The Role of Major and Mid-scale Research Infrastructure in Fueling the US STEM Workforce Pipeline – PreK-12

2022 Research Infrastructure Workshop

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September 15, 2022

Project Collaborators:

UCAR CENTER FOR SCIENCE EDUCATION · University of Colorado Boulder · UtahStateUniversity · YOUTH POWER 365 · EAGLE COUNTY SCHOOLS · walking mountains science center

This material is based on the work supported by the National Science Foundation (NSF) under Grant # 2011518. Any opinions, findings, or conclusions expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

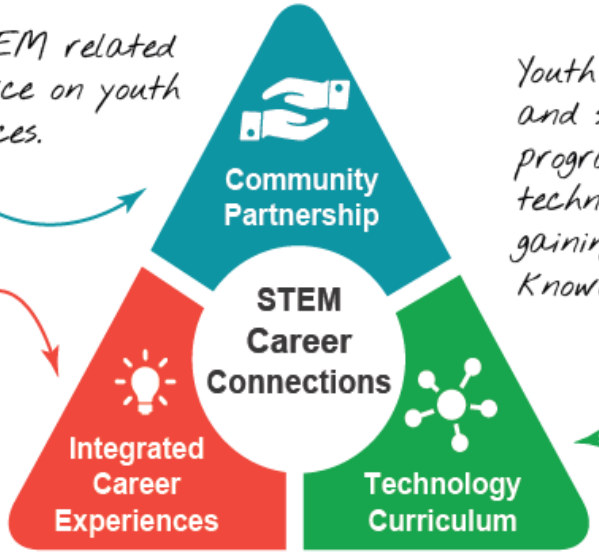
Goals of the STEM Career Connections project:

- To connect the classroom with real-world examples of STEM careers: to make the curriculum come alive!
- To help build partnerships that support students and teachers
- To stimulate youth interest in STEM career opportunities

STEM Career Connections Project Overview

Local community members with STEM related careers meet with youth, offer advice on youth projects, and share career experiences.

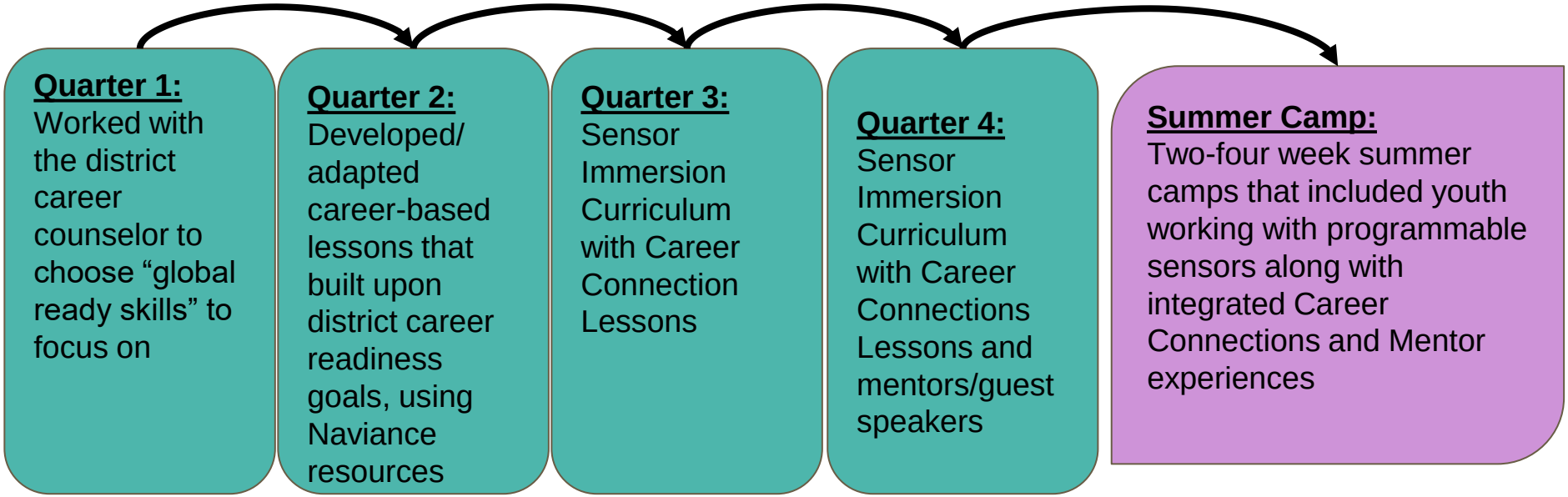
Youth explore career pathways and opportunities that are integrated into the curriculum using existing career readiness materials (such as Naviance) in collaboration with Eagle Valley school counselors.



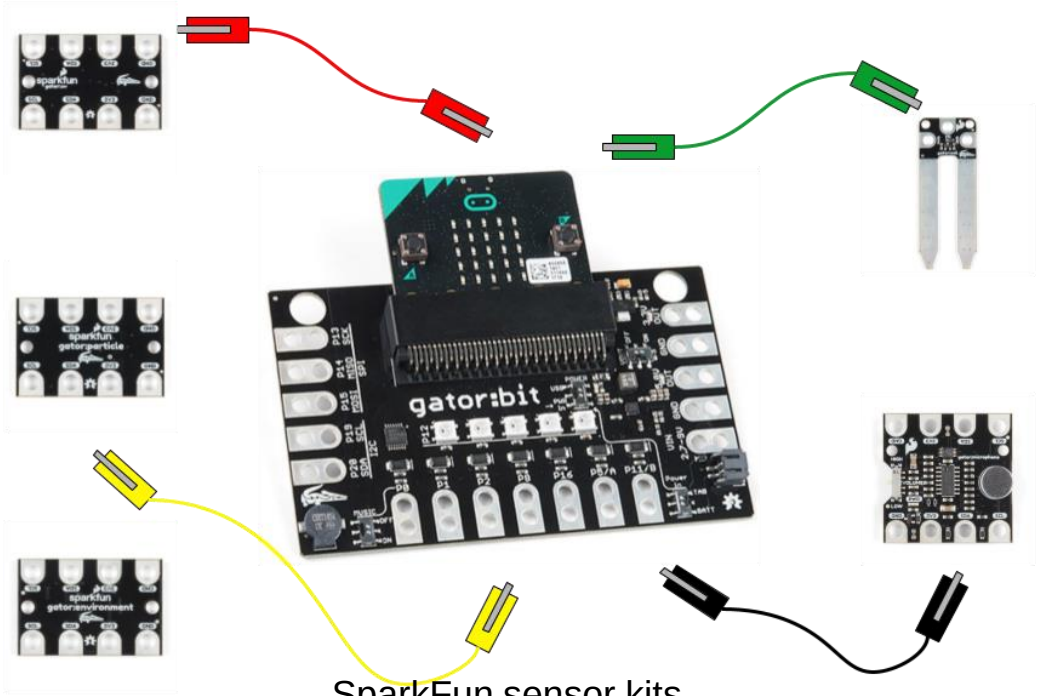
Youth in afterschool clubs and summer camps investigate programmable sensor technologies and 3D printers, gaining STEM skills and knowledge throughout the unit.

2021-2022 STEM Career Connections Program

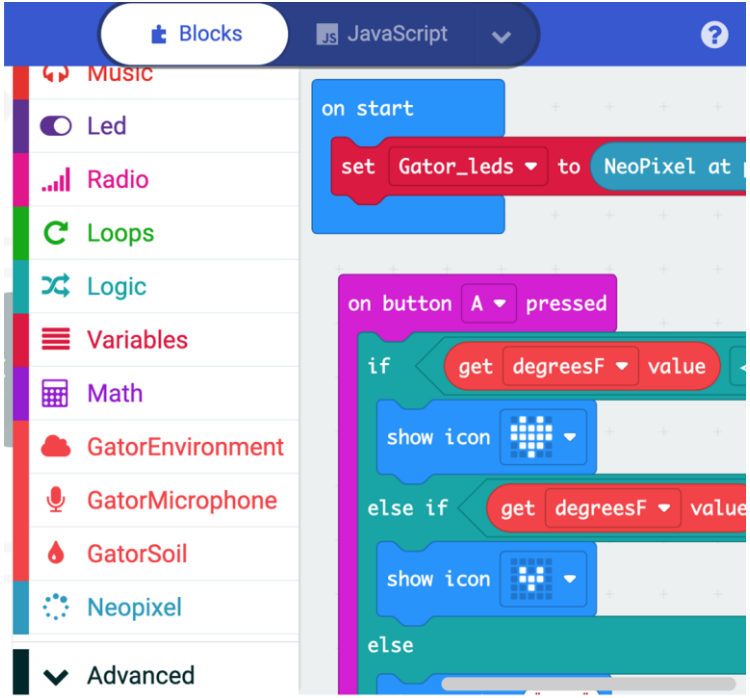
Worked with the Eagle County (Colorado) Career Counselor, STEM teachers and local afterschool providers:



STEM Curriculum: Sensor Immersion

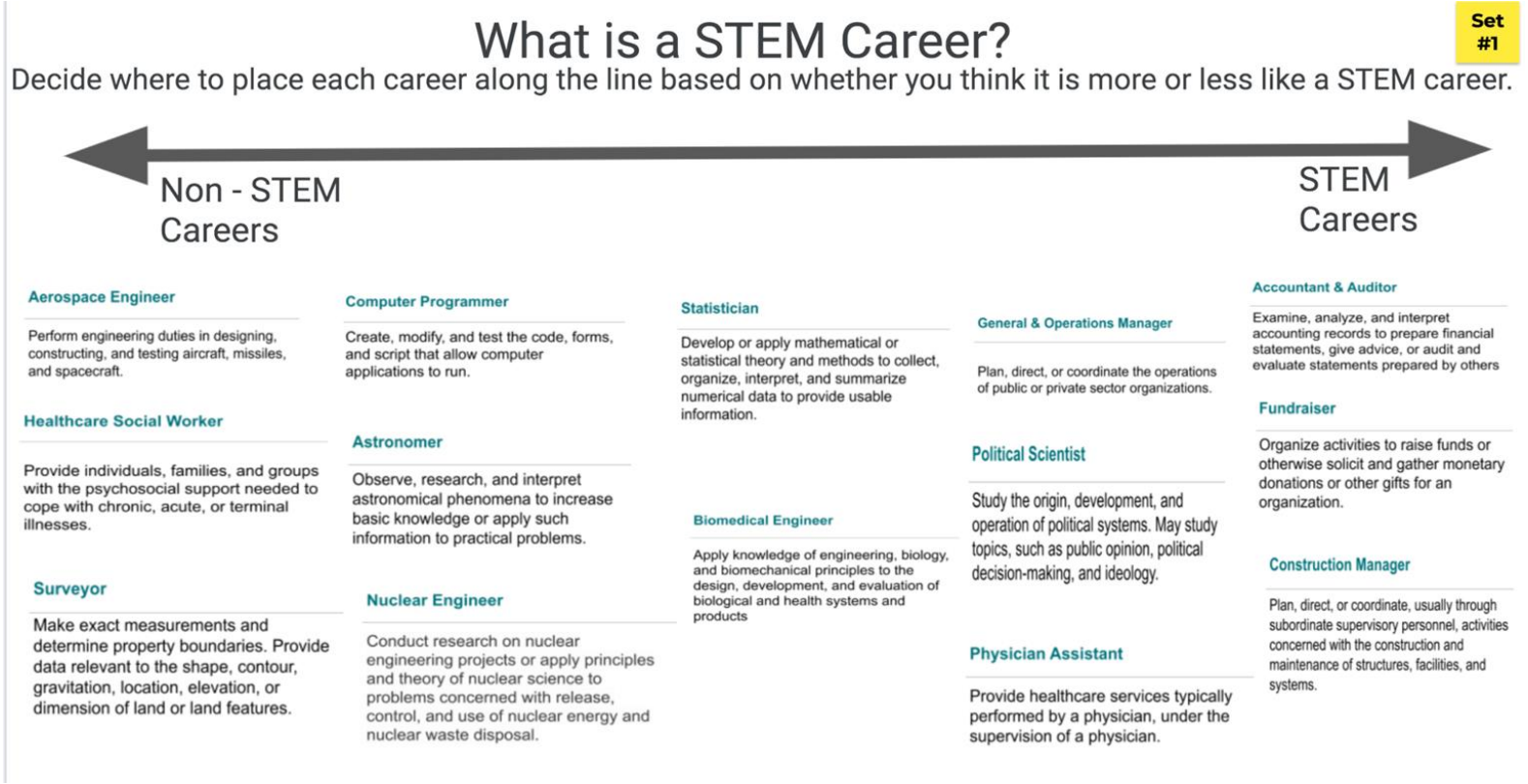


SparkFun sensor kits



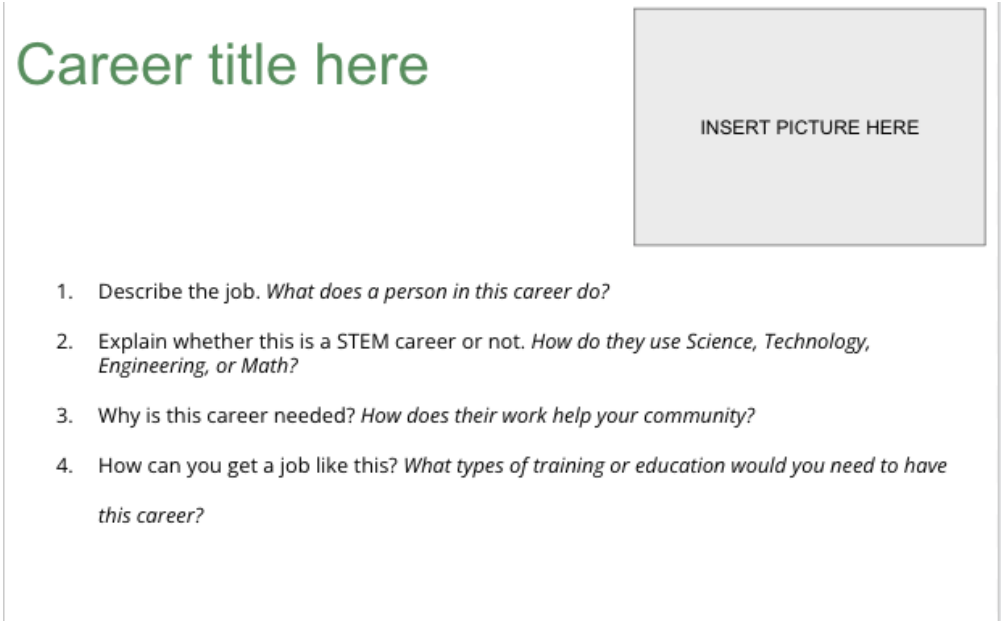
MakeCode programming

STEM Careers Card Sort and Career Wall



Community Hero Interviews

- **What STEM jobs are in your community?**



Career title here

INSERT PICTURE HERE

1. Describe the job. *What does a person in this career do?*
2. Explain whether this is a STEM career or not. *How do they use Science, Technology, Engineering, or Math?*
3. Why is this career needed? *How does their work help your community?*
4. How can you get a job like this? *What types of training or education would you need to have this career?*

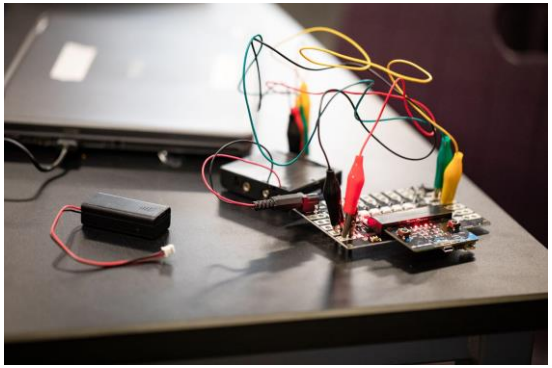
Connecting to STEM careers in your community

- **STEM professionals were invited to be mentors**
  - We targeted mentors with skills that related to the curriculum
  - Mentors share about their work and career path
  - Students ask questions relating to interests, training/skills, job tasks, etc
  - Mentors & students brainstorm real-world applications of the work they are doing in class
  - Students practice explaining their ideas and receiving feedback

Recruiting Mentors from NCAR

Name/Lab	Year	Description
Frank Flocke ACOM	Summer 2021	Virtual mentor; spoke with students 3 times about his work in air quality & wildfire science and mentored students about their sensor project ideas
Julie Haggerty EOL/RAF	Spring 2021	Virtual mentor; spoke with students 3 times about her work using instruments to measure the atmosphere from the NCAR aircraft (NCAR Research Aviation Facility) and mentored students about their sensor project ideas
Alice Lecinski ACOM	Spring 2021	Virtual mentor; spoke with students 3 times about her work in ACOM programming the hardware used in scientific instruments and mentored students about their sensor project ideas
Christina McCluskey CGD	Spring 2021	Virtual mentor; spoke with students 2 times about her work in CGD doing CESM modeling and mentored students about their sensor project ideas
Ivan Ortega	Spring 2022	Virtual mentor; spoke with students 3 times about his work in ACOM with remote ground based sensing (coding and building instruments that measure atm composition) and mentored students about their sensor project ideas. Ivan also gave the students a virtual tour of his lab, explaining the equipment that he works with, and showed samples of the coding that he works on

Promising Practices



- Learn about the local STEM ecosystem
- Align with community partners who share similar goals
- Have a meet and greet with teachers, mentors, and researchers
- Provide support to instructors for logistics and to mentors around youth engagement
- Ask students to develop questions for mentors ahead of time
- See Mentor Tips Handout for more ideas

Thank You!

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STEM For All Video:
https://multiplex.videohall.com/presentations/2304

CU Boulder SchoolWide Labs Sensor Immersion Curriculum