UC PEER REVIEWED

4-H Geospatial Project

Geospatial refers to the position of things on the earth's surface. This geographic information may be measured through the global positioning system (GPS) and mapped using geographic information systems (GIS). Both GIS and GPS may be used to create maps with layers to help in analysis of geospatial data. Mapping helps us gain a better spatial sense, see patterns of spatial phenomenon, and provide clues as to events and activities under study. Youth will

- learn about the history of map making (cartography) and the usefulness of maps
- use a GPS system to record and find geospatial coordinates. Learn about multiple geographic coordinate systems, such as latitude and longitude, UTM, or UPS
- learn to read, understand, and design maps both on paper and using GIS software

Starting Out *Beginner*	Learning More *Intermediate*	Exploring Depth *Advanced*
• Learn about navigational tools like a compass. • Learn to use a GPS handheld by going on a treasure hunt (geocaching). • Use GPS to save locations and find the latitude and longitude of famous objects. • Locate fire hydrants in your neighborhood and put them on a Google Earth map.	• Explore unusual or strange maps, and reflect on why the cartographer made the map the way they did. • Create a map for a local park or trail. • Look at soil and weather maps for information about what crops, plants, and birds you will find in your community. • Install GIS software (like ESRI's ArcGIS) and create a map with several distinct layers.	• Work with a local organization or government agency to create a map to benefit the community. • Create a series of themed geocaches to teach about the history and culture of your community. • Design an emergency evacuation plan for your community. • Lead a geospatial activity for younger members (such as the Maps and Apps activity).

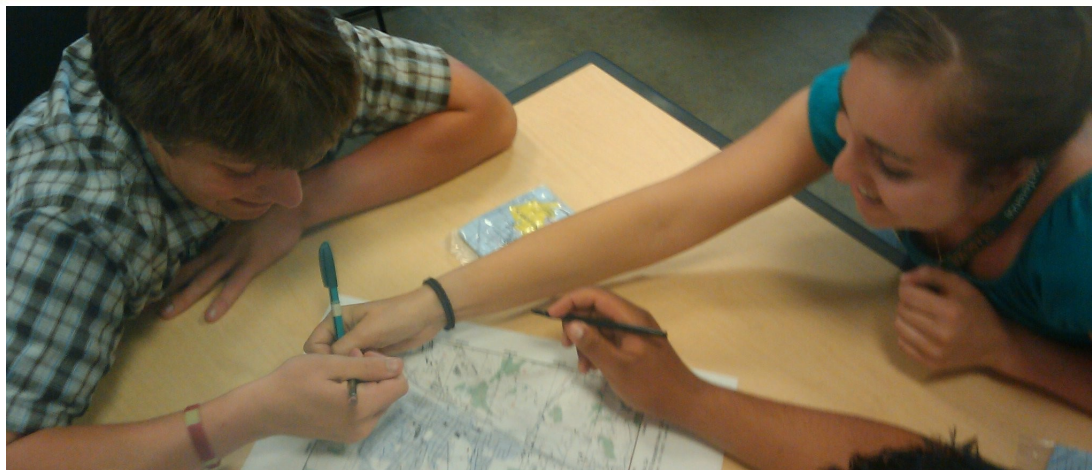The activities above are ideas to inspire further project development. This is not a complete list.

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.

Light Your Spark   Flex Your Brain   Reach Your Goals   Light Your Spark   Flex Your Brain   Reach Your Goals

Expand Your Experiences!

Science, Technology, Engineering, and Mathematics

- Investigate how satellites and GPS units work together to determine geographic locations.
- Experiment with different coordinate systems and assess their benefits and drawbacks.
- Attend the Esri User Conference to see how professionals use GIS maps.

Healthy Living

- Share how geospatial strategies might improve people's health and wellness.
- Create and share maps of local hiking and biking trails.
- Determine how to use GPS to track miles walked or biked.

Civic Engagement

- Use GIS to identify community issues by combining multiple data layers.
- Share local maps with organizations and government agencies to improve their services.
- Visit with your county's GIS coordinator to see how they use maps.

Leadership

- Serve as a Junior or Teen Leader.
- Lead a team to create a map of a local park.
- Share your knowledge of geospatial technologies by giving a presentation to younger youth.

College and Career Readiness

- Visit an engineering department at a college campus.
- Complete an online certification for GIS systems.
- Integrate your 4-H geospatial project with a school assignment.

Resources

- U.S. Geological Survey
  https://www.usgs.gov/
- Geocaching
  https://www.geocaching.com/play
- National 4-H Geospatial
  www.facebook.com/4hgisgps/
- Putting Youth on the Map (GIS Map)
  interact.regionalchange.ucdavis.edu/youth/
- There's No New Water! Mod. 4
  https://4-h.org/parents/curriculum/water-conservation/

The UC 4-H Youth Development Program does not endorse, warrant, or otherwise take responsibility for the contents of unofficial sites.

Connections & Events	Curriculum	4-H Record Books
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.	- 4-H Maps and Apps https://4-h.org/parents/national-youth-science-day/maps-and-apps/ - ArcGIS Five by Five https://esri.app.box.com/v/ago5x5 - Pennsylvania 4-H GIS www.geotechcenter.org/uploads/2/4/8/8/24886299/yet_gis_curric.pdf	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/.

University *of* **California** Agriculture and Natural Resources

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