Virginia Cooperative Extension
Virginia Tech • Virginia State University
www.ext.vt.edu

Full S.T.E.A.M. Ahead....

Inspiring youth to observe, examine, explore and collaborate through Science, Technology, Engineering, **Art** and Math

Kathryn Alstat, 4-H Senior Agent, Virginia Cooperative Extension, Greene County

Overview

Add some STEAM to your 4-H Programming and achieve a high level of energy and enthusiasm for STEM projects by adding the "A" for Arts and creating STEAM. As youth reach middle school, their enthusiasm in STEM (Science, Technology, Engineering and Math) decreases, especially with girls by age 15. Over 50% of Americans do not pursue STEM careers because they perceive it to be too difficult. Adding the Art element can add creativity to existing STEM programs, encourage creativity, self expression, and confidence to explore and gain skills while thinking "outside of the box." STEAM programs can engage less confident learners across a variety of venues, economic levels and back grounds—in schools, home school groups and low income afterschool groups. Youth who feel intimidated by science, technology and math can gain new mastery of skills and above all, have fun while learning. These approaches can start with Cloverbuds (ages 5-8) and engage older youth through and beyond middle school

Learning Objectives

. To encourage and attract youth who might feel intimidated or unenthusiastic about traditional STEM programming

. To Inspire youth to observe, examine, explore, collaborate and create through STEAM (Science, Technology, Engineering, Art and Math) projects and activities.

. To encourage creativity, innovation and out-of-the box thinking and problem solving.

Impacts

. **By adding Art to the process, 92% of youth felt that projects were more approachable and fun.**

. **Of over 50 youth interviewed and surveyed, only one youth preferred STEM activities over STEAM ones.**

. **Since modifying and advertising programs as STEAM, Greene County 4-H has had a 60% increase in the number of girls enrolling in STEAM programming, vs strictly STEM programming.**

. **80 % of youth surveyed agreed that STEAM programming helped them think of more creative solutions when problem-solving.**

Implementation

Venues

Since 2020, Greene County 4-H has offered a variety of STEAM programs to over 300 youth through...

. Virtual Workshops and at-home projects (2020)
. Family STEAM Night
. Afterschool workshops
. Homeschool workshops/classes
. Day camps
. Lessons at 4-H Club and Cloverbud Meetings
. Summer Camp Classes
. In School enrichment programs

Projects and Activities

. Bubbleology and Bubble Painting
. Rocketry (Paper Straw, Balloon, Stomp Rockets, Water Bottle Rockets)
. Fibonacci /Math Art
. LEGO designing and building (including Robotics)
. Leaf Identification, Resist Painting and Collages
. Marshmallow Catapult Designing and Building
. Squishy and Paper Circuits
. Hot Air Balloons and Paper Airplane Design
. Marble Mazes and Domino Designs
. Gyotaku Fish Prints
. Nature Crafts/Insect Hotels