

Chapter Title: Theory of Change

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Part I

# **GETTING STARTED**



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# THEORY OF CHANGE

**A theory of change offers a picture of important destinations and guides you on what to look for on the journey to ensure you are on the right pathway.**

(Reisman and Gienapp 2004, 1)

## Highlights

- A theory of change is a diagram and narrative explaining how program activities lead to program outcomes.
- Creating a theory of change can help environmental educators think critically about planning a new program, reflect on how to improve an existing program, identify targets for evaluation, and communicate about a program.
- The reflective and collaborative process of creating a theory of change can lead to new insights and new opportunities for working with stakeholders.
- Your theory of change should include a diagram and narrative that describe environmental or other ultimate outcomes, behavior or collective action outcomes that lead to ultimate outcomes, intermediate outcomes that lead to behavior change and action, and activities that lead to intermediate outcomes, as well as assumptions and context that may influence desired outcomes.

## What Is a Theory of Change?

Although you may not articulate it out loud, somewhere in your mind you likely have a theory of change about how your environmental education program makes a difference to participants, your community, and the environment. For

example, you may live in a coastal town, and you want your rural participants to support local greenhouse gas mitigation policies. You think the pathway to get there is for them to develop trust with government officials and university climate scientists. So you organize an activity—a volunteer day where youth, community members, county officials, and scientists work side by side to install oyster reefs along the shoreline. You considered an alternative pathway—an evening lecture by a climate scientist—but knowing that knowledge does not generally lead to action, especially for community members who may be climate science skeptics, you decide that informal sharing and learning while volunteering may be a more effective pathway to meet your goals.

Articulating your theory of change helps you to think broadly about your big outcomes, such as improved environmental quality. You then define changes in behaviors or collective actions that will lead to your big outcome, and identify the intermediate outcomes—like trust and environmental identity—that are needed to effect those changes. Once you have defined your environmental behavior or collective action, and intermediate outcomes, you home in on what program activities will most likely lead to your intermediate outcomes. By diagramming your theory of change, you create a visual pathway to reach your intermediate and behavior/action outcomes; this theory is based on your own experience, the experiences of your colleagues and community members, your reflections, and the results of research and evaluation. A complete theory of change also includes a short narrative where you explain the context, assumptions, and reasoning behind your pathway diagram.

You may be familiar with logic models, which have some similarities with theories of change. A logic model is a diagram of a program's components, including its inputs (e.g., funding, expertise); activities (e.g., curriculum development); outputs (e.g., a curriculum and teacher training); intermediate outcomes (e.g., teachers' knowledge gain); and long-term outcomes (e.g., students of a teacher who has gone through your training will increase their scores on the state science exam). Similar to a theory of change, a logic model allows you to see if your outcomes are in sync with your program activities. However, a theory of change goes one step further—it forces you to reflect on *why* you predict certain activities will lead to desired outcomes. You can think of a logic model as a *description* of a program and its outcomes, whereas a theory of change is an *explanation* of the pathways to reach a program's outcomes (Clark and Anderson 2004). Through the process of explaining, we also engage in critical reflection about our assumptions. In short, a logic model is used to make sure you have all the pieces in place for your program and is often used by funders to evaluate project proposals. A theory of change encourages deeper reflection—including rethinking and adapting programs based on new information.

## Why Is a Theory of Change Important?

**Failure in reaching goals is almost guaranteed in the absence of a clearly developed model of change. Failures in the context of a Theory of Change can be opportunities to learn from the experience, recalibrate, and return to the field with more effective interventions.**

(Taplin et al. 2013, 7)

The iterative process of constructing a theory of change with colleagues and other stakeholders is at least as important as the final product.

- The process of constructing a theory of change allows staff and stakeholders to learn from each other's experience and from related research and to engage in dialogue that challenges their assumptions. Questioning established ways of thinking is particularly important in environmental education, where we often default to the "knowledge-attitudes-behavior" theory of change that has been debunked by research over the last forty years (Hungerford and Volk 1990; Kollmuss and Agyeman 2002; Heimlich 2010).
- Theories of change help to define which outcomes should be the focus of our program evaluations. For example, do we want to measure changes in trust among program participants, a new collective action, or a change in environmental quality? Although not all environmental education programs have the resources to systematically assess different levels of outcomes, diagramming and describing the pathways in your theory of change can at a minimum focus your observations and reflections on what is working, what is not working as you thought it would, and what adjustments you might make to your program activities and theory of change (Connell and Kubisch 1998; Taplin et al. 2013).
- When constructed collaboratively with colleagues and even partner organizations, a theory of change can build relationships among a range of stakeholders (Taplin and Clark 2012; Taplin et al. 2013).
- A theory of change can be used to communicate about your program to stakeholders and funders. You might consider simplifying your theory of change diagram into a logic model, which may be easier for a funder or other stakeholder to grasp (Taplin et al. 2013).

In short, constructing a theory of change is important in program planning and evaluation, communicating about program goals and activities, establishing

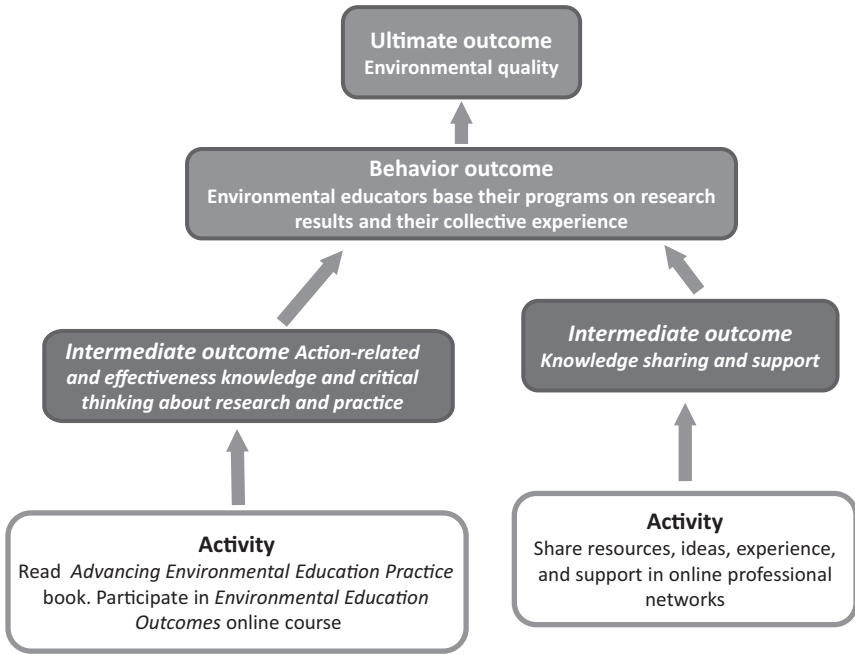
partnerships, and, perhaps most important, helping educators to critically question assumptions and, when necessary, replace them with research- and experience-based strategies.

## **This Book Has a Theory of Change**

You might ask, what is the theory of change of this book? My ultimate outcome, as with many environmental education initiatives, is to improve environmental quality and build social-ecological systems resilience (see chapters 4 and the conclusion). To reach that ultimate outcome, I believe environmental educators can play a key role.

For environmental educators to play a role in improving environmental quality and building resilience, I believe we need to reflect on—and, where needed, enhance—our practice, which is my behavioral outcome. In particular, as environmental educators, we need to broaden the range of approaches we consciously use to influence behavior. We often focus on knowledge and attitudes, but our programs can influence multiple intermediate outcomes that have been shown to impact individual behaviors and collective action—including efficacy, norms, identity, and social capital. I include these intermediate outcomes because my review of the research and my experience lead me to believe that, compared with instilling knowledge or trying to change attitudes, these intermediate outcomes are oftentimes more effective in changing behaviors and actions.

Yet, ironically, a book like this one is an attempt to build knowledge among readers. I believe, however, that unlike many environmental education audiences who may not have an environmental identity or hold environmental values, the readers of this book—practicing or aspiring environmental educators—are eager for new knowledge, in particular action-related and effectiveness knowledge (chapter 6) to help them reach their goals. At the same time, environmental educators are often isolated and may not be supported by their organization as they try to adopt new practices. I also believe that there is no one answer to solving the environmental crisis, and thus that the experience of a broad group of educators and researchers is critical to helping us try different approaches and to learn based on the results of our efforts. For these reasons my theory of change goes beyond this book. It also includes forming social networks to help environmental educators learn from and support each other as they enhance their practices. Thus, in addition to this book itself, my theory of change includes creating opportunities for sharing knowledge, practice, and resources, and for forming social connections through social media, online courses, and face-to-face workshops (figure 1.1; see Civic Ecology Lab 2019).



**FIGURE 1.1.** Theory of change diagram for this book and related Civic Ecology Lab activities

## Constructing a Theory of Change

**Developing a program's theory of change can, thus, allow researchers and practitioners to look inside the "black-box" and examine the mechanisms that lead to desired changes and outcomes.**

(Burbaugh et al. 2017, 194)

Before embarking on your theory of change, you might ask yourself: why bother? For what purpose will I invest the time and energy to develop a theory of change? Questions to guide your thinking about the purpose of a theory of change include the following: Do you want to reflect on your own assumptions about a program you are responsible for? Do you want to join with colleagues to develop a new program? Would you like to identify areas for assessment in an existing or new program? Or maybe you want to collaborate with government agencies, businesses, and nonprofit organizations to develop a coordinated theory of change that will inform environmental education in your state?



Note that theories of change can be constructed individually or as a collaborative exercise, and can be used to reflect on, improve, plan, and communicate about your program or a broader initiative. Steps in creating a theory of change include (1) articulating your ultimate outcome, (2) articulating your behavior or collective action outcome, (3) articulating intermediate outcomes likely to lead to the behavior or collective action, (4) identifying activities to achieve your intermediate outcomes, (5) considering the context, (6) constructing a narrative, and (7) reflecting and revising.

## 1. Ultimate Outcome

First, articulate your ultimate outcome. Ultimate outcomes are the conditions that will change—like reduction in greenhouse gas emissions or increase in pollinator populations—as a result of actions taken by program participants (Burbaugh et al. 2017). In reality, this big outcome is likely to be achieved in partnership with multiple organizations, government agencies, and the private sector, but it is still important to keep in mind one’s ultimate goal because it guides your behavior/action and intermediate outcomes, as well as your program activities. Not all environmental education programs focus on environmental quality as their ultimate outcome. For example, a science-based program may aim to increase science literacy and ultimately to enhance the nation’s technology competitiveness, and a youth development program that incorporates environmental stewardship may be part of efforts to improve community well-being.

Ultimate outcome:

Environmental quality (reduced greenhouse gases)

## 2. Behavior/Action Outcome

Next think about what your program participants need to do to realize your ultimate outcome. Let’s say that your ultimate outcome is slowing climate change by reducing greenhouse gases. Can participants change their individual behaviors to reduce greenhouse gases? Can participants work together to take collective action? Although multiple pathways are possible, based on recent reading and your knowledge about state tax incentives for installing solar, you decide your pathway for achieving the ultimate outcome is for your city to install a community solar farm. By reducing fossil fuel consumption of multiple households, community solar will achieve your ultimate outcome of reducing greenhouse

gases. But for that to happen, the most promising pathway seems to be for your program participants to work together with community groups to influence local renewable energy policy. Collective action to influence policy is then your behavior/action outcome. In short, the behavior/action outcome is a second-level outcome that leads to your ultimate (top-level) outcome.

Collective action outcome:  
Advocate for renewable energy policy

### 3. Intermediate Outcomes

The third step is to think about intermediate outcomes, which define your pathway to achieve your behavior/action outcome. How do you build the capacity of program participants to advocate for your local government to approve a community solar project? Perhaps you have read the literature on political efficacy, which suggests that people who have had positive experiences changing policy will acquire a “can do” attitude and be more likely to participate in additional policy actions (see chapter 10). Your pathway is beginning to take shape. Political efficacy leads to collective action to influence energy policy to reduce greenhouse gases.

Note that you may have several pathways to reach your behavior/action goal, each with its own intermediate goals. In addition to political efficacy, you remember that the research on collective environmental action suggests that for people to work together, they need to develop some sort of trust or build “social capital” (see chapter 13). You decide to include both political efficacy and social capital as intermediate outcomes or pathways to collective action.

Intermediate outcomes:  
Political efficacy and social capital

### 4. Activities

What activities foster political efficacy and social capital? In planning your activities, you can bring in the research as well as your own experience of what you have seen work in similar situations. You may also want to get input from colleagues and community and family members.

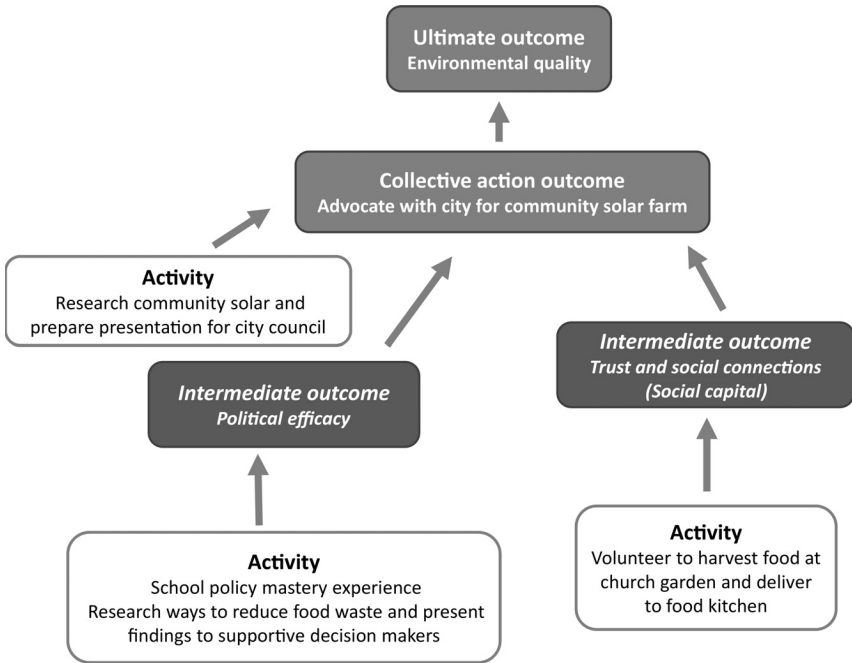
The research on efficacy suggests that people who achieve initial success through “mastery experiences,” and who have positive role models and supportive social interactions, are likely to develop a sense of self- and political efficacy (Bandura 1977; Beaumont 2010). Research suggests that social capital can be built through social, recreational, and challenging activities in which participants build trust and connections (Krasny, Kalbacker, et al. 2013).

Maybe your colleagues led an environmental action program, in which students attempted to reverse a local policy regarding new highway construction. Unfortunately, the students got to the point of presenting their argument to the transportation department, but the transportation department failed to act. Upon reflecting on that experience, you tease out several lessons learned. Perhaps the project was too ambitious—your colleagues failed to account for the influence of more powerful businesses. Perhaps there were things outside their control—structural factors like federal highway dollars—that were working against the students. And maybe your colleagues could have teamed up with other organizations like homeowners and environmental groups, rather than try to go it alone. You have seen another environmental action program in your school achieve its goals and decide to talk with the teachers leading that effort to determine what they think enabled success.

After drawing on research and experience, you are ready to propose program activities to reach your intermediate outcomes. You decide to start with activities to build social capital. You organize a volunteer activity, where participants work with community members to harvest food at a church garden and deliver it to a food kitchen. In working together, program participants and community members build trust and social connections.

Second, you plan a small project that serves as a mastery experience to build participants’ self- and political efficacy. You are aware that school cafeteria personnel want to reduce waste, but they don’t know how. Your students research what other schools have done and make recommendations to the cafeteria. Since the cafeteria has already indicated its interest in the waste issue, students are likely to be able to influence school policy, and thus have a mastery experience. At the same time, they will be going through the steps used to build action skills, including research, critical thinking, and communication (Earth Force, n.d.).

Now that your students have acquired a degree of trust and social connections and efficacy, you are ready to engage them in research, critical thinking, and communication activities that focus on advocating for a community solar farm (figure 1.2).



**FIGURE 1.2.** Theory of change diagram for environmental education program

## 5. Context

As you create your theory of change, keep in mind factors outside your program that might impact its success—in other words, consider the context. For example, if you are trying to influence local solar power implementation, are there new state or federal incentives for community solar coming online? Or is the recent implementation of tariffs on foreign-made solar panels likely to increase their costs? Is a key policy maker about to leave his position and be replaced with someone favorable to your initiative? And what partners might you engage in the program activities to make those activities more meaningful, or even in discussing your theory of change to make it more robust? Outside forces both constrain and provide opportunities for your program (Connell and Kubisch 1998; Taplin et al. 2013).

## 6. Narrative

Once you have completed your theory of change diagram with activities and three levels of outcomes, you will want to write a short narrative summarizing the reasoning behind your proposed pathway(s). Your narrative should describe

in one or two paragraphs the ways in which the activities lead to the intermediate, behavior/action, and ultimate outcomes. It should also include two types of reasoning: (1) why intermediate outcomes lead to the behavior/action outcome (If this occurs, then . . .), and (2) why activities lead to intermediate and behavior/action outcomes (If we do this, then . . .). Also, describe contextual factors that might influence your ability to reach your outcomes. If you are using your theory of change to inform your evaluation, you may also want to include the indicators you will use to measure the various outcomes.

## 7. Reflecting and Refining

**Theory of Change allows proponents and stakeholders the means to continually challenge their assumptions and, in doing so, refine and sharpen their strategies for greater success.**

(Taplin et al. 2013, 8)

Whether or not you achieve your ultimate and behavior/action outcomes, it is important to reflect on your proposed pathway. Constructing a theory of change involves not just creating a diagram and narrative but continually challenging your assumptions and, if needed, refining your program activities and proposed outcomes. You might ask, What is my evidence that the volunteer activity fostered social capital and that social capital in turn led my program participants to work together for change? What if they didn't build trust through the volunteer activity? Should I conduct multiple activities before suggesting they work together on a policy issue, or should I abandon my approach and revise my theory of change? Or perhaps I should revise my collective action outcome?

If you're like me, it's difficult to admit that something might not be working as intended; we all get invested in our program activities. We also all have some underlying theory about how we can make a difference, and we can benefit by reflecting on and tweaking our plans and activities as new information becomes available. Articulating our theory of change forces us to pay careful attention to the ways in which our participants are using the opportunities we afford them.

Sometimes program participants can help open up that black box of what actually happened in a program and shed light on your theory of change. Graduates of an agricultural leadership program in Virginia reflected on what they had learned, identified salient behavior outcomes, and diagrammed the connections between activities and these outcomes (Burbaugh et al. 2017). Only after they had identified changes in their leadership practice and the program activities that

led to these changes did the intermediate outcomes or theory of change pathways become obvious. In short, the program participants collaboratively created a visual model of how the program had developed their leadership capacity, thus providing the program leaders with new insights.

In the above example, the program leaders wanted to enrich their understanding of how the activities had led to outcomes from past participants' perspectives. In traditional applications of theory of change as a planning tool, educators propose pathways and intermediate outcomes before deciding on activities to achieve those outcomes. However, you might also want to consider a pathway mapping activity conducted by past program participants to gain insight into your program and theory of change.

## Using Your Theory of Change for Evaluation

A theory of change can be used to identify outcomes that can be evaluated. With the help of an evaluator, you can then define indicators for your outcomes (see chapter 2). Indicators can be quantitative, such as the number of people working to change a policy, or descriptive, such as documenting a new policy. To estimate the impact of a community solar farm on greenhouse gas reduction, you might work with a local utility to gather information on the kilowatts of solar power produced and its equivalent in the volume of CO<sub>2</sub> or methane gas reduced. For intermediate outcomes, like political efficacy or social capital, you can use existing surveys (see appendix). A qualitative evaluation using interviews and observations aids in understanding how and why a program works—which is valuable information as you go about adapting your program to reflect your current understanding of outcomes and how they are achieved (Connell and Kubisch 1998).

If you find that you have not reached your desired outcomes, an evaluator might help you identify what changes need to be made. For example, perhaps the implementation of your activities was not done in the most effective way. Maybe your assumptions about which activities lead to particular outcomes were not valid, or the situation changed mid-program, presenting new structural barriers. Maybe your theory needed to be expanded to take into account additional intermediate outcomes as well as outside factors that you are not able to control (Taplin et al. 2013).

In the end, you want your theory of change to be *plausible*—it reflects what can happen to the best of your knowledge. You want it to be *doable*—you can implement the activities given the resources available to you. And you want it to be *testable*—you can either evaluate it formally or you can use it to guide

your own observations and reflections. Because environmental educators work in situations where information about what activities might lead to particular intermediate outcomes, and what intermediate outcomes lead to behavior/action outcomes, is constantly changing based on new research, be open to revising your theory of change as new information becomes available (Connell and Kubisch 1998).