

Up, Up and Away

EPSCoR is helping students in five Alaska high schools to reach new heights.

Together with Alaska Upward Bound, EPSCoR is administering “The Modern Blanket Toss,” a program through which high school students perform experiments using unmanned aerial vehicles (UAVs). The goal of the project is to increase students’ interest in STEM (science, technology, engineering and math) fields as they undertake projects that are useful to their communities.

“We named this project after the Native tradition of the blanket toss, which enabled people to expand their horizons beyond their immediate surroundings,” said John Monahan, Director of UAF Upward Bound and head of the program. “We want this project to do the same thing – literally, by giving students a bird’s-eye view of their communities, and figuratively, by exciting them about college and about STEM careers.”

The program, which is being funded by a \$750,000, three-year NSF award, will engage approximately 75 low-income, prospective first-generation college students from high schools in the communities of Shishmaref, Bethel, Chefnak, Nikiski and Seward. Students will attend Upward Bound’s residential summer classes on the UAF campus, during which they will be trained in UAV use, as well as in science communication and leadership, in addition to the program’s general curriculum. Instruction will include classroom modules and hands-on experiences that take advantage of campus UAV expertise, including field trips to UAF’s Poker Flat Research Range.

All five schools will be provided with Arducopter quad-rotor UAV’s, as well as GoPro cameras and GPS tracking devices. During the academic year, students – under the instruction of both local and remote Upward Bound personnel – will take part in learning activities centered around the UAV’s, including guest speakers, “virtual field trips,” and other instruction delivered via videoconference. All five schools will communicate online in order to learn from each others’ experiences and results. As they gain experience with the UAV’s, students will take part in hands-on activities such as simulated search-and-rescues or charting trails, and will also gather data for a NASA



Shishmaref High School students Jessica Kuzuguk and Nellie Okpowruk display a Modern Blanket Toss UAV.

aviation safety project.

Each school year will culminate in a large-scale mapping project, which will be chosen and designed based on student and community members’ input. Students will then present project results at community meetings and other events, including a workshop during the final summer of the program in which results will be exhibited for a nationwide group of educators. With professional supervision, students will also create a series of videos describing stages of the project.

The first phase of the project began in spring 2014 and involved 12 students in Shishmaref High School. Under the tutelage of site coordinator John Yula, students undertook controlled experiments with their UAV inside the school gym, learned how to operate (and repair) the device and GoPro camera, and also collaborated with a classroom in Hawaii, all toward a goal of mapping erosion along their village’s shoreline. The first cohort of students in the program, consisting of 16 students

from four of the communities, began their Upward Bound summer studies in June.



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