adjusted to include additional activities, but the sequence of the scripts should be followed. For example, one might want to add a presentation of previous research or an introduction to the issue being addressed after the welcome and introductions. But a "Connection Circles" or "Causal Mapping" exercise should generally always follow from a "Graphs over Time" exercise. Moreover, although it is possible to use both the "Connection Circles" and "Causal Mapping"

exercises in the same workshop, using both exercises tends to duplicate the content across exercises, increase fatigue and ultimately decrease the motivation and energy later in the workshop. Hence, it is recommended that only one exercise be used for finding connections between variables.

One session design

The one session design may have the most appeal for bringing together community leaders, decision makers, and other actors in a system, but it is also the most demanding on the facilitation team in terms of logistics, facilitating a full-day session, and experience in group model building and system dynamics.

Workshop agenda (1 day)

- Welcome and introductions
- Setting expectations – "Hopes and Fears"
- Identifying trends – "Graphs over Time"
- Lunch
- Making connections – "Connection Circles" or "Causal Mapping"
- Break
- Identifying current and potential levers for change – "Action Ideas"
- Reflections
- Close of workshop

Two session design

The two-session design is more forgiving, breaking the activities up into two different sessions and allowing the team to both reflect and adjust between sessions. Timing between sessions matters. Short intervals of 1-7 days between the sessions increases the likelihood that participants will carry over content and insight from the previous session, but this format leaves little time for the facilitation team to reflect and adjust the design if there were issues in the first session. Long intervals of 14 or more days provide more opportunity for the facilitation team to reflect and learn from the first experience, but may increase the likelihood that participants will not recall or draw on content from the first session.

First workshop agenda (2 hours)

- Welcome and introductions
- Setting expectations – "Hopes and Fears"
- Identifying trends – "Graphs over Time"
- Reflections
- Close of workshop

Second workshop agenda (3 hours)

- Welcome and introductions
- Review of previous session
- Making connections – "Connection Circles" or "Causal Mapping"

- Break
- Identifying current and potential levers for change – "Action Ideas"
- Reflections
- Close of workshop

Three session design

The three-session format is the most forgiving for a learning and gaining experience. Distributing the exercises across three sessions limits the risk of a single exercise derailing the rest of the workshop and provides more opportunity for the facilitation team to learn and adjust the facilitation for the subsequent sessions. The main limitations of the three-session format are the difficulty of maintaining continuity of participants across all three sessions and the need to reorient participants at the start of each session to the content from the previous session.

First workshop agenda (~2 hours)
- Welcome and introductions
- Setting expectations – "Hopes and Fears"
- Identifying trends – "Graphs over Time"
- Reflections
- Close of workshop

Second workshop agenda (~2 hours)
- Welcome and introductions
- Review of previous session
- Making connections – "Connection Circles" or "Causal Mapping"
- Reflections
- Close of workshop

Third workshop agenda (~1.5 hours)
- Welcome and introductions
- Review of previous session
- Identifying current and potential levers for change – "Action Ideas"
- Reflections
- Close of workshop

Group Model Building Scripts

This section provides more detailed instructions for each group model building exercise or "script". These are based on the group model building scripts from *Scriptapedia*. For full details on the scripts along with their origin and history, please refer to *Scriptapedia*.

Hopes and Fears

This script is used to elicit and establish group expectations for a GMB session or project and is performed at the start of a GMB project.

Time

Preparation time: 5 minutes

Time required during session: 30 minutes

Follow-up time: 5 minutes

Materials

1. Two different colors of office paper (8.5 x 11) for each participant
2. Thick tipped markers
3. Blue "painters" masking tape
4. Camera or other method to capture the clusters

Team Roles

- Facilitator with good group facilitation skills and knowledge of the local language and topic
- Wall-builder to categorize hopes and fears
- Recorder to summarize the hopes and fears as they are shared during the session
- Runner (optional) to transfer hopes and fears from facilitator to wall-builder

- Timekeeper

Steps

1. Participants are given several sheets of paper in each color. The facilitator explains that they will be writing their hopes and fears (or concerns) for the project and then sharing them with the group.
2. The facilitator states which color paper represents hopes and which represents fears. The facilitator asks the participants to write one hope or one fear per paper according to the corresponding colors. The facilitator gives the participants a few minutes to individually write as many hopes and fears in the time allotted.

3. The facilitator then has the participants separate the hopes and fears into two piles. The facilitator asks the participants to rank their hopes and fears from most to least important, placing the most important on top of each pile.
4. In a round-robin fashion, each participant then reads one fear and one hope. The facilitator takes each hope and fear that the participant has read and reflects back what the participant has said for clarity. If there is a runner, the runner will take each hope and fear to the wall-builder. If not, the facilitator will hand off each participants' hope and fear to the wall-builder and return to the next participant.
5. The wall-builder will concurrently be listening to the participants and facilitator's clarifying statements. The wall-builder will then take hopes and fears from the facilitator or runner and cluster them into thematic groups by taping them to the wall. The wall builder may arrange clusters as the script progresses to accurately capture unifying themes.
6. After each participant has had a chance to share once, the facilitator may open the floor to participants to offer hopes and fears or may go around the room until everyone has shared all of their hopes and fears.
7. The facilitator will then have the wall-builder explain the themes of the hopes and fears and ask the group: "Does this resonate with you? Are there other themes you notice, or any hopes or fears you think should be moved?"
8. Recorders write down the theme of clusters in the session notes and take pictures of the wall.

Evaluation Criteria

● Participants have shared both their hopes and fears for the upcoming project
● Participants understand the overall themes of the hopes and fears

Hopes and Concerns wall in Alaska

Graphs over Time

This script is used to engage participants in a group model building session in framing the problem, initiating mapping, eliciting variables, and gathering input to decide the reference modes for the workshop or modeling process. It is performed at the beginning of a group model building session as it is a springboard for discussion about the problem to be modeled.

Time

Preparation time: 15 minutes

Time required during session: 45 minutes

Follow-up time: 5 minutes

Materials

1. Stacks of 8.5x11 white paper with X and Y axes drawn on them
2. Large blank wall (8'x10')
3. Thick tipped markers
4. Blue painter's tape, glue sticks, or tacks
5. Camera or other method to capture the graphs

Team Roles

● Facilitator who has some experience with SD to work with the group
● Wall-builder with little or no experience in SD who will cluster graphs and talk about themes
● Recorder to document the session through written notes and photograph the clustered graphs
● Runner (optional) to carry the graphs from the participants to the facilitator if the group is large

Steps

1. Based on group size, decide whether to break participants into subgroups. In smaller groups (less than 10 people), allow individuals to work and present independently. In larger groups (less than 10 people), divide participants into subgroups of roughly 10. Ask the subgroups to sit together.
2. The modeling team hands out sheets of white paper to each participant.
3. The facilitator gives an example of how to draw a graph over time, carefully labeling the X-axis as "Time," and adding a start time, end time, and the present

time indicated with a vertical dashed line. The Y-axis is labeled with a variable name. The facilitator then sketches the behavior over time.

4. The facilitator then asks participants to draw one variable over time per piece of paper. The participants should be given the option of including hoped for behavior, expected behavior ("business as usual"), and feared behavior on the same graph.

5. The facilitator and wall-builder walk around and help participants with the task as needed. Allow 15 minutes, or until the group runs out of steam, to complete the task.

6. Reconvene as a large group:
   - If fewer than 10 people, instruct participants to arrange their graphs in a stack with the most important graphs ("the best stuff") on top. The facilitator takes one graph at a time from each participant, holds it up in front of the entire group, and asks the participant to talk about it. Ask for participants to share the "best stuff" first. Clarify timescale, variable names, etc.
   - If N>10, instruct subgroups to share their graphs with each other and choose the ones they think are most important. They should then arrange their graphs in a stack with the most important ones on top. The facilitator then goes to each subgroup and holds the first graph they have selected up in front of the entire group. The subgroup spokesperson talks about the graph. Ask subgroups to share the "best stuff" first. Clarify timescale, variable names, etc.

7. The facilitator then hands the graph to the wall-builder.

8. The facilitator repeats steps 6 and 7 with each participant or subgroup, taking one graph at a time until all graphs are shown or time has run out. Finish by asking if any participant has something else that really ought to be shown.

9. During steps 7-8, each graph is posted on the wall. The wall-builder tries to cluster the graphs meaningfully on the fly based on themes and variables.

10. The facilitator asks the wall-builder to explain the clusters of graphs on the wall. The wall-builder tries to summarize dynamics that help to characterize the problem that emerges from the participants' graphs.

11. The facilitator enables the participants to talk about the clusters and the characterization of the problem they imply.

12. Consider labeling the clusters based on themes or related variables. There is potential for the modeler to close by highlighting the beginnings of feedback thinking in the dynamic problem.

Evaluation Criteria

- Interesting, self-sustaining group discussion about clusters (Example 2) described by the wall-builder
- Meaningful clusters identified
- Graphs tend to converge to a clear dynamic problem
- Some key dynamic variables emerge from reflecting on the graphs and thematic clusters

- Modeling team can begin to see important feedback loops
- Members of the group appear to have a better understanding of the problem being modeled

Graphs Over Time walls in American Samoa (above) and Guam (below)

Connection Circles

This script is used to see important variables and connections between variables at the start of a session.

Time

Preparation time: 10 minutes

Time required during session: 30 minutes

Follow-up time: 15 minutes

Materials

1. Sheets of large paper, such as butcher block paper, with blank connection circles (1 per small group)
2. Dark thick tipped markers (1 per person)
3. Example of a completed connection circle on paper or in presentation slide format
4. Camera or other method to capture the drawings

Team Roles

- Facilitator with training/experiencing using connection circles.

- Timekeeper

Steps

1. At the start of the exercise, separate participants into small groups and give each group one blank connection circle and a set of thick tipped markers.
2. Introduce the exercise by stating, "The goal of our first exercise is to identify the variables and the connections between them that are important in the system affecting [insert topic, e.g. child nutrition and health in…]. We are going to draw a connection circle. A connection circle is a visual tool that can help us identify and understand problems and see the connections in a system. First, let me show you an example."
3. Tell participants, "We are going to start with a large circle."
   - Next, explain that the participants will then pick two variables that are connected and draw a line with an arrow pointing in the direction of influence. Say that the arrow shows causality and it can indicate both a positive or a negative situation. Provide an example to the participants.

- Say, "Next, you will pick another set of variables that are connected and draw an arrow to show causality. After about 15 minutes or so, you might have something that looks like this." Show an example of a completed circle.
- Tell the participants that there are several points to keep in mind before starting:
- First, for a connection that goes in both directions, draw two separate lines, one going in one direction and the other going in the other direction. Remember that the arrow shows the direction of influence, or of causation. The arrow can represent something positive or negative.
- Second, it may be easier to bend some of the lines to make them easier to follow, and that's OK.
- Third, the variables and connections can be based on the data sharing or personal experiences.
- Fourth, this connection circle is the overall or combined group picture of what may be happening for [topic]. Some variables and connections may be common to all communities. Other variables and connections may be specific to only one community or group.
- Finally, a recorder does not need to be chosen for the groups. Each person can participate by generating ideas and making connections on the circle.
3. Tell participants that they will have 15 minutes to complete the exercise, and a warning when only five minutes remain will be provided. Tell participants that their task is to identify connections that impact [topic].
4. As groups work on their connection circles, facilitators walk around the room, observe how the groups are doing, and coach them. The focus of coaching moves through three phases:
   - For the first phase (approximately the first five minutes), the focus is on clarifying the instructions and providing positive reinforcement that the participants are on the right track. For example, tell participants, "That looks great. You have several variables representing [topic] and connections with arrows pointing in one direction."
   - During the second phase, focus on helping groups improve their skills in developing the diagrams and representing their discussion. For example, tell participants, "Remember, if you want to show a relationship that goes in both directions, draw two separate lines," and, " Seems like you're having a lot of disagreement about whether the variable is the same for all communities. Why don't you try adding a second variable and representing both ideas on the page, even if they feel a bit contradictory, or are only relevant for some communities."
   - During the final phase (approximately the last five minutes), look for a group that has a good example to start the next exercise, and role model how one explains the connections as follows: "You have 5 minutes left before we return to a large group. That looks great. I see how [variable 1] is influencing [variable 2], and this is influencing [variable 3], which then affects [variable 4]. Nice job."

5. Tell the groups to stop after 15 minutes.
6. Ask participants to share out their connection circles with the larger group as time allows. Have all participants move around the room to each connection circle as it is presented. Presentations should focus on sharing out the connections that the group found most important or relevant.

Evaluation Criteria

● Connection circles with many connections including one or more feedback loops
● Participants see a system

Connection Circle presentation in CNMI (above) and development in American Samoa (below)

Initiating and Elaborating a Causal Loop Diagram

This script is used to get an initial idea of central concepts and their relationships at the beginning of a project.

Time

Preparation time: 20 minutes

Time required during session: 45 minutes

Follow-up time: 20 minutes

Materials

1. Either three flip charts OR wall space on which several flip charts / cling sheets are taped,

   OR

2. A whiteboard, markers and flip chart,

   OR

3. A projector and laptop with a suitable modeling software (capable of drawing causal loop diagrams). Note that in the last case a second person is needed to draw the diagram in the modeling software, while in the other situations one person may guide the group.

4. Camera or other method to capture drawn diagrams

Team Roles

- Facilitator/modeler with experience in drawing causal loop diagrams, and preferably with experience in building formal models.
- Community facilitator familiar with participants and local context, fluent in local language and strong small group facilitation skills.

Steps

1. Remind the group of the problem variable, preferably sketched as a reference mode of behavior. Remind the group of the list of variables elicited before. Place the list of variables in such a way that it is visible to the group of participants. Write the problem variable in the center of the white board.

2. Build the model by repeating following steps (see Vennix, 1996, p. 120).
    o Ask participants which variable from the collected list is a cause for changes in the problem variable. When someone makes a suggestion, include this in the drawing of the model in order to visualize what is meant. Then check to see if everyone agrees with the proposed relation. If someone disagrees, ask for clarification and try to determine what the group thinks the relationship should be. If a discussion goes on too long, you can choose to temporarily 'park' this item and continue with another part of the model. Hopefully, there will not only be variables that have a direct relationship with the problem variable, but you will also build a few logical chains of reasoning (via intermediate variables) into the model. In addition, check the polarity (positive or negative) of the relationship.
    o After spending some time doing this, proceed to the consequences of changes in the problem variable.
    o At the point where a feedback chain becomes closed, check with the entire group to see if the chain as a whole is correct. Check again to see if a loop is balancing or reinforcing.
3. In the last part of the session, analyze the model by checking the feedback loops one more time. Before you close the group session, make sure you do the following:
    o If there is a list of 'parked' issues, go through them.
    o State once more what has been done and what will happen with the final products.
    o Formulate a few concise conclusions.
    o Make sure that all the information which is necessary for the report has been noted.

Evaluation Criteria

● A causal loop diagram with polarities for each link and loops identified as balancing or reinforcing
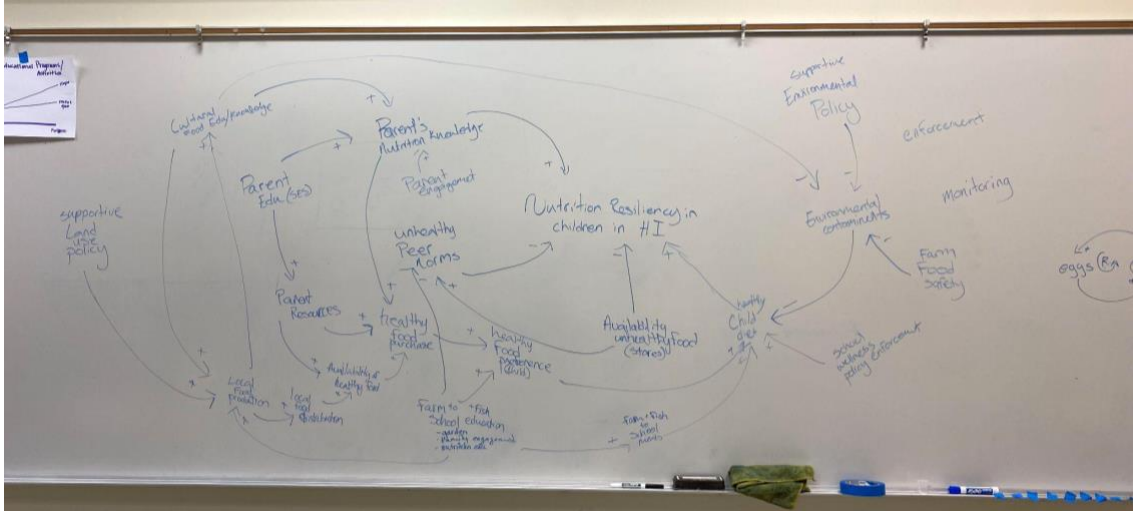
Causal Loop Diagrams constructed in Hawai'i (above) and Alaska (below)
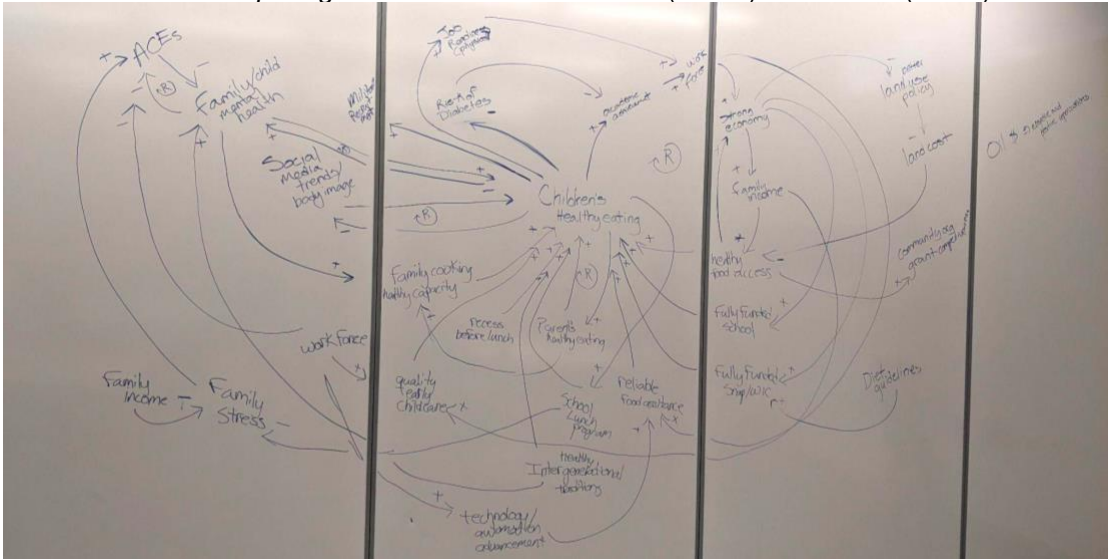
Action Ideas

This script is used to identify and prioritize actions after a model has been developed.

Time

Preparation time: 5 minutes

Time required during session: 30 minutes

Follow-up time: 30 minutes

Materials

1. Sheets of office paper (enough for 5-8 sheets per participant)
2. One dark thick-tipped marker per participant
3. Blue "painters" tape for creating the wall and labels for the axes on the wall

Team Roles

● Facilitator experienced in small group facilitation
● Co-facilitator/ Modeler who is able to organize the ideas on a wall
● Recorder to take notes on the ideas being suggested
● Reflector to reflect on observations back to the group

Steps

1. Ask groups to take 10 minutes to identify as many actions as they can that could impact the model from the previous exercise.
   ● What I would now like you to do in each group is take 10 minutes and use the diagram to help you identify as many possible actions to improve this system as you can.
   ● For each action, I want you to write a name that identifies the action on a sheet of 8.5x11 paper.
   ● Since we will be posting and organizing each action, write only one action per sheet of paper and please use the large thick markers.
   ● Specifically, look at the diagram and identify places where you might intervene. [Give example; e.g. In the obesity example, we might try to implement a program to decrease the consumption of unhealthy snacks and call this action "Providing healthy snacks at church." We would then write the name of this ("Providing healthy snacks at church") on one sheet of 8.5x11 inch paper using the markers.]

- After 10 minutes, I will ask you to share in a round-robin fashion the results of your list of actions by going to each group and asking you to share your most important action.
- For each action, I want you to do the following when you share out with the group: (1) describe the action, (2) identify where it would impact the model, (3) identify how easy or hard it is to implement, and (4) if successfully implemented, how much impact might this have on the [topic].
- You will have 10 minutes to complete this task.

2. Participants are given a 1-minute warning and told to sort their actions from the most important to the least important.
    - We're about to finish. Please complete your last action before we get started again in the large group.
    - Please sort your actions from the most important to least important.
    - Please stop.

3. The facilitator then asks groups to share their actions, one at a time and in a round robin fashion starting with their most important action. If another group has already identified that action, then they should select their next most important action.
    - As we did in the first exercise, I am going to ask each group to only share one action at a time because I want to make sure that everyone gets an equal opportunity to share their insights.

4. The facilitator asks clarifying questions to make sure everyone understands the action and where the action would impact the system by referring to the model, and then asks them to identify where the action should be placed on the wall in terms of implemention difficulty and potential impact.
    - Where do you see this action falling in terms of ease of implementation? How easy or hard would it be to implement this?
    - If successfully implemented, what do you see as the potential impact of this action on [topic]?

5. As each group shares the action, the co-facilitator/ modeler places the action in the quadrant identified by the group, while a co-facilitator or recorder writes the action and draws how it connects to other variables in the connection circle.
    - It is important that the group nominating the action determines where it fits in terms of workability and importance, as well as how it connects to other variables in the system. If other groups have a different opinion on where the action fits, they can nominate the variable on their turn.

6. Reflect back to the group your observations about the potential actions.
    - Actions that are easily workable and high priority represent "low hanging fruit."
    - Actions that are hard and high priority represent areas where funders, policy makers, and researchers may be able to help in understanding or modifying the barriers to implementing high priority ideas.

Evaluation Criteria

- The exercise has led to a rich list of potential actions prioritized by the ease of implementation and potential impact
- Participants have high energy and express enthusiasm in finding potential solutions
- The group has developed a shared understanding of each action and how it maps into the system
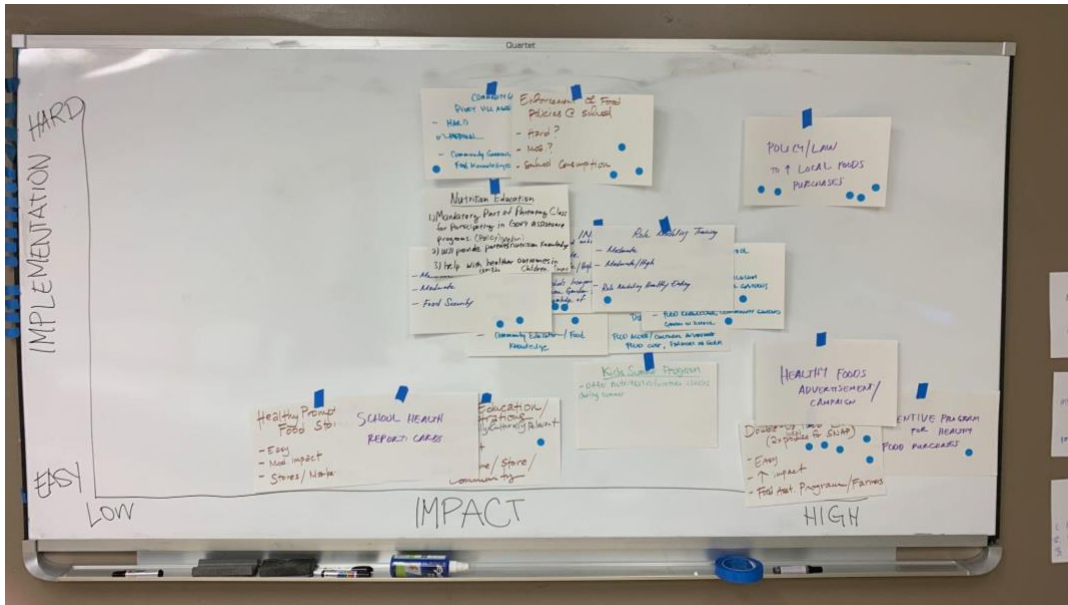
Action Idea grids in Guam (above) and CNMI (below)
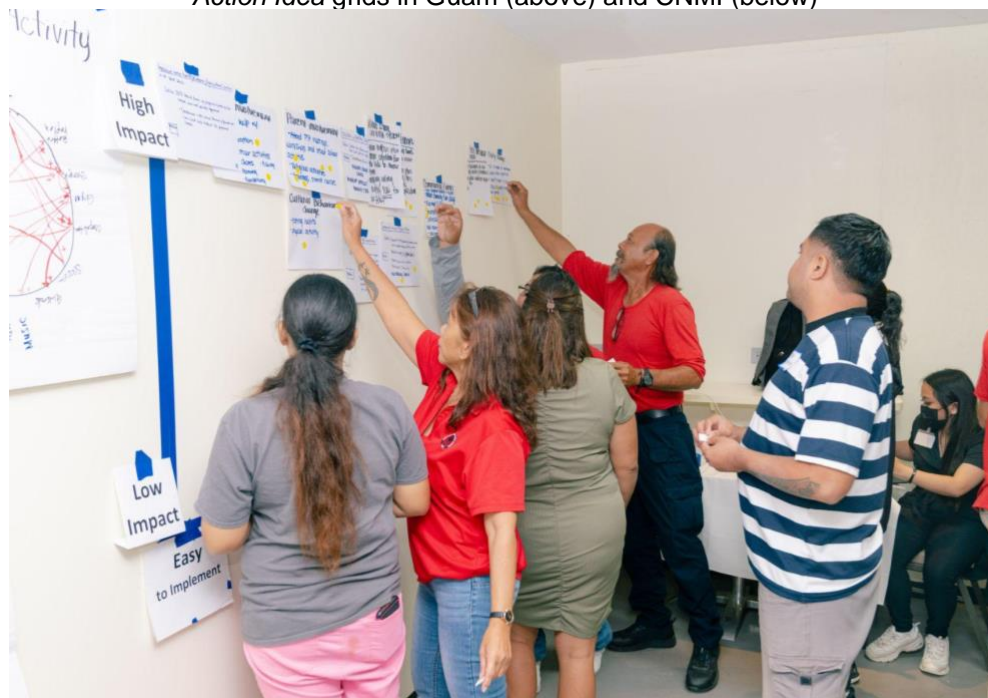
Reflector Feedback

This script is used to summarize insights by the group, clarifies ideas that may have been confusing or ambiguous, and negotiates next steps.

Time

Preparation time: 20 minutes

Time required during session: 15 minutes

Follow-up time: 5 minutes

Materials

1. Flip chart/whiteboard
2. Markers
3. Notepad paper for reflector
4. Camera or other method to capture products

Team Roles

● One or more reflectors with expertise in system dynamics, topic under discussion, or community members

● Timekeeper

Steps

1. Before the session starts, reflectors are assigned specific areas of focus based on their expertise. Generally, someone with expertise in modeling should be focusing on system dynamics insights while an expert on the topic being discussed would typically focus on what is new or similar with respect to what is already known, and someone with expertise in the community (e.g., a person with lived experience) might focus on what is new or happened within the community.
2. Reflectors take notes and prepare summary comments for model reflection at the end of the session.
3. If possible, it can be helpful to have the reflectors briefly coordinate their comments (e.g., during a brief break).
4. Each reflector takes a few minutes to summary 2-3 key insights, raise any questions for clarification and brief discussion, and summarizes any next steps,

e.g., "So there are three things I heard as possible next steps. First,... Second, ..., And third, ... Did I get that right?" "Which of these seems the most important?"

- Start by having one reflector (typically the reflector with modeling expertise) reviewing the session and what happened, and refer back to (point to or stand by) the boundary objects around the room in temporal order.
- As one reviews what happened, highlight key insights tied to the modeling and be sure to point to any structures or diagrams as this is an important time to reinforce the conventions and types of diagrams.
- After reviewing the process insights, reflectors focused content can share how the insights relate to what is known by experts. This is an important point to help people recognize how what they came up with may or may not align with what expert researchers have found, as well as highlight what is new or innovative.
- Then, close by reviewing how this contributed to building community and connections, as well as acknowledging any remaining sources of tension or disagreement (e.g., "It seems we still have some work to do and some disagreement, but perhaps it was too much to expect that we can resolve all the issues in one day. Nonetheless, we made some good progress.")

5. After the summary of model, content, and community insights, it is useful to talk about and negotiate next steps. This is important for both understanding and setting realistic expectations. A number of areas might be considered and those who have the most insight into what is feasible and needed should be invited to weigh in at this point.

Evaluation Criteria

- Unclear ideas have been clarified
- The group has a shared sense of what they did, how this related to insights
- Clear sense of next steps for the modeling

Group reflection in Hawaiʻi

Facilitation Team Roles

Group model building involves teamwork with different roles ([Richardson and Andersen, 1995](#)). These roles vary in their demands and experience required with group model building/system dynamics, which can be learned through training, observing someone else in the role, and coaching. The following list of roles represents a minimal list. Other roles such as a process coach, opener and closer, convener, video team, etc., can be added as people and resources are available to the team.

Convenor/closer. Person responsible for welcoming participants, starting the workshop, orienting participants to the topic/project of the workshop and goals for the session. This is usually a person who has high status among the participants and in a leadership position with respect to the participants. The same person can serve the role of closer where they thank participants for their time, contributions to the work, and commitment to next steps.

Modeler-facilitator. The facilitator is someone who has training in systems thinking/system dynamics, either from previous workshops or from more formal training in system dynamics and group model building. They are familiar with the steps of each group model building script, graphing and diagramming conventions (e.g., for a graph over time, connection circle, and causal loop diagram) with enough experience to help draw out system dynamics from what is being shared. The modeler-facilitator co-facilitates the workshop with the community-facilitator.

Community-facilitator. The community facilitator is someone who has strong small group work and facilitation skills and is familiar with the participants in the workshop, cultural context and language, and can recognize and manage power dynamics that might otherwise be unknown to someone outside the participants' cultural referent group(s). The community-facilitator co-facilitates the workshop with the modeler-facilitator.

Wall-builder. The wall-building has familiarity with the context and is able to quickly organize ideas (e.g., hopes and fears, graphs over time, action ideas) into thematic clusters. While the exercises are generally robust with respect to how ideas are clustered, this can be a demanding role as wall-builders have to work quickly and may feel pressured to get the clustering "right" when in front of community members.

Recorder. The recorders take notes of the sessions. They are familiar with the local dialect/language and have good skills in paraphrasing and typing. Given that it can be hard to hear all participants from a single vantage point, it is often useful to have 2-3 recorders in the room.

Reflector. One or more people who can summarize the process, findings, and relevance of the contributions at the end of the workshop. The reflector role can be divided among at most three people if needed with each person taking a specific focus (e.g., process, how results compare with the science). They are generally not participating as part of the formative content of the session in terms of eliciting graphs

over time, drawing causal loop diagrams or generating action ideas, for example, but can serve as an effective synthesizer of the process and presentations during the workshop.

Runner (optional). The runner assists the facilitator and modeler/facilitator in exercises involving round-robin sharing (e.g., *Hopes and Fears, Graphs Over Time, Action Ideas*) where the physical arrangement of the room makes it difficult to bring content from participants up to the wall for the wall builder.

Timekeeper. The timekeeper monitors the progress of the workshop, identifies when the session is falling behind, develops options for adjusting the workshop to make up time (e.g., cutting a break short, shortening the number of rounds in a round robin), and consults with the team to keep the workshop on time.

Checklists

There are a number of planning and logistical issues that can quickly complicate group model building workshops. Recruitment, planning and logistics may also require coordination across different team members. The following checklists were developed to help plan and organize group model building workshops across jurisdictions. They provide a starting point to think through what may be involved. Items that are not relevant (e.g., door security, need for parking passes) can be dropped while there might be other items that need to be added.

Participant Recruitment

- Set the date
- Prep the invitees for the invite
- Set up RSVP tracking sheet
- Draft, review and send formal email and/or written invitation
- Create pre-workshop communications for confirmed attendees
    - Welcome statement
    - Reminder of the purpose and "why them"
    - Date
    - Time
    - Location
    - Parking
    - COVID/any health and safety protocol
    - Food and drinks/breaks/lunch
    - Request allergies (option to link to allergy survey)
    - What to bring/what will be supplied
    - What to expect (general, e.g., group activities and discussion; contributions of oneself/agency on the focus topic, "what is GMB" reminder, etc.)
    - Consider: Will there be more than one session?
    - Consider: What will happen once the first/only session is done?
    - Attendance ("full participation is critical/required")
    - Acknowledgements (*i.e., land and people)*
    - Funders and partners
    - Send out link to pre-workshop survey

Workshop Location

- Secure the venue
- Do a visual (or physical) walkthrough
    - Is it safe for all parties
    - Is it accessible
    - Is it a neutral zone for invited participants
    - Does it have the right setup (walls, technology, parking)
    - Is there at least 5' by 10' of wall space and double for session with translation
    - Is there emergency/first aid/water on site, etc.
- Does the date or time conflict with anything else happening around it, (e.g., a university sports game could clog traffic, parking, or an academic conference or a big community/political/recreation could as well. These could also impact attendance/availability by the participants. Check the local events calendar!)
- How long will it take most participants to get there?
- Does it have the seating, breakout areas, break/lunch areas needed for the workshop?
- Can the seating be rearranged?
- Is there security – will doors be unlocked from the outside, are codes needed, etc.?

Supplies

- Make a categorized list of supplies, materials, purchases, etc., with deadlines, prices
- Identify responsible parties, etc.
- Forms (parking, sign-in, COVID, human research, photo release, etc.)
- Payments (attendance, food, parking, supplies, etc.)
- Passes (parking)
- Food/drinks/snacks
    - Shopping list and budget
    - Refrigeration requirements
    - Preparation tasks
    - Identify caterer
    - Head count
    - Cost per head
    - Delivery/logistics
    - Payment method
    - Setup
    - Cleanup
    - Allergy list, etc.
    - Need for certain utensils, napkins, cups, hand sanitizer, etc.
- Gifts/swag
    - If gifts or swag are planned, ensure they are allowable purchases and that any other requirements are met; appropriate items

Workshop Materials

- Site Visit General Information
    - Map to meeting location
    - Phone number for points of contact
    - Informational materials
    - Flyers or handouts
    - This guide for facilitation team

- Overall Session Materials
    - Laptop and cord
    - Contact sheet for participants to sign
    - Photo release forms
    - Camera or other method to capture script products

- Hope and Fears
    - Two different colors of office paper (8.5 x 11) for each participant

- Thick tipped nontoxic washable markers (one for each participant + 2 for facilitators)
        - Blue "painters" masking tape

- Behavior Over Time
        - Ream of plain paper (8.5 x 11)
        - Thick tipped nontoxic washable markers (one for each participant + 2 for facilitators)
        - Blue "painters" masking tape

- Initiating and Elaborating a Causal Loop Diagram
        - Either three flip charts, OR wall space on which several flip charts are taped, OR a whiteboard and flip chart
        - Thick tipped nontoxic washable markers (one for each participant + 2 for facilitators)

- Connection Circles
        - Sheets of large paper, such as butcher block paper, with blank connection circles (1 per small group)
        - Thick tipped nontoxic washable markers (one for each participant + 2 for facilitators)
        - Example of a completed connection circle on paper or in presentation slide format

- Action Ideas
  - Sheets of office paper (enough for 5-8 sheets per participant)
  - Thick tipped nontoxic washable markers (one for each participant + 2 for facilitators)
  - Blue "painters" masking tape

- Reflector Feedback
  - Notepad paper for reflector

Workshop Evaluation

Children's Healthy Living Group Model Building Workshop Pre Survey

Create a user id so your post survey data can be matched anonymously with your answers in this survey. Your user id = first letter of your first name, the month you were born in and your favorite color. (For example, my name is Karen, I was born in April, and I love purple—my id = KAprilpurple.)

USER ID: _____

1. Select the answer that fits you best.

	Very unimportant	Somewhat unimportant	Neutral	Somewhat important	Very important
How important are understanding food systems issues to you?	○	○	○	○	○
How important are understanding food systems to your organization?	○	○	○	○	○

2. Briefly describe the main issues related to food systems that your organization addresses.

_____

_____

_____

3. Have you participated in other group model building activities?

○ Yes – please answer questions 4 and 5

○ Don't know – please skip to question 6

○ No – please skip to question 6

4. What was the result of the previous group model building activity?

_____

_____

_____

5. How effective was the previous group model building activity? (Only answer if you have participated in previous group model building activities.)

○ Not effective at all

○ Slightly effective

○ Moderately effective

○ Very effective

○ Extremely effective

6. What type of organization do you work for?

○ College or university

○ Public school system

○ Nonprofit organization

○ Head Start

○ Local government

○ State government

○ Other _____

7. What gender do you identify as?

○ Male

○ Female

○ Non-binary / third gender

○ Prefer to self identify _____

○ Prefer not to answer

8. Are you of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish cultural heritage?

○ Yes

○ No

○ Prefer not to answer

9. Which category or categories do you identify with? (Select all that apply.)

○ Black or African American
○ American Indian or Alaska Native Please specify the one(s) you most identify with. (Check all that apply). ○ Athabascan ○ Siberian ○ Cup'ik ○ Yup'ik ○ Inupiaq ○ Other (please describe): _____
○ Asian Please specify the one(s) you most identify with. (Check all that apply). ○ Cambodian ○ Japanese ○ Thai ○ Chinese ○ Korean ○ Vietnamese ○ Filipino ○ Malaysian ○ Other (please describe): ○ Indian ○ Pakistani _____
○ Native Hawaiian or Pacific Islander Please specify the one(s) you most identify with. (Check all that apply.) ○ Chamorro ○ Kosraean ○ Pohnpeian ○ Tahitian ○ Carolinian ○ Marshallese ○ Samoan ○ Yapese ○ Chuukese ○ Native Hawaiian ○ Tongan ○ Other (please describe): ○ Kirbati ○ Palauan ○ Tokelaun _____
○ White
○ Prefer to self describe _____
○ Prefer not to answer

Children's Healthy Living Group Model Building Workshop Post Survey

Enter your id that you created for the pre survey. This would be the first letter of your first name, the month you were born, and your favorite color. (For example, my name is Karen, I was born in April and I love purple—my id = KAprilpurple.)

ID: _____

1. What actions do you plan to take as a result of this workshop?

   _____

   _____

   _____

   _____

2. What were the most valuable parts of the workshop?

   _____

   _____

   _____

   _____

3. What questions do you wish we had spent more time on?

   _____

   _____

   _____

   _____

4. How could the workshop be improved?

   _____

   _____

   _____

   _____

5. Select the answers that best describe your workshop experiences.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
This model will advance food systems work in my organization.	○	○	○	○	○
There were clear expectations.	○	○	○	○	○
The facilitator had a teaching attitude.	○	○	○	○	○
The facilitator did not try to steer the discussion.	○	○	○	○	○
Open communication was encouraged.	○	○	○	○	○
Everyone was encouraged to participate.	○	○	○	○	○
No one dominated the discussion.	○	○	○	○	○
I felt like part of the team.	○	○	○	○	○
I enjoyed working with other team members.	○	○	○	○	○

6. Select the answer that fits you best.

	Very unimportant	Somewhat unimportant	Neutral	Somewhat important	Very important
How important are understanding food systems issues to you?	○	○	○	○	○
How important are understanding food systems issues to your organization?	○	○	○	○	○

7. In the first column, choose the answer that best fits how you thought about issues BEFORE this workshop. In the second column, choose the answer that best fits how you think about issues NOW after participating in the workshop.

	Before the workshop					After the workshop				
	Strongly disagree	Slightly disagree	Neutral	Slightly agree	Strongly agree	Strongly disagree	Slightly disagree	Neutral	Slightly agree	Strongly agree
When I have to make a decision in my life I tend to see all kinds of possible consequences to each choice.	○	○	○	○	○	○	○	○	○	○
Social problems, environmental problems, and economic problems are all separate issues.	○	○	○	○	○	○	○	○	○	○
I like to know how events or information fit into the big picture.	○	○	○	○	○	○	○	○	○	○
Only very large events can significantly change big systems like food systems or ecosystems.	○	○	○	○	○	○	○	○	○	○
All the Earth's systems, from the climate to the economy, are interconnected.	○	○	○	○	○	○	○	○	○	○
Everything is constantly changing.	○	○	○	○	○	○	○	○	○	○
Adding just one more small market in a community can permanently alter people who live there.	○	○	○	○	○	○	○	○	○	○
When a boom or a crash happens in part of the world's economy, it is because someone intentionally planned or designed for it to run that way.	○	○	○	○	○	○	○	○	○	○
Ultimately, we can break all problems down to what is simply right and wrong.	○	○	○	○	○	○	○	○	○	○
The Earth, including all its inhabitants, is a living system.	○	○	○	○	○	○	○	○	○	○

Rules and laws should not change a lot over time.	○	○	○	○	○	○	○	○	○	○
If I make plans and control my behavior I can accurately predict how my life will unfold.	○	○	○	○	○	○	○	○	○	○
Seemingly small choices we make today can ultimately have major consequences.	○	○	○	○	○	○	○	○	○	○
My health has nothing to do with what is happening in the world.	○	○	○	○	○	○	○	○	○	○
It is possible for a community to organize into a new form that was not planned or designed by an authority or government.	○	○	○	○	○	○	○	○	○	○

Glossary of Terms

Balancing feedback loop: a feedback loop where the behavior of a loop in response to change is to counteract or oppose the direction of the change to "restore" an equilibrium.

Causal map: a diagram with variables and causal links that can be used to identify and label feedback loops, better understand the dynamics of the system, and inform formal modeling

Children's Healthy Living (CHL): CHL is a partnership among remote Pacific states and other jurisdictions of the U.S. that promotes active play and intake of healthy food to prevent young child obesity in the Pacific Region. See more: https://www.chl-pacific.org/

Community Based System Dynamics: a participatory method for involving communities in the process of understanding and changing systems from the endogenous or feedback perspective of system dynamics

Endogenous or feedback perspective: an approach to a problem that searches for its causes and solutions within the system boundary

Feedback loop or mechanism: a sequence of causal links between variables in a model that form a closed causal chain or circuit.

Jurisdiction: Jurisdiction of the United States means the state of Connecticut, any other state, the District of Columbia, freely associated state, and any tribe of the United States. The CHL jurisdictions are: Alaska, American Samoa, Commonwealth of the Northern Mariana Islands, Guam, Federated States of Micronesia, Hawaiʻi, Republic of Palau, and the Republic of the Marshall Islands.

Group model building: a methodology for building models in which a group or team of people participate actively and simultaneously in building the model

Reinforcing feedback loop: a feedback loop where the behavior of the loop in response to a change is to amplify or reinforce the change

Script: a predefined set or pattern of behavior that has a well-defined input and output, and one primary group task (convergent, divergent, evaluative, and presentation).

Simulation model: the generation of the behavior of a system with a formal computer model

System dynamics: the use of informal maps and formal models to understand the dynamic behavior of a system from an endogenous perspective

References

Davis, A. C., & Stroink, M. L. (2015). The relationship between systems thinking and the new ecological paradigm. Systems Research and Behavioral Science, 33, 575-586.

Donaldson, J., & Franck, K. (2015). Needs Assessment Guidebook for Extension Professionals. University of Tennessee Extension Publication (PB1539). Available for free download at: https://utextension.tennessee.edu/publications/

Ford, D. N. (2019). A system dynamics glossary. *System Dynamics Review*, *35*(4), 369–379.

Hovmand, P. S. (2013). *Community Based System Dynamics*. Springer Science & Business Media.

Meadows, D. (1999). *Leverage points: places to intervene in a system.* Hartland, VT: The Sustainability Institute.

Novotny R, Yamanaka A, Butel J, Boushey CJ, Dela Cruz R, Aflague T, Coleman, P, Shallcross L, Fleming T, Wilkens LR. Maintenance Outcomes of the Children's Healthy Living Program on Overweight, Obesity, and Acanthosis Nigricans Among Young Children in the US-Affiliated Pacific Region: A Randomized Clinical Trial. *JAMA Network Open. 2022*;5(6):e2214802. doi:10.1001/jamanetworkopen.2022.14802

Richardson, G. P. (2011). Reflections on the foundations of system dynamics. *System Dynamics Review, 27*(3), 219-243.

Richardson, G. P., & Andersen, D. F. (1995). Teamwork in group model building. *System Dynamics Review, 11*(2), 113-137.

Rouwette, E. A. J. A., Korzilius, H., Vennix, J. A. M., & Jacobs, E. (2011). Modeling as persuasion: The impact of group model building on attitudes and behavior. *Systems Dynamics Review, 27*(1), 1-21.

Vennix, J. A. M. (1996). *Group model building*. John Wiley & Sons.