

# Space race through the airwaves

Students, teachers aim for stars with project

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PALMER — A recent challenge to connect students at Pathfinder Regional Vocational Technical High School with astronauts aboard the International Space Station is garnering expertise from not only educators but radio aficionados from throughout the Pioneer Valley.

Over the course of the past year Pathfinder HVAC program instructors Marius Zielinski and Schley Warren have introduced Pathfinder students to the world

Turley Publications staff photo by Wyatt Aloisio  
**(From left) Pathfinder HVAC instructor Marius Zielinski; sophomore HVAC student Nathan Kendall; HVAC instructor Schley Warren; and Mount Tom Amateur Repeater Association Club board members Sue and Al Grimaldi and Harold Woering pose with a radio antenna.**

teur radio. The school is enrolled as one of dozens from across the globe participating

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in the Amateur Radio on the International Space Station program, an initiative that encourages student interest in space, science, engineering and other technology careers through radio building and operating.

"It's a really just amazing thing for young students to have the opportunity to learn," said Zielinski.

Also present were Warren, Pathfinder sophomore and Belchertown resident Nathan Kendall and representatives from the Mount Tom Amateur Repeater Association, including Board of Directors member Al Grimaldi, President Sue Grimaldi, and secretary Harold Woering.

At the center of the room they were standing in recently was a radio array constructed by several staff and students using a commercial antenna, a re-purposed and modified speaker tri-pod, and a milled base allowing the antenna to move and swivel.

Just two weeks before, Zielinski and the rest of the Pathfinder faculty received notice from ARISS that the school had been selected as one of 13 finalists from across the country, from 25 original applying schools and groups, who would be allowed to participate in phase two of this year's program. They will have the chance to move one step closer to speaking with astronauts aboard the ISS.

Should they make it to the final stage of the deliberation process, the school will be granted a brief window of time on a select date where they will be allowed to transmit and connect their radio on the ground with the radio located aboard the space station and ask astronauts sev-

eral questions of their choosing live.

But connecting a radio array on the ground to an object moving through space at 18,000 miles per hour is no easy feat, which is why Zielinski said the school will be required to submit a comprehensive equipment and technology plan detailing just what kind of capabilities their array will have and if it can make the cut.

"We're hoping to get the other departments, electronics, machine, other shops not just our own involved and really make it something for the whole school to be a part of and not just one shop and a few students," said Zielinski.

The final array will according to Zielinski likely be over 12 to 14 feet in length and controlled through the use of a computer program that will help to adjust factors including the array's elevation and movement.

The new set-up will likely be positioned on the roof of the school, a much different set up than the current array which can be used to transmit radio signals off of orbiting satellites and to speak with individuals located from as far away as Florida.

Should they be selected to move forward in the competition the school will likely be slated to contact the space station in the later half of 2018.

"I think that what is most appealing about amateur radio is that it is such a broad field that has so many different possibilities that come with it," said Zielinski.

ARISS's primary goal is to help foster an appreciation in science, technology, engineering, and math with students and to involve them in areas related to space exploration, ra-



Turley Publications staff photo by Wyatt Aloisio  
**Marius Zielinski and student Nathan Kendall demonstrate the technological capabilities of radios using only electronic waves emitted from the radio to cause a nearby bulb to light up.**

dio, and communications.

Through his own interactions in working in amateur radio broadcasting and in meeting with another MTARA member Gary Thomas, Zielinski said that he became aware of the ARISS program and set up the school to take part.

"It seemed like a really great opportunity to give kids a chance to learn and experience more about HAM radio," said Zielinski.

Although they were denied for last year's application Warren said that getting turned down served as a good learning experience for what needed to be done differently. He said both he and Zielinski have learned more about the field including taking part in workshops and training hosted through the National Association

for Amateur Radio.

Students from various programs throughout the school also began contributing in various ways to help and learn more about the project.

Kendall was among those students who took part and said that since beginning the project he has become enamored by HAM radios and hopes to seek out a federal Amateur Radio Technical Certification to begin constructing and array of his own and broadcasting.

"I started just looking at the equipment one day and got interested in it," said Kendall who said Zielinski began to walk him through the many capabilities of HAM radios.

"It's interesting to me to see how you can communicate with people who are so far away all while using

so little energy," said Kendall.

"A lot of people have been very supportive of the project overall," said Warren. "It takes a whole team of people to make something like this happen."

Warren and Zielinski said they hope that the project will foster a growing interest at the school. Warren remarked that with the recent efforts to return to space in the national spotlight, he hopes it will ultimately encourage students to consider entering into space related fields following their graduation.

Thomas and his fellow members of the MTARA also helped in numerous ways such as donating needed equipments and helping guide Zielinski and Warren with setting up and broadcasting properly.

"We knew right away after Marius approached us about it that it was definitely something that we wanted to be a part of," said Sue Grimaldi.

Al Grimaldi said that one of the most attractive aspects of involving students in HAM radio operations is not only the exposure of teaching them communications technology that can lend itself in emergencies but also the volunteer aspect since all ama-

teur radio operations are considered to be non-profit.

Al noted how during the June 1, 2011 the club's efforts helped in communicating with emergency services and tracking the path of the tornado's damage. They were also able to provide coverage for events including local parades and other community gatherings.

Woering, who has had the opportunity to speak with astronauts aboard the station in the past, said he is excited to see the renewed interest in space that comes with the project.

"I'm here to give 100 percent of my efforts where they are needed," said Woering.

"The really exciting part is seeing people get involved that normally wouldn't," said Sue. "It's certainly not something that will stay just in the school. It will definitely grow to the rest of the community as well."

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