

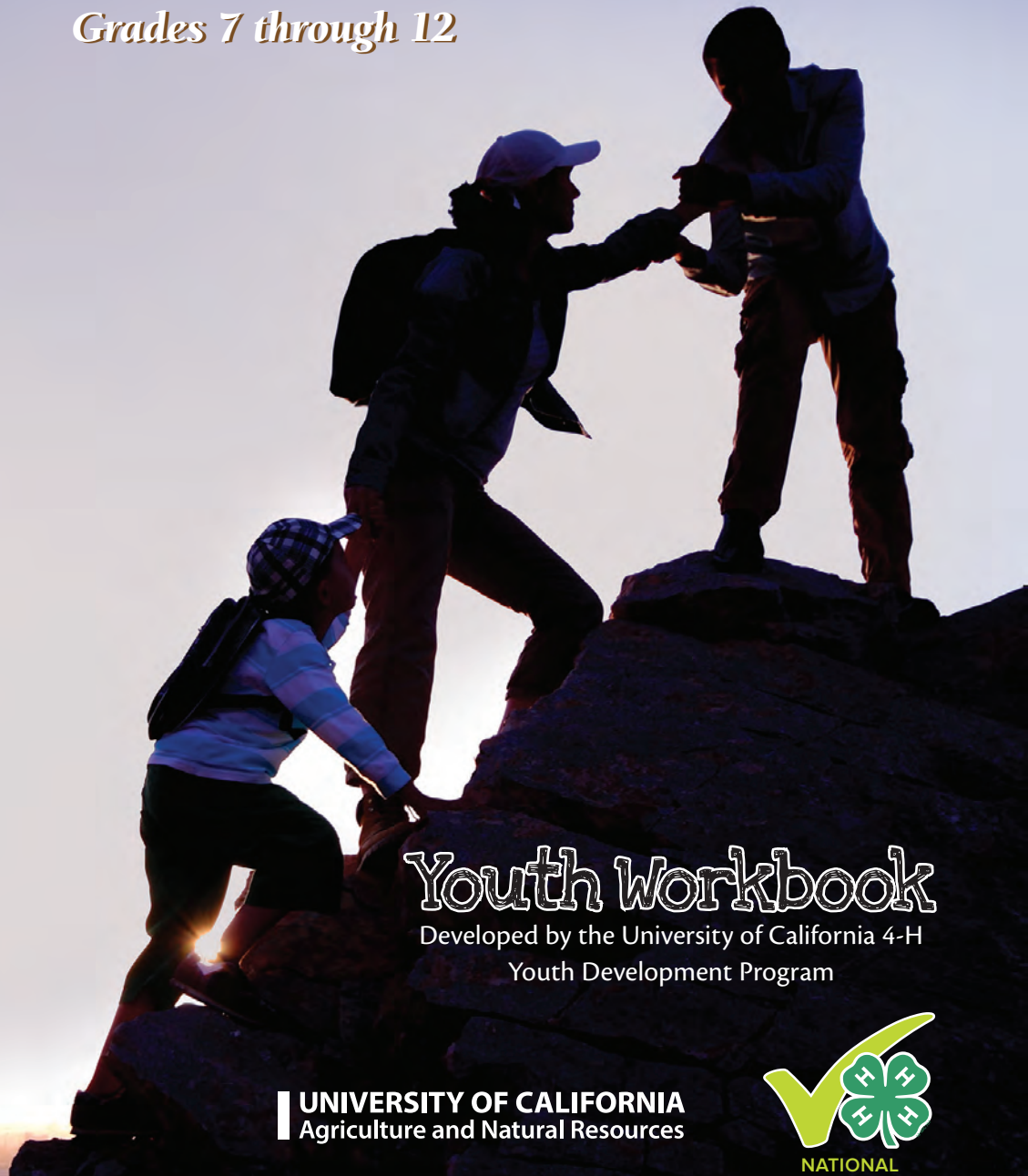
iThrive

Leadership, Science & Me



4-H Leadership Development Project

Grades 7 through 12



Youth Workbook

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

UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources



NATIONAL
PEER REVIEWED

This workbook is about experimenting and designing and, through these experiences, becoming a **thriving** person!

In your 4-H Leadership Project, you have opportunities to feel valued, to reach your fullest potential and contribute to your community. This project is also about participating in the practices of science, engineering and technology where you may:

- ⦿ Experience excitement and interest to learn about phenomena in the world
- ⦿ Manipulate, test, explore, predict, question, observe and make sense of the world
- ⦿ Reflect on science and engineering as a way of exploring the world
- ⦿ Think about yourself as a scientist or engineer!

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Thank you all for your contributions of time, talent and resources to help youth thrive!

Steven Worker & Gemma Miner





Step Up to Thriving -the introduction

Positive Youth Development

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.

Science and Engineering Learning

Whether 4-H members are in an animal, environment, food, or any other project, they have opportunities to learn science, technology, engineering and mathematics. 4-H members will find a science and engineering connection in almost all 4-H projects! Science is all around us, from the food we eat, to the clothes we wear. Engineers and designers planned, prototyped and manufactured phones and computers using scientific knowledge and the engineering design process.

Why are we focusing on positive youth development and science and engineering learning?

1. The concepts in this program are based on years of positive youth development research. This research has shown that when youth have a spark, growth mindset, are able to set and manage goals and self-reflect they are more likely to reach their full potential and thrive.
2. Many people are not aware of how important science is. Even more significant, many people believe that they cannot learn science topics, do not have what it takes to become a scientist, think science is boring and/or think science is not necessary for them to achieve their dreams. People who believe these MYTHS will have trouble reaching their full potential.

What's in my iThrive workbook and how to use it

Each chapter guides you through the elements of thriving embedded in the practices of science and engineering. In each chapter, you will be presented with background information on one of the thrive concepts along with one or more of the eight scientific and engineering practices.

ixplore activities: hands-on activities where you will work with your peers in the 4-H Leadership Project

ireflect activities: reflect on your experience, share it with others and start to draw connections between the concepts and your own life

istretch activities and real world applications: with other project members or on your own, learn more about the concept and apply the concept in the real world

All of the **ixplore and ireflect** sections are designed to be completed at your project meetings. You may want or need to continue the ireflect at home on your own and then figure out how you are going to share your reflections with each other at the next meeting.

When you complete 4-H **iThrive**, you will be eligible to be awarded a 4-H Thrive pin in recognition of your effort! This is an annual award and can be achieved multiple times. The first year that you complete the **iThrive** Leadership Project, you will earn the oval Thrive pin (see below). In following years, when you complete additional **iThrive** Leadership Projects, you will earn the round clovers to cluster around the Thrive pin. Each clover indicates an additional year of project completion.

Ready to launch.....and **thrive!**





RECORD your progress!

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 the 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 with 4-H being the youth outreach and education program. 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, over one 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 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.

Collecting Data ... A Critical Practice of Science

A core practice of science is collecting data using rigorous, reliable and valid methods. Just as you are learning about the practices of science, the 4-H program is conducting scientific research about young people like you! One of the ways that we know what works and the impact of 4-H on your growth is by tracking your progress. This also allows us to continually improve the 4-H YDP and help ensure that it meets the needs of young people for the next 100 years.

You can help advance the research by answering questions in surveys that may be provided by your adult leader.



Kindle Your Inner Passion

What is your inner passion?
What gives you joy, energy and motivation?
Perhaps it is a hobby, a skill, sports, music, art,
leading meetings, presenting or helping others.



ch. 1

passion

A spark is something you're passionate about; it really fires you up and gives you joy and energy. A spark comes from deep in your gut and is an important part of who you are. A spark may be an interest, skill or quality. Your spark is also something you use to make a positive difference in the world. It might be anything from playing a musical instrument to rebuilding antique cars, from leading a 4-H project to caring for animals at a shelter.

What is one spark that you know you have so far? If you don't know, that's okay. Sometimes it takes a lot of trying new things to find out what you are passionate about.

Spark Champions

Research shows that when a young person has at least three caring adults in their life who support them and help nurture their Sparks, then they are more likely to have a sense of purpose, be more socially competent and physically healthy and they do better in school. We call these caring adults, Spark Champions. As you go through the year, think about the adults in your life who are already your Spark Champions. It's okay to ask an adult who has the same Spark as yours to be your Spark Champion.

The Questions that Drive Science and Engineering

Questions are the fundamental process of science and engineering. Scientists ask "What exists?", "What happens when?", "Why does it happen?", and "How do we know?" Engineers ask "What can we do to address a human need?", "How can we define the need?", "What tools could be developed to address this need?"

There are a wide variety of natural phenomena that have been investigated using science and built using engineering. There are hundreds of fields of science and engineering that work to study and design the world.

While science and engineering share similarities, they have several fundamental differences. Scientists strive to identify general rules of nature while engineers design solutions that satisfy particular needs. Engineering involves constraints in materials, finances and aesthetics that often require trade-offs. These constraints, while present in the process of science, should not affect scientific theories.



ie xplore

Sparks of Science

Think about your spark and find a way to represent your spark with a drawing. If you don't know one of your Sparks yet, don't worry—sometimes it takes a lot of time to know your spark. Draw something that you think you might be interested in.

- ⦿ Once your drawing is complete, think about the ways science and engineering connect to your spark.
- ⦿ Select a Field of Science and a Field of Engineering card that you believe connect to your spark.
- ⦿ In groups, discuss how science and engineering connects to your spark.
- ⦿ Start to pose questions that scientists in that Field of Science might want to investigate around your spark. Start to pose questions that engineers in that Field of Engineering might want to address.

ireflect

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

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

4 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?

3 Share your ideas about any spark that someone can have that you think doesn't require science or engineering.

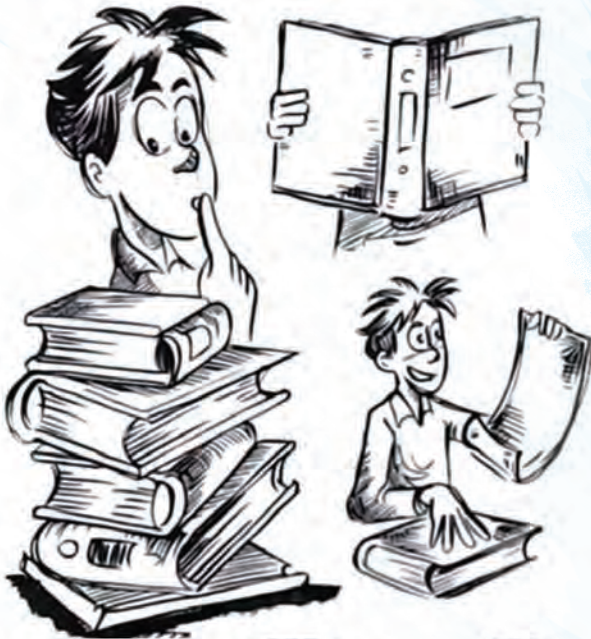


istretch

Watch a 2 minute video about the Feynman method of learning found at:
<https://youtu.be/D0zW0F9yFcA>



- ⦿ *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.*



The Science of Risk



"Not learning by doing, but learning by risking." - Toba Beta

Consider this quote. Think about what this means to you.

Risk is an event or action involving uncertainty and often danger. Risk is the possibility of suffering harm or loss often balanced by the possibility of great reward. Taking risks may allow you to move outside your comfort zone and grow as a person, though other times risks may be unhealthy behaviors and could result in pain. Often risks may be both healthy and unhealthy. It is important in life to be able to identify appropriate risks. Unhealthy risks are often referred to as high-risk behavior and are things that have adverse effects on health and may prevent one from future success.



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April 2021

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Designed by Mark Deamer - www.coroflot.com/markdeamer

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