iChampion

Leadership, Science & Me

Adult Volunteer Guide
4-H Leadership Development Project

Grades 7 through 12

Leaders Guide Companion to *iThrive: Leadership, Science & Me Youth Workbook*

Developed by the University of California 4-H Youth Development Program

UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

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Steven Worker & Gemma Miner

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iChampion: Leadership, Science & Me Adult Volunteer Guide

TOWARD THRIVING THROUGH SCIENCE AND ENGINEERING

Positive Youth Development, Skill Building and Thriving

This curriculum supports the 4-H Thriving Model (Arnold, 2018) that supposes that youth who participate in a high quality, 4-H program context will thrive. Further, the model projects that thriving youth achieve key developmental outcomes. 4-H programs done well, embrace the concepts of developing Sparks, focus on quality with an emphasis on belonging, and foster youth-adult partnerships where the adults are caring, share power and challenge growth.

Youth Development Outcomes

The key youth development outcomes that we strive to achieve are described by Mary Arnold (2018) in the 4-H Thriving Model. The outcomes that you will see reflected in this curriculum include: competence, personal standards, connection, contribution, academic motivation and success, reduction in risk behaviors and healthful choices.

Learning Science, Technology, Engineering and Mathematics (STEM)

4-H made a commitment to help address youth science literacy needs in the U.S. through its 4-H Science Mission Mandate. This effort seeks to engage youth across the country in out-of-school time science programming that is experientially based and uses inquiry methods.

The goals of the 4-H Science Initiative are to improve 4-H members' understanding, skills, attitudes, and contribution towards science. The expected outcomes of the initiative are to help youth see science as a powerful tool to make sense of and construct knowledge about the world; address and think about issues in their lives that involve science, engineering, technology, and mathematics; and connect learning with real-world situations where youth can adopt and use new science methods or improved technology to solve problems.

iThrive Leadership, Science & Me is a curriculum that uses thriving concepts to help youth cultivate positive attitudes and aspirations toward science.

To help connect the 4-H Science Initiative to positive youth development and thriving efforts, the goals of this curriculum are to:

1. Help youth cultivate positive attitudes and aspirations toward science. This includes seeing science in ones future and seeing relevance of science to everyday life.

2. Improve youth engagement in science.

3. Provide opportunities for youth to develop science knowledge, reasoning skills, interest and attitudes.

4. Help youth apply their science learning by making a contribution in their community.

Whether 4-H members are in animal, environment, food, or any other type of project, they participate in hands-on learning in science. In each of these projects members can plan, design, investigate, build, construct and experiment – all related to science! Science is all around us, from the food we eat, to the clothes we wear!

Reform in Science Education

The Next Generation Science Standards (NGSS) advance a three dimensional framework:

1) engaging youth in the eight scientific and engineering practices (fundamental to inquiry-based learning);

2) emphasizing seven cross-cutting concepts such as patterns, cause and effect and stability and change; and

3) focusing on disciplinary core ideas in physical sciences, life sciences, earth and space sciences and engineering, technology and applications of science.

The 4-H Youth Development Program, being a leader in out-of-school time education, embraces science and engineering that helps youth grow and thrive! This combination of positive youth development and science education promotes a real-world perspective where youth are engaged, active and involved in scientific-related issues in their communities.

In *iThrive: Leadership, Science & Me*, each lesson links one or more scientific and engineering practices to a Thrive concept. These eight essential practices are those used every day by scientists and engineers in their work. Focusing on providing opportunities for 4-H members to engage in the practices exemplifies experiential education and inquiry-based learning. These practices include:

1) asking questions (for science) and defining problems (for engineering) *(Chapter 1)*

2) developing and using models, diagrams and computer simulations *(Chapter 5)*

3) planning and carrying out investigations *(Chapter 4)*

4) analyzing and interpreting data *(Chapter 2)*

5) using mathematics and computational thinking

6) engaging in argumentation from evidence *(Chapter 3)*

7) obtaining, evaluating and communicating information *(Chapter 6)*

About the *iThrive* Series

The *iThrive* series includes educational materials that are sold separately or as a bundle. Each set includes ten *iThrive Member Guides* and one *iChampion Adult Volunteer Guide.* Each set has a specific subject matter combined with concepts of thriving.

It is helpful for adult volunteers and members to get a grounded in the concepts of thriving by starting with *iThrive: Leadership U* and its companion *iChampion: Leadership U.* The extensive background information on thriving given in *iChampion: Leadership U* lays the foundations for understanding the thriving concepts. That level of information in not repeated in *iChampion: Leadership, Science & Me.*

Each set of materials also requires some supplies as indicated in each lesson and at the back of this guide. The more complex supplies are also available for purchase as a supplemental kit.

Sets:
iThrive: Leadership U and *iChampion: Leadership U* focus on the concepts of thriving, personal development and leadership development.

iThrive: Leadership, Science & Me and *iChampion: Leadership, Science & Me* focus on the concepts of thriving and science as they relate to members' leadership roles.

iThrive: Leading Healthy and *iChampion: Leading Healthy* focus on the concepts of thriving and health as they relate to members' leadership roles.

Why is iThrive considered Leadership Development?

As you read through the materials you will discover that the concepts presented are not typical leadership development concepts. In iThrive: Leadership, Science & Me the materials emphasize educational practices embedded in the domain of science as well as personal development of thriving skills. Our belief is that when young people are given opportunities to develop their spark, growth mindset, and goal management skills, they will become effective in their leadership roles. The personal development and self-reflection skills gained through participation in iThrive, help members practice and apply those skills to their leadership roles.

1. ***iThrive* is designed specifically for teen youth members enrolled in a Leadership Development Project.** It is especially helpful for youth who are in youth leadership positions and who may be enrolled in a Leadership Project.
2. Each chapter guides youth through promising practices of thriving and is related to the four components of thriving.
3. In some cases, this may be the second or third year that a member has been involved in this project. Think about ways to give them leadership responsibilities for teaching the thriving concepts in each chapter.
4. ***iThrive* is sequential.** Each chapter is in the order it must be taught. The lessons in each chapter set the groundwork for the following chapters.
5. **The chapters help build specific skills toward thriving.**
6. **Each chapter focuses on one or two scientific and engineering practices.**
7. **The final chapter is about celebrating success.**

8. **Each chapter has the following features:**
   a. **Key ideas** about the topic
   b. **iexplore** activity (hands-on, shared experience about the topic)
   c. **ireflect** activity (internalize and personalize what was learned)
   d. **istretch** activity (apply what was learned by watching a short video and completing an activity in-between meetings)

9. **The iexplore activities** are designed to be completed as a group during the Leadership Project meeting.

10. The ireflect exercises are BEST done during the Leadership Project meeting, but can be done individually between meetings if time constraints require it. Facilitator Note: iThrive is set up so that youth can record their answers to the reflection prompts. Some groups may prefer to use the questions for discussion and do a mixture of writing and discussion. Keep some writing components so that youth internalize their reflections. **It is critically important that the reflections in Chapter 4 are written individually by each member.**

11. **The istretch activities** are split into two types of activities: viewing short films that are BEST done during the Leadership Project meeting but can be done individually between meetings; and suggestions for real-world applications for youth to complete between meetings and reporting back at the next meeting

12. **If an ireflect and/or istretch are done independently,** ALWAYS begin the next meeting with a discussion of what was learned.

13. **Some chapters have multiple activities.** Complete at least one set of iexplore, ireflect and istretch exercises in each chapter. Doing them all will help to reinforce the concept most clearly.

14. **When youth complete *iThrive: Leadership, Science & Me,*** they are eligible to be awarded a 4-H Thrive pin in recognition of their effort! This is an annual award and can be achieved multiple times. The first year that members complete the iThrive Leadership Project, they will earn the oval Thrive pin. In following years, when they complete additional iThrive Leadership Projects, they will earn the round clovers to cluster around the Thrive pin. Each clover indicates an additional year of project completion.

About *iChampion*

1. *iChampion* is arranged so that each chapter number matches a corresponding chapter in *iThrive Member Guide.*

2. The Toward Thriving section—that's the one you're reading now—has information that will be helpful for you to know before getting started. Read this first section completely and ensure that you are aware of the practices, policies and resources available here. The Step Up to Thriving introduction section and each chapter of *iChampion* provides:

    a. **The main point** of the chapter

    b. **An *Chapter Checklist*** section with a step-by-step walkthrough of that chapter

    c. **Keep in Mind...** about each Thrive concept, so you can be sure to hit all the main objectives and deliver the key messages for each section

    d. **Complete activity** descriptions

3. **Before each meeting** of the Leadership Project, read the *iThrive* chapter and the *iChampion* chapter that will be the focus of the upcoming meeting. Be sure you understand the activities, exercises and discussions, plus the key concepts and applied science.

4. **Gather supplies** that you will need for each meeting. Most supplies are inexpensive and readily available. Supply kits are available for purchase from Shop 4-H or may be special ordered over the Internet.

5. **Ask for help** if you need it. Contact ca4h@ucanr.edu for support.

Experiential Learning

You may have experience with or at least remember hearing about experiential learning in your 4-H Adult Volunteer Orientation. It is important to understand this model because the 4-H program is based on a proven experiential learning model. It creates and educational climate through planned learning by exploring, doing, and reflection. The activities and exercises in this series are built around concepts and steps in this model.

> The activities in *iChampion* are designed for a developmental age of 12 and older and may not be developmentally appropriate for younger members.
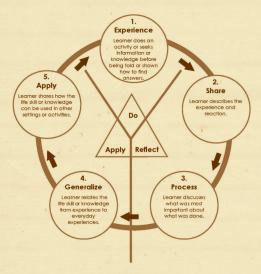
In most of the chapters, the iexplore activity is an experiential education activity. An essential component of 4-H STEM programs is the framing of activities around the experiential education cycle. Experiential education provides opportunities for participants to construct meaning through engaging experiences. Components of experiential education include:

1. Experience: An activity to engage learners in an investigation, observation, experiment or scenario. It is important to let members work through how they might solve the problem presented to them. Answering questions is fine, but let them come to conclusions or try a different strategy, themselves. *(iexplore)*

2. Reflection: Seamless movement through three distinct phases (share, process, generalize) where the facilitator guides the learners to share thoughts and feelings with others in order to process and generalize their experience. The reflection should be focused around the concepts explored in the chapter. Throughout this series, you the guide gives

you open-ended questions/prompts to help youth think about what they learned. These questions usually start with "What....?", "How....?", "Discuss...", etc. *(ireflect)*

3. Application: An opportunity for learners to apply new knowledge to authentic situations in order to help deepen and extend their understanding. *(istretch)*

Only providing a hands-on learning experience does not count as experiential learning. The experience comes first and the learning comes from ideas created during the sharing, processing, generalizing and applying those experiences.

Pfeiffer, J.W., & Ballew, A.C. (1988). Using structured experiences in human resource development (UATT Series, Vol. 1). San Diego, CA: University Associates.

Inquiry-based Learning

In addition, high quality STEM education is best when it is youth-centered and allows for young people to inquire into the concepts. In inquiry-based learning, youth build understanding through active exploration and questioning. The key to inquiry is that youth seek answers to questions rather than being given answers, which requires those who lead activities to facilitate the learning process and not simply disseminate knowledge. When activities are being led in an inquiry manner, youth actively question, observe and manipulate objects in the environment.

Youth need opportunities to develop an understanding of the fundamentals of science inquiry. These include:

» Being able to ask a question about objects and events in the environment

» Abilities to plan and conduct a simple investigation

» Skills to use tools and equipment to collect data and observe the world

» Reasoning skills to analyze data and make conclusions

» Competence to communicate findings

The Value of Reflection

Adapted with permission from: Cain, J., M. Cummings., & Staunchfield, J. (2008). A teachable moment: A facilitator's guide to activities for processing, debriefing, reviewing, and reflection. Dubuque, Iowa: Kendall Hunt.

In order for youth to become better learners it is important to make time for reflection. Research has shown that when we allow time for reflection and use effective techniques, we learn better. This is not just beneficial for brain, it's necessary.

Leaders are often motivated by exciting and engaging group challenges that they sometimes do not make time for what they consider the less engaging task of debriefing or reflecting. Although process activities can be a little dry at times, it can also be engaging--the enthusiasm of the leader helps youth view reflection as a powerful learning tool.

Facilitator Tips on Reflection

Allow group members to pass. This will help them trust the facilitator and the group. Members will offer insight in a group setting when they are ready.

Help your group create a model for appropriate behavior during group activities and discussions. For example, you may want to create some group agreements about appropriate behavior before beginning the activity. You can refer back to the group agreements as necessary. This increases the amount of sharing as well as interaction within the group. Also, it increases opportunities for reflection.

Begin reflection activities with simple, conversational prompts. For example, you could start the conversation by saying, "While you were doing this activity, I noticed… Would someone share with the group something you noticed?" This leads to more in-depth discussions. Reflection is an art that needs to be practiced both by the member and the facilitator.

Allow for superficial answers and comments during reflection activities. REMEMBER: This is a practice exercise. When people begin to reflect they might start with surface-level comments and observations. Persevere! As group members develop continued participation, the level of sharing and reflection increases.

Silence is okay, even necessary. Allow time for group members to think and formulate their ideas.

Look for teachable moments. It can be effective to reflect at different times during the program depending on the group and situation. Always remember that structured reflection doesn't need to happen with every activity, but should minimally occur at the end of a lesson.

Mix up your methods. According to scientific brain research, novelty and use of different learning tools/methods facilitates learning.

Processing can happen any time. Sometimes a group will experience a teachable moment in the midst of problem solving. A brain-based learning approach shows that immediate feedback and reflection during this time can be valuable.

Treat debriefing activities as fun and engaging. Debriefing is not just something you do after the fun and engaging activity is over.

Empower participants. Be careful not to force your own agenda, opinions, and/or judgments on members. Go with flow and be flexible. Let youth take charge of their own learning.

Allow the group to self-process. At times it is helpful to divide the group into smaller, more individ-ualistic groups. This helps members feel more comfortable expressing an opinion.

Take risks. Experiment. Allow for an activity to be unsuccessful. There are always new things to learned by making mistakes--allow this to happen.

Application of Learning to New Situations

The *iThrive* curriculum strives to help prepare youth for life experiences outside of Leadership Project meetings. Having a fun activity is only as important as the ability of youth to apply new knowledge and skills to authentic situations. When engaging youth in experiential and inquiry-based learning, hands-on activities serve as vehicles for learning new concept knowledge and skills. The application of new knowledge or skills to real-world situations is the important determinant of a good curriculum. Thus, to complete the cycle of experiential learning it is important to intentionally provide youth specific opportunities for authentic applications. Each activity contains two types of application, titled **istretch**: a) watching a short video that help youth see the concept in a new situation; and b) suggestions for real-world activities outside of the project meeting. For the second, real world activities, ask and invite youth to complete these in-between project meetings and report back at the next meeting.

Meeting Plans

Over the years of implementing the iThrive Leadership Development Project, Project Leaders have found that a two hour meeting is optimal for completing most chapters. In the suggested calendar below, there are recommendations for the amount of time each chapter or lesson will take.

Suggested Meeting Outline

- ⊙ Greet members
- ⊙ Check-in Circle

  Review how we're doing as a group (review group norms, CUDOS, etc)
  Share any *istretch* or real world application exercises that were completed between meetings

- ⊙ Read the information at the beginning of each chapter out loud together

- ⊙ Complete at least one *iexplore,* the related *ireflect* and related *istretch*

- ⊙ Ask members to complete a real world application and bring their results to the next meeting

Tip: Be sure to have notebook paper at each meeting just in case a member forgets their *iThrive Member Guide.* They can still look on with another member and complete the reflections or written exercises on plain paper and then insert their work in their own member guide at a later time.

Suggested Lesson Calendar (whenever you start, just keep going in this sequence)

First	Step Up to Thriving (2 hrs)
Second	Chapter 1: Kindle Your Inner Passion (2 hrs)
Third	Chapter 2: The Science of Risk (2 hrs)
Fourth	Chapter 3: A Community's Perspective (2 hrs)
Fifth	Chapter 4: Engineering a Plan to Reach Your Goals: Can-Can Robot (2 hrs)
Sixth	Chapter 4: Engineering a Plan to Reach Your Goals: My Goals and Strategies (2 hrs)
Seventh	Chapter 5: Growth Mindset in Science (2 hrs)
Eighth	Chapter 6: Thriving in Science (2 hrs)
Ninth	Chapter 7: Celebrate (2 hrs)

4-H Data Collection Tools

The 4-H Youth Development Program (YDP) is part of the national Land-grant University system. The first Land-grant Universities were approved by President Lincoln in 1862 with an Act of congress that granted federal land to states in exchange for colleges that taught practical (and often hands-on) agriculture, science and engineering. 4-H enters this story in 1914 with the passage of the Smith-Lever Act. The Act created the Cooperative Extension Service with a mission to bring agricultural research from universities to farmers. While the farmers were slow to adopt new practices and agricultural innovations, their children, the first generation of 4-H members, were eager to learn and try new agricultural techniques. In essence, 4-H members not only learned about science but helped advance scientific research!

Today, a hundred years later, 4-H still helps young people learn, grow and contribute to the research. 4-H today is much broader than agricultural education, but we still work with youth to help them improve society through the application of new innovations, ideas and knowledge. In 4-H we share what we know about youth development: what works, what's new and what's promising.

One of the ways that we know what works and what the impact 4-H has on learning and growth in young people is by tracking youth progress. Tracking progress also allows us to continually improve the 4-H YDP based on what youth and adult volunteers tell us.

Youth Surveys and Feedback

If your state or county program is studying growth and learning in youth members and/or adult volunteers, please plan to include time for youth to complete surveys or participate in other research efforts from your Land-grant University.

Step Up to Thriving-the first meeting

What's the Point?

The first meeting should be the establishment of safety (physical, emotional, social) and group norms. Creating a safe space early in the project for each young person and yourself is critical for the success of the project. In addition, many young people (and adults!) can be intimidated by science and engineering, especially the type of science they have experienced in school. Helping everyone feel safe with each other and with science and engineering will help people feel comfortable sharing and building their skills.

Getting Started

Read through this whole section of *iChampion*, to be comfortable with the lesson plan. Since this is not a chapter but an introduction, it does not follow the chapter model. Instead, this first meeting plan is mostly designed by you, with resources found in *iChampion* and your own skills and background. During the meeting, it will be important for you to learn what the members think about science and engineering and create group norms. You may also have first meeting paperwork to work through with your group.

In the first two chapters of iThrive, members will think about risk behaviors and thinking from other people's perspectives. To prepare for discussions that may include sensitive issues and for respectfully arguing from evidence review the section in the *iChampion* Appendix on Sensitive Issues, page 64 (American Camp Association, 2012). If this project is new to you, it may be helpful to read the Background and Key Concepts about emotional and physical safety, *iChampion* page 65.

iThrive Step Up to Thriving introduction checklist

- ✓ Play a name game especially if the members of your project are new to each other.

- ✓ Read the iThrive introduction together. Make sure members understand how iThrive is organized.

- ✓ Complete the activity: Agree to Disagree. Have a discussion of how young people feel about science and engineering. Try to tease out hopes and fears. What do members think about the nature of science and engineering? What experiences do you have with science and engineering at school, home and other places?

- ✓ Complete a group behavior activity or two.
  One activity is found in this chapter: CUDOS to You! Other activities can be found in *iChampion: Leadership U.*

- ✓ Complete any necessary paperwork. Set a meeting calendar for the year.

- ✓ Ask members to complete the istretch real-world application in-between meetings and report back at the next meeting.

Project Leader Tips

If you have used previous iThrive materials, it could be that you will have both new members to the project and continuing members. If all of the members are continuing or you have a mix of new and returning, use returning members to help lead some of the activities. Be sure to do all of the safety and relationship building pieces even if they all know each other. As young people grow and mature, their needs around physical and emotional safety can change. It's very important that they have consistent opportunities to develop safety as often as necessary.

Spend a few minutes at the beginning of each meeting to "take the safety temperature in the room." A simple way to do this is to review your group agreements together to see how everyone thinks the group is doing. If something doesn't feel right check in with the group and see what you can do together to create a safe meeting place again.

Each time a new member is introduced, you have a "new" group. Safety for this new group needs to be re-established. You can do this by having another youth mentor the new youth and guide them through the activities you have already done to establish safety. You will also want to play some relationship building games and make sure everyone knows each other's names.

Consider the personalities, abilities, ages and stages of development and individual differences of young people in your project group. Some members may be active participants from the very beginning; others will wait to feel comfortable enough to talk aloud. Project members shouldn't feel forced to converse, but should definitely be encouraged to engage and be involved, even if that means reserving the right to pass in the meantime. Growth can look very different between each individual. Leaving the door open for an ongoing conversation can allow for thriving discussions to evolve over time.

istretch

After the first two activities youth will hopefully be thinking about group norms along with science concepts. Suggest between now and the next meeting that youth think about where they use or do science in their lives. Ask them to be ready to share at the next meeting!

ACTIVITY 1: AGREE TO DISAGREE

Objective: People come with a wide divergence of past experience, opinions and interests. This activity helps the facilitator and youth start to understand and share their differences with each other in a safe manner.

Time: 15 minutes for a group of about 10 people

Materials: Four pieces of paper labeled as "Strongly Agree", "Agree", "Disagree" and "Strongly Disagree"

Preparation: Hang the four pieces of paper at head-height, each on one wall of the room.

Preparation Time: 3 minutes

Facilitator Tips:

   » You may add a "Neutral" or "Neither Agree Nor Disagree" option if desired, however, often forcing a decision one way or the other will really make a young person think about the question at a deeper level.

   » When asking for responses to the questions, allow members to pass if they don't want to talk.

   » Sometimes, there is a "peer-pressure" effect in this activity when youth stand underneath a sign everyone else is clustered around instead of moving to a sign that reflects their true opinion. You may try asking a question like, "While no one 'strongly disagreed', what do you think someone standing underneath this sign might say?"

Directions:

1. Explain that this activity will help people express their opinions about science.. Explain to the group that you're going to read a question and each person should move to stand next to the sign that reflects their opinion. Point out the signs, "Strongly Agree", "Agree", "Disagree" and "Strongly Disagree."

2. Start with a test question, something like "Dogs make better pets then cats" or "I like the color pink."

3. Once everyone understands the activity, start asking questions. Sample questions are included below, but feel free to add or modify questions.

   » I like science.
     Follow-up questions: why do you like (or not like) science? What aspects of science do you find challenging? In your experience, what differences have you observed between science in school and science elsewhere?

   » I think science will be important in my future.
     Follow-up questions: In what ways do you think science will be important or not important? How do you think science may be related to education (college) or career/work?

   » I like to talk about science with my friends.
     Follow-up question: What types of things do you talk about?

» Science is directly related to engineering, technology and math.
Follow-up questions: In what ways do you think science, technology, engineering, and math are similar? How might they be different?

» Engineering and math are useful for solving everyday problems.
Follow-up questions: In your own words, how do you define engineering? How have you experienced engineering in your own life?

» 4-H helps me learn about science.
Follow-up questions: Can you provide examples from your experience? In what ways do you think 4-H could help you learn more about science?

4. If time permits, you might ask for other questions, related to science, from the group.

5. Close the activity by asking open-ended questions, such as "Did anything surprise you?", "Any ah-ha moments?"

ACTIVITY 2: CUDOS TO YOU!

Objective: Any group or community operates according to norms – group-held beliefs about how members should behave. In 4-H, norms include abiding by the Code of Conduct and treating each other with respect. But norms also include other unwritten rules. In the scientific community, the acronym CUDOS describes the 5 most common Mertonian norms, introduced in the early 1940's.

Time: 20 minutes for a group of about 10 people

Materials: one piece of poster board, colorful markers

Preparation: Prior to the meeting, title a poster board "CUDOS" and write the list of 6 items below it. Leave enough space for additions.

» Communalism: We share openly with each other.

» Universalism: Everyone may contribute regardless of irrelevant criteria.

» Disinterestedness/Humility: We must work for the public good and not for personal benefit.

» Originality: Be yourself and be creative.

» Skepticism: We are critical thinkers.

Preparation Time: 20 minutes

Facilitator Tips: After the activity, leave the board up throughout the meeting and let them come back to it if they need to. Let members take their time signing the poster board at the end of the activity. Use the poster at the beginning of each meeting to check in with members on how they are doing as a group meeting their commitments to each other.

Directions:

1. Explain to the group that we're going to work through an exercise so everyone knows how to behave and what to expect and there is agreement to how they are going to work together. Starting with the norms of the scientific community, we will add additional norms for our own Leadership Project community during the year.

2. Share that a community is a group of people who share a sense of commonality and solidarity. There are many communities in this world.

3. Read through each CUDOS. Have people discuss what each means. How might each apply in 4-H?

4. Ask for additional norms for the Leadership Project.

5. When members are ready to make this commitment, each person signs their name to the poster board.

6. Talk about how you are going to support each other to remember the group norms.

7. Use the completed group norms at the beginning of each meeting to check in with members of the project group. How does everyone think we're doing on our agreements with each other? Share your ideas on how can we support each other if we are struggling in any area. Are there other ideas that should be added to the list?

Imagination is more important than knowledge. The important thing is not to stop questioning. Curiosity has its own reason for existing.

-Albert Einstein

Chapter 1
Kindle Your Inner Passion

What's the Point?

Youth Development Concept: Sparks

Scientific and Engineering Practice: Asking questions and defining problems

All youth have a spark – a quality, skill or interest that they are passionate about. A spark comes from inside of us and when we express it, gives us joy. Sparks must be nurtured over time by Spark Champions and through interacting within the various contexts that shape development. Such as 4-H!

Behind every spark there is a science. Science surrounds us. For example, without science, there would be…

» No way to use electricity! Science has steadily built up our understanding of electricity, which today carries our voices over telephone lines, brings entertainment to our televisions and keeps the lights on.

» No plastic. Chemistry has allowed us to form a wide variety of plastics suited for all sorts of jobs. Can you imagine today's world without plastic?

Sparks can:

» Be a skill, talent or interest that goes deeper than activities (such as going to the mall or watching a movie). For some, it's a way of being in the world

» Originate from inside a person, rather than being imposed from the outside

» Be a source of intrinsic motivation, meaning and self-directed action that can help drive young people to put forth effort in other areas of their life

» Make (or have the potential to make) the world a better place

» No modern agriculture. Science has transformed agriculture. In the 1940s, biologists began developing high-yield varieties of corn, wheat and rice, which, when paired with new fertilizers and pesticides developed by chemists, dramatically increased the amount of food that could be harvested from a single field. These science-based technologies triggered striking changes in agriculture, massively increasing the amount of food available to feed the world and simultaneously transforming the economic structure of agricultural practices.

» No modern medicine. Scientists discovered germs in the 1800's and antibiotics only in 1920. From the eradication of smallpox, to the prevention of nutritional deficiencies, to successful treatments for once deadly infections, the impact of modern medicine on global health has been powerful.

Asking Questions and Defining Problems

Science begins with questions about phenomena that may be investigated empirically. Engineering questions clarify issues to determine criteria for successful solutions and identify constraints to solve problems. In this activity, youth will connect their spark to a Field of Science or Field of Engineering. Then they will start to think about and discuss the questions science might ask and the issues engineers might address.

Getting Started

Read and understand more about Sparks found on the next few pages. See "Sparks Conversation Starters" found in the Appendix on pages 57-63. Your role as an adult volunteer is to nurture and support youth to identify their spark and to listen for opportunities to point out when something may ignite joy and energy in a member. Take a look through iThrive, Chapter 1, to be comfortable with following the lesson plan presented here and helping youth follow along in their iThrive Member Guide.. Be prepared to help guide youth through the iexplore, ireflect and istretch activities.

Chapter Checklist

- ✓ Complete the Sparks of Science activity.

- ✓ Complete the ireflect discussion questions. (Remember to give them just a couple of minutes to jot down some key ideas to the questions in their Member Guide, and then use the questions for group discussion.)

- ✓ Complete the istretch video clip and questions as a group or individually between meetings. Ask members to complete the istretch real-world application in-between meetings and report back at the next meeting.

Project Leader Tips

Fields of Science and Fields of Engineering cards may be purchased for this activity, however, you may decide not to use the cards and instead have youth identify science and engineering fields themselves. Younger youth may benefit from having an array of cards, perhaps listing fields they have not heard of before, to select from. Older youth may be aware of a greater number of science and engineering fields so you can challenge them to think deeply about their spark's connection with science and engineering.

Keep In Mind...Sparks Messages

By the age of 10 youth can fully understand the concept of a spark. All youth have a spark – a quality, skill or interest that they are passionate about—they may not know it yet. A spark comes from inside of us and when we express it, gives us joy. Sparks must be nurtured over time by Spark Champions— caring adults with whom youth interact.

Objectives of the Sparks Lessons
» Youth understand the concept of sparks.
» Youth identify sparks in themselves.
» Youth understand the benefits of having spark champions.
» Youth develop a plan for identifying or finding their own spark champions.

Highlights
» Sparks are the passions, ability, skills and strengths that are discoverable in all youth.
» Sparks are a catalyst for thriving.
» Sparks are a source of motivation (come from within a person).
» Sparks often change over time.
» Sparks are deeper than activities (e.g., watching TV).
» Spark champions help identify and grow sparks.
» Make (or have the potential to make) the world a better place.

Avoid ...
» using sparks as a label (i.e., something inherited or a "given" attribute);
» excessive matching of sparks to "career goals."
» referring to a spark as "something you're REALLY good at" (they may be passionate about something that needs effort and persistence before they're "good" at it).

Help youth find their sparks:
» Notice when a young person lights up and shows joy and positive energy toward something.
» Talk to a young person about what excites them (e.g., asking questions like: "Tell me, what do you love to do in your spare time? Why? How does doing what you love make you feel?").
» Listen carefully for a way to support a young person.
» Help youth find ways to practice their spark(s).
» Attend a young person's games, performances and public demonstrations of her or his spark(s).

iexplore
Sparks of Science

Objective: To help youth understand their spark and investigate their spark's connection to science and engineering.

Time: 30-45 minutes

Materials: Blank paper, markers, Fields of Science & Fields of Engineering cards

Preparation: Gather materials.

Preparation time: 15 minutes to gather supplies and understand the activity.

Facilitator Tips: Youth may not know their sparks yet. If so, ask them to write something down that they think might be their spark.

Directions:

Part A

1. Briefly explain what sparks are and ask youth to think about their spark. Hand out blank paper and ask youth to draw a representation of their spark.

2. Have youth group in pairs or small groups (4 max). In each group, rotate through each person and ask them to share with each other the following:

    a. Describe your spark.

    b. Explain ways in which you practice and do your spark (or would like to practice your spark).

    c. Describe ways others help you develop your spark.

Part B

3. Ask an opening question for the second part, for example, "What do you know about science?" or "What types of things do scientists and engineers do?".

4. Invite youth to think about how science and engineering are connected with their spark. Spread out the fields of science and fields of engineering cards and invite youth to look at all of the cards. After reviewing them, ask youth to select one Field of Science card and one Field of Engineering card (2 cards total).

5. Back in their pairs or small groups, invite youth to:

    a. Describe the connections they see between their spark and the field of science and field of engineering cards they selected.

        i. Start to discuss and write down questions that scientists in their Field of Science might want to investigate around their spark.

        ii. Start to pose questions, activities and designs engineers in their Field of Engineering might be interested in around their spark.

6. Reconvene the entire group and have them share their spark, their Field of Science and Field of Engineering and the types of questions and problems each might be interested in.

7. Invite youth to select a field card they think does not match their spark. Discuss as a group.

ireflect

As the facilitator, help guide youth as they question, share and compare their observations. Before they share with the group, have youth reflect on the activity in *iThrive* . Use more targeted questions as prompts to get to particular points.

> » What surprised you about connections between science and engineering with your spark?

> » After thinking about how science and engineering connect to your spark, what conclusions can you draw about science and engineering?

> » In your role as a leader, how could you help other youth explore and/or develop their spark? How can you help them discover how science is related to their spark?

istretch

Throughout the *iThrive* Leadership Project, we use movie clips to generate discussion around a specific concept.

Film: If time allows, view the video during the project meeting. Instead of recording answers, you can use the questions as group discussion after viewing the video clip. Depending on your project size, you may want to divide into smaller groups or keep them together if it's manageable. If there is not time, encourage members to complete the istretch activity on their own or in small groups and bring their answers to the next meeting. At the beginning of the next meeting, spend about 5 minutes sharing their thoughts.

Watch a 2-minute video of physicist Richard Feynman talking about learning science at **https://www.youtube.com/watch?v=tkm0TNFzleg**

> » Discuss and share what Feynman might say about how you could best learn science. In what ways can you learn science and engineering while doing something related to your spark?

Real-world Application Suggestions

The suggestions below will help you extend and apply your learning in real-world settings.

» Hold spark conversations with others, including your family and other 4-H members, using eight essential questions: What is your spark? When and where do you live your spark? Who knows your spark? Who helps you get better at your spark? What gets in your way? How can I help? How does science and/or engineering relate to your spark? How will you use your spark to make our world better?

» Take one or more of the questions you developed in the iexplore activity and design an investigation. Determine how you can find out more about the science and engineering aspect of your spark. Conduct the investigation and report back to the group.

Chapter 2

The Science of Risk

What's the Point?

Youth Development Concept: Healthy and Unhealthy Risk Behavior

Scientific Practice: Analyzing and Interpreting Data

This chapter deals with healthy and unhealthy risks. In *iChampion*: Leadership U, we used the concept of dream thieves to help young people understand that the practice of undesirable risky behaviors can rob them of their dreams. In this volume, we approach healthy and unhealthy risks from a data analysis perspective. The goal of this chapter is to help young people understand the difference between healthy and unhealthy risks while employing a scientific approach to analyzing, interpreting and making meaning of the data.

Analyzing and Interpreting Data

A scientific practice is analyzing and interpreting data. Data comes in many forms – numbers, text, graphs, photographs, stories – and requires a keen eye in order to make sense and derive meaning. Scientists look for patterns, trends and themes in the data that might indicate significant features. After analyzing the data, scientists try to find a way to communicate it to others in an effective format for understanding.

Getting Started

Take a look through *iThrive*, Chapter 2, to be comfortable following the lesson plan presented here and helping youth follow along in their *iThrive* Member Guide. Be prepared to help guide youth through the iexplore, ireflect and istretch. To prepare for discussions that may include sensitive issues, review Sensitive Issues; Safety: Background, and Key Concepts; and Dangerous Games, found in the Appendix, pages 64-67.

Chapter Checklist

» Complete the Inquiry into Risks activity.

» Complete the ireflect discussion questions.

» Complete the istretch video clip and questions as a group or individually between meetings. Ask members to complete the istretch real-world application in-between meetings and report back at the next meeting.

Project Leader Tips

If you sense that a member is struggling with this risk factor, invite them to talk to you if they would like help connecting with resources – at school or in the community – to help navigate this risk factor in their life.

ACTIVITY 4

iexplore
Inquiry into Risks

Objective: To help young people identify risks and categorize them. Open the dialogue about risk factors that are healthy or unhealthy and under what conditions.

Time: 20-30 minutes

Materials: 50-100 Notecards, writing utensils for each person

Preparation: A few examples of risks, if needed, to get the youth started

Preparation Time: minimal

Facilitator Tips: Optimally, each group needs 40+ notecards in order to have a full experience sorting and grouping the cards. If the groups get stuck sorting, prompt them with questions about similarities and differences in the types of risks. Groups may have more success by first starting with two categories and then having subcategories underneath each.

Directions:

1. Pass out the notecards so that each member gets a stack of blank notecards (perhaps 20-40 each) and a writing utensil. Ask members to think about the types of risks teenagers face in their lives. They can be risks across the continuum between healthy and unhealthy risks.

2. You may notice that some members seem stuck and cannot think of many risks. You might pose some additional questions or prompts to stimulate thinking. You might mention that all human activity carries some risk, but that some activities entail much more risk than others. What are types of risks at home, at school, with friends, while alone, while driving, eating? What are types of risks that involve finances, health, food and the environment?

3. When most of the members have completed writing down as many as they can think of, gather the notecards. Do not cut off the thinking too soon, many groups may take 10-15 minutes to write on the cards. The more notecards, the better for this activity!

4. Explain to the group that they now have a dataset to analyze and then start to interpret. Scientists will start by analyzing the data, often by sorting items into groups or categories and then by trying to explain (interpret) themes.

5. Form groups of 3-4 members and pass out even stacks to each group. Ask the groups to discuss potential ways they might sort these risks. What makes sense as a method to start to find patterns and trends in the data? Once they have a grouping that makes sense to them, start to interpret the data.

6. After a period of time, have the small groups reconvene and share their categories with the other groups. Help guide youth as they question, share and compare. Here are a few prompts you might use:

   » Why did the group decide to classify their risks in this way?

   » What are the similarities or differences between groups?

   » Does one type of grouping make it easier to understand? Would another grouping make sense?

   » How do we want to present our findings to others?

   » What other tools can you think of we could use to analyze this data?

   » What trends do you notice?

7. If there is enough time and computers available, you can have groups input their data into a spreadsheet program (like Microsoft Excel) and do additional analysis.

ireflect

Have members think about the reflection questions in iThrive and then share out with the group, if they feel comfortable doing so.

   » What relationship did you detect between the scientific practices of analyzing data compared to interpreting data?

   » What other methods or tools might be useful in analyzing and interpreting data?

   » What were some of the common factors between the types of risks you investigated?

   » What would you tell younger 4-H members about risk?

istretch

Film: If time allows, view the video during the project meeting. Instead of recording answers, you can use the questions as group discussion after viewing the video clip. Depending on your project size, you may want to divide into smaller groups or keep them together if it's manageable. If there is not time, encourage members to complete the istretch activity on their own or in small groups and bring their answers to the next meeting. At the beginning of the next meeting, spend about 5 minutes sharing their thoughts.

Watch the 3 ½ minute video from Silvia Bunge at the University of California on the adolescent brain at **https://youtu.be/HvBNFJk4G8g**

From your understanding of the video, what advice would you give to a peer on risk taking? How would that advice change if given to an adult?

Real-World Application Suggestions

» Invite members to complete real-world activity in-between meetings. Two suggestions include:

» Have youth investigate their community's statistics for youth well-being and youth vulnerability on the "Putting Youth on the Map" website at **http://interact. regionalchange.ucdavis.edu/youth/**

» Develop a proposal to address community vulnerability issues.

» Coordinate a photovoice project with younger 4-H members on potential places for healthy and unhealthy risks in their homes, schools, and neighborhoods. Photovoice is a process where photographs are used to initiative discussion based on youth's expression of themselves and their environment. Share at a 4-H meeting, at school, or with community organizations to help initiate community change.

Chapter 3

A Community's Perspective

What's the Point?

Youth Development Concept: Connections, relationship building with peers and adults

Scientific Practice: Engaging in argument from evidence

An important aspect of thriving is developing connections and relationships. Relationships with adults and peers are the sources of emotional support, guidance and instrumental help that are critical to young people feeling connected to others. In this chapter, we think about connections in the community and extend this to scientific communities.

Communities are groups of people. Often communities are defined as groups of people who live in one place and share a common history, social, economic and political interests. At other times, community is defined as a group of people sharing a common interest but who do not necessarily live in the same place. Regardless of the definition, members of a community interact with one another and each bring a unique perspectives. Reaching agreement on community goals requires the ability to think about multiple perspectives.

Engaging in Argument from Evidence

Scientists and engineers use argumentation to listen to each other's interpretations and theories based on scientific merit. In science and engineering, merit includes scientific knowledge, research evidence, logic and consideration of economic, social, environmental and ethical factors.

A Community of Scientists

Groups of scientists can also be considered a community. Think of a scientist at work. What does he or she do? Yes, scientists experiment, analyze data, develop explanations and use mathematics. All of this is done with other people! You can think of science and engineering as communities – the scientific community and the engineering community – and in order to become a scientist or engineer, you must learn how to participate in community activities.

While all eight of the Scientific practices involve groups, two of them are specific to working with others: a) engaging in argument from evidence; and b) communicating information. Both of these practices require someone who knows how to listen, compare and evaluate ideas, be respectful and think about multiple perspectives. Scientists and engineers use argumentation to listen to each other's interpretations and theories based on scientific merit. In science and engineering, merit includes scientific knowledge, research evidence, logic and consideration of economic, social, environmental and ethical factors.

Getting Started

Take a look through *iThrive*, Chapter 3, to be comfortable with following the lesson plan presented here and helping youth follow along in their *iThrive* Member Guide.. Be prepared to help guide youth through the iexplore, ireflect and istretch activities.

Chapter Checklist

- » Complete the Multiple Perspectives, One World activity.

- » Complete the ireflect discussion questions.

- » Complete the istretch video clip and questions as a group or individually between meetings. Ask members to complete the istretch real-world application in-between meetings and report back at the next meeting.

Project Leader Tips

This activity may invoke strong feelings on environmental and economic issues. As the adult facilitator, help promote respectful conversation. You can also remind the group that this activity is about arguing from scientific evidence, not personal feelings, opinions, political agendas, or subjective thoughts. You might need to help youth think about the difference between subjective opinions and scientific evidence.

ACTIVITY 5

iexplore
Multiple Perspectives, One World

Objective: Through a simulated town hall debate on whether or not a marine protected area should be extended, members think through a perspective of a stakeholder (instead of their own opinion). Through this activity, members learn about multiple perspectives, arguing from evidence and the need for respect when participating as a member of a community.

Time: 50 minutes

Materials: paper, pencils, copies of the case study and 1 copy of the role descriptions.

Preparation:

» Select one of the three case studies (Merritt Island, Point Sur, or Cocos Island).

» Download materials from National Geographic Education at **https://www.nationalgeographic.org/activity/marine-protected-area-stakeholder-debate/**.
  Make copies of the case study. You might want to make this available to members before the meeting.

» Print out a copy of each of the stakeholder role descriptions and cut out cards for each of the roles.

Preparation Time: 30 minutes to understand activity and gather materials

Directions:

1. If they have not already done so, ask members to read the case study. Then discuss everyone's understanding of the case. What is the conservation goal of the MPA (if needed, prompt members to think about how the MPA may protect the ecosystem, cultural resources, sustainable fishing and gathering of living resources, etc.)?

2. Assign stakeholder roles to each member. Ask them to read and think about their stakeholder. To help members think about their stakeholder, you might ask members to determine if their stakeholder would be for or against extending the MPA. Have members get into these two groups to think through the reasons their stakeholder would have for that opinion (for or against). Provide paper and pencils for members to write down their thoughts.

3. Explain that these stakeholders have been selected to participate in a town hall-style debate on the advantages and disadvantages of establishing this new MPA. Ask members to prepare in like-minded groups to develop their arguments and rebuttals by writing down:

   » points their stakeholder can make to support their view. Include a short description of evidence that supports each point.

   » points other stakeholders can make to oppose their stakeholder view. Include a short description of evidence that supports each point.

Hosting the town hall

4. Give each person two minutes to introduce their stakeholder and make their case for or against the site as a Marine Protected Area from the perspective of their assigned stakeholder.

5. After all groups have presented, have a 15-20 minute open question and answer session.

6. Explain that they need to work together to make a joint decision on how best to proceed with the MPA. Their goal is to get all stakeholders to understand the MPA designation plan and come to a consensus about how to modify and/or implement the plan. Allow approximately 15 minutes for a consensus-building discussion. Members may not reach full consensus, as it is often not possible to get buy-in from all stakeholders. Tell members that, if necessary, they may need to compromise and develop a range of possibilities and locations for the MPA, resulting in a MPA everybody can live with and benefit from.

Resources:

Merritt Island MPA: **https://media.nationalgeographic.org/assets/file/Case_Study_Point_Sur_State_Marine_Reserve_and_Marine_Conservation_Area.pdf**

Point Sur MPA: **https://media.nationalgeographic.org/assets/file/Case_Study_Point_Sur_State_Marine_Reserve_and_Marine_Conservation_Area.pdf**

Cocos Island MPA: **https://media.nationalgeographic.org/assets/file/Case_Study_Cocos_Island_National_Park.pdf**

Stakeholder roles: **https://media.nationalgeographic.org/assets/file/Stakeholder_Role_Descriptions_1.pdf**

ireflect: As the facilitator, help guide youth as they question, share and compare their observations. Before they share with the group, have youth reflect on the activity in iThrive. Use more targeted questions as prompts to get to particular points.

» What conclusions can you draw about engaging in argument using evidence in scientific communities?

» How do you think your connections within your community help in reaching your goals? In what ways do you think connections with others are beneficial when people are on opposite sides of an issue or argument?

» What is important to consider in reaching agreement in your 4-H community?

istretch

Film: If time allows, view the video during the project meeting. Instead of recording answers, you can use the questions as group discussion after viewing the video clip. Depending on your project size, you may want to divide into smaller groups or keep them together if it's manageable.

If there is not time, encourage members to complete the istretch activity on their own or in small groups and bring their answers to the next meeting. At the beginning of the next meeting, spend about 5 minutes sharing their thoughts.

View the first 3 minutes of physicist Lee Smolin talking about science and democracy (TED Talk) at **https://youtu.be/MOLFTpAr7eU**.

He talks about how the scientific community works, as he puts it, "we fight and argue as hard as we can," but that science works because scientists are members of ethical communities.

» Do you agree with Lee's argument that science and democracy are similar because they are "a community bound together by an ethics"? Please discuss.

» What helps make the community of 4-H work?

TED is a nonprofit organization devoted to Ideas Worth Spreading. It started out (in 1984) as a conference bringing together people from three worlds: Technology, Entertainment and Design. Since then its scope has become ever broader.

Real-World Application Suggestions

Invite members to complete a real-world activity in-between meetings. Two suggestions include:

» Identify a current community issue (you can look at recent City Council or commission notes). What stakeholders are interested in the issue? What are their perspectives? Think about ways that integrate multiple perspectives. Develop a plan for addressing this issue in a way that brings together multiple perspectives.

» Investigate the connections in your 4-H Club to the community. What collaborators does your 4-H Club have? Develop a plan to strengthen connections between your 4-H Club and community organizations, agencies and groups.

Chapter 4

Engineering a Plan to Reach Your Goals

What's the Point?

Youth Development Concept: Goal selection, pursuit of strategies, shifting gears
Scientific Practice: Planning and carrying out investigations

The focus of this chapter in *iThrive* is on helping young people think concretely about goal management as a science and applying it to further develop their science and engineering abilities. The GPS goal management system is more than just goal setting—it's really a lifelong system of planning where you are going, how you are going to get there and what you are going to do when things get in your way.

GPS

Goal management is defined by the ability to effectively utilize goal-setting skills to manage the process of reaching a goal, or goals. In the 4-H Thrive model, we are using the GPS system of goal management:

Goal Selection – Figure out what you want to do.

Pursuit of Strategies – Make your plan with details: By when? How? Where?

Shifting Gears – Decide on other options if obstacles get in your way.

Within the G, P and S are defining phrases that we call dimensions. The words in **bold** are the dimensions to pay attention to.

Goal Selection means that you….

…take initiative to **choose meaningful, realistic and positive goals.** The goals you choose are challenging and ones that will help you reach your full potential.

Pursuit of Strategies means that you…

… **stick to a plan** by making step by step actions to reach your goals.

…work your hardest and **show persistent effort** to reach your goals.

…**check your progress** toward your goals to see if changes are necessary.

Shifting Gears means that when you are having trouble reaching your goals, you…

…**seek help** from new people and resources.

…**substitute strategies** by figuring out which ones don't work and change your strategies.

Planning and Carrying out Investigations

Engineering investigations identify the effectiveness, efficiency and durability of designs under different conditions. Scientists and engineers investigate and observe the world to systematically describe, explain and predict phenomenon.

Getting Started

Read and understand more about GPS Goal Management, found on page 32-34. Your role as an adult volunteer is to support effort and persistence in goal selection, pursuit of strategies and shifting gears when things get in the way. Take a look through *iThrive,* Chapter 4, to be comfortable with following the lesson plan presented here and helping youth follow along in their *iThrive* Member Guide. Be prepared to help guide youth through the *iexplore, ireflect* and *istretch* activities. This chapter has two iexplore and two *ireflect* exercises. We have divided this chapter into two suggested meetings, although it is acceptable to complete all of the activities during one extended meeting.

Chapter Checklist

Meeting A

- ✓ Complete the iexplore activity Can-Can Robot.
- ✓ Complete the ireflect discussion questions.

Meeting B

- ✓ Complete the iexplore activity My Goals and Strategies.
- ✓ Complete the ireflect discussion questions.
- ✓ Complete the istretch video clip as a group or individually between meetings. Ask members to complete the istretch real-world application in-between meetings and report back at the next meeting.

Project Leader Tips

Within the GPS model of goal management are different **dimensions** that help us understand the deeper meaning of the step. It will be important for you to observe when youth members are practicing the skills and to use the language to point out when they do. For example, "I see that you are really working hard to **stick to your plan.** At this point, what other things could you do to help move toward your goal?" **(Seek help from others? Substitute a strategy?)**

Toy Motors: The toy motors may not be readily available for purchase in a local store. You may order these online at a variety of websites. Look for "toy motor" or "miniature DC motor" at 1.5 to 3.0 V (volts). We have had success purchasing these at kelvin.com, project motor 1.5V-3.0V, vendor number 851230. They are fairly inexpensive, and you will need to allow time for delivery. Be sure to purchase the motors with the leads (i.e., wires) pre-attached, unless you want to solder them on yourself!

Objectives

» Youth learn the skills necessary to manage goals (GPS).

» Youth choose their destinations and set "good goals" that are: meaningful, realistic and stretching; good goals "draft" other goals.

» Youth develop strategies for pursuing their goals.

» Youth learn the value of shifting gears when the going gets tough.

Help a young person to reflect on their goals

» Help them to break down goals into bite-size pieces, or "shrink the change."

» Notice when that person has a small win. Highlighting a "win" will build confidence and reinforce good choices.

» Encourage them to apply effort in the face of challenge; try different strategies and seek help. (Apply a growth mindset.)

» Identify behaviors that are already working, called "bright spots." Support a young person to recognize these signs of early success that can provide hope that they are capable of reaching goals.

Highlights

» GPS is a set of skills that can help you find a way to reach goals, much like a GPS in a car helps you find your way to a destination.

» Scientists have shown that individuals who learn and practice these skills have far more life success reaching their goals.

» GPS stands for: G = goal selection; P = pursuit of strategies; S = shifting gears "when the going gets tough."

Select goals that are:

* meaningful to you. Visualize what your destination will look and feel like.
* realistic and yet stretching in terms of challenge. Just as a rubber band can't be too loose or too stretched to work, a good goal can't be too easy or too difficult.
* drafting. Drafting is a term used in biking. It is when a tunnel of air is created behind the first rider, which reduces the effort for the riders behind them. This helps the entire group get to their destination faster. Similarly, a goal can help draft other goals.
* Use the acronym MRS.D (meaningful, realistic, stretching and drafting) to remember the elements of a well-selected goal.
* Break your goals into smaller steps that include precise timing, location and resources needed, called action triggers.

Pursue strategies by:

* creating and sticking to a plan.
* persisting with your strategies and considering new strategies.
* checking progress along the way.

Shift gears by:

* substituting strategies or changing parts of a strategy when necessary.
* looking for help from familiar and new people and resources.
* emulating strategies of role models.
* changing goals when it looks like you can't meet your goals. Don't get stuck in "feeling bad." Consider this experience as learning. There is likely a new goal that will be a better fit for you.
* checking how your strategies are working and if they aren't, think about ways to change your strategies.

Avoid:

» describing GPS as only goal setting.

» making comparisons to S.M.A.R.T. goals.

Tips for Goal Setting Conversations

1. The goal of the mentor/mentee conversations is three-fold:

   a. Help the adult volunteer understand and recognize each youth's current goal management skills.

   b. Help the youth member understand their current goal management skills and learn areas for improvement

   c. Help the adult volunteer guide the youth member towards growing their skills in goal management and development of the 6 Cs.

2. DO ask youth members to share their Leadership Project GPS goals on page 31 of iThrive and their Contribution GPS goals on page 36 with you.

3. Ask each youth member open-ended questions that follow the experiential learning cycle model. Some questions could be:

   a. Tell me about how you chose your goal and strategies. Were you able to identify challenges that may get in the way of achieving your goal? How did it feel to set goals for you using the GPS model?

   b. Tell me about the progress you are making toward reaching your goal. Are you able to stick to your plan? Why or why not? How would you describe the level of effort you are putting toward your goal? Have you asked others for help in reaching your goal? Have you had to shift any of your strategies to meet your goal?

   c. What are your next steps toward reaching your goal? What support do you need to help reach your goal? How do you feel like you know when it's time to re-evaluate your goal and maybe change the goal or strategies?

4. Talk openly with each youth member about your impression of their skills so far. Sometimes, youth members are more critical of their skills than you will be. In addition to helping youth accurately self-reflect it's important that they see another perspective. A couple of good opening statements are:

    a.   "I've seen you demonstrate....toward achieving your goal."

    b.   "You have worked so hard to reach your goal. This is something that I've noticed that may help you...."

    c.   "I remember a time when that happened to me. What I did when presented with that challenge was.... It seemed to make a difference for me. What parts of that story do you think you could use?"

5. Be sure to share personal stories or experiences that you had as a young person. Have a story in mind that demonstrates some challenges you experienced, how you adjusted your goal or strategies, and what you learned.

6. ALWAYS close the conversation by providing support and encouragement for effort and persistence that they have demonstrated toward reaching their goals.

Keep In Mind...Engineering Design

Goal management skills are essential for people to thrive! Goal management has much in common with the way engineers go about their work.

Engineers use scientific knowledge to construct objects, buildings and solutions to address real world issues. The basic process of engineering design is iterative and cyclical. **Iterative** means that the cycle repeats itself multiple times as engineers design➔ build➔ test➔ redesign➔ build➔ test. **Cyclical** means that the design process is a cycle and not a set of linear and sequential steps. Engineers conduct investigations to identify the effectiveness, efficiency and robustness of their designs.

Identify the issue, challenge and opportunities (goal selection)

When presented with an issue, an engineer will first ask questions. These questions help an engineer understand the issue – "What have others done?", "What is the scope of the issue?" and "What is the goal of the solution—what do we want to ultimately achieve?" These types of questions help engineers gain clarity and determine criteria for acceptable results. Engineering does not always have to be focused on designing solutions to address problems. Sometimes engineers design something to improve on an existing device or just for fun!

Generate possible solutions and compare; select a solution (pursuit of strategies)

Once an engineer has identified the issue and defined the boundaries and constraints, they begin to imagine the possibilities. **This task can be creative and innovative!** Engineers generate ideas and possible solutions. After narrowing down their ideas, engineers evaluate and compare possible

solutions to see which will best solve the problem. Engineers often use notebooks to write lists of needed resources and draw diagrams of designs. Engineers will also rely on help from other people. They will sketch designs and develop a **plan**. They initially stick to their plan, show persistent effort and check their progress.

Build and then test the design; re-design if needed (shifting gears)

Using their detailed plan, engineers build their device. After engineers have a working model, they test and redesign the technology. Engineers know that there is always room for improvement. Failure is a **beneficial** option that allows them to substitute strategies as it helps improve the device! They communicate and discuss the results of their tests and seek help from others. They modify their device and retest it. This step in the process ensures that engineers create the best possible product. Finally, engineers communicate the final product and share their solutions with others.

ACTIVITY 6

iexplore
Can-Can Robot

Objective: Youth will plan and engineer a robot that they will draw on paper. Youth will explore how parts can be assembled to build or make more complex things. This activity will encourage youth to explore and modify designs using different types of parts to construct a machine and practice setting a goal, pursuing strategies and shifting gears.

Time: 45-60 minutes

Materials: For each group (2-3 people): AA or AAA battery, toy motor, tape (masking or electrical), felt tip markers (washable), small pencil erasers or glue sticks (glue gun not needed), cups (plastic or paper), poster paper, scissors, rubber bands

Preparation: Gathering the materials, understanding activity
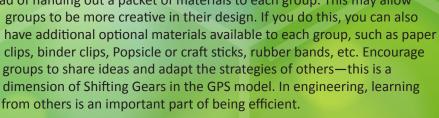
Preparation Time: 30-60 minutes to gather materials, understand the task

Facilitator Tips: We recommend that you place materials in a center table instead of handing out a packet of materials to each group. This may allow groups to be more creative in their design. If you do this, you can also have additional optional materials available to each group, such as paper clips, binder clips, Popsicle or craft sticks, rubber bands, etc. Encourage groups to share ideas and adapt the strategies of others—this is a dimension of Shifting Gears in the GPS model. In engineering, learning from others is an important part of being efficient.

The motor may be placed in many different positions causing the cup to move. One way, but certainly not the only, is to attach a counter-weight to the shaft of the motor (like an eraser or part of a glue stick) which will cause the motor to vibrate.

Directions:

Part A:

1. Introduce the scenario to the group: A local art center has hired your team to build a device that will draw a piece of art on a large piece of paper. The device needs to be automated, meaning that it can draw without the aid of human intervention. They are providing a few supplies they thought might be helpful – a small motor, a battery, a cup and felt markers. You may also use other materials available, like erasers, rubber bands, tape, wire, aluminum foil, craft sticks and anything else lying around.

2. **Before groups begin construction,** ask them to work with their group to identify what they are they being asked to do. What are the constraints?

3. Once they have determined the scope of the challenge, ask them to draw a design. What type of device might work? Have each group discuss and then sketch their design in their *iThrive* journal.

Part B:

4. Once a group has a design, allow them to begin construction. They may need to redesign once they've started.

5. Have groups test their designs on the poster paper. Depending on time available, you may allow groups to continue testing, but be sure to leave time for the reflection.

6. Ask groups to present their robots and demonstrate how they draw. If needed, prompt groups to provide a reflection on their device.

» What did its drawings (markings) look like?

» What aspects of your design worked well? What designs, from all of the groups, worked well? What could have been improved?

» Talk about the strategies you developed and how they worked. How did you need to incorporate seeking help from others?

» Think about and share if and how you experienced shifting gears.

» How could you change what your device can draw?

ireflect

As the facilitator, help guide youth as they question, share and compare their observations. Before they share with the group, have youth reflect on the activity in *iThrive.* Use more targeted questions as prompts to get to particular points. There is no one right answer.

» From your experience with this activity, what advice would you give to new engineers as they design and build a device?

» Share which aspects of GPS you found particularly helpful during this activity and which aspects were challenging. Describe a time when you had to shift gears.

iexplore
My Goals and Strategies

Objective: Youth will set two goals for the year, using the GPS model of goal management.

Time: 45 minutes

Materials: *iThrive* for each member, pens and/or pencils

Preparation: understanding activity

Preparation Time: 20 minutes to understand the activity and the dimensions of the GPS model (see page 36)

Facilitator Tips: Be prepared to use the language of the GPS dimensions to help coach members in developing their Goals, Strategies and Shifting Gears. As with the Can-Can Robot exercise, your ability to ask guiding questions will help young people use this tool most effectively.

Directions:

1. Have members open their *iThrive* member guides to pages 13-14. Say: "Now, we're going to set some goals for our work in 4-H. Start with choosing two goals. They can be goals related to your work as a junior or teen leader, or other leadership roles you may have, or if you don't know your spark yet, it could be a goal to discover at least one spark by the end of the year. There are some ideas on page 13, to get you thinking about some meaningful goals. Take about five minutes to write two goals....how will you know if it's a "good" goal?" (Meaningful, Realistic and Positive).

2. After five minutes or when everyone is done with two goals, Say: "Now that you have a couple of goals, work on developing four strategies for each goal. Can someone remind us what should be included in strategies?" (By when? Specific tasks? By whom?). Take about 15 minutes to develop at least four strategies for each goal."

Ideas for choosing your goals:

1. Find your spark if you don't already know.

2. Learn more about how science and/or engineering is/are related to your spark.

3. In your leadership role, help others understand that science is all around us.

4. In your leadership role, help others engage their inner scientist or engineer.

3. After 15 minutes or when everyone is done with their strategies, Say, "Okay, the last step in using the GPS goal management system is to preview things that might get in the way of achieving your goals or pursuing your strategies. Can a few people share why they think previewing what could happen is a good idea before it even happens? (Solicit ideas). For each goal, identify at least two things that could get in the way of you reaching your goal and most importantly, what you will do if that happens. Take about 10 minutes to write a couple of ideas for each goal."

4. After everyone is done, let them know that if they are a Junior or Teen Leader for a 4-H Project, or they have other leadership roles in 4-H such as being a Club Officer or camp counselor or they are an All-Star, be sure to go into their Record Book and record goals for the year—they may even use the ones they just did. They will notice that the Junior/Teen Leadership Development Report form follows this same process.

ireflect

Things change, new opportunities arise and sometimes you have to seize the moment and choose different goals. How would you decide which path to choose—keep the existing goals you have or go after the new opportunity? How could you use science to help you decide?

What advice would you give to someone if they were struggling to reach a goal?

istretch

Watch the 2 ½ minute video "You Can Change the World" at **http://www.youtube.com/ watch?v=cp5y7MO6Q9w**

» How would you categorize the skill or qualities these people have in common as they tried to achieve their goals.

» If you have a goal that feels overwhelming, describe how the dimensions of GPS can help you manage your goal?

Real-world Application Suggestions

The suggestions below will help you extend and apply your learning in real-world settings.

» Thinking about your spark and the two goals you've set for the year, identify places in your community where you might find adult spark champions to help you reach your goal. Approach individuals at these places, share your goal and see how they might help you pursue your goals.

» Using the tools available to you, like the Internet, library, family and friends, find out if others have similar goals to you. See how they have pursued their goals and what they have done when faced with obstacles. How have they shifted gears?

Chapter 5

Growth Mindset in Science

What's the Point?

Youth Development Concept: Growth Mindset

Scientific Practice: Developing and Using Models

This chapter in *iThrive* helps us understand how our mindset helps us get better at science and engineering. **Growth mindset** is a belief that intelligence, abilities and personality can grow with effort and persistence. Having a growth mindset allows people to approach their ideas about being good at science and/or engineering with the belief that even if they fail, they will have learned something. **Fixed mindset** is a belief that talents, skills and personality are mainly inherited, (fixed) and can't change much. With a fixed mindset, people are afraid to challenge themselves and don't grow much because they don't think they can change. In the face of challenges, having a fixed mindset can lead to greater trouble reaching goals.

The intention of this chapter is to help youth move from fixed mindset ideas such as, "I can't do that, I'm just not a science person.", to a growth mindset position of, "I know that if I keep trying science activities, even if they are hard, that I will get better at it!"

The more we learn and practice new things—yes even about science!—we make new connections in our brain. In fact, the used brain areas actually grow bigger as knowledge increases. Science becomes easier when we put forth effort and persist through challenges. You will start to think about science and engineering as something you can master and you will actually notice yourself feeling smarter.

When we are actively using and practicing a scientific skill or thought pattern, people and animal studies show that the brain lays down more connections that speed up the ability to think, act and behave in more confident ways around science and engineering. What starts out difficult becomes easier.

Developing and Using Models

Scientists and engineers use models to think and explore the world in new ways. Models allow scientists to better understand a phenomenon and develop a possible explanation. Engineers use models to analyze systems, identify potential flaws, test possible solutions and optimize designs. With models, ideas may be examined, communicated to others or tested. A few examples of models include analogies and metaphors, computer simulations, physical models, diagrams, sketches and formal representations like mathematics.

Getting Started

Read and understand more about Growth Mindset, found on pages 41-43. Your role as an adult volunteer is to practice a growth mindset yourself and use wise praise techniques with youth. Take a look through *iThrive*, Chapter 5, to be comfortable with following the lesson plan presented here and helping youth follow along in their *iThrive* Member Guide. Be prepared to help guide youth through the iexplore, ireflect and istretch activities.

Chapter Checklist

✓ Completed three iexplore and ireflect activities:

   a. Learning in Plane Sight,

   b. Oh, the Places You'll Grow, and

   c. Ability Improved! (with Effort).

✓ Complete the istretch video clip as a group or individually between meetings. Ask members to complete the istretch real-world application in-between meetings and report back at the next meeting.

KEEP IN MIND… GROWTH MINDSET MESSAGES

Objectives

» Youth understand that there is new research about the brain that can help them reach their goals.

» Youth understand how the brain thinks thoughts.

» Youth understand how the brain is like a muscle that grows stronger with challenge.

» Youth understand the unique opportunity for nurturing brain growth in pre-adolescence.

» Youth learn that a growth mindset is about applying effort, trying strategies and seeking help.

» Youth learn the value of a growth mindset in their own lives.

Help a young person adopt a growth mindset:

Modeling your own Growth Mindset through language and action (e.g., putting in effort, trying new strategies, seeking help). Show that you tackle challenge and learn from mistakes.

Praising times when you see a young person tackle challenge and show effort, try alternate strategies or seek help. Say:

"I can see the effort you're putting into this. Good for you!" (praising effort)

"I like how you keep trying new ways to get there." (praising strategy)

"You tried hard. Then you asked someone for help when you got stuck. Great!" (praising seeking help)

Using Wise Praise – *Convey three points:*

"I have high expectations of you."

"I know you can do it."

"I will help you."

» Help a young person accept challenges by emphasizing that the brain grows with challenge.

» Notice when a young person seems to be practicing either a fixed or a growth mindset—without labeling and with finesse—support self-awareness.

» Praise times when you see a young person tackle challenge and show effort, trying alternate strategies or seeking help.

» Engage a young person in thinking through strategies that would be useful to them.

» Encourage a young person to seek help when they need it.

Highlights

» Did you know that you can shape your own brain? New research shows how the brain works and what you can do to reach your full potential.

» Your brain thinks thoughts by sending electrical and chemical impulses along pathways of neurons. Pathways grow stronger cell connections each time you repeat a thought or action.

» Challenge is good for your brain. Your brain is like a muscle: it grows stronger with challenge and effort.

» To think well, your brain needs: exercise, fuel (food and water), sleep and challenging activities.

» Growth mindset is a belief that abilities and personality can grow with challenge. Having a growth mindset allows people to approach challenge with: effort, trying alternate strategies and seeking help.

» Fixed mindset is a belief that talents, skills and personality are mainly inherited (fixed) and can't change much. With a Fixed Mindset, people are afraid to challenge themselves and make mistakes because they don't think they can change. In the face of challenge, having a fixed mindset can lead to greater trouble reaching goals.

» You—or anyone—can grow abilities and even personality by using effort, trying different strategies and seeking support. With a growth mindset, you'll be more successful in life.

Avoid ...

» using labels like "smart," "dumb" or "talented".

» speaking as if "easy" is positive and "hard"/"failure" is negative.

» using excessive labels of "growth" and "fixed" mindset. Explicitly apply the growth mindset intervention and then allow the young person to develop their belief naturally, without adult over-use or pushing.

» implying that personality or ability is inherited or pre-determined.

Wise Praise

Use wise praise to help young people who have seemingly failed a task. Through the use of wise praise we can point out the high standards we have for achievement and at the same time give youth the kind of support that results in feeling encouraged instead of discouraged. For example, if a member is working hard toward reaching their Gold Star and is missing significant activities in their record book, you would say, "In order to meet the high standards required to receive a 4-H Gold Star, all of these things need to change. I wouldn't be telling you this if I didn't think you could meet them. Let me know when you've made these corrections." Or you could simply say, "I know you can meet the high standards to achieve a Gold Star."

Using this technique, you communicate that you know this work is hard and that you also know that the young person can meet the challenges presented to them.

Phrases and Ideas to Support a Growth Mindset

» "That's being a good learner!"

» "Great job! I can see that you really worked hard on that."

» "Wow! You picked the hardest one!" That was a big challenge; I'll bet you learned a lot!"

» "Oops, I made a mistake—let's celebrate! Making mistakes helps me learn."

» "Awesome effort! Keep going!"

» "That was challenging and just by trying, your brain grew! How cool is that?'

» "I know you're disappointed that didn't work. Keep trying, your effort will pay off."

» "Based on what you learned, what will you do next time to help you succeed?"

» "How can you use what you learned when you (describe a previous similar situation) to the challenge you're having now?"

» "What is going to help you learn the most?"

» "What have you achieved so far?"

» "You're learning!"

In response to "I can't!" Say, "What would it look like if you tried?"

In response to "This is too hard!" Say, "It is hard and it's okay to make mistakes. What have you learned by making mistakes so far?"

iexplore

Learning in Plane Sight

Adapted from the Exploratorium, 2009.

Objective: Youth will design paper airplanes, test them, and through trial and error optimize to find the most efficient design. This activity helps demonstrate improvements by learning from experience and gives youth an opportunity to practice using a growth mindset.

Time: 20 minutes

Materials: Blank paper and measuring tape. Optional: plastic straws, index cards, tape, scissors, paper clips or other small attachments

Preparation: Gather materials

Facilitator Tips: As with other engineering activities, there is no correct answer. The important takeaway is the process. This activity emphasizes **optimization** through creating models and testing. Optimization is a process engineers use to make something as functional and effective as possible.

Directions:

1. Have everyone construct their favorite paper airplane using the supplies provided.

2. Conduct flight test #1: Mark the starting point, have each member fly their plane and measure the distances. Determine the average distances all of the planes flew in test #1.

3. Take the top fliers (2-3 designs) and have members design and construct another plane using one of the top fliers as a base for their new plane. Invite members to change a thing or two from the top fliers to make their new planes fly even further.

4. Conduct flight test #2: Determine the average distances all of the planes flew in test #2.

5. Repeat steps 3 and 4 as many times as you'd like (perhaps 3 to 5 rounds)

6. Compare the averages each round. You might try having members graph the average distances. How did the average distance for the group change each test?

ireflect

» Describe how you could determine when the process of optimization was complete.

» What connections can you make from this activity to a growth mindset?

» If a younger 4-H member is struggling in a project, what advice would you give them?

ACTIVITY 9

iexplore

Oh, the Places You'll Grow

Objective: This activity helps youth explore where they can strengthen a growth mindset. Learning to persist can happen everywhere in our lives. No matter where or when we learn, our brains grow and increase our brain's network of neural connections!

Time: 20 minutes

Materials: Sticky notes or index cards, pens, pencils, poster paper

Preparation: Gather materials.

Directions:

1. Pass out index cards or sticky notes and ask groups to write down as many places that they can think of where they nurture their growth mindset.

2. Ask the group to review the data; organize it in a manner that exhibits one or more patterns; interpret and explain. If needed, prompt the group to think about other places they can learn, including:

   » School

   » Afterschool (3-6pm)

   » Work

   » Extra-Curricular Club/Sport (connected to School)

   » Designed Settings: Museums, Science Centers, Aquariums, Planetariums, Zoos, etc.

   » Community Programs: 4-H, Camp Fire, Scouting, Martial Arts, Sports Leagues, etc.

   » Media: TV, radio, movies, magazines, newspapers, etc.

   » Internet

   » Everyday: Families, Hobbies, Experience

3. Ask each group to present their findings.

ireflect

As the facilitator, help guide youth as they question, share and compare their observations.

   » Where or under what conditions do you strengthen your growth mindset the best?

   » Based on your own experience, what about these spaces promotes or hinders a growth mindset? Please explain.

   » As a leader, how can you support what, when, where or how others learn?

iexplore

Ability Improved! (with Effort)

Objective: Through storytelling and a writing exercise, understand that the brain can get better at science—it grows stronger with effort, trying different strategies and seeking help.

Time: 30 minutes

Materials: *iThrive* , pens and or pencils

Preparation: None

Facilitator Tips: Before beginning this activity, it's important that youth understand the key messages contained in the beginning of *iThrive* , Chapter 5 before completing this activity. They will need the knowledge contained there to master the materials and to be able to skillfully complete the ireflect that immediately follows reading the two short stories.

While this may seem like a very simple activity, the current research being done around growth mindset is showing that the reading and writing exercise, done in this very specific way, is the one strategy that is showing the best results in long-term internalization the information in youth people. This is the one time that the ireflect questions should be written individually and not used as group discussion.

Directions:

1. Ask a member to read the opening paragraph aloud: (this is also in *iThrive*, page 30)

    "In science, many people believe that it takes a naturally gifted individual to do truly great things. Those who are the "top of the class" are the ones who go off to the prestigious universities to become scientists. We paint scientists as prodigies destined to become the most innovative thinkers, who emerged from the womb already able to do difficult math equations and identify chemical compounds. What gets lost during all of this glorification is the fact that many successful scientists were not naturally the highest in their class. In fact, many have experienced significant failure at some point in their careers; failure that we rarely hear about. We see the finished product the men and women who mapped out how to fly around the world for the first time, or the brilliant minds determined to find a cure to cancer - but we are not aware of how much training and hard work went into the product. We sometimes assume that successful scientists are born into already high achieving families, who are put in science classes since they are little and are always tracked into the higher lanes of math and science classes; the role of attitude and the mind is severely discounted."

2. Together, read aloud the stories of Nikola Tesla and Marie Curie

    Nikola Tesla is credited for his design of the alternating current, an electrical supply system that is widely used. But Tesla's contribution was not immediate. Born in Serbia, Tesla had a long way to go before he became one of the great innovators of the 19th century. Tesla's father was a priest and his mother made mechanical appliances for the home, but Tesla was fascinated with math and electricity. After going through rigorous schooling, Tesla came to the US to work for Thomas Edison. Although Edison

and Tesla did not get along very well, Tesla kept following his instinct and eventually teamed up with George Westinghouse where he made his name as one of the most accomplished scientists in history. So while Nikola Tesla is often called a genius, his accomplishments did not come easily, and only came with his continued determination, effort, and time.

Marie Curie's Growth Mindset enabled her to not only follow her dream of science, but become one of the first great female scientists. Curie, born in Poland, was the first woman to win a Nobel Prize and the only woman to win a Nobel Prize in more than one field. Despite the oppression that many woman lived under during her time, and the lack of education available to woman, Curie persevered and worked hard to be one of the leaders in radioactivity research. She won a Nobel Prize in both Physics and Chemistry, and her studies made great discoveries that are used as the base of our knowledge today. Despite the constant amount of setbacks, prejudice, and ridicule she faced along the way, Curie knew that with hard work, she could accomplish her dreams even if other people believed it was not possible.

3. Members individually complete the ireflect questions in *iThrive* on page 32. Make copies of the paragraphs they wrote and review them at a later time. Look for their reflections to include information about how through effort and persistence, people can change their brain.

ireflect

Think about the articles that you just read. What are all the reasons why scientists say that people's ability can grow and get better with effort and practice? Please summarize them briefly below.

In the opening information and the two iexplore stories, you learned 3 things:

When you work hard and learn new things, your brain grows new connections and you get smarter.

The more you challenge yourself, the smarter you will become.

Smart people are the people who have practiced more—they have built up their brain "muscles."

Think about an example from your own life. What is something you did not do well at first, but then you practiced using a good strategy and became really good at it. Write about it and explain how you became good at it.

Imagine a friend who is struggling with science. This friend used to do pretty well in science but now is having a hard time and is starting to feel dumb. Write a letter to your friend to encourage him or her—tell him or her about what you just learned about the brain and why he or she shouldn't be discouraged.

In your leadership roles what are some ways that you could reinforce the growth mindset, especially when a younger person says, "I'm not good at science" or "I'm not smart enough to be a scientist."

istretch:

View the 3-minute video on How We Learn at **https://vimeo.com/230426221**

As a leader, how can you help 4-H members or others "cross their ravine?"

Real-World Application Suggestion

The suggestions below will help you extend and apply your learning in real-world settings.

Discuss fixed vs. growth mindset with an adult leader of a project in which you are a youth leader. Discuss how you will help the 4-H members in the project develop a growth mind-set. Refer to **http://www.mindsetworks.com/** for help.

What do you find challenging, related to science and engineering, in pursuing your spark? Discuss this with family, friends, 4-H leaders, research on the Internet and determine how others have approached this challenge or would recommend approaching this challenge. Plan a goal to meet this challenge head-on. Share at your next 4-H project meeting.

Chapter 6

Thriving in

Science

What's the Point?

Youth Development Concept: Self-Reflection

Scientific Practice: Obtaining, evaluating and communicating information

This chapter helps youth members connect key concepts learned through *iThrive*. The primary purpose of this chapter is to reflect on what they have learned about themselves as being capable of learning science and to demonstrate mastery of the skills learned over the year.

Obtaining, Evaluating and Communicating Information

An important scientific practice is obtaining, evaluating and communicating information. Communicating information may be done in many ways including diagrams, graphs, models, presentations, posters and papers. The 4-H program also emphasizes public speaking and presentations.

Getting Started

Take a look through *iThrive,* Chapter 7, to be comfortable with following the lesson plan presented here and helping youth follow along in their *iThrive* Member Guide. Be prepared to help guide youth through the iexplore, ireflect and istretch activities.

Chapter Checklist

- ✓ Complete the iexplore activity, Poster Session.
- ✓ Complete the ireflect activity.

Project Leader Tips

Consider assigning the creation of the poster in between meetings. Youth would then present their posters and complete the *ireflect* and *istretch* activities during the meeting.

iexplore
Poster Session

Objective: Review the concepts of thriving and communicate this information through a poster

Time: 30 minutes

Materials: poster board or large sheets of paper, markers, magazines, photographs, etc.

Facilitator Tips: If you want members to be more elaborate, you might ask them to prepare before or after the meeting and have the meeting focus on discussing the types of presentation formats that could be used. Creating a presentation and sharing it with others may also be considered application of the knowledge they've learned in the Leadership Development project.

Directions:

1. Ask youth to prepare a poster that conveys the key concepts of *iThrive* and their reflections from the Leadership Development project this year. Posters should include:

   » Your progress in identifying and practicing your spark.

   » How your Spark Champions help build your spark.

   » Your spark's connection to science.

   » Your progress in pursuing a goal related to science.

   » How you have grown more confident in your ability to do science.

   » What you think about your capacity to be a scientist.

2. If needed, pose these questions to help stimulate thinking:

   » Who is your audience? Who will you be presenting to?

   » How can you best organize the key concepts and your reflections?

   » What format will most effectively communicate your information (text, photographs, drawings, etc.)?

3. Ask members to present.

ireflect

» In what ways did each group's presentation format communicate key ideas? Discuss each format's effectiveness in communicating information.

» What Thrive elements have been most challenging for you this year?

» During the year, how have you applied Thrive concepts to your work and life inside and outside of 4-H?

istretch

» Reflect back on the goals you set in Chapter 4. Evaluate how you are doing on pursuing the strategies to reach your goals. When you complete the second part of your Junior and Teen Leadership Development Project Report Forms, be sure to talk about how you took initiative to:

» **choose meaningful, realistic and positive goals**

» **stick to a plan** by making step-by-step actions to reach your goals.

» work your hardest and **show persistent effort** to reach your goals.

» **check your progress** toward your goals to see if changes are necessary.

» **seek help** from others and seek additional resources.

» **substitute strategies** by figuring out which ones are not working and change your strategies.

Real-World Application Suggestion

» The suggestions below will help you extend and apply your learning in real-world settings.

» Discuss fixed vs. growth mindset with one of your project leaders. Discuss how you will help the 4-H members in the project develop a growth mindset. Refer to http://www.mindsetworks.com/ for help.

» What do you find challenging, related to science and engineering, in pursuing your spark? Discuss this with family, friends, 4-H leaders, research on the Internet, and determine how others have approached this challenge or would recommend approaching this challenge. Plan a goal to meet this challenge head-on. Share at your next 4-H project meeting.

Chapter 8

Celebrate!

What's the Point?

The primary purpose of this chapter is to celebrate the year together. Celebrations are important markers of milestones; they create belonging and connections among your members and provide great opportunities to bring families together in the 4-H community.

Getting Started

Read this chapter for more information on celebration. Take a look through iThrive, Chapter 8, to be comfortable with following the lesson plan presented here and helping youth follow along in their iThrive Member Guide. Be prepared to help guide youth through the iCelebrate activity. Encourage members to share their iThrive Leadership Project stories in the county newsletter.

Chapter Checklist

- ✓ Complete the iCelebrate Kinetic Confetti.

- ✓ Plan a celebration that is meaningful to the members of the Leadership Project. The celebration can be very simple or more elaborate and include family members. In anticipation of the celebration, order a Thrive pin for each member of the Leadership Project who has completed the iThrive Leadership project. If this is the first year a member has completed this project, order the oval Thrive pin. If this is the second year, order the small round clover pin.

Project Leader Tips

As you begin planning the celebration, involve young people in the planning and decision-making – utilize what you learned about thriving youth-adult partnerships. Don't forget to capitalize on what you know about each member's spark, reinforce growth-oriented language and be sure to utilize GPS!!! Allow opportunities for self-reflection during the process and at the celebration.

iCelebrate

Kinetic Confetti

With others in your leadership project, plan a way to celebrate the completion of 4-H *iThrive.* A fun and engineering way to celebrate is to build confetti launchers!

Adapted from PBS Kids.

Objective: Youth design and build a confetti launcher to help celebrate their journey.

Time: 30-45 minutes

Materials: paper confetti. Have these supplies available for groups to select from:

» drinking straw

» string

» sheets of cardboard (approx. 8.5 x 11 in.)

» duct tape

» wooden spool

» paint stirrers

» rubber bands

» 8-oz. paper cups

» 4-oz. paper cups

» You can also provide a hot glue gun, scissors and other tools to help youth modify and/or attach objects.

Preparation: Read and understand the activity, gather materials

Preparation Time: 30 minutes to gather supplies and understand the activity

Facilitator Tips: As with other engineering education activities, there is no right or wrong way to build a device. If some groups are having difficulty, a good technique is to stop all groups, gather them around and ask people to share "what's working" and "what's not working" as a way to get youth to share.

You may want to have a vacuum handy for cleanup.

Directions:

1. Split youth into pairs or small groups and ask them to build a device that will launch confetti into the area. Explain that they can build any number of devices including slingshots, catapults, levers, or something else.

2. Show the supplies available and help groups think through some ideas:

   » What are other devices you've seen that launch objects into the air? How did you observe these devices launching things?

   » Look at the materials. What can you use to launch confetti into the air?

3. Give groups 15-30 minutes to build, test and modify their launchers.

4. Compare launchers with one another. What explanations can you give for how the confetti burst out of each device?

Celebrate! Hand out Thrive Pins

Material List

First Meeting

> » Paper signs with words "Strongly Agree" "Agree" "Disagree" "Strongly Disagree"

> » Poster paper

> » Colorful markers

> » Tape

Chapter 1

> » Blank paper

> » Colored markers or other writing utensils (e.g., crayons, colored pencils, watercolors, etc.)

> » 1 set of Field of Science & Engineering cards for each group (3-4 people)

Chapter 2

> » 50-100 Notecards

> » Writing utensils for each person

Chapter 3

> » Paper

> » Pencils

> » Copies of one of the three case studies

> » Copies of the role descriptions

> » Download from National Geographic Education at **https://www.nationalgeographic.org/activity/marine-protected-area-stakeholder-debate/**.

Chapter 4

> » Pens, pencils

> » For each pair:
>   - AA or AAA battery
>   - toy motor
>   - tape (masking or electrical)
>   - felt tip markers (washable)
>   - small pencil erasers or glue sticks
>   - cups (plastic or paper)
>   - poster paper
>   - scissors
>   - rubber bands

Chapter 5
- » Pens, pencils
- » Blank paper
- » measuring tape
- » plastic straws
- » index cards
- » tape
- » scissors
- » paper clips
- » sticky notes
- » poster paper

Chapter 6
- » Poster board or large sheets of paper for each member
- » Magazines, photographs, drawings, print-outs from websites, etc
- » Scissors
- » Glue sticks
- » Markers
- » Scrapbooking materials

Chapter 7

- » For each pa*ir:*
  - • poster paper
  - • markers
  - • paper confetti
  - • straw
  - • sheets of cardboard (approx. 8.5 x 11 in.)
  - • duct tape
  - • wooden spool
  - • paint stirrers
  - • rubber bands
  - • 8-oz. paper cups
  - • 4-oz. paper cups
  - • String

- » You may also have available
  - • Hot glue gun
  - • Scissors
  - • other tools to help youth modify and/or attach objects

Sparks Conversations Starters…
Used with permission from the Search Institute

Why This Is Important for Young People—and for You

How much would a parent give to hear these words from one of his or her children:

"When I have a family of my own, I want to raise them exactly as my parents have raised my siblings and me."

That's what Angelica Carvajal, a thriving 17-year-old at Middletown Senior High School in Connecticut, says of her parents.

Here are some of the specific things she says her parents do to be "the wind beneath her wings," things that she would want to emulate:

» They always tell us the truth about life. They don't try to paint a pretty picture of life, but they tell us about the realities of life. That makes us trust them more.

» My dad is really passionate about all of us working hard, getting good grades, and doing well in everything we take on. I wouldn't say he shouts, but he IS passionate, and we listen to what he says.

» I love fashion, but my mother tells me, "Who you are is not what you wear. Who you are is what you give back to the world." My mom keeps me on track with my values.

» My dad says things like, "If you want to be a professional and not live paycheck-to-paycheck, you need to work hard." Or, "Don't depend on the person you marry to take care of you. You need to be fine on your own, to be independent and successful on your own."

» Maybe some parents don't realize that their kids listen to them, so they don't realize how important it is to talk to their kids. Both my parents really talk with us, and we do listen.

At Search Institute, we've been studying young people who are thriving for the past five years. Young people who are not just surviving, not just getting by, but who are truly doing well—aware of and using their interests, talents, and abilities; achieving their goals; living up to and beyond their potential.

We've discovered three things that, when they are all present in young people's lives, almost guarantee that they will thrive:

1. Young people know their "sparks," the special interests and abilities they are passionate about

2. They pursue their sparks and use them to contribute to a better world

3. Their parents and other adults support, encourage, and help them with their sparks.

This resource is intended to help you help young people thrive, by addressing all three of these important factors in one simple way: by talking with young people. Now look back at that bullet list of wonderful things that Angelica praises her parents for—how many of them are about her parents talking with her?!

What do we mean by "simply talking with young people"? Well, what we mean is having real, person-to-person conversations with them, talks that help them discover their own abilities and possibilities, talks that reveal your own struggles and dreams and lessons learned, so that your children can learn from them. Real adult-to-child conversations, not just pal-to-pal chats.

Are you interested? We hope so, because we believe how you talk with children can make a huge difference in their future success, fulfillment, and contribution to the world.

In the rest of this guide, you'll find easy-to-use information about skills you can practice, the ways you can set up good situations for talks, and the kinds of questions and ideas that help make these conversations work. As you work your way through, you'll find all kinds of ways to help children find and nurture their sparks, and you may just find that your own sparks are rekindled in the process!

Things to know and skills to practice

Have you already been having thriving conversations with young people in your life? Are you just getting started? Do you want to become more intentional, more effective as a young person's guide, role model, cheerleader, teacher, or coach? Take a look at the skills below—you likely have a number of them already, but perhaps there are a few you could bone up on, deepen your knowledge of, or apply differently.

Listening First

The focus is talking "with," not talking "to." And since adults spend much of their time talking "to," we sometimes have to stop ourselves and listen first. Ask open-ended questions. Give a little silence that opens the space for young people to find their own voices. And that ties to the next point.

Creating a Feeling of Safety

In order for many people to talk about their innermost self, their dreams, their passions, they need to feel safe. That may mean knowing they won't be made fun of or put down. It may mean talking while walking or driving, so they don't have to be looking eye-to-eye with someone. It may mean talking after spending quite a bit of time together doing other kinds of activities and getting to know each other well.

Practice making it feel safe for young people to talk with you. Keep their confidences if they ask you to (unless, of course, it entails harm to them or others). Respond with respect, interest, and positive ideas. Try having talks in different kinds of situations and see which situations seem to feel "safest" to the young person you want to talk with.

Allowing for Individuality

It's cliché to compare the uniqueness of human being to the uniqueness of each snowflake—but clichés emerge from widely known truths. In regard to thriving, it is certainly true that each of us has his or her own personal best, his or her own ways of fulfilling their special potential. But there are some particular kinds of individuality to be sure to keep in mind when you're hoping to be a "thriving guide" for a young person, including age, temperament and personality, and a stage of development.

Age. Remember that young people have different abilities at different ages. The youngest children may well reveal that they have passions and talents, but be unable to focus on them for very long. And the difference in planning, decision making, and problem solving between a 13-year-old and a 16-year-old can be huge. Have high expectations for kids of any age, but make sure they are age-appropriate.

Temperament and personality. Is the girl or boy you're working with a highly sensitive person (HSP)? Is he or she outgoing or shy? Talkative or reserved? The kind of person who laughs long and loud or chuckles quietly? Does he or she shake off disappointments or take them to heart? Does he or she prefer things to move in logical, predictable directions, or does he or she like to just jump in and see what happens? A performer or a behind-the-scenes person?

All these kinds of differences in temperament or personality in young people may make a difference in how you approach and talk with her or him. One child may get so excited and think so far ahead of where he is that he might need help to rein in his imagination and focus on next steps. Another might be a little insecure about her talent and need more encouragement to be bold and confident.

Practice observing the young person you want to help thrive—what kind of person is he or she? What styles of interaction seem to be most effective?

Practice observing yourself, too! Are you more demanding of others than yourself, or less? Do you treat all young people as equals, or do you find yourself sometimes acting from assumptions or stereotypes? How often do you say "You should…" compared to "What do you think"? Broadening the range of your interaction and speaking styles and making sure you are phrasing things in positive, empowering ways will increase your effectiveness with young people in all your spheres of influence.

Stages of development. Numerous aspects of a young person's development—cognitive emotional, spiritual, and more—need to be accessed for a young person to thrive. Yet few, if any, people develop at the same rate in all aspects. So a young person may be a straight-A student in academics, yet lag behind some of her peers in emotional self-regulation. Another might be very astute in observing and understanding others' feelings, but not yet have developed strong skills in focus and concentration.

Part of your "work" as a thriving guide may be to notice a young person's strengths and challenges, and look for ways to help her or him raise the levels of any developmental areas that need it.

Affirming the different pathways to thriving

Some people seem to know what they want to be, what their spark is, from the time they are very young. Others discover their passion during elementary, middle, or high school. Many really "find themselves" in the exciting intellectual atmosphere of higher education. Others seem to continue searching, even give up searching for a while, then later in life suddenly emerge as a writer or an artist or a teacher. In fact, the existence of the common term "late bloomer" testifies to the relative commonness of the latter experience.

Finding your spark and moving from surviving to thriving can take a number of pathways, so it's important to try not to force a particular trajectory on any particular young person. Instead, do your best to discover the young person's natural pace and rhythm. Sometimes he or she may need some time to think about the possibilities, or a nudge to start looking for new ones.

Walking a fine line sometimes

Helping a young person thrive is more of an art than a science. Sometimes a subtle change in tone or emphasis can make all the difference in whether good advice is accepted or rejected. This calls for skill on the part of the adult in observing his or her own behavior, body language, and manner of talking.

Practice being aware of the sometimes fine line between empty praise and helpful encouragement. Notice whether you're going beyond support to doing some of the work for them. Be intentional about whether someone needs just a nudge, or to be pressed a bit, or really responds to being pushed. And most of all, keep an eye on the creative tension between realism and idealism. When a young person says his spark is to become an astronaut, yet he doesn't seem to have affinity for science, ask yourself what's really going on. Is that really his spark? Is he actually responding to or eager for the sense of adventure and exploration that an astronaut represents? Do you need to help him find another activity that satisfies that urge for some healthy risk-taking? Or do you need to find him some tutoring in science subjects?

Converting a dream into steps to take

Young people often need help to see how current classes and chores and tasks have anything to do with their ultimate dream. It's up to you as the adult to help them begin to break a big goal into achievable steps.

When a young person says she wants to be the president someday, help her see the value in signing up for debate and drama now by pointing out that the skills she learns in those classes will be called on whenever she makes a speech in the future.

Teaching good values

It's not enough for a young person to have talent and a supportive adult or two. Two matters of character are vital to thriving as well: 1) developing the motivation, dedication, confidence, and discipline to excel at his or her spark, and 2) using that spark to give back to or contribute to the world.

When the supportive adults around a young person, including parents, extended family, clergy, coaches, and mentors, present a united front on important values, a young person is more likely to begin to claim those values as his or her own. And when those same adults live out those values through their own lives, that role modeling goes even farther than repeated reminders about "if at first you don't succeed, try, try again".

Show them the options—with enthusiasm!

Principles of Thriving Conversations

As you get started or continue with thriving conversations with the young people in your life, consider these principles. They may help you be clearer and more intentional about keeping thriving as a primary goal.

You can't start too soon.

While little ones who are not yet talking can't really participate in thriving conversations, and elementary-age children may not be ready to commit to a spark with dedication, you can't start too soon in nurturing in your children a spirit of adventure, exploration, and contribution.

It's never too late.

It's never too late for a young person to receive encouragement and assistance in finding or rekindling a spark—and it's never too late for adults, either! Besides, some people have a longer timeline in discovering their sparks, so sometimes patience and persistence are key.

Know yourself, but stay open to possibilities.

One of the best ways to talk with young people is to tell them about yourself genuinely and authentically. Think about your own history, and share with young people your dreams, your struggles, your successes, and what it's been like. And remember that if you aren't feeling very "sparkling" lately, it might be time to open your eyes to discovering a new spark for yourself.

Know the child, but be open to surprises.

If you are a child's parent, you know that child well—but that knowledge can sometimes blind you to change in your child. If your child has been a marvelous singer since she was a toddler, be sure to remind her of that when she's trying to decide whether to be in chorus this year or not. But at the same, be sure to listen if she wants to try dance or gymnastics or debate this year instead.

Watch for prime moments.

These thriving conversations don't have to be artificial or constrained. Watch for prime moments to bring up the ideas. For example, when the young person has gotten a report card (good or bad!), when he or she has won or lost a competition, when you're watching an inspiring movie or TV show together or have enjoyed a live performances of some kind, when he or she announces "I'm bored!"...all are good times to talk about possibilities, passion, and spark.

Sometimes the best moments come when you're not expecting them—they may or may not be convenient. A young person is engrossed in an activity, and on your way out the door you ask, "So, what are you working on?" What was a simple, throwaway question for you might be a trigger that evokes a whole lot of passion and conversation. These moments may not happen on your schedule, but they may be the times a child is most open to the conversation.

Don't give up.

If at first the conversations don't go smoothly, or you feel as if you're talking to a brick wall, wait a few days and try again in a new way. Check yourself to be sure you're listening more than you're talking, and that you're saying more positive things than negative things. And remember that finding and acting on our sparks is a lifelong process; it doesn't all happen at once.

Don't go it alone.

As with so many other aspects of youth development, a young person's thriving doesn't depend on just one person, whether that's a parent, an uncle, a mentor, or a neighbor. Think of the movie Akeelah and the Bee—and think of yourself as just one of that young person's 50,000 coaches. And if the young person you're trying to coach doesn't seem to have enough cheerleaders and guides and mentors, consider doing a little recruiting on his or her behalf.

Suggestions for using: Think back to situations you've experienced with a young person when you could have used a bit of guidance to enrich a conversation. Then scan through these thriving conversation starters for ideas. Remember this resource next time you're hoping to encourage and aid a young person toward thriving, and start being aware of possible moments for using them!

<h2 style="text-align:center">Conversation Starter 1:
"This Seems to Make You Happy"</h2>

Finding the Moment

The key to finding this is to notice—notice when a young person is having a slow experience…not just the momentary happiness of an ice cream sundae, but the sustained "time doesn't exist" thrill of spending two hours in front of the computer editing video footage and then proudly showing others the resulting 5-minute clip. Or the hours spent curled up in a comfortable chair to plow through the fourth Harry Potter novel in one sitting. Or it might be that a child who has been bored through the first five days of vacation suddenly lights up when you stop by the roadside to say hello to a group of beautiful horses.

Questions, Probes, and Ideas

>> What does it feel like when you're doing this activity?

>> How did you become so motivated?

>> Do any of your friends like doing this, too?

>> Let's figure out a way for you to do more of this!

>> Would you teach me a little about it so I can share in the fun or understand you better?

>> What are the things you like about it?

>> How does a person move to the next level?

>> Is there anything else that makes you feel this way?

Follow-through

Noticing their enjoyment can affirm for a young person that this talent, skill, or spark is something special about her or him. A great way to follow through is to check back about the activity in a few days or a week by subtly suggesting there's a next step: What's your next film project going to be? Have you found any other books you like as much as the Harry Potters?

<h2 style="text-align:center">Conversation Starter 2:
"Have You Ever Thought of…?"</h2>

Finding the Moment

This is a question for a quiet time, while you're traveling, sitting on a bench at the park, taking a break from a bike ride, or laying on a hillside waiting for Fourth of July fireworks to start. It might also work well right after you hear the young person heave a sigh of boredom.

Questions, Probes, and Ideas

>> What's the coolest job you've ever heard of?

>> I know someone who spends every workday taking care of elephants at an elephant sanctuary

>> Do you ever wish you were an inventor? An undersea diver? A scientist making a medical breakthrough?

>> What would it be like to learn the folk dances of Sweden or the folk songs of Bali?

» Have you ever heard of people having a life list? [explain about it being a list of really interesting goals and things to do during one's life, then tell one from yours, like "join a tornado chase team" or "explore a real castle" or "record a song I've written".]

Follow-through

Make an agreement to take some steps toward meeting some life-list goals! Google the term "life list" and visit some of the sites that come up to see if you like the ideas there.

<div align="center">

Conversation Starter 3:
"I Had a Really Great Day Today; Let Me Tell You Why!"

</div>

Finding the Moment

Blow your kids' minds one day by bursting through the back door and, instead of immediately asking them about homework or complaining about the traffic, say exuberantly, "I had such a great day today!" Then, whether they ask about it or not, tell them what was so great about it. Let your enthusiasm spill into your tone of voice and your gestures; jump up and down, if that's your style. And set the stage for a confidential talk to begin.

Questions, Probes, and Ideas

» When's the last time you had a day like that?

» What were you doing? What was so great about it?

» [If it has been a while] What could we do to make tomorrow or the next day a day like that for you?

» What would you want to do? How would you spend your time?

» What would you have accomplished at the end of the day?

» I don't always have days like this, but I love it when I do—and it happens often when I do what I love. What do you love to do?

» One thing that always improves my days is doing something to help other people; did you help someone today?

Follow-through

Encourage your young person to make some plans for a really great day; offer to help on some parts of it, but be sure to leave room for his or her initiative, too. Consider planning a little surprise for the young person—a bit of extra time together, an unexpected early-breakfast date on a school day, a "new" used book or CD from the thrift store. Help him or her see that the more you visualize and plan for having great days, the more often they happen!

Sensitive Issues

Within the 4-H community, youth often develop strong bonds with peers and adults while interacting with them. Sometimes, youth do not share sensitive information with everyone in their community like people at school, home, or a large group setting. However, creation of strong bonds within the 4-H community can help youth members feel comfortable sharing this information. Private discussions, of such sensitivity, are crucial to foster a safe and welcoming environment that 4-H strives to provide all youth members. Here are some basic guidelines for understanding confidentiality of such conversations in your 4-H project, club, activity, or event:

Health and safety always come first. Did a 4-H member disclose something that leaves you questioning their health and safety? Chapter 11, Section V. titled Training and Awareness of Child Abuse Reporting Procedures of the 4-H YDP Policies Handbook provides key resources that can help 4-H adult volunteers determine if a 4-H member might be at risk of abuse or neglect; and what steps need to be taken if there is a concern regarding the welfare of a 4-H member. In addition, the manual provides resources that can help you and your fellow volunteers feel more prepared to handle these types of difficult situations before they evolve. This can be done by receiving training on safe spaces either through a community organization or online.

What if a 4-H member has made a disclosure that hints at child abuse or neglect? Below are three simple questions that you might want to consider asking the 4-H member privately in order to seek clarification or additional information regarding the disclosure.

> » Are you going to hurt yourself?
>
> » Are you going to hurt someone else?
>
> » Is someone hurting you?

Although you are not expected to be a child abuse expert, asking simple questions like these can help you make better judgments about the safety of a 4-H member that might have disclosed sensitive information. If you are concerned about the safety of a 4-H member, ALWAYS immediately consult your UCCE county office. Additionally, you can notify the appropriate authorities.

Don't do it alone. If you do not know how to handle a sensitive issue broached by a 4-H member, don't be discouraged. There is nothing wrong with referring the youth to another adult who you feel could provide better assistance or support on the topic disclosed.

Consider making a list of your allies and/or mentors within the 4-H program in advance. This will serve as a list of resources you can consult in order to ensure safety, support, and comfort of a youth member in the 4-H YDP.

Ask for clarification. This helps you better understand the needs of a 4-H member. Asking a simple question like "How can I help you" can instigate a request from a youth member. This helps them feel comfortable sharing desires, needs, and hopes in relation to a sensitive topic.

Leave out judgments and opinions. This, perhaps, may be the first time a youth member tells an adult about an issue. Your response, or lack of one, will determine how and if the 4-H member continues to seek guidance and/or support. Although everyone is entitled to an opinion, be sensitive to the needs of the youth member. At times, voicing out your own opinion or judgment can conflict with that of a youth member.

4-H YDP volunteers play a crucial role in helping youth develop a strong sense of character which stems from their own moral understanding of good and bad. In order to model a mutual relationship of trust and respect, you can help a youth member self-reflect on sensitive issues by allowing them to explore thoughts, feelings, and incidents in their lives.

Safety: Background and Key Concepts

Emotional Safety

Emotional safety has to do with a sense of well-being. When you feel relaxed—this is emotional safety. When you feel welcome in a group or when you feel a sense of trust—this is emotional safety.

As the adult in this partnership, you have great opportunities to increase feelings of emotional safety in your leadership project. You can do this by following the steps below:

Advocate for all members in your project. When you see or hear put-downs, negative comments, or other actions that diminish self or others, consistently speak up. In a calm and matter-of-fact voice, let your project members know that this behavior is not optimal and doesn't help us thrive.

Maintain self-control in yourself and your members. One of the things kids fear the most is being out of control….and they don't have very good brakes! The brain is not fully developed the ability to act with sound judgment and emotional control until age 25. Before things get out of hand, step in and calm things down.

Other simple tips:

>   » Greet all youth upon arrival.

>   » Ensure that everyone knows each other's names.

>   » Create a space where everyone can contribute.

>   » Turn around the first time a member calls your name.

Adapted from the work of Bob Ditter

Physical Safety

We feel physically safe when we know that steps are being taken to ensure our safety. The 4-H Safety Manual is the publication that gives activity guidelines for physical safety during 4-H activities.

One of the ways that we can help create physical safety is by talking about it. Some topics to discuss include: locations of emergency exits, what to do in an emergency, who is in charge, where the fire extinguisher is located, etc. Also engage young people and provide an opportunity for them to share in the decision-making and planning around the physical space. Ask them to identify all the ways that they can see that this is a safe meeting space. You may have to ask processing questions such as "If we had a small fire, what and where is a piece of equipment that could help us put it out? Then ask them if they have ideas on how to make the meeting space safer.

Young people who are engaged in conversations about safety report higher levels of feeling safe than their peers who do not have these conversations. For them, just knowing we thought about these issues increases their feelings of safety!

Dangerous "Games" Every Youth Leader Must Know About

Recent media stories have shed a renewed spotlight on the types of dangerous games kids play when they are searching for "thrill-seeking" experiences. While experts note that boys in general, and boys and girls of middle school age as a group, are more likely to engage in dangerous games — kids of any age may try them, especially when they are in groups where there is peer pressure. The Dangerous Behaviors Foundation, Inc. (DBF) suggests that one of the reasons for the recent growth in participation in dangerous games is the accessibility of home videos on social media sites that depict children engaging in these "games." What all of these games have in common is that kids believe they are "safe" as they are not using illegal drugs, and the games themselves are not illegal.

For youth programs, it is critical that you and parents understand the high-risk "games" that are attracting alarming numbers of participants. The key to preventing youth from participating in these risky activities at 4-H programs is in your supervision practices. During club and project meetings, youth are highly supervised and have limited opportunities to participate in these "games." However, because youth may be aware of these games, it's important for you as a leader of youth to be aware of the terminology. If you hear youth discussing these games, it's helpful for you to be able to act as a resource to deter youth from that practice. As always, you should be vigilant to make sure that members are not engaged in unsafe activities. This is not an exhaustive list, please consult the Center for Disease Control or other authoritative sources for current information on youth risks and safety.

Chubby Bunny

This dangerous game requires someone to shove as many full-sized marshmallows into their mouth as possible, and then say the words "chubby bunny" to an audience. Those who succeed put another marshmallow in their mouth —chewing and swallowing is not allowed — and then try to say the same words again. While rare, the risk of choking is apparent, but what is not readily understood is that when marshmallows get in the windpipe, they have a high potential of melting and cannot be removed with the Heimlich maneuver. The National Safety Council reports that 60 children ages 5 to 14 die each year of "suffocation by ingested object", but it keeps no data on how many of these deaths were the result of games or contests gone awry.

The Cinnamon Challenge

Also depicted in scores of videos on social media sites, this game involves taking a spoonful of cinnamon (without drinking water) and trying to swallow it in one minute. Most people immediately cough out a huge cloud of cinnamon powder. Some people vomit from the strong flavor. Others have coughing fits after breathing in the fine powder. In rare cases, people are hospitalized after inhaling powder into the lungs and placed on ventilators.

According to the American Association of Poison Control Centers (AAPCC), about 88 percent of phone calls in the first three months of 2012 to the nation's poison control centers were related to the "cinnamon challenge." The number is already up more than 240 percent from 2011. Although only 25 percent of those calling needed hospital attention, the challenge can be especially dangerous for those with breathing problems like asthma or chronic obstructive pulmonary disease (COPD).

Huffing

Also known as dusting, this "game" involves the intentional inhalation of common household chemicals (including cans of compressed gas used to clean keyboards), causing an immediate "high." Using huffing as a method to get high can lead to permanent brain damage and damage to the heart, lungs and liver. According to the National Survey on Drug Use and Health (NSDUH/NHSDA), common household chemicals are the fourth most commonly abused substance in the United States among eighth graders and high schools students.

Mumblety Peg

This game has been around for decades, but has seen resurgence in recent years. A player spreads his fingers on a table (or bare toes on the ground) and then stabs the spaces between them as quickly as possible with a pocket knife. The injuries are usually not life threatening, but obviously, the risk of stabbing wounds is high.

The ABC Scratching Game

This game requires two people. One person must name words that begin with each letter of the alphabet for a given topic, while the other person scratches the letter into the back of the player's hand to distract him. The potential for infection is evident. In an extreme case, in 2007, scratches on a girl's hand caused necrotizing fasciitis, an infection in which toxins destroy skin and muscle. Since then, her left arm became infected and the girl has gone through seven surgeries to remove tissue infected with the flesh-eating bacteria and has had oxygen treatments twice daily.

The Choking Game

Also known as suffocation roulette, the fainting game, space monkey, blackout, the pass-out game, flatliner, funky chicken, tingling, the dream game, knock-out, choke trance, ghost, airplaning and space cowboy (to mention a few), the game involves cutting off the oxygen supply to the brain through strangulation for a brief high. Kids play the game in groups and alone, using ropes, belts and even plastic bags — often tying the ligature to objects such as trees and bunk beds. Along with the brief high that lasts for several seconds before loss of consciousness and upon awakening, experts believe that another inducement to participate is the psychological effect of escaping a "near-death" experience.

A recent CDC study analyzed 82 probable Choking Game deaths nationwide over 12 years. The study found that the average age of kids who died was 13, but those who died ranged in age from 6 to 19. Nearly all of them (96%) were playing the game alone when they died, even if they'd first played it with a group of friends, and the majority of them (87%) who died were boys. Most of the parents cited by the study (93%) said that they hadn't heard of the Choking Game until their children died.

Adapted from *Dangerous "Games" Every Camp Must Know About* (June, 2012), American Camp Association. http://www.acacamps.org/knowledge/participant/training/dangerous-games

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