

Introduction to STEM: Design and Making Camp



Abstract

Our middle school students will be making career choices in the 2030's. What sort of jobs will be needed? As technology continually changes it is difficult to fathom, however, we know the skills that have made people successful regardless of time. Critical thinking, creativity, collaboration, and communication are skills that will be needed. "Growing Your Expertise" allows students to choose a technology-related passion project and share what they learn with an authentic audience increasing their interest in STEM.

Teachers will use two main strategies to facilitate the experience.

- Design process - Facilitates student thinking as they create a solution to a problem. Student's negotiate criteria and constraints to develop a prototype and use testing/feedback to improve the prototype. Students share their insights/learning as a final reflective step.
- Genius Hour - Genius hour is a movement that allows students to explore their own passions. It provides students a choice in what they learn during a set period of time during school.

Goals

1. Students will experience and understand the design process with a special emphasis on prototyping, testing, and feedback for improvement.
2. Students will design and realize a solution to a problem using a STEM-related technology of their choice.
3. Students will practice being independent learners.
4. Students will experience STEM careers at a local industry partner.
5. Students will communicate their learning to an authentic audience.

Example Schedule

Day 1	Introduce Design process - Straw Rocket/ Lego Spinner activity Pick passion projects
Day 2	Explore passion projects/Investigate technology - Develop initial prototype
Day 3	Visit 3 STEM related companies to explore possible future careers
Day 4	Test initial prototype; get and give feedback about prototype; begin creating presentation
Day 5	Finish testing; Develop and present to community supporters

Possible STEM Resources

Physical Computing - Micro:bits, Hummingbird robotics,

Robotics - mbots, Ozobots, Sphero, doodlebot, Lego - EV3, Lego Boost

Design/Making - Sewing circuits, 3D modeling, 3D pen, Knex, Circuit Scribe, Bridge Builder

Aeronautics - Drones, Straw Rockets, Water Rockets, Flybrix

Coding - Bloxels, Code.org, Coding Board Game

Video - Stop Action, Green Screen

Final choice of STEM resources will be made by camp leader(s)

