Training Guide

for The Power of the Wind

One-Day Training
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Welcome and Introductions

Purpose:
- To identify the purpose of the training.
- To know who else is in the training.
- To identify key components of the two day training.

Time: 5 minutes

Materials:
Trainer Resource:
- Agenda

Handout:
- The Power of the Wind Implementation Training Agenda
- Flip chart paper with three introductory items: Name, Function, and What participants hope to do as a result of the training
- The Power of the Wind Youth Guide and Facilitator Guide for each participant

Trainer Notes:

STEP 1: Welcome and Introductions

Welcome to The Power of the Wind training. Some of you may have more experience than others in facilitating groups of youth in their learning. The overarching goal of this workshop is to enhance your ability to successfully work with youth using The Power of the Wind Youth and Facilitator Guides. This training is dependent on The Power of the Wind Youth and Facilitator Guides and is designed to deepen your knowledge and skills on how to use those guides most effectively.

My name is ________________ and I will serve as your trainer for the next two days.

If more than one trainer is present, each person should introduce themselves. Each trainer should say a little about their background as it relates to this training and what qualifies him or her as the trainer(s).

The training is designed to meet your needs and as such it is important that if you need to get up and move around or go to the restroom, please feel free to do so. We will have scheduled breaks and lunch since those are crucial to your learning as well, but there just may be times you need to stand up or leave the room for a moment. We know based on something called Maslow’s theory that you cannot concentrate on what is happening in the room if you have other survival needs. When you have to use the restroom for example, it is all you can think about, so, please take care of your need.
Before we get started, here are some logistics (adapt logistics that are appropriate for your training).

**Explain:**
- Where restrooms are located.
- To please turn off cell phones as these can disrupt learning.
- Other logistical items that may be pertinent to training.

Let’s take a few moments and find out who is in the room. We are going to do this quickly because we will have many chances to interact and learn about each other during this training, but, for now, I would like you to tell me:

**Refer to the flipchart with the items below.**

- Your Name
- Your Function (not always title – but what work do you do for 4-H/extension—your work with youth)
- What you hope to do as a result of this training (lead a middle school group; train others; etc.)

We know it is important to provide training for volunteers with new curriculum such as *The Power of the Wind*. As mentioned earlier, the purpose of this training is to prepare you to lead this curriculum with youth. In this training you will be learning more about the engineering design process and how these activities can build middle school age youth’s skills in this area. With that said, let’s look at the specific components of the training as outlined in the agenda.
STEP 2: **Review Agenda**

*Go over the training agenda with the participants, calling their attention to places that may have come up in their introduction. Explain that this is a training designed to have them implement The Power of the Wind.*

*Mention that participants will have an opportunity to experience and process three activities from the curriculum as learners. Then they will discuss the activities in the context of leaders and facilitators and reflect on how they will use this with youth.*

STEP 3: **Transition**

This curriculum is just one piece of a much larger initiative called 4-H SET—Science, Engineering, and Technology. While 4-H members will use math in this and many other 4-H projects, 4-H chose not to commit to developing projects and activities to increase knowledge and skills in math and measuring math learning outcomes. The 4-H commitment is to science, engineering and technology—SET. Many of you may call this type of programming STEM (Science, Technology, Engineering and Math) and will find situations where it is easier for you to refer to it as STEM rather than SET.

As always, be sensitive to your audience and who you are communicating with. When we talk about it here, in a 4-H context, we will be using SET. Now let’s take a look at this 4-H initiative called SET—Science, Engineering and Technology. Let’s explore what 4-H SET is by looking at its components.
As you go through the agenda, try to make references to things they said they want to do as a result of this training and point out where that will occur. This tool is just a little background. Use your own skills and expertise to determine how much depth or information you share at this point.

**DAY ONE**

**Welcome and Introductions**

**4-H SET Checklist – Components of the 4-H SET Initiative**

We are going to take a little time to discuss how The Power of the Wind Curriculum is just one piece of a much larger initiative and meets the criteria for being SET-Ready as a piece of this national initiative. We will become familiar with those components and think about how they relate to our own expertise and things we still want to know more about.

**Curriculum Scavenger Hunt**

The Curriculum Scavenger Hunt gives you a chance to become familiar with the curriculum and for all of us to discuss how it is organized and how to use this when you implement The Power of the Wind.

**Designing a Wind Powered Boat**

Throughout the training you will participate in three of the activities in the curriculum—this is just the first one. By participating, you will have the experience and will connect this directly to the curriculum and the facilitator’s guide. You will participate in the activities as both the learner and the facilitator so they can be thought about on both of these levels.
Experiential Learning Cycle

A critical component of 4-H educators’ and volunteers’ work is the Experiential Learning Cycle. Many of you are very familiar with this and some may have never heard of it at all. This activity will give you more familiarity with the cycle and how it is critical to a young person’s learning.

How Does a Pinwheel Use Wind Power?

This is an activity out of the curriculum that you will get to experience and comment on as both a learner and facilitator.

Engineering Design Process

As mentioned in the introduction, the engineering design process is a critical learning thread that runs throughout this curriculum. It will be important for you to be more familiar with what this means in order to work with youth in their engineering design. This activity helps focus on the main components of the design process.

Designing a “Better” Pinwheel

In this activity, you will experience another youth guide activity and document the engineering design process.

Resources, Questions and Action Plan

Time will be spent identifying where there are additional resources you might want to use when implementing the curriculum. This will also be a time to answer any additional questions you may have. Finally, there is time for developing your own plan of action for The Power of the Wind.

Closure and Evaluation

Feedback is critical to our learning and improving. We will take time to evaluate and close the training which promises to be a great day.
MORNING

- Welcome and Introductions
- 4-H SET Checklist – Components of the 4-H SET Initiative
- Curriculum Scavenger Hunt
- Designing a Wind Powered Boat
- Experiential Learning Cycle

AFTERNOON

- How Does a Pinwheel Use Wind Power?
- Engineering Design Process
- Designing a “Better” Pinwheel
- Resources, Questions, and Action Plan
- Closure and Evaluation
**Purpose:**
- To identify the components that make an experience or project SET-Ready.

**Time:** 40 minutes

**Materials:**
Charts around the room with the seven components of the Checklist (each chart has one of the headers listed below)
- National Science Education Standards
- SET Abilities
- Essential Elements
- Trained, caring adult staff working as co-learners with youth as partners
- Experiential approach to learning
- Inquiry to foster creativity and curiosity
- Target SET outcomes with frequency and duration

**Trainer Resource:**
4-H SET Checklist

**Handouts:**
- 4-H SET Checklist
- 4-H SET Logic Model

**Trainer Notes:**

**STEP 1: Context**

Begin by distributing the 4-H SET Checklist and saying there are seven key areas that are necessary to make an activity, program, or initiative 4-H SET-Ready.

I want you to take a few minutes to review the 4-H SET Checklist handout and the 4-H SET Logic Model.

Give participants time to individually read through and review.

- What do you notice?
- What was new to you?
- What questions do you have about any of the areas?

Check to make sure participants understand categories and what they mean.
STEP 2: Choosing a Component and Discussion

Now, I want you to think about each of these components and decide which one you feel most comfortable with already as a facilitator/leader. You will see there are charts around the room and I want you to go stand by that chart. There is no right or wrong answer.

When you get to the chart you chose, introduce yourself to the other participants that chose the same chart. In a small group conversation, share with each other why you chose to stand there.

Give participants a few minutes to discuss. Go to each chart where people are standing and have a representative report why they chose to stand there.

Note any themes that come up as people share. Let participants know these components of SET will be discussed intermittently throughout the training. Use the “trainer support guide sheet” as needed in both the beginning discussion and as people report out. Do not read all this information but become familiar with it so critical elements can be added as people share.

STEP 3: Choose Again and Discussion

Now I want you to switch and choose another component you would like to learn more about over the next two days of our training.

When you get to your chosen component, introduce yourself to the other participants that chose the same chart. In a small group conversation, share with each other why you chose to stand there.

Once again, ask for a representative to share key items of the conversation. As items come up, refer back to the agenda about where these might best be covered. If something is not going to be covered at this training, be clear about that. Encourage sharing and raise themes or consistencies as they emerge.
STEP 4:  **Reflection**

*Have everyone take his or her seats and ask the following questions.*

- What did you notice about how the different areas of the 4-H SET-Checklist were selected?
- What did you learn from this activity that tells you about how you might help each other or where the gaps might be?
- Why do you think National 4-H felt it necessary to create this type of checklist?
- How else might you use this checklist as you are working on your own SET work?

The checklist names the key components of 4-H SET. Whether it is designing and delivering curriculum, preparing staff, or evaluating the 4-H SET work, the logic model and checklist guide the 4-H SET program. Because of that, you will see them repeated in the curriculum. Throughout the training we will be going back to these key areas and intentionally taking time to notice these different components in our training.

STEP 5:  **Transition**

Now let’s take a closer look at the curriculum to familiarize yourself with how it is organized.
4-H SET Checklist

National Science Education Standards

The National Science Education Standards outline what youth should know, understand, and be able to do in the natural sciences over the course of their K-12 education. The underlying concepts and processes in science are divided into eight categories:

• Science as inquiry
• Physical science
• Life science
• Earth and space science
• Science and technology
• Science in personal and social perspective
• History and nature of science

How many of you use the National Standards in your SET (Science, Engineering, Technology) work? How many of you also use specific state standards? We use the national standards because they provide a consistent base of quality content on which our programs design, development, delivery and, assessment is built.

SET Abilities

We have identified 30 SET Abilities or science process skills that are practiced in the areas of science, engineering, and technology. How are you, in your work, making sure children and youth are getting these and other science process skills? You will see later that the Exploratorium uses 7 Process Skills and has created a tool for us that frames these 30 in those categories.

Essential Elements

How many of you call your work youth development? 4-H is committed to a positive youth development approach that focuses on having youth walk away from their 4-H experience with a sense of belonging, increased independence, skill mastery, and a spirit of generosity—these are the Essential Elements.
Trained, caring adult staff working as co-learners with youth as partners

We will talk about this a little later as time permits. How we prepare our volunteers as facilitators and front-line youth workers is critical to the effectiveness of 4-H SET. Our commitment is to ensure that people are trained, that we are clear about our expectations, and that we provide the tools to do this work.

Experiential approach to learning

The Experiential Learning Cycle is something that is basic to how we deliver 4-H programming. This is key to moving an activity to something “fun” that youth do and making sure that there is learning occurring as young people apply that learning to the real world.

Inquiry to foster creativity and curiosity

Working with youth to pose a problem, coming up with a plan, investigating, and communicating their results are all critical parts of 4-H SET. This is about their skill development in using an inquiry approach that is youth-led.

Target SET outcomes with frequency and duration

The 4-H SET initiative builds from a logic model that is designed to reach outcomes for youth that include increased knowledge and skills, increased interest and numbers in SET careers, and increased science literacy in the general population. These and other outcomes are best reached by being very intentional about the work we are doing in 4-H SET and ensuring that we are working with the same youth frequently and for a sufficient length of time. Though we don’t have all we need to know from research, it does show that frequency and duration are key factors in reaching positive outcomes.
4-H SET Checklist

A “SET-Ready” 4-H experience is a program that is framed in SET concepts, based on SET standards and intentionally targets the development of SET Abilities, and has the outcome articulated by the 4-H SET Logic Model. It integrates the essential elements and engages participants in experiential and inquiry-based learning. In addition to the following criteria below, it also recommends that SET programs offer a sustained learning experience which provides youth the opportunity to be engaged in programs with relevant frequency and duration. Utilize the following checklist to self assess the program you deliver.

To meet the needs of children, youth and the nation with high-quality science, engineering, and technology programs.

Are you providing science, engineering, and technology (SET) programs based on National Science Education Standards?

Science education standards are criteria to judge quality: the quality of what young people know and are able to do; the quality of the science programs that provide the opportunity for children and youth to learn science; the quality of science teaching; the quality of the system that supports science leaders and programs; and the quality of assessment practices and policies.

http://www.nap.edu/readingroom/books/nses/

Are you providing children and youth opportunities to improve their SET Abilities?

Predict, Hypothesize, Evaluate, State a Problem, Research Problem, Test, Problem Solve Design Solutions, Measure, Collect Data, Draw/Design, Build/Construct, Use Tools, Observe, Communicate, Organize, Infer, Question, Plan Investigation, Summarize/Relate, Invent/Implement Solutions, Interpret/Analyze/Reason, Categorize/Order/Classify, Model/Graph/Use Numbers, Troubleshoot, Redesign, Optimize, Collaborate, Compare
Are you providing opportunities for youth to experience and improve in the essential elements of positive youth development?

- Do youth get a chance at mastery—addressing and overcoming life challenges in your programs?
- Do youth cultivate independence and an opportunity to see oneself as an active participant in the future?
- Do youth develop a sense of belonging within a positive group?
- Do youth learn to share a spirit of generosity toward others?

Are learning experiences led by trained, caring adult staff and volunteers acting as mentors, coaches, facilitators and co-learners who operate from a perspective that youth as partners and resources in their own development?

There is a commitment to prepare, train and support our staff and volunteers to work with youth. Youth are seen as assets and individuals who are valued resources.

Are activities led with an experiential approach to learning?

Learning is done with a hands-on approach that includes an experience and deepens learning through sharing, processing, generalizing and application to the real world.

Are activities using inquiry to foster the natural creativity and curiosity of youth?

Youth are encouraged to answer their own questions by planning, investigating and communicating their results.

Does your program target one or more of the outcomes on the SET Logic Model and have you considered the frequency and duration necessary for youth to accomplish those outcomes?

SET programs increase young people’s knowledge and skills and reach intentional outcomes by occurring frequently over a sufficient length of time.
## Description of challenge, problem, or opportunity:

- Unsolved worldwide social problems need to be addressed by SET
- In the US, shortage of scientists and people understanding SET
- Under-representation of women and minorities in SET careers
- Need a diverse pool of trained scientists to frame and solve problems and educate others.
- General population in the US (and worldwide) lacks basic understanding of science methods and content ("science literacy")

## What we invest:

- Federal, state and private funds
- 4-H Infrastructure
- Land Grant Univ. Support
- County Extension administrators and agents, program coordinators, and specialists
- Training
- Knowledge
- Collaborations with external researchers
- Collaborations with SET industry leaders

## What we do:

- Select and develop 4-H SET curricula
- Select and train volunteers
- Market 4-H SET to increase interest participation
- Conduct non-formal education (learning and teaching, facilitated inquiry and discovery)
- Facilitate question formation and problem solving through guided activities
- Provide or supplement math programming
- Teach youth about academic and career choices, requirement

## Who we reach (Participation):

- Extension administrators, LGU and Extension faculty and staff
- Youth (grades 3-5, 6-8, 9-12)
- Federal, state & private funders
- Partners
- Public

## What we produce:

- 4-H SET curricula
- New instructional methods
- Trained staff and volunteers
- Adult participants engaged
- Youth participants engaged
- Partners (other federal agencies, science museums, youth organizations, etc.) collaborating
- Marketing materials
- Evaluation materials

## Knowledge

Occurs when there is a change in knowledge or the participants learn:

- Increased awareness of SET among youth
- Improved SET skills (scientific methods) and knowledge (content areas) among youth
- Increased awareness of opportunities to contribute to society using SET skills.
- Increased life skills (self-efficacy) among youth

## Actions

Occur when there is a change in behavior or the participants act upon what they’ve learned and:

- Youth apply SET learning to contexts outside the 4-H courses (e.g., school classes, science fairs, invention contests, etc.)
- Youth adopt and use new methods or improved technology
- Youth demonstrate use of life skills
- Youth express interest/demonstrate aspirations towards SET careers (career fairs, job shadowing, volunteer work or internships)
- Youth raise questions and identify problems to be addressed using SET

## Conditions

Occur when a societal condition is improved due to a participant’s action taken in the previous column.

- Increased number and more diverse pool of youth pursuing education and careers in SET related fields.
- Increased and more diverse pool of trained teachers, educators, scientists
- Increased science literacy in general population
- Increased innovation addressing social problems using SET

## Assumptions

- 4-H non-formal experientially based programming addresses science abilities, concepts and content under guidance of trained (scientifically able) 4-H learning facilitator; 4-H develops appropriate SET Abilities to emphasize in non-formal education; 4-H essential elements create optimal youth development context for learning; 4-H reaches diverse population; and increased awareness of SET skills, content, and career possibilities increases engagement of youth in SET careers.

## External Factors

Youth experience in schools (including [with] SET & mathematics, No Child Left Behind [course content, testing, tutoring provided in school], changing landscape of schools, community and family influence [e.g., religious teaching on Creationism], population changes, immigration, global economy and competition in SET education and SET pursuits.)
Curriculum Scavenger Hunt

**Purpose:**
To identify the setup and key components in The Power of the Wind Curriculum Guide.

**Time:**
40 minutes

**Materials:**
- Trainer Resource: Curriculum Scavenger Hunt
- Handout: Curriculum Scavenger Hunt

**Trainer Notes:**
Explain that this section will familiarize participants with both the purpose and key components of The Power of the Wind.

**STEP 1: Context and Instructions**

In order to become familiar with the curriculum, I am going to have you do a scavenger hunt with a series of questions to find out how The Power of the Wind Youth Guide is organized. I could stand up here and tell you, but, that is not really how people learn. Unless you have your own experiences with the information and have to think about your own learning, it is less likely to happen. This is not just true of you as adults, but also of the youth you work with.

**STEP 2: Activity and Discussion**

You will work in small groups of three to four (or with a partner) to answer the questions on the Curriculum Scavenger Hunt Handout. This is a time for you and your team members to become familiar with the curriculum so take your time. This is not a race. Think about the answers, and if there are questions it raises for you, bring them back to the larger group for discussion. This will not point out everything about the curriculum but give you an overview to become more familiar with it.
Pass out the Curriculum Scavenger Hunt handout. Have participants work with one or more people to complete the worksheet. This may take around 15 – 20 minutes. Watch silently to see when people are finished. Allow time for participants to find the items on the Curriculum Scavenger Hunt handout. The important thing is that they are really learning how the curriculum is organized.

Have participants share answers they found to each question. Add on to what people found where there is something that is going to be specifically relevant to their understanding. See Trainer Resource – Curriculum Scavenger Hunt for background. If time permits, ask the following questions.

Let’s discuss what you found.

In addition to what the worksheet asked you to find:

- What did you notice, learn, were surprised about, etc?

- In what ways does this organization make it easier or more difficult for you as a facilitator?

- In what ways does the curriculum help you prepare to lead an activity?

The scavenger hunt activity is designed to familiarize you with the elements of the curriculum and can help you implement The Power of the Wind.

**STEP 3: Transition**

One way of becoming familiar with the guide is the activity we just did, another way is to actually experience and discuss the activities. We will now get a chance to do the first of three activities you will be experiencing from the Youth Guide.
1. Notice the background color in the header space that lists the “big question” for each activity. How are the colors correlated with type of activity?

   This guide is written with an engineering approach to the lessons. What does that mean? It means it is composed of a series of challenges, investigations, and explorations. The activities are setup from an engineering perspective: Exploration – orange, Challenge – blue, Investigation – green. Take a look at page 3 of the Facilitator Guide for more information on each of these pieces.

2. Look over a couple of lessons and specifically look at the “Talk About It” section. What is the purpose of this section?

   After the initial “experience,” the next step in the experiential learning model is to share, process, generalize, and apply. This section is the next in the sequence. Participants record data which is a form of sharing. The questions help them process, generalize, and apply. This will be covered further in the experiential learning piece of the training.

3. What information is presented in the blue sidebars? What do the timelines show? What can you learn from the photo captions and other sidebars?

   Once the participants have answered, have them review pages 19 and 21 as examples of these three pieces and explain that they are all ways that infuse content into the lessons.

4. The guide is structurally set up in the following way that uses wind energy as the content focus:

   • How can we think like an engineer?
   • How do we study the wind?
   • How do we use the wind?
   • How do geography and community influence wind power projects?
   • How does wind inspire creativity and design?

   Where do you find these and how do they help you as a facilitator and as the learner?

   These questions are located at the bottom of each of the pages in the footer section. These questions become the purpose for doing the activities listed. It can help youth give context to the lesson and provide a sense of direction as they are working through it.
5. **Most activities have a section titled, “In Your Engineering Notebook.” What is the purpose of this section?**

A place for data collection, to record thoughts, to write down investigations just like engineers do. The purpose of this is to help young people go through the investigations and model how scientists and engineers do their work.

6. **What page has an activity about Wind Farms?**

Page 30 – 31. Case studies are good examples to share because it helps young people see a relevance and applicability in the “real world.” This activity might help them ask questions about their community and wind energy.

7. **What section immediately follows the “What Innovative Design Can you Create” section?**

The Appendix section is where additional resources for the activities can be found. It is where handouts can be copied from. It was purposefully put there so not to take away from the learning sections within each individual lesson.

8. **On what page is there an engineering design process diagram?**

The engineering design process is the foundation for which this curriculum is built. The model can be found on page eight. Think about how you might continually guide youth back to this place as a reference as they work through the book.

9. **How many scientific terms are defined in the curriculum?**

There are 49 scientific terms defined in the curriculum and can be found in the Glossary. The glossary in the appendix defines the terms that appear in bold type throughout the text. What else can you find in the appendix? In the other appendices you will also find templates for some of the activities and pages for an Engineering Notebook.
1. Notice the background color in the header space that lists the “big question” for each activity. How are the colors correlated with the type of activity?

2. Look over a couple of lessons and specifically look at the “Talk About It” section. What is the purpose of this section?

3. What information is presented in the blue sidebars? What do the timelines show? What can you learn from the photo captions and other sidebars?

4. The guide is structurally setup in the following way that uses wind energy as the content focus:
   a. How can we think like an engineer?
   b. How do we study the wind?
   c. How do we use the wind?
   d. How do geography and community influence wind power projects?
   e. How does wind inspire creativity and design?

Where do you find these, and how do they help you as a facilitator and the learner?
5. Most activities have a section titled, “In your Engineering Notebook.” What is the purpose of this section?

6. What page has an activity about Wind Farms?

7. What section immediately follows the “What Innovative Design Can you Create” section?

8. On what page is there an engineering design process diagram?

9. How many scientific terms are defined in the curriculum?
Designing a Wind Powered Boat

**Purpose:**
- To become familiar with an activity in *The Power of the Wind* curriculum.
- To identify different ways to approach leading an activity.

**Time:** 45 minutes

**Materials:**
- Flip chart with the following:
  - Design and build a “sailboat” that will travel in a straight line a minimum of 75 cm on a smooth surface. Your “constraints” are to use a Styrofoam tray for the body and to attach a mast with a sail to the tray.
  - Small styrofoam tray, flexible straws, cardboard or index cards, tape, straight pins, scissors, tape measure, box fan, flip chart with activity directions on (see bolded statement below). Optional: pencils, stop watch with second hand, string, paper cups, paper clips, pennies, miscellaneous hardware and office supplies.

**Trainer Notes:**

**STEP 1: Context and Instructions**

Let’s get going and dig into the curriculum! In this training segment you will first be a “learner” and do an activity from the youth guide on designing boats. After you have completed the activity, I will ask you to take off your “learner hat” and put on your “leader” or “facilitator hat.” We will then spend some time debriefing the activity.

Refer to flip chart with instructions for this activity.

**STEP 2: Activity and Discussion**

We are going to work on designing a wind powered boat. The challenge is a design problem. In this activity, you will build your own sailboat and test it to see how far and straight it goes when you use a fan as the source of wind. Feel free to test, adjust your designs, and test again.

Please work with a partner to complete this activity. You will have about 20 minutes to complete this activity. Materials are located _________ (tell participants where materials are located).

As participants are doing the activity, move around the room and check in with groups to identify progress and challenges they are having. The activity can take about 20 minutes after participants begin; however, if the majority of participants are done early or need extra time, the length of time

spent on the activity can be adjusted. Notify participants when they have 5 minutes left. This cue will help them wrap up the activity.

Now let’s discuss your designs and models. Let’s do a “show and tell” and highlight your designs.

Have participants walk to each group as they give a short overview of their boat. When the overview is completed, ask the group selected questions from below. Do this for each group after they highlight their design.

Questions to ask groups as they discuss their design:

• How far did the sailboat travel? How does the wind move a sailboat?
• What was something you learned by building this sailboat?
• Where else in your life do you see wind used to move things?
• How might you use what you just learned in other designs?

STEP 3: Review as Facilitators

Now let’s break this apart as facilitators that would be leading this activity ourselves.

Please open your The Power of the Wind curriculum to pages six and seven.

Give them some time just to familiarize themselves with the page and read the different sections.

Notice the piece of the activity you just did “How Can We Design a Wind Powered Boat?” Let’s review the setup of each lesson. Can someone point out the key pieces or headers for this lesson?

Have participants share the specific sections below.

• The “Design and Build” section gives you the challenge or task that needs to be completed.
• The “Try It” section gives you ideas and specific directions of HOW to complete the task.
• The sidebar on page six lists the materials you need.

The “In your Engineering Notebook” section lists a series of questions that you can think about, talk about, and answer as you are doing the activity, as well as after you have completed the activity.

The side bars on page seven provide content information about wind that might be helpful in completing the activity.

There are a lot of great ideas in the youth and facilitator guides. This training is designed to deepen your learning of these great resources and how you might use these and other ideas while you implement.

• What similarities and differences did you notice in how you completed the activity versus what the guide says?
• What did you just learn about how this activity is done by doing it?
• How will this help you implement?
• Based on the activity you did, what challenges do you anticipate with leading this activity?

Please turn to the Facilitator’s Guide on pages six and seven. Take a couple of minutes to read through the facilitators tips for this activity.

• Can you identify how I, as the facilitator, used these tips in facilitating the lesson?
• What additional helpful hints do you see in the Facilitator’s Guide for this activity that you will want to use as a facilitator?
• What SET Abilities were you intentionally working on as you completed this activity?

STEP 4: Transition

In the next section, we will be learning more about the Experiential Learning Cycle. You have been experiencing this since you walked in the door, but now we are going to look at its parts and think about your role as facilitator in using this technique.
Experiential Learning Cycle

Purpose:
To be able to identify the different components of the Experiential Learning Cycle.

Time:
35 minutes

Materials:
- Trainer Resource: Designing a Wind Powered Boat
- Handout:
  - Experiential Learning Cycle
  - Flip chart labeled with Experiential Learning Cycle
  - Large Post It Notes (1/2 sheets) with: What? So What? Now What?

Trainer Notes:

STEP 1: Context

Let’s take a few minutes to explore the Experiential Learning Cycle: what it is, why we use it, and how you will be using it when you facilitate The Power of the Wind.

Start by asking if anyone knows what the Experiential Learning Cycle is and the different parts of the process.

- Does anyone know what the Experiential Learning Cycle is?
- Can anyone name the different parts of the process?
- It is a part of our SET Checklist and basic to what we do in 4-H. Can anyone tell me why?

STEP 2: Overview of Cycle

We are going to spend the next few minutes getting familiar with the Experiential Learning Cycle and how you might use it as you lead The Power of the Wind. One of the most important pieces of the cycle is the purpose—“what is your intent?”. It is important that you are clear about your purpose and use the Experiential Learning Cycle to strengthen that purpose.

The purpose depends on the outcomes you are trying to reach—the knowledge, skills, and behaviors you are trying to address with this specific activity or experience.
What do you think was the purpose of the activity you just did with the sailboats? You begin with the purpose and then think about what activity would best accomplish that purpose.

Use the Trainer Resource as your guide to how the Experiential Learning Cycle was used with Designing a Wind Powered Boat.

Regardless, being clear on what will be different as a result of the activity is a critical first step to learning.

Experiential learning begins with hands-on learning—a chance to become familiar with the content.

Distribute the Experiential Learning Cycle handout at this point and also call their attention to the fact that this is on page five of the Facilitator Guide and the way it talks about the Experiential Learning Cycle and amplify with more specifics about each stage. In addition, having the cycle on the flipchart you can specifically refer to how it helps participants “see” where you are at while you are talking or asking questions. Have a chart, like their handouts, that has a place for purpose, activity, and the questions.

The Purpose was:
Participants will successfully demonstrate an understanding of the engineering design process by constructing a sailboat.

Experience is the opportunity to become familiar with the content.

- What experience or activity did you do?

Share explores a deeper meaning of the content. Some think of the share as “what happened or the What?” There is not a right or wrong answer; it is whatever the person perceived as what happened.

Post the What? ½ sheet on the flipchart of the Experiential Learning Cycle by Share.

- In the last activity, how did you share?

Process and Generalize is getting into the “So What?” Now you did it, you shared what you did, but what does that mean? This is your chance to explore the deeper meaning of the content. This is where you start thinking for yourselves through analyzing, as well as explaining what it means beyond the activity.
**Place the So What? ½ sheet on the flipchart of the Experiential Learning Cycle by Process and Generalize.**

- What questions did the trainer ask at this point?

**Apply** can be thought of as “Now What?” So now what are you going to do with this information, how is it going to help you, your life, and/or your community?

**Place the Now What? ½ sheet on the flipchart of the Experiential Learning Cycle by Apply.**

- What did you do in the last activity to apply what you had learned?
- In *The Power of the Wind*, how does what you learned lead to other learning?

Let’s move on to apply this learning and try to use it ourselves with activities from *The Power of the Wind*.

**STEP 3: Small Group Activity**

We are going to focus again with the same purpose and activity—Designing a Wind Powered Boat—to come up with different questions or a different approach to the steps of the cycle.

We are going to break into groups and each group is going to do one component of the Experiential Learning Cycle. One or two groups will do **Share**, one or two groups will do **Process and Generalize**, and one or two groups will do **Apply**. Using the same purpose and the experience as we just did in the board activity, I want you to come up with a different way, or different questions you could use to get youth to share, process & generalize and apply in order to reach that same purpose.

Often we come up with questions for each of these steps but you can also do this in other ways.

How would you have people share? Examples may include questions the facilitator might ask, a skit or picture drawn by the participants, or something else.

Each group will determine how they will do their segment of the Experiential Learning Cycle.
I would like you to break into groups of three to four people per group.

*If you have 20 people that might mean you have 6 groups of 3-4 people. Two groups would do each step: two groups doing sharing; two groups doing processing & generalizing and two groups doing applying. You might want to have the right number of cards prepared labeled with the names of the three groups and then just have people pick a card and join together based on whether their card said sharing; processing & generalizing or applying.*

*Provide time for groups to work through this exercise. Move around the room to answer questions participants might have.*

**STEP 4: Report and Discuss**

*Have each group report out on what they would have their youth do in order to get us to Share, Process & Generalize, or Apply the Wind Powered Boat Activity.*

- What is important about this type of practice?
- How might you use what you learned in your own facilitation?

What I find most important about this is that you began thinking about how to reach your purpose. We will cover this in many different ways. For example, tomorrow morning we will look at what your purpose might be in terms of what process skills you might want to focus on with young people as you move forward. Doing the activity is not enough so we need to make sure we choose ways, sometimes questions, that help youth think about and apply what they are learning.

**STEP 5: Transition**

Let’s continue our learning about the curriculum and the activities by experiencing two more and thinking about the importance of the engineering design process in this curriculum.
Designing a Wind Powered Boat Activity

**Purpose:** To become familiar with an activity in *The Power of the Wind* Curriculum

**Experience:** Designing a Wind Powered Boat

**Share:** Each group highlights their design
How far did the sailboat travel? How does the wind move a sailboat?

**Process & Generalize:** Where else in your life do you see wind used to move things?

**Apply:** How might you use what you just learned in other designs?

**Other:** What else did the trainer do to reach the purpose?
Experiential Learning Cycle

1. Experience
   Youth do before being told or shown how.

2. Share
   Youth describe the experience and their reaction.

3. Process
   Youth discuss what was most important about what they did.

4. Generalize
   Youth relate the project and life skill practiced to their own everyday experiences.

5. Apply
   Youth share how they will use the project and life skill practiced in other parts of their lives.

How Does a Pinwheel Use Power?

**Purpose:**
- To become familiar with a new activity from the curriculum.
- To become competent in completing an engineering-based lesson.
- To identify ways content can be embedded in lessons.

**Time:**
45 minutes

**Materials:**
Internet connection, computer, LCD projector, scissors, straight pins, pencils with erasers, pinwheel pattern from Appendix A or B

**Trainer Notes:**

**STEP 1: Context**

Explain to participants that they will complete investigations using the engineering design process, learn about the process itself, and redesign a “product.” This is the first of three workshop segments that will scaffold and help them become competent in leading this curriculum based on engineering design principles.

**STEP 2: Activity**

Let’s get going! You will have an opportunity to create a pinwheel, a form of a turbine. You will have 30 minutes to complete the activity “How Does a Pinwheel Use Wind Power?” on pages 14 – 15 in the Youth Guide. Please work with someone who you have not yet worked with. Materials are located________ (tell participants where materials are located).

As participants are doing the activity, the facilitator should move around the room and check in with groups to identify progress and challenges they are having. The activity can take about 30 minutes but if the majority of participants are done early or need extra time, the length of time spent on the activity can be adjusted. Notify participants when they have 5 minutes left. This cue will help them wrap up the activity.
STEP 3: Discussion

Have participants walk around and see what each group did. Have each group share a little about their process. As groups are sharing, choose some of the following questions.

- When the wind blows straight into the front of the pinwheel, it turns. What happens when the wind blows into the back of the pinwheel or if it blows into the sides? Try both sides and see what happens.
- What adjustments can you make in the design to make your pinwheel turn better?
- How does the pinwheel use the power of the wind?
- The pinwheel and your boat both use wind power. How are they similar? How are they different? 3

STEP 4: Video Clip and Discussion

Great! Thanks for sharing. I want to show you a brief video clip of pinwheels. It may help to ignite your thinking about your pinwheel and what you might do to make it better. (http://projects.4-hcurriculum.org/curriculum/wind/)

- What did you see in this video that was similar to what you learned when you were creating your own pinwheel?
- What is one thing you saw here that you might want to try?
- How can you help infuse content into the lessons you lead with youth?

STEP 5: Transition

Explain that through this process participants just completed a portion of the engineering design process. Tell participants that they will now spend some time working through the engineering design process and reflect on the pieces they’ve completed. When done explaining, they will have an opportunity to complete the process by redesigning their pinwheel.

Examining the Engineering Design Process

Purpose:
• To identify the components of the engineering design process.
• To identify how the engineering design process works and how it is implemented with The Power of the Wind.

Time: 20 minutes

Materials:
Trainer Resource:
• Engineering design process
• Flip chart with engineering design process

Handout:
Engineering design process chart

Trainer Notes:

STEP 1: Context

The Power of the Wind includes the engineering design process and it is important for you to know about this process as you are working with youth. As you built an initial pinwheel, tested, and are now thinking about redesign, you are going through the engineering design process. Please turn to page eight in the Youth Guide. Let’s apply the engineering design process to the activity you did.

STEP 2: Discussion of Process

With the chart on the wall and participants referring to it in their books, walk through it briefly so they think about each component. As you do, ask participants about each step and whether they used this in their pinwheel design. Use the trainer resource sheet to discuss the components. If time allows, ask the following questions:

• What do you notice on this chart?

• How many of you have used something like this with youth already?

• How might this help young people think through their design and their role as engineers?
STEP 3: Discuss Applying with Youth

The engineering design process really is about identifying a challenge or problem, identifying solutions, testing them, getting results, and making the product better. Think about new products coming out all of the time. One product may have several models or versions. Engineers are continually improving their products.

- How would you go about making this a focal point of the lessons?
- How do you think youth will benefit from using this model?

STEP 4: Transition

In the next activity, we will use the engineering design process again, but, this time, instead of thinking about it after you have done the activity, I want you to complete the chart as you are doing each step. This is a way for you to become more familiar with the process and to make decisions as a group. Remember that the engineering design process is always circular. This handout merely gives you a place to record your thoughts and progress. Working as “teams” is another important part of how engineers design and an exciting part of this career.

Hand out the engineering Design process chart and say that in the next activity they will have a chance to complete this chart for how they make the pinwheel “better”.
Remember that the engineering design process is always a circular process like the chart in the Facilitator Guide.

**STEP 1: What is the challenge?**

Engineering work is based on “challenges” or “problems.” There must be a problem for engineers to solve. Clearly identifying the problem or challenge is the first step to thinking like an engineer.

**STEP 2: How have others solved this?**

Engineers don’t think only by themselves. In order to be efficient in their work, before they attempt to find a solution, they gather information. They might look at similar problems, geography, or a magnitude of projects. They may ask other engineers or researchers, or tap into their prior experiences.

**STEP 3: What are the design criteria and constraints? Brainstorm possible solutions.**

Before engineers can identify possible solutions, they need to know what is available to them. What is their budget? What are the materials? How much time is available? After identifying these, they can begin to brainstorm possible solutions.

**STEP 4: Which of the possible solutions do you choose?**

Engineers don’t identify only one possible solution. They brainstorm several solutions and identify the pros and cons of each. During their identification of pros and cons, they take into consideration what they know from steps two and three. After careful thought, they can select the best solution for the problem.
STEP 5: **Build a prototype.**

A prototype is a first design of the solution. Engineers know that their work will be refined and the product made better, but they always need to start with an initial design.

STEP 6: **How does it work? Try it and test again.**

After the prototype is built, it must be tried and tested. Engineers will do several tests to ensure reliability. During the testing phase they will note what works well and what parts of the product need to be improved. They observe and record carefully.

STEP 7: **How do you learn from the designs of others?**

It is likely that others are working on similar problems or challenges. By sharing those problems and challenges with other engineers, they can get additional ideas for their design and products.

STEP 8: **How can you use your new ideas to improve your design?**

Looking closely at the initial prototype, data records from initial trials, and learning from others, engineers will redesign and refine to make their products better.
Remember that the engineering design process is always a circular process like the chart in the Facilitator Guide. This handout merely gives you a place to record your thoughts and progress.

<table>
<thead>
<tr>
<th>Engineering Design Process</th>
<th>Pinwheel</th>
</tr>
</thead>
<tbody>
<tr>
<td>What was the challenge?</td>
<td></td>
</tr>
<tr>
<td>How have others solved this same challenge?</td>
<td></td>
</tr>
<tr>
<td>What were the design criteria and constraints? How did you brainstorm possible solutions?</td>
<td></td>
</tr>
<tr>
<td>What possible solutions did you choose?</td>
<td></td>
</tr>
<tr>
<td>How did you go about building your prototype?</td>
<td></td>
</tr>
<tr>
<td>How did it work? How did you test it and try it again?</td>
<td></td>
</tr>
<tr>
<td>What did you learn from the design of others?</td>
<td></td>
</tr>
<tr>
<td>How can you use your new ideas to improve your design?</td>
<td></td>
</tr>
</tbody>
</table>

**Purpose:**
- To become competent in completing an engineering-based lesson.
- To become skilled at leading engineering-based lessons.
- To increase ability to lead an activity from *The Power of the Wind*.

**Time:** 50 minutes

**Materials:**
- Scissors
- Straight pins, pencils with erasers, paper (various weights), pinwheel patterns, paper plates, aluminum pie plates, paper clips, coffee stirrers, popsicle sticks

**Trainer Notes:**

**STEP 1: Context and Introduction**

Now that you have constructed an initial pinwheel, watched the video, and talked about the engineering design process, I have one more challenge for you. In the business world, scientists and engineers are always trying to find ways to improve products and refine their work. Now you will have a chance to make your pinwheel even “better” than we did the first time. Your challenge is to design and construct a “better” pinwheel than your current one.

Someone may ask what “better” means. In this case, groups can decide HOW they want to make their pinwheel better. Possible ideas include: turn faster, turn for a longer period of time, bigger, smaller, etc. You may want to ask: What are ways you can think of to define better? What would make it better for your team?

Using the handout for the engineering design process, I want your groups to document what it is they are doing. Take each step and think as a group about how you want to proceed and what it is you want to be able to accomplish. Not unlike other things we have done, this is the intentional aspect of the engineering design process—what do you want to accomplish and how will you figure that out?
STEP 2: Activity

You will have 30 minutes to design and construct a “better” pinwheel. Materials are located__________________ (tell participants where materials are located).

As participants are doing the activity, the facilitator should move around the room and check in with groups to identify progress and challenges they are having. This may be a time when the facilitator encourages the learning with open-ended questions about what is happening, what they have done, what they want to do. Remind people about the handout of the engineering design process. Ask them to make notes on each step of the process as they make a “better” pinwheel. The activity can take about 30 minutes.

STEP 3: Discussion

Now that you have each completed the activity, let’s share with the group. Remember, we are doing this as though we were “learners” so share as though you were a youth going through this activity. Each small group needs to describe their design and redesign to the large group.

Ask the following questions of each group after they share about their model:

- What element of the design did you choose to to make “better”?
- How did you go about doing it (what was the process)?
- What did you learn through doing this?

STEP 4: Review as Facilitators

It is now time to once again take off your “learner hats” and put on your “facilitator” or “group leader hats.” Let’s spend some time thinking about what you did and consider what it means to you as a leader working with youth.
Please turn to pages 16 – 17 in *The Power of the Wind Youth Guide*. The activity “How Can We Design a Better Pinwheel?” is essentially the same activity you completed. Let’s look closely at the lesson and see what additional ideas are included that might help you as a leader or a youth complete this activity.

**Have participants look at the lesson in both Youth and Facilitator Guides. Have them share additional items that they had not thought about in their activity.**

**STEP 5: Video Discussion**

You were also given content in a video to help you make your design better.

- How did the video (content information) help you either in the design or implementation phase?

- Other than video, how else can content be infused throughout this curriculum?

- How do you plan to infuse content into the lessons you lead with youth?

As you can see, content can be embedded into learning experiences, and specifically by using *The Power of the Wind* curriculum in a number of ways. While some youth may search more or less for content, knowing how to help them find what they are looking for can help foster their learning, and continue their interest in this area. You are not expected to have all of this content knowledge, nor do you need to have it, to provide rich learning experiences for youth.
STEP 6: Review the Process

We had you document what you were doing at each step of the engineering design process so you could become familiar with the steps and think about what this meant to implementing *The Power of the Wind*.

- Why do you think we had you use that tool?
- In what ways did it help you become familiar with the steps in the process?
- What was it like to document what you were doing?
- How might this work with the youth you work with?
- How might you want to do this differently?

STEP 7: Transition

Next we will be taking some time to share some resources to help you implement *The Power of the Wind* and answer questions.
Resources, Questions, and Action Plan

**Purpose:**
- To identify additional resources to support the implementation of *The Power of the Wind*.
- To identify strategies for answering questions or challenges.
- To determine how *The Power of the Wind* will be implemented.

**Time:** 30 minutes

**Materials:**

**Trainer Resource:**
- Resources for Facilitators Guide Sheet
- Internet connection (optional but advisable)
- Computer, screen, LCD panel

**Handout:**
- Resources for Facilitators
- Action Plan Worksheet

**Trainer Notes:**

**STEP 1: Context**

There is so much we could have put in this training and it is so great to see what fun we have had and how much we have all learned from each other.

**STEP 2: Resources for Facilitators**

Distribute the Resources for Facilitators handout to participants. Explain that this is a starting point for where they might look for additional resources. Ask participants to take a couple of minutes to look over.

The handout you received does not cover all of the possible resources that can help you as a facilitator. Rather, if you have questions as you work through *The Power of the Wind* Curriculum, or as you read through the Facilitator’s Guide, you may want take the participants online to review the links to provide additional information.

The first link is the main website and has many other links embedded. The rest of the links on the sheet come from the main page, but not all are listed. I purposely selected the rest of the links listed because they can be meaningful in directly supporting what you have done in this training.
STEP 3: Questions & Answers

Before we leave, we want to make sure that if you have additional questions that we take some time to answer those. I want to pause now and make sure that there are no burning questions or comments that we still need to cover together. Write down any questions or comments you still might have. I am going to be quiet again for a couple of minutes so people just have some time to think and write.

Once people seem to be lifting their heads and not writing, ask people to share some of those questions or comments they still might have. Answer them the best you can or if you really can’t answer, tell them you will find the answer if you can and get back to them, or see if anyone in the room might have the answer.

- As you are thinking about implementing The Power of the Wind what are some questions you still have?

- What do you see might be a challenge or obstacle you might have to overcome?

- What suggestions might we have as a group for helping with those challenges or obstacles?

Remember that some of the best learning you can do is with each other. As you complete activities, or have questions, don’t be afraid to contact each other or refer to the other resources that were brainstormed in this training.

All of us are still learning how to implement this curriculum. It will happen quite differently in different places, and we can learn about those differences and similarities.
STEP 4: **Action Plan**

Now that you have had an opportunity to learn about and experience 4-H SET and have several experiences with *The Power of the Wind*, it’s time for you to think about how you will implement this with youth.

**Pass out the Action Plan Worksheet and explain that this is a way for them to be intentional about thinking and writing what they plan to do. If any participants will facilitate this curriculum together, have them work together on completing the Action Plan Worksheet.**

I’ve handed out the Action Plan Worksheet and would like you to take a few minutes to think about and write down what your plans are after you leave the training. I will be asking (some of) you to share your plans with the group.

**Explain the worksheet and give participants a few minutes to complete. Have them hand in the worksheet, make copies, and give a copy of the worksheet back to participants for their reference. If time allows, follow up with participants after a period of time to determine how they implemented their action plan and assist in strategizing about dealing with any challenges they may be having.**

**Ask for a few people to share their key action items.**

STEP 4: **Transition**

It is great what you will get to do as a result of this curriculum and training. It is now the time of day when we are about to close out the training and hear from you about what learning took place and your recommendations for how to improve the training.
Visit the web site (www.4-H.org/curriculum/wind) and follow the links.

**The Power of the Wind Website**

The main website that has links to Table of Contents, Facilitator Guide, Engineering Notebook, the philosophy of 4-H and much more!

This is the main website that contains all of the links below. In addition to the links below, other resources that can be found here include: overview of the curriculum, promotional posters, National Directory of 4-H materials, National 4-H Curriculum, and completion certificate. This website is specific to The Power of the Wind Curriculum, so the support materials are very specific to the Guide.

**The Power of the Wind Facilitator Guide Website**

Provides helpful hints for facilitators. Scroll down and you will find links to content about wind energy.

This link includes many basics for 4-H facilitators such as the experiential learning process, the engineering design process, the essential elements, and facilitator tip sheet. In addition, you can find the templates that make it easy to print off copies for participants. It discusses in brief each lesson that gives you a better understanding of how the lessons are organized and arranged.

**The Power of the Wind Table of Contents**

Provides an overview of the lessons as they are sequenced in the book.

This link provides an overview of the table of contents with the order of the lessons. If you only have a few sessions with youth, or have certain learning outcomes you want to work on, it can help you in identifying which lessons might be most appropriate. Each lesson is broken down into investigation, challenge, and exploration. (See the resource sheet guide for the scavenger hunt for more information about these three types of lessons.)
The Power of the Wind Engineering Notebook

Visit the web site (www.4-H.org/curriculum/wind) and navigate to the youth portion. There you’ll find downloadable sheets that can be used as additional engineering notebook pages.

Provides additional sheets youth can use as they collect, record, and communicate data. Copies can be made of these extra notebook pages just like they are seen in the book!

There are sheets in the back of the Youth Guide that can serve as an engineering notebook or place for youth to record data. If more sheets are needed, they can be quickly printed off with the gridlines and provide more space for youth to write.

Grab and Go Activities

Visit the web site (www.4-H.org/curriculum/wind) and navigate to the Grab and Go subpage.

If you are looking for extra activities to use, check out this link. These activities provide step-by-step directions for youth to create a device that measures wind speed, make a kite, measure air pressure, and hold a wind power debate in their community. Minimal prep needed!

The grab and go activities are stand alone and can be used in a youth setting that only meets once. More specifically, youth won’t need to complete activities prior to this one, in order to do this successfully. If participants need a reinforcement activity, these may be appropriate. Materials needed to complete the activity are also listed here.

Interactive Media

Visit the web site (www.4-H.org/curriculum/wind) and navigate to the Interactive Media subpage.

Are you looking for lesson extensions, more activities, and fun games for youth to do? Check out this website for additional youth support materials for most lessons!

This site has several links within it. If youth get excited about a certain lesson and are looking for places to do further research, take online quizzes, or play online games, each lesson has links that can help them further explore their learning in that area.

Note: There are many other resources that aren’t included in this site. These are just a few that can help you have successful experiences leading youth.
Visit the web site (www.4-H.org/curriculum/wind) and follow the links.

**The Power of the Wind Website**
The main website that has links to Table of Contents, Facilitator Guide, Engineering Notebook, the philosophy of 4-H and much more!

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**Grab and Go Activities**
If you are looking for an extra activity to use, check out this link. These activities provide step-by-step directions for youth to create a device that measures wind speed, make a kite, measure air pressure, and hold a wind power debate in their community. Minimal prep needed!

**Interactive Media**
Are you looking for lesson extensions, more activities, and fun games for youth to do? Check out this website for additional youth support materials for every lesson!
With whom will you implement *The Power of the Wind*?

When do you plan to implement *The Power of the Wind*?

Where will you be implementing it?

What will you be doing (how many sessions, length of sessions)?

Other things I need to consider (timeline for getting ready to implement, materials, organizational support, etc.):
Closure and Evaluation

Purpose:
• To bring a sense of closure to the training.
• To identify learning that has taken place.
• To provide feedback on the training for improvement.

Time:
20 minutes

Materials:
Handout:
• The Power of the Wind Competency Assessment
• Resources for Post-Pre Assessment Evaluation form

STEP 1: Closure

As a closure activity, think of something that will be significant to the group and brings some closure. One possibility is to have each person describe the training as either a pinwheel or a sailboat and why they chose that one. This gives them a chance to express something and let’s everyone know a little more about their impression of this training. This is one of those activities that is a remark without comment and tends to go very quickly.

Throughout the last two days you were able to experience key components in The Power of the Wind. As you begin to implement this curriculum, keep in mind the SET Abilities, how to effectively include content, where to find resources, the engineering design process, and the Experiential Learning Cycle.

Thank you for taking two days to participate in this training. Hopefully this has been a positive experience for you. Please complete both the assessment and evaluation before you leave.

STEP 2: Assessment and Evaluation

We have created a post- pre-assessment for this training because it is very important to us that the training increases your knowledge and skills to implement The Power of the Wind. The assessment is a self-assessment and we hope you will share it with us in complete
confidentiality, not because we would be looking to see each individual’s progress, but, so we could do a cumulative effect and see where there was learning. This would help us determine where the training or trainers are either effective or not effective so we can improve. Please take a few minutes to complete the self-assessment.

**Give people a chance to complete the self-assessment in silence once done ask participants.**

- What is your reaction to this assessment tool?
- Were there specific areas that surprised or troubled you?
- Did this tool help you think about other learning you wish that had occurred?

**Ask each person to complete the evaluations and note it is only through this feedback that we can continue to learn what works and what doesn’t and how to make this the best learning experience possible. Collect the evaluations as people get done. Thank them as they leave.**
About your training experiences …
We are interested in how you view your training experiences with *The Power of the Wind* Training. Please check circle in the the box that best describes how much you agree with the following statements both AFTER and BEFORE the training.

<table>
<thead>
<tr>
<th>Caring Adult</th>
<th>BEFORE THE TRAINING</th>
</tr>
</thead>
<tbody>
<tr>
<td>I demonstrate shared leadership though youth/adult partnerships.</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>I encourage youth to think about what they are learning.</td>
<td>Agree</td>
</tr>
<tr>
<td>I offer praise and encouragement when youth take initiative and leadership.</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>I identify, build on, and celebrate the potential of all youth.</td>
<td>Agree</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Belonging</th>
<th>BEFORE THE TRAINING</th>
</tr>
</thead>
<tbody>
<tr>
<td>I help youth feel welcome and part of a group.</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>I cultivate a sense of togetherness among youth.</td>
<td>Agree</td>
</tr>
<tr>
<td>I initiate, sustain, and nurture group interactions and relationships.</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>
### After the Training

#### Sense of Hope

- I reinforce the idea that all youth can succeed.
- I offer positive encouragement and support even in the face of setbacks.

#### Self-Determination

- I provide experiences that encourage youth to share scientific evidence.
- I identify opportunities for youth to compare scientific claims with each other.
- I encourage youth to articulate strategies for data collection and analysis.
- I actively consult, involve, and encourage youth to contribute their ideas, expertise, and thoughts.
- I provide opportunities for youth to determine program expectations and direction.

#### Engagement in Learning

- I guide youth in learning, rather than telling them what I already know.
- I create opportunities for problem solving via discussion, debate, and negotiation.
- I use a variety of questioning and motivational approaches.
- I use multiple learning approaches to meet learner’s needs.
<table>
<thead>
<tr>
<th>Mastery</th>
<th>BEFORE THE TRAINING</th>
<th>AFTER THE TRAINING</th>
</tr>
</thead>
<tbody>
<tr>
<td>I suggest challenges that can be explored by direct investigation</td>
<td>○ ○ ○ ○ ○ ○ ○</td>
<td>○ ○ ○ ○ ○ ○ ○</td>
</tr>
<tr>
<td>I encourage youth to make predictions</td>
<td>○ ○ ○ ○ ○ ○ ○</td>
<td>○ ○ ○ ○ ○ ○ ○</td>
</tr>
<tr>
<td>I assist youth in developing hypotheses related to their investigations</td>
<td>○ ○ ○ ○ ○ ○ ○</td>
<td>○ ○ ○ ○ ○ ○ ○</td>
</tr>
<tr>
<td>I allow youth to conduct formal and open-ended tests and experiments</td>
<td>○ ○ ○ ○ ○ ○ ○</td>
<td>○ ○ ○ ○ ○ ○ ○</td>
</tr>
<tr>
<td>I have youth discuss their findings with each other and evaluate evidence critically</td>
<td>○ ○ ○ ○ ○ ○ ○</td>
<td>○ ○ ○ ○ ○ ○ ○</td>
</tr>
<tr>
<td>I encourage youth to share their knowledge by teaching others and leading new activities</td>
<td>○ ○ ○ ○ ○ ○ ○</td>
<td>○ ○ ○ ○ ○ ○ ○</td>
</tr>
<tr>
<td>I help youth see setbacks as opportunities for new explorations</td>
<td>○ ○ ○ ○ ○ ○ ○</td>
<td>○ ○ ○ ○ ○ ○ ○</td>
</tr>
<tr>
<td>I support youth to set new goals, and try new ideas and approaches</td>
<td>○ ○ ○ ○ ○ ○ ○</td>
<td>○ ○ ○ ○ ○ ○ ○</td>
</tr>
<tr>
<td>I provide opportunity for youth to use appropriate technology</td>
<td>○ ○ ○ ○ ○ ○ ○</td>
<td>○ ○ ○ ○ ○ ○ ○</td>
</tr>
</tbody>
</table>
Help us improve future trainings!

1. Overall, how would you rate the training you received for The Power of the Wind?  
   ___ Excellent  
   ___ Good  
   ___ Fair  
   ___ Poor

2. What factors made you rate the training the way you did?

3. What do you feel was the most beneficial part of the training?

4. What, if anything, would you change about the training? If you wouldn’t change anything, please write “nothing.”

5. What could 4-H staff do to support you in leading The Power of the Wind activities?
6. What would you still like to know about using *The Power of the Wind* with others? What questions do you still have?

7. Now that you’ve participated in the training, how would you rate your level of disagreement or agreement with the following statements?

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Agree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. I understand the 4-H Experiential Learning Cycle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. I feel prepared to lead <em>The Power of the Wind</em> activities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. I am confident I could facilitate youth learning about <em>The Power of the Wind</em>.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The following questions are to help us better understand the diverse experiences of 4-H leaders and volunteers. All questions are optional.

8. Including this year, how many years have you been a 4-H staff or volunteer? ____________

9. Including this year, how many years have you been a staff member or volunteered with other 4-H science, engineering, or technology activities? ____________

10. Do you have a professional background or experiences related to science, engineering, or technology? If yes, please explain.
4-H Pledge

I Pledge my **Head**
to clearer thinking,

**my Heart** to greater loyalty,

**my Hands** to larger service,

and **my Health** to better living,

for my club, my community, my country, and my world.