

Title: Hampden County 4-H Urban Programs

Project Leader: Lauren Dubois

Project Overview

Based on feedback from youth, community partners, and parents, young people in our hands-on after-school and summer programs (STEAM, Citizenship, Sewing, Gardening, and Cooking) are learning skills that will better prepare them for their future. Young people in our STEAM programs show an increase in their interest towards STEAM in school and as future careers. Young people in our Citizenship programs have completed community service projects and have learned about local organizations that they can support. Young people in our Sewing program are learning how to hand-stitch and use a sewing machine to create usable things, such as: pillow cases, bags, and aprons. Young people in our Gardening program get hands on experience in a garden, planting and harvesting their own vegetables, fruits, and herbs. They learn about the importance of knowing where their food comes from and they get to cook with food that they grew. Young people in our Cooking program get to learn about measurements and healthy substitutes. They get to taste food they've cooked from start to finish and share that with their friends and families.

The Massachusetts 4-H Program continues to assist in delivering quality educational programs in out-of-school settings. Project leaders will continue to seek partners in the Springfield and Holyoke communities and at UMass Amherst to expand the array of educational enrichment and youth development experiences to help prepare youth for success in school while creating connections and pathways between Springfield and Holyoke youth and the University of Massachusetts Amherst.

STEAM curriculum

Creature Features: Adaptations Activity (biology): Using homemade dough, students will create an original creature to survive a designated habitat.

Objective: This activity teaches how various organisms adapt to the specific features of their habitats and how those adaptive features ensure survival.

Paper Tower Project (engineering): Using just 2 sheets of newspaper, students will build a tower as tall and stable as possible.

Objective: This activity teaches how to use different shapes to construct a tower. We will discuss how engineers consider outside forces such as friction and wind when building their structures.

Edible DNA Project (biology): Students will use food items to design and construct a DNA double helix.

Objective: This activity teaches the structure of DNA, all the components of a nucleotide, and base – pairing. They will learn how much information and organization is contained in DNA.

Fingerprinting activity (technology): Students will take fingerprints and see how they can classify them into categories, just as fingerprint specialists do.

Objective: This activity teaches how to collect large amounts of data, identify patterns, and organize them so that they can be useful.

Homemade Thermometer Project (chemistry): Using rubbing alcohol, a plastic bottle, and a straw, students will make a thermometer that accurately records temperature.

Objective: This activity teaches the relationship between heat and temperature as well as how heat affects matter. We will also introduce the Laws of Thermodynamics.

Inertia Towers and Cart-Race Project (physics): Using blocks, cups, and index cards, students will create towers and then remove some of its components without compromising the integrity of the structure. Students will then race using a large cardboard box with an object inside.

Objective: This activity teaches Newton's First Law of Motion and introduces key concepts such as inertia and equilibrium.

Properties of Water and Water Transport Activity (chemistry): Students will use a paper towel and dyed water to see how water travels. They will compete with one another in simple, water-based challenges.

Objective: This activity teaches how plants transport water from their roots to their leaves as well as the structure of a water molecule and its unique properties. It introduces key concepts such as capillary action, transpiration, plant biology, and water transport.

Speed Project (physics): Students will engage in a physical activity to determine how time and distance are used in calculating speed.

Objective: This activity teaches how to calculate average speeds while thinking about and comparing them to instantaneous speeds. Students will be able to determine an unknown distance based on calculated average speeds.

Consumer Report Project (engineering and math): Students will design their own experiments to test which brand of tissue paper is the best buy.

Objective: This activity encourages to compare different brands of products, design scientific tests to compare those brands while developing independent thinking skills. They will use math skills to quantify and qualify the gathered data.

Osmosis Project (biology): Students will study the movement of water into and out of gummy bears.

Objective: This activity teaches how cells transport substances through their membranes. They will become familiar with key vocabulary such as diffusion, osmosis, concentration, and selectively permeable membrane.

Racers and Rollercoasters Project (physics and engineering): Students will race marbles and design different tracks, some of which will include loops.

Objective: This activity teaches to develop problem-solving and teamwork skills while touching upon some basic physics concepts such as energy, acceleration, and momentum.

Wind and Lego! Project (physics and engineering): Students will design and build wind-powered Lego contraptions.

Objective: This activity teaches about alternate energy sources; such as wind power. They will review basic physics concepts such as energy, interference, power, and work.

Life-skills Curriculum

Activities: Identity Wheels, Definition of Active Listening, Definition of Empathy

Purpose: to practice communication skills and create awareness of one's self and become better acquainted with other members.

Objectives: Youth will be able to: Self-reflect on who they are, understand what Empathy means, Actively Listen.

Activities: What is Leadership?

Purpose: Allow space for young people to think about what it means to be a leader and to talk about leadership.

Objectives: Youth will be able to establish personal definitions of leadership, describe attributes of leaders, determine their leadership characteristics; what are their strengths and weaknesses?

Activity: What are Role Models?

Purpose: Role models impact everyone. Often times, who your role model is determines many of your life choices.

Objectives: Youth will be able to: Think about the role models in their lives, explain why they look up to certain people, communicate how those role models have impacted their lives

Activity: Teamwork

Purpose: For youth to develop skills that will allow them to work effectively in groups

Objectives: Youth will be able to: Learn the value of communication between team members, Work with others to achieve a common goal

Activity: Critical thinking and Communication

Purpose: Critical thinking is important for leaders. Everyone has had different experiences in life and therefore each of us have a different understanding of how the world around us works.

Objective: Youth will be able to: Learn from each other, Practice critical thinking skills, communicate their thoughts and feelings based on their personal experiences

Citizenship Projects:

Created dog and cat beds and toys for Dakin Humane Society animal shelter.

Created Cards for the clients at CHD's Cancer House of Hope.

Clean-up project in the community collecting over 10 bags of trash.

Outcome: Young people will get to give back to their community and see first-hand the importance of service learning.

The facilitation of curriculum that we provide in Holyoke and Springfield align with the mission of 4-H which is to empower young people with the skills to lead for a lifetime. It's a research-based experience that includes mentors, hands-on projects and activities, and a meaningful leadership opportunity. We work side by side with our community partners, UMass Extension faculty, and 4-H volunteers to create programs that will positively impact youth throughout their lives.

Activity Summary - 2016

- 4-H Program Staff Meetings with Community Partners and UMass Students (32)
- After School Program Workshops (8)

Total Educational contacts

	Youth Contacts	Adult Contacts
Direct Contacts	197	36
Indirect Contacts (Print, Web, etc...)		

Narrative Summary and Impact

STEAM is the foremost growing funding field in the United States because the US realizes that in this climate of financial uncertainty, innovation and pioneering designs are required to lead the nation's future to prosperity. However, getting the initial support for STEAM is challenging, primarily because strong leaders in the field are needed to teach the upcoming generations. Developing STEAM curriculum is difficult and time consuming, in part due to the intricate nature of the topic. Then there is the challenge of engaging and teaching youth topics unfamiliar to them.

We have been able to hire a new program assistant, Lizmarie López, who has an extensive knowledge of Science, Technology, Engineering, the Arts, and Mathematics (STEAM) and experience teaching young people. The addition of the program assistant to our team working in Holyoke and Springfield has elevated the quality of our programs and the impact for the young people engaging in STEAM. This is exactly the goal we strive for.

Lizmarie is from the same community that she is serving here in Springfield. She not only understands the barriers that urban young people face but she knows what it takes to overcome those barriers. The passion she brings to her work is seen in her interactions with each young person she meets. She is dedicated to sharing her STEAM knowledge with the youth in Holyoke and Springfield in hopes of better preparing them for a world where knowing STEAM is necessary for their future success.

4-H After-School in Holyoke and Springfield primarily focuses on STEAM education and exploration, as well as community awareness and outreach coupled with college access.

Young people from Holyoke and Springfield are introduced to the fields of STEAM and have the opportunity to learn more about STEAM careers through a higher education lens that college students, volunteers, UMass faculty and 4-H staff provide.

Over the past 26 years, 4-H has worked in Holyoke creating two community gardens where young people and adults from the community can grow their own fruits, vegetables, flowers, and herbs. At the two after-school program sites, young people learn about nutrition, cooking, sewing, and horticulture.

In the past 8 years Springfield 4-H youth have developed varying science skills by attending the bi-annual Science Quest event held at UMass Amherst, exploring the field of Veterinary Science at the UMass Hadley farm, attending the annual Explore UMass 4-H Summer of Science program, and completing STEAM projects with UMass Engineering faculty and students. They have also increased community awareness by visiting local museums and taking college tours, all the while practicing public speaking and participating in leadership workshops.

Collaborating Organizations

- **(4-H) New North Citizens' Council**
- **(4-H) South End Community Center**
- **Chestnut Accelerated Middle School South**
- **The Center for Human Development**
- **Make-It Springfield**
- **Sargeant West Community Center**
- **South Canal Community Center**
- **UMass Engineering Departments**
- **UMASS Agricultural Sciences Department**
- **UMass Design Center in Springfield**
- **Student Bridges Organization**
- **UMASS Nutrition Extension**