Getting Started with 4-H Robotics Professional Development

Welcome to the 4-H Robotics Professional Development modules. These modules will assist you in providing training for 4-H educators, volunteers and teen leaders who are interested in your 4-H robotics program. They are designed to be flexible to meet the needs of many different programs. Each module includes two to three hours of hands-on, interactive training activities; handouts; Power Point slides; and tips for facilitators. The trainings are designed to allow facilitators to capitalize on the expertise and resources of their audience. Through their participation in the modules, staff and volunteers should be able to gain new skills and knowledge that will enhance their role in your robotics program.

This guide has three parts:
- The first section will help you plan your training. Starting with setting your objectives, and ending with assessment and evaluation, it will help you get started and set your agenda.
- The second section provides tips on preparing for the training, everything from selecting a location to gathering supplies.
- The third section will give you tips on leading a 4-H Robotics training.

Let’s get started!

This resource includes nine modules, but they may not all meet the needs of your audience. The modular design makes it easy to combine activities and modules to create customized trainings that will address the needs of your specific audience.

Module 1: Comprehensive Robotics Overview (Length: 2 hours)
In this module, participants will get acquainted with 4-H Robotics programs and the opportunities they offer to youth. Later modules will provide strategies for developing and building a local or state-wide robotics program.

Module 2: Recruitment and Partnerships (Length: 2 hours)
In this module, participants will learn about the resources needed to build a robotics program and begin to develop an action plan for their program. It includes strategies for recruiting volunteers for robotics programs.

Module 3: Community Resource Cultivation (Length: 2 hours)
In this module, participants will develop strategies for building community support and continue to develop the action plan started in Module 2. It includes strategies for recruitment, funding and marketing a robotics program.

Module 4: Using Technology to Deliver a Robotics Program (Length: 1.5 hours)
In this module, participants will become familiar with the Virtual Robotics component of 4-H Ro-
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**botics: Engineering for Today and Tomorrow.** They will develop strategies for facilitating the 4-H Robotics curriculum with youth and for implementing technology in youth development.

**Module 5: Experiencing Engineering Design**
(Length: 2.5 hours)
In this module, participants will become familiar with the Junk Drawer Robotics component of 4-H Robotics: Engineering for Today and Tomorrow. They will be introduced to the engineering design process and experience how the 4-H Robotics curriculum incorporates science, engineering design and building. It includes strategies for incorporating engineering in youth development.

**Module 6: An Experiential Model of Building Robots** (Length: 3 hours)
In this module, participants will become familiar with the Robotics Platforms component of 4-H Robotics: Engineering for Today and Tomorrow and the LEGO NXT Mindstorms robotics kit and programming software. They will be introduced to science inquiry and the experiential learning model and learn how these can be tools for positive youth development.

**Module 7: Scientific Inquiry and Programming Robots**
(Length: 2.5 hours)
In this module, participants will increase their familiarity with the Robotics Platforms component of 4-H Robotics: Engineering for Today and Tomorrow and develop more advanced skills in programming using the NXT Mindstorms software. Using the Experiential Learning Model, participants will evaluate and develop questions to enhance positive youth development.

**Module 8: LEGO WeDo Introduction** (Length: 3 hours)
In this module, participants will be introduced to the WeDo robotics kit by LEGO and how it can be used in a 4-H robotics program. Participants will experience building and programming their own robot.

**Module 9: Expansion, Enrichment, Endurance** (Length: 2 hours)
In this module, participants will consider strategies to strengthen and expand a new robotics program. Earlier modules focused on the initial recruitment of youth and volunteers and building community support. This module focuses on retaining youth and volunteers and helping a new program continue to grow.
Planning Your Training

When planning your training, start by determining what your overall objective is. Are you introducing robotics? Are you trying to develop a local robotics program? Are you trying to build specific skills in robotics? It is important to have a goal in mind as you begin planning.

Then consider your audience.
- Who will be attending the training?
- What are their needs?
- What do they already know?

The pre-assessment included at the end of this guide is a good resource to help you determine the knowledge base and needs of your specific audience.

Knowing your objective and your audience will prepare you to mix and match the modules to design the best training for your participants.

For example, the first training you offer may be designed to build local interest in robotics and introduce volunteers and staff to the resources you can provide. Later you may offer additional trainings designed to build interest in robotics into an effective program with lasting impacts on youth.

If your goal is to develop a strong robotics program in your community, county, or state, you may choose to go through each of the modules in order. This sequence guides your group through learning about the opportunities robotics programs can offer, creating an action plan, building infrastructure such as community partnerships and a volunteer base, learning about the 4-H Robotics curriculum and creating a well-rounded program that meets your local needs.

Creating a Training Agenda

Below are some items to consider as you plan your training agenda. Sample agendas are included at the end of this guide.

**Introductions:** Introductions are an important part of any training! Asking all the participants to introduce themselves takes time, but also helps build relationships. Always introduce yourself and all your co-presenters to the group, and wear name tags.

**Sharing the objectives:** You should know what your objective is for each part of the training—this information is listed at the beginning of every module. Share objectives with the participants so they can direct their own learning. If your training location allows, consider displaying the learning objectives for the length of the session so they are easy to keep in mind.
Planning breaks: We all need a physical break now and then, but breaks also give everyone a chance to step back from their learning and ask questions. Plan to take your own break at another time so you can be available to participants during their break.

We recommend that you present this training with a team of facilitators - be sure to schedule your team so that everyone has adequate breaks, as well.

We learn best when we are comfortable and not hungry, thirsty, or otherwise distracted. If possible, provide participants with refreshments. At least be sure there is drinking water available.

Reflection and discussion: Reflection questions are included in each module, and discussion of these questions is an integral part of the learning that will take place. Be sure to allow sufficient time for discussion and sharing. While each module includes an estimated time, reflection and collaboration should be encouraged within that timeframe. You may want to create an agenda that gives a few extra minutes between modules to ensure that participant interaction and discussion is not rushed.

Keeping a good flow: Each training module contains a mixture of activities and discussions. It is a good idea to break up the time so that participants spend some time listening, then have the opportunity to work hands-on. Try to plan a fun, engaging activity in the afternoon (especially just after lunch) to keep everyone alert.

Endings: The ending of your training is the beginning of working together with participants to build a robotics program. Be sure to allow adequate time for wrapping up the training, assessment, and putting materials away so that you can be available to answer questions.

Don’t begin to clean up immediately. Instead, position yourself in such a way so that participants can talk with you if they have questions. Be sure to provide participants with contact information for your team of facilitators, so they can get in touch with any questions that come up after the training concludes.
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Facilitators

The 4-H Robotics modules are best delivered by multiple facilitators who alternate leading the instruction. Multiple presenters provide opportunities to:

- Include expertise in science, engineering and youth development
- Reflect the diversity of participants (position, gender, age, culture, race, etc.)
- Vary the tone and style of delivery

If possible, include youth with robotics experience as part of your team of facilitators. At least two facilitators are recommended for groups larger than 12. As your group size increases, plan to add more facilitators accordingly. All the facilitators should:

- Take time to prepare for the training together
- Determine who will lead each activity
- Debrief following the training.

In addition to knowing who will lead each activity, you should also understand your role when you are not leading. As a group, decide; Is it okay to check email? Should you look for groups that need extra assistance? Whose job is it check that the food is arriving on time?

- As you plan the agenda, communicate with your whole team and be sure that that each presenter has enough time to prepare. Here are some questions you may want to discuss with your co-presenters:

- What role will “off duty” presenters have? Can they interact with the facilitator and participants during modules or activities they are not leading? What kinds of interaction would we appreciate?

- Consider the location of your training. Will participants be distracted or bothered if other presenters are preparing for an activity while another activity is taking place? How will we assist each other to prepare for each sessions?

- How can we team up to assist each other? What roles can facilitators fulfill for each other (for example, demonstrating a program or keeping notes)

- How will we manage and keep track of the time, so our training runs as scheduled? What will we do if we finish early, or if we are running late?

As you prepare, you may also want to discuss ways that you are individually suited to assist learners. Do any of your facilitators speak sign language? Is anyone particularly good at drawing diagrams for visual learners? Be sure to fully utilize the strengths of each facilitator when you plan your training experience.
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Audience

The 4-H Robotics professional development modules are intended for 4-H professionals, volunteers, teen leaders and other who want to learn more about 4-H robotics. The modules are best delivered to an audience of 12-24 participants, and much of the training is planned for participants to work in groups.

As you prepare, you will need to spend some time thinking about the way your audience will interact with you, and with the material. What is their role in the 4-H Robotics project? How diverse is your audience? Do you have people with many different roles participating? What other differences are there in the audience? Are there different ages, cultures, backgrounds, or familiarity with robotics among the group?

It is important to pay attention to these differences to be sure you are meeting everyone’s needs. Often having people work together in small groups can help meet everyone’s needs. Being part of a group gives people opportunities to share what they know and connect new experiences to prior knowledge. It also gives people the opportunity to learn from others in informal ways. Encourage discussion and sharing among the groups. Your audience will bring their own experience and questions, and your training will be enriched if you encourage them to share both with you and with each other.

A robotics workshop should not be quiet! Consider ways in which you can encourage participants to share and connect with each other and with you as a facilitator. This network will be a valuable ‘take home’ for them even after the training has concluded.

Another important consideration is the different abilities and challenges of your audience. How will you plan to assist learners with mobility issues, visual or hearing impairment, or any other special needs? Will registration materials and/or the pre-assessment give you enough information to adequately prepare a meaningful learning experience for all participants?

Keep in mind at every step - you are not only facilitating a training for trainers, you are also modeling effective training methods that they will carry back to the programs with which they work. Demonstrating techniques for adapting the training to best meet the needs of all learners will encourage them to do the same when they work in their own communities.
Assessment and Evaluation
The pre-assessment survey included at the end of this guide is a useful tool. It will provide facilitators with information about:

- Prior knowledge and experience of participants
- Expectations participants have for the training
- Progress participants have already made in developing a 4-H Robotics program

This information will help you better understand your audience and effectively plan the training. It also provides participants with an opportunity to engage with and think about the ideas that will be presented in the training. Therefore, the pre-assessment is most effective if you ask participants to complete it between 1 to 2 weeks prior to the training. You can consider the results as you plan your final agenda.

Remember that you may need to adapt the assessment provided if you do not plan to use all the modules. Review the assessment carefully after you have completed your agenda and select the items that are related to the modules and activities you will be using.

Post-assessment and evaluation tools will give you information about

- What participants have gained from the training
- Gaps that should be addressed in follow-up support
- Elements of the training that participants felt were/ were not effective
- Plans and next action steps participants have developed

Similar to the pre-assessment, a post-assessment is most effective if it is completed a few days after the training, so participants have had time to think about their experiences and can take their time giving feedback. However, it may be easier to get everyone to complete the post-assessment during your training.

For a longer training, you may also want to include formative assessment. Formative assessments happen during your training and give presenters immediate feedback from the group about how things are going: Here are some possible methods of formative assessment:

Put blank index cards on each table. Ask participants to write what has been effective for them as a learner on one side of the card. On the other side of the card, write what has been difficult for them as a learner or any topics with which they may be struggling. Take time to review the feedback from participants with your co-presenters and discuss how you can adapt your teaching to meet the needs of the group.

At the end of the day, give everyone an index card or blank sheet of paper. Ask participants to record questions that they still have. Overnight, you can review these questions and decide which are:

Easy to answer questions that you can address in your opening the next day.
Important questions that may require re-teaching, or rearranging of the agenda for the next day.

Big questions that may require follow-up after the training.

Up-coming questions that will be answered over the course of the workshop.

If your group has questions that don’t fit into these categories, you will need to decide how to answer them.

The next day, summarize for participants what questions will be addressed, and when: immediately, later during the course of the training, and after the training is over.

If you take the time to ask participants for their questions, it is very important to take the time to answer their questions, or to let them know when they will receive an answer.

From Planning to Preparing

You will know that you have reached the end of the planning stage when you know:

- What the objectives of the training are
- Who will be leading the training with you
- Who will be participating in the training – you may have a general idea of who participants will be, or know specific people who will be attending
- How long and what the agenda for the training will be
- Which modules and activities you plan to include in the training

When your planning has reached this stage, it is time to begin preparations for your training.
Preparing for Your Training

Now it is time to prepare yourself and your co-presenters. Begin by reviewing all the activities you will present. If you are unfamiliar with any of the robotics, electronics or computer software referenced, take the time to learn more about them.

Some of the modules include robotics demonstrations. If you are inviting others (like local robotics clubs or researchers) to do demonstrations, plan ahead and share clear expectations about how much space and time is available.

Selecting a Training Location
Ideally, you can work with a local host who will organize the physical space for your training. Your training location should include:

- A spacious room with good lighting and acoustics
- Adequate tables and seating for participants to work in small groups or teams – including enough space for each group to have a computer, if needed
- Adequate space for clear walkways between desks and tables (*Safety must be one of your prime concerns.*)
- Easily accessible restrooms and emergency exits
- Space for breaks and refreshments (*It is always a good idea to keep food and drinks away from computers and robotics components.*)
- If your training is more than one day long, space to safely store robotics equipment and computers between sessions and overnight

A local host can help locate a space that will meet your needs, arrange the space as needed, provide refreshments for the group and answer some of the questions that come up during the training.

Technological Tools
In addition to the basic room requirements, there are some technological tools that will make your training easier. You may have your own technological equipment or use equipment provided.

Your computer will be used for PowerPoint slides and for some of the trainer resources. Be sure you have the appropriate files loaded on the machine you will be using in advance. In some of the modules, there is particular software that will need to be loaded before the training (i.e. NXT software, Virtual Robotics program)* These details will be in the instructions on the first page of each module. Be sure you allow plenty of time to get software and files loaded.

You will also need a projector and speakers to connect to your computer for some of the modules. Plan ahead when you set up the space for where the projector and screen need to be located. PowerPoint slides are included in each module.

A flip chart or whiteboard is used in every module. If you don’t have access to one of these
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tools, you may need to make some posters in advance or adapt the training script.

If each group will be working with a computer and/or robot, they will need access to electricity.

Although not required for any of the modules, Internet access will make it easier to answer questions and share resources with the group.

* If you will be working with a technological tools belonging to a host site or community partner, be sure to discuss the need to install any programs that your training agenda will require. You may need to present a list of computer system requirements to the person responsible for the computers at your training location, and in some instances you may need to take other steps before installing programs. For example, if you will be using a computer lab at a military installation, there are likely to be very specific guidelines for computer use with which you must comply.

Training with Computers

It can be challenging to work with multiple computers in a training. Many of the 4-H robotics professional development modules require a computer for each group of 2-3 participants. As you lead the training, you will also model for participants strategies that they can use to manage computers for the robotic afterschool program, club or team. Here are some tips on finding and managing computers.

Hints for finding computers for all participants:
- Check with locations in your community like schools, job training centers or public libraries, which may have a computer lab you can use.
- Check with your state 4-H office. You may be able to access computer labs at the university by working with the state office.
- Can participants each bring their own computer? If you choose this option, you may have to allow extra time to load or troubleshoot software.

Considerations for using multiple computers:

Using several computers means you will need several power sources. If you are using computers and robotics kits, then each robot may also need to be plugged in before or during the workshop. We recommend providing a power strip at each table.

Computers need space and if participants are building and programming robots, they will need space next to their computer for their robot. This may require some creativity if you are using a traditional computer lab. If you have tables and laptops, a good rule of thumb is that you can fit a group of 2-3 people working with a laptop and robot in the space you would normally seat 4 people.

Though the training modules do not require Internet connections, you may want to be able to access additional information about 4-H Robotics programs or FIRST competitions on-line.
Training with Robotics Platforms (Kits)

There are many educational robotics kits available, and 4-H does not recommend any particular product. The activities in Robotics Platforms were designed to guide youth in learning about whatever robotics kit they are using. It is likely that the people you are training will already have kits that they would like to use for the training. However, if you are purchasing new kits here are some items to consider.

- Look for a kit that can be built and rebuilt rather than one designed to assemble a single robot.
- Look for a robot that is programmable and includes sensors. In Robotics Platforms there are activities specifically designed for an ultrasonic sensor, light sensor and touch sensor.
- Decide if your 4-H clubs will also participate in FIRST. The FIRST FLL competition uses a LEGO Mindstorms NXT kit and the FTC competition uses a TETRIX kit as the basis for the robot and LEGO Mindstorms NXT programming. In the FRC competition, each year the team will design and build a new robot using the kit purchased as part of the competition.
- Consider both value and durability when selecting a kit. You can expect to use a robotics kit for several years. If you do a lot of trainings, you may want to have a set of 6-10 kits you use for trainings.

**How many kits will you need?** Ideally you will have one kit for every two participants in your training (we suggest the same ratio when working with youth). However, logistically you may choose to have more people share a kit. We do not recommend more than four people using a single kit.

**Before the training:** It is important to take time to familiarize yourself with the kit you will be using.

- Know what basic pieces are in your kit. Check to be sure critical pieces are not missing, such as sensors, USB cables that connect the robot to the computer, or the power cord/batteries.
- Know if you will need to bring extra batteries, and what sizes are required. A battery tester will be useful. Consider using rechargeable batteries, and always be sure to properly dispose of used batteries.
- Review the instructions that come with the kit, even if you won’t be using them in the training. There are probably resources on-line that would also be helpful.
- Be sure you have the programming software required for your kit installed on all the computers that will be used. Try it out yourself. Complete the activities in the training on your own so you are familiar with the steps. Look for help menus in the program or on-line resources that provide additional help.
Using the Training Modules
Each module includes professional development activities, handouts, Power Point slides, and tips for facilitators. The modules are designed to be easy to follow.

- The training scripts (words to be spoken by the facilitator) are in roman type.
- Directions for facilitators are presented in italics.
- Training tips and background information are presented in boxes.

The training scripts were not designed to be read or followed word-for-word. Rather, each presenter should take time to familiarize themselves with the scripts and directions so that they can convey the content in their own words.

Applying the Experiential Learning Model
An experiential approach to learning has been integrated throughout the trainings, but to be effective, it needs to be purposefully applied by the presenter. To help you, each question has been identified with which part of the model it is related to. As you direct each discussion keep in mind if the goal is to share, process and generalize or apply the experience. Select follow-up questions that encourage sharing, processing or generalizing the experience of participants. Remember your learners are the youth and adult leaders in your training. However, as you lead discussion, you are also modeling for leaders how they can apply the experiential learning model in their work with youth.
Appendix 1:

Sample Robotics Workshop Agendas

One Day Training - Sample Agenda 1
9:00  Introductions and Objectives for the Training
      Overview of 4-H Robotics Curriculum
      Introduce Junk Drawer Robotics and Engineering Design Process
10:00 Design and Build Clipmobiles
      Evaluate Clipmobile Designs
11:00 Apply the Experiential Learning Model to the 4-H Robotics Curriculum
12:00 Lunch
1:00  Explore Virtual Robotics
2:00  Facilitating 4-H Robotics Curriculum with Youth
3:00  Developing Community Support for Robotics Programs
      Evaluation and Wrap-Up

One Day Training - Sample Agenda 2
8:30  Registration & Morning Refreshments
9:00  Welcome & Introductions
9:10  Robotics Overview
11:30 Potential Community Resources
12:00 Lunch
12:30 WeDo Hands-On Training
2:00  Start on your County Robotic Plans with Teen Facilitators
2:30  Mindstorms Training
4:00  Evaluation & Wrap-Up
4:30  Safe Travels Home
Appendix 1:
Sample Robotics Workshop Agendas

3 Day Training - Sample Agenda

4-H Robotics Clubs Project

Day 1
Session 1 - 1:00-2:30
Opening Remarks
Introductions and Goals for the Training
Beginning with the End in Mind: 4-H Essential Elements and Robotics Programming

Session 2 - 2:45-5:00
Overview of 4-H Robotics: Engineering for Today and Tomorrow curriculum
Explore the World of Virtual Robotics
Delving into Junk Drawer Robotics
Dinner

Session 3 - 6:30-8:30
Complete Junk Drawer Robotics – a Clipmobile Competition
Create Your Robotics Dream Team

Day 2
Breakfast
Session 4 - 8:00-10:30
Goals for the Day
Applying the Experiential Learning Model to 4-H Robotics
Build a NXT Robot
Program your Buddy

Session 5 - 10:45-12:00
Programming with Parameters
NXT Programming Challenges
Lunch

Session 6 - 1:00-3:00
Making it Happen: Implementing 4-H Robotics with youth
Building Community Support for Robotics

Session 7 - 3:15-5:00
Programming with Sensors
Planning an Effective Training
Dinner

Playground - 7:00-8:00
Robotics Playground (open time to explore the curriculum, play with your robot or get more resources for your state's action plan)

Day 3
Breakfast
Session 8 - 8:00-10:00
Goals for the Day
Building Relationships with our Partners
Year-Round Robotics

Session 9 - 10:15-12:00
Programming at the next level
Sensor Programming Challenges
Workshop wrap up and evaluation

Box Lunches and safe travels home
Appendix 1:
Sample Robotics Workshop Agendas

3 Session Training/Distance Learning - Sample Agenda 1

Workshop One
1:00  Robotics Overview
2:30  Start on your County Robotic Plan

Workshop Two (1-2 months after workshop one)
9:00  Welcome & Introductions
9:10  WeDo Hands-On Training
11:20 Volunteer Recruitment
12:00 Lunch & Demonstration of Various Platforms
1:00  Marketing, Promotion and Outreach
2:00  Mindstorms Training
4:00  Evaluation

Workshop Three – Webinar (1-2 months after workshop two)
10:00 Expansion, Enrichment, Endurance
Appendix 2: Pre-Assessment Survey

It is recommended that you offer this survey to participants approximately one to two weeks before your training is scheduled. You may simply distribute the survey on paper or via email, or you may wish to use a web-based survey program of your choice.

The purpose of this needs assessment is to identify the skills, experience, questions and concerns of participants in the upcoming 4-H Robotics training. Thanks for taking time to complete this survey.

1. Please tell us about yourself.
   Name:
   City:
   State:

2. What is your role in 4-H Robotics?

   Please tell us about your experience with robotics.

3. Have you led robotics activities with youth? (If yes, please describe your experience working with youth. (Survey Monkey question type: comment box)

4. Have you trained 4-H volunteers or staff in leading robotics activities?
   If yes, please describe your experience working with volunteers or staff.

5. Have you used educational robotics kits with youth or 4-H volunteers?
   If you use robotics kits, which kits are you using? Select all that apply.
   - LEGO NXT
   - LEGO WeDo
   - TETRIX
   - VEX
   - Robotix
   - SeaPerch
   - Other – please list

6. Have you worked with youth participating in robotics competitions?
   If yes, what competitions do youth participate in? Select all that apply.
   - FIRST Jr. FLL
   - FIRST FLL
   - FIRST FTC
   - FIRST FRC
   - Botball
   - VEX
   - SuGO
   - Other – please list
   - Not sure.
7: How prepared are you to do the following? (1 = not prepared, 2 = somewhat prepared, 3 = prepared, 4 = well prepared)
   - Develop a 4-H Robotics action plan
   - Promote or market 4-H robotics in your community
   - Develop community support and partnerships for 4-H Robotics
   - Describe the 4-H Robotics curriculum
   - Provide 4-H Robotics curriculum training
   - Describe opportunities 4-H Robotics offer to youth
   - Recruit youth for 4-H Robotics clubs or teams
   - Establish year-round 4-H Robotics clubs or teams
   - Provide opportunities for 4-H youth to be in robotics competitions

8. How comfortable do you feel with the following activities? (1 = not comfortable, 2 = slightly comfortable, 3 = moderately comfortable, 4 = very comfortable)
   - Managing year-round 4-H Robotics clubs or teams
   - Finding a space for clubs or teams to meet
   - Finding technical expertise in robotics
   - Facilitating an engineering curriculum with youth
   - Supporting 4-H youth participating in robotics competitions
   - Preparing youth to use technology
   - Using computers to teach youth about robotics
   - Teaching programming to youth
   - Implementing the 4-H Robotics Curriculum
   - Utilizing sensors in robotics
   - Building robots using LEGO Mindstorms NXT kit
   - Programming NXT robots
   - Helping youth design and build their own robot
   - Using pseudocode to plan a computer program
   - Utilizing robotics as a vehicle for youth development
   - Implementing the Experiential Learning Model in robotics
   - Implementing Scientific Inquiry with youth
   - Implementing Engineering Design with youth
   - Implementing the Essential Elements in robotics

Please tell us about your future plans in robotics.

9. Which components of the 4-H Robotics: Engineering for Today and Tomorrow curriculum do you plan to use?

   **4-H Virtual Robotics**
   - Plan to use
   - Do not plan to use
   - Not sure
4-H Junk Drawer Robotics
Plan to use
Do not plan to use
Not sure

4-H Robotics Platforms
Plan to use
Do not plan to use
Not sure

10. Do you plan to use educational robotics kits?
   Yes
   No
   Not Sure
   If yes, what kits do you plan to use? Select all that apply.
   LEGO NXT
   LEGO WeDo
   TETRIX
   VEX
   Robotix
   SeaPerch
   Other – please list

11. Do you plan to include robotics competitions?
   Yes
   No
   Not Sure
   If yes, what competitions do you plan to include? Select all that apply.
   FIRST Jr. FLL
   FIRST FLL
   FIRST FTC
   FIRST FTC
   Botball
   VEX
   SuGO
   Other – please list

12. Do you plan to establish new 4-H clubs or teams?
   If yes, describe your plans for new clubs or teams.

13. Do you plan to recruit and/or train new volunteers?
   If yes, describe your plans for recruiting or training volunteers.

14. Do you plan to build new partnerships in your community around 4-H Robotics?
   If yes, describe your plans for building partnerships.

15. What are you hoping to learn at the upcoming training to prepare you to work with 4-H robotics? Please list your top 3 priorities.
Appendix 3: Post-Assessment Survey

The purpose of this assessment is threefold. Your participation will help us (1) evaluate the effectiveness of the training you attended, (2) assess your progress, and (3) identify additional resources and support that we can offer you. Thanks for taking time to complete this survey.

1. Please tell us about yourself.
   - Name:
   - City:
   - State:

2. What are your next steps for implementing 4-H Robotics?

3. What professional development strategies (if any) used at the training do you plan to implement in your work?

4. Following the training, how prepared are you to: (1 = not prepared, 2 = somewhat prepared, 3 = prepared, 4 = well prepared)
   - Develop a 4-H Robotics action plan
   - Promote or market 4-H robotics in your community
   - Develop community support and partnerships for 4-H Robotics
   - Describe the 4-H Robotics curriculum
   - Provide 4-H Robotics curriculum training
   - Describe opportunities 4-H Robotics offer to youth
   - Recruit youth for 4-H Robotics clubs or teams
   - Establish year-round 4-H Robotics clubs or teams
   - Provide opportunities for 4-H youth to be in robotics competitions

5. Following the training, how comfortable do you feel with: (1 = not comfortable, 2 = slightly comfortable, 3 = moderately comfortable, 4 = very comfortable)
   - Managing year-round 4-H Robotics clubs or teams
   - Finding a space for clubs or teams to meet
   - Finding technical expertise in robotics
   - Facilitating an engineering curriculum with youth
   - Supporting 4-H youth participating in robotics competitions
   - Preparing youth to use technology
   - Using computers to teach youth about robotics
   - Teaching programming to youth
   - Implementing the 4-H Robotics Curriculum
   - Utilizing sensors in robotics
   - Building robots using LEGO Mindstorms NXT kit
Getting Started with 4-H Robotics Professional Development

Programming NXT robots
Helping youth design and build their own robot
Using pseudocode to plan a computer program

Utilize robotics as a vehicle for youth development

Tell us about your plans in robotics.

6. Please tell us about your plans for building partnerships in your community.
   New ideas about building partnerships gained from the training and networking at our meeting:
   Other ideas for implementation:
   Additional resources you would like to have:

7. Please tell us about your plans recruiting youth and establishing 4-H Robotics clubs or teams.
   New ideas about recruiting youth and establishing clubs gained from the training and networking at our meeting:
   Other ideas for implementation:
   Additional resources you would like to have:

8. Please tell us about your plans for implementing the 4-H Robotics: Engineering for Today and Tomorrow curriculum.
   **4-H Virtual Robotics**
   Plan to use
   Do not plan to use
   Not sure
   **4-H Junk Drawer Robotics**
   Plan to use
   Do not plan to use
   Not sure
   **4-H Robotics Platforms**
   Plan to use
   Do not plan to use
   Not sure
   New ideas implementing the curriculum gained from the training and networking at our meeting:
   Other ideas for implementation:
   Additional resources you would like to have:

9. Please tell us about your plans for utilizing educational robotics kits.
   Which kits, if any, do you plan to use? Select all that apply.
   LEGO NXT
   LEGO WeDo
   TETRIX
   VEX
   Robotix
   SeaPerch
10. Please tell us about your plans for involving youth in robotics competitions.  
   Which competitions, if any, do you plan to include? Select all that apply.  
   - FIRST Jr. FLL  
   - FIRST FLL  
   - FIRST FTC  
   - FIRST FRC  
   - Botball  
   - VEX  
   - SuGO  
   - Other – please list  
   - Not sure.  

New ideas robotics competitions gained from the training and networking at our meeting:  
Other ideas for implementation:  
Additional resources you would like to have:  

11. Please tell us about your plans recruiting and training new volunteers for 4-HRobotics.  
   New ideas about recruiting and training volunteers gained from the training and networking at our meeting:  
   Other ideas for implementation:  
   Additional resources you would like to have:  

4-H Robotics Post-Assessment  
Please give us your suggestions for future work in this area.  

12. What do you think is most important to include in future 4-H Robotics professional development trainings?  

13. What do you think is most important to offer for on-going support in 4-H Robotics?