University of Maine System 4-H STEM Ambassadors Program

Background/Rationale

4-H is the youth development effort of University of Maine Cooperative Extension, and is integral to the land-grant mission of UMaine. 4-H reaches over 25,000 youth statewide annually. Youth participate in community clubs, camps, in-school and after-school programs. 4-H works to empower Maine youth ages 5-18 through leadership development, citizen engagement, and science, technology, engineering and math (STEM). 4-H STEM programs expand the accessibility to every Maine county and engage youth through hands-on learning. We connect youth to higher education through campus visits; collaboration with campus faculty, staff and students; and 4-H STEM Ambassadors.

The 4-H STEM Ambassadors program was piloted in 2013/2014 as part of the UMaine PRE-VUE (Presidential Request for Visions of University Excellence) project “Increasing University of Maine Recruitment, Enrollment and Retention through Maine 4-H STEM”. Due to the success of that pilot, we now propose a statewide 4-H STEM Ambassadors program that will involve at least 14 undergraduate students, representing each of the University of Maine System (UMS) campuses, in providing STEM education to upper elementary and middle school aged (ages 8 - 14) youth for in- and after-school programs, clubs and camps. The program includes offering “Science Saturdays” to local youth at each campus. Existing 4-H professional staff and proposed new staff, geographically dispersed throughout the state, will provide program coordination and recruitment, orientation, training and supervisory support for the Ambassadors.

Proposed Project Outcomes:
Participating youth will:
- increase their ability and comfort with STEM topics,
- increase their knowledge of the UMS campuses,
- increase proficiency in STEM disciplines,
- increase higher education aspirations, and
- demonstrate an increased interest in attending a UMS campus.

Participating undergraduate STEM Ambassadors will:
- increase their knowledge of best practices for teaching STEM,
- increase their ability to facilitate STEM activities,
- increase their knowledge of positive youth development, and
- demonstrate increased leadership and communication skills.

Methods:
We will accomplish this by:
- creating a structure for undergraduates to deliver hands-on STEM activities,
- creating a network of undergraduates to directly deliver STEM programming to youth,
- promoting STEM programs at each UMS campus to support student recruitment,
- exposing over 5,000 youth to hands-on STEM education,
- providing STEM education support to teachers and after-school providers, and
- supporting learning outcomes that are connected with Maine Education standards.
Project Narrative

We propose to develop and deliver a UMS-wide 4-H STEM Ambassadors Program. 4-H professional staff will work with administrators and faculty at each UMS campus to determine signature, priority STEM programs. Staff will recruit at least two undergraduate students per campus, oversee the 4-H volunteer certification process, supervise, and train each in hands-on, inquiry-based learning. Professional 4-H staff will connect with area schools, after-school programs, clubs and camps to secure work sites. The undergraduate students will deliver 4-H STEM activities to area youth based on the campus-specific priority program. Professional 4-H staff will interact regularly with host sites, and evaluate each program annually.

With a local presence throughout the State of Maine, and established relationships with the UMS campuses, 4-H is the natural choice to administer this program. 4-H currently engages over 25,000 youth annually, and over 13,000 of these youth engage in a STEM program. Recent (2013) data from Maine 4-H youth suggest that 83 percent of participating youth want to finish college, with 24.5 percent wanting to pursue more education after college. Seventy-three percent of Maine 4-H youth surveyed reported that they would like to have a job related to science (National 4-H Council, 2014). Nationally, girls involved in 4-H are twice as likely to pursue science careers as their peers (Lerner, 2013).

Our pilot STEM Ambassadors program was successful, with students commenting that “(the undergraduate student) got the learning across in the games that we played. She is really friendly. We were more comfortable around her because she is closer to what we are going through than most teachers, she made it fun”. One seventh grade teacher commented that “It went well overall and the students did respond well to (the undergraduate). I do think the middle school students relate to an undergrad. It was easy for us to implement in that (the undergrad) brought all the supplies and did the work.” A sixth grade teacher commented “(the undergrad) was wonderful with the students. She was patient, she commanded their attention, always smiling and fielded questions like a pro”. One 2013-2014 STEM Ambassador said “I was given the opportunity to work with a couple of afterschool science programs at area middle schools. Being able to get in the classroom and try my hand at leading a group of kids was amazing, thanks to wonderful students and staff at both of the middle schools. In fact, since accepting this position and leading activities, I've been doing my best to achieve my dream of becoming a science teacher once again”.

We also piloted a “Science Saturday” model at UMaine by offering three-hour in-depth experiences for youth in Animal and Veterinary Science, Food Science, and Innovation Engineering/Physics. Attendance at these programs increased each time, with many youth attending multiple sessions. In addition to the academic experience, youth were able to participate in a campus tour, or experience the campus recreation center. Responses to the programs were positive, both from the youth and from the faculty/staff presenters. We propose offering this model at all UMS campuses.

By expanding our 4-H STEM Ambassadors program to be available system-wide, we will leverage the impact of results accomplished through the UMaine PRE-VUE project. Due to our positive experience in piloting 4-H STEM Ambassadors on a limited scale, we are confident in our ability to successfully implement this program for Maine youth statewide.

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<th>Proposed Budget for 70 and 100K</th>
<th>$70,000</th>
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<tbody>
<tr>
<td>Professional staff (1 FTE) (salary and fringe)</td>
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<tr>
<td>Undergraduate Students (hourly)</td>
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<td>Materials and Supplies/Training</td>
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*in 2014/2015 we will pay work-study eligible undergraduates to participate or have students volunteer if they do not have federal work-study. It is our expectation that this program will become sustainable by offering this experience to undergraduates as a for-credit internship, or that departments will cover the cost of their undergraduates to participate.

**in 2014/2015 at least half of the STEM Ambassadors will have federal work study. It is our expectation that this program will become sustainable by offering this experience to undergraduates as a for-credit internship, or that departments will cover the cost of their undergraduates to participate.

**References:**