4-H SCIENTIFIC LITERACY PROJECT

Youth need to understand science, technology, engineering, and mathematics (STEM) concepts and know how to use scientific and engineering thinking to address important societal concerns. The 4-H scientific literacy project introduces 4-H members to important concepts through engaging in reasoning skills to help improve attitudes for and interest in STEM. Through this project, youth apply their learning to real-world issues.

- Youth develop science-related conceptual understanding associated with issues relevant to their respective 4-H projects, their own lives, and to the citizens of California.
- Youth strengthen their scientific reasoning, the cognitive skills needed to understand and evaluate scientific information.
- Youth apply their knowledge and skills to real-world problems to gain a deeper understanding of STEM.

### Starting Out  
**Beginner**
- Spark young people's interest in STEM through hands-on and experiential activities.
- Focus on engaging youth in science process skills, such as observing, communicating, comparing, ordering, categorizing, relating, inferring, applying.
- Visit science centers, museums, and other science-related places.
- Invite a scientist or engineer to speak.

### Learning More  
**Intermediate**
- Deepen young people's interest in STEM through longer-term projects where they can ask questions, plan and carry out investigations, analyze and interpret data, construct explanations, and communicate information.
- Invite youth to use scientific and engineering tools.
- Use scientific and engineering terms and concepts.

### Exploring Depth  
**Advanced**
- Sustain young people's STEM interest with scientific investigations and engineering design.
- Engage in a citizen science project.
- Explore community issues; design and implement a scientific exploration to address relevant questions.
- Facilitate hands-on STEM activities with younger youth.

The activities above are ideas to inspire further project development. This is not a complete list.

### 4-H THRIVE

**Help Youth:**

**Light Their Spark**
A spark is something youth are passionate about; it really fires them up and gives them joy and energy. Help youth find how this project excites them.

**Flex Their Brain**
The brain grows stronger when we try new things and master new skills. Encourage youth effort and persistence to help them reach higher levels of success.

**Reach Their Goals**
Help youth use the GPS system to achieve their goals.

- **Goal Selection:** Choose one meaningful, realistic and demanding goal.
- **Pursue Strategies:** Create a step-by-step plan to make daily choices that support your goal.
- **Shift Gears:** Change strategies if you’re having difficulties reaching your goal. Seek help from others. What are youth going to do when things get in their way?

**Reflect**
Ask project members how they can use their passion for this project to be more confident, competent and caring. Discuss ways they can use their skills to make a contribution in the community, improve their character or establish connections.
## Expand Your Experiences!

### Science, Technology, Engineering, and Mathematics
- Explore the history and development of a scientific tool or theory.
- Hold a townhall-style debate on a socioscientific issue (like climate change) where each person represents a stakeholder group (engaging in argumentation from evidence).
- Learn about scientific norms—like C.U.D.O.S.

### Healthy Living
- Find ways to use science or engineering to improve the health of your community.
- Research how scientific advancements have helped improve our standard of living.
- Coordinate a GIS project to map local sources of fresh fruits and vegetables.

### Citizenship
- Discover the science-rich institutions in your community. Find methods to increase youth participation in interacting with these places.
- Identify community needs and plan a scientific investigation or engineering design to address the issue.

### Leadership
- Become a Junior or Teen Leader.
- Plan, prepare, and present a Science or Engineering Presentation at a 4-H presentation day.
- Lead a 4-H National Youth Science Day event in your community- www.4-H.org/NYSD.

### Connections & Events

| **Apply for a 4-H Golden Clover Award in the Brownlee Science category.** |
| **Presentation Days** – Share what you’ve learned with others through a presentation. |
| **Field Days** – 4-H members may participate in a variety of contests related to their project area. |
| Contact your UC Cooperative Extension office to determine additional opportunities available, such as a field day. |

### Curriculum

- For K-3rd grade youth: Youth Experiences in Science- http://4h.ucanr.edu/Resources/Curriculum/FREE/4-H_Youth_Experiences_in_Science_2000/ |
- There’s No New Water! http://www.4-h.org/resource-library/curriculum/4h-there’s-no-new-water/ |
- Explore It! Curriculum http://npass.edc.org/curriculum |

### 4-H Record Book

- 4-H Record Books give members an opportunity to record events and reflect on their experiences. For each project, members document their experiences, learning and development.
- 4-H Record Books also teach members record management skills and encourage them to set goals and develop a plan to meet those goals.

To access the 4-H Record Book online, visit http://ucanr.edu/orb/
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University of California
Agriculture and Natural Resources
Communication Services
2801 Second Street
Davis, CA 95618
Telephone 1-800-994-8849
E-mail: anrcatalog@ucanr.edu

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California 4-H Project Sheet Series Authors
JOHN BORBA, 4-H Youth Development Advisor, UC Cooperative Extension, Kern County; CLAUDIA DIAZ, 4-H Youth Development Advisor, UC Cooperative Extension, Riverside and San Bernardino counties; MARCEL HOROWITZ, Healthy Youth, Families, and Communities Advisor, UC Cooperative Extension, Yolo County; ANNE IACCOPOCCI, 4-H Healthy Living Academic Coordinator, California State 4-H Office; SHANNON KLISCH, UC CalFresh Community Education Supervisor, UC Cooperative Extension, San Luis Obispo County; KENDRA LEWIS, 4-H Evaluation Academic Coordinator, California State 4-H Office; KATHERINE SOULE, Youth, Families, and Communities Advisor and Director of UC Cooperative Extension, San Luis Obispo and Santa Barbara Counties; and STEVEN WORKER, 4-H Youth Development Advisor, UC Cooperative Extension, Marin, Napa, and Sonoma counties.