ARISS Scores an A+ at Midvalley Elementary

A dedicated principal and an enthusiastic teacher spark a fire of interest in ham radio.

Rosalie White, K1STO

Jacee and Nikole enjoyed hands-on classroom activities related to ARISS. Teacher Dave Bettinson, KE7LMH, says that students continue to be excited about ARISS and technology they used to take for granted.

Carla Burningham, principal of Midvalley Elementary School in Midvale, Utah, is known in ham circles as KC7HON. Her school serves about 540 students from kindergarten through sixth grade. She had thought about ARISS (Amateur Radio on the International Space Station) learning activities for her students, explaining, "Having ARISS education in my school was important to me because it would bring real-life science into the students' daily lives. It would be an opportunity to inspire young minds to study hard, especially in the subject areas of science and math."

When Carla was Assistant Principal at Midvale (not Midvalley) Elementary she tried to get the sixth grade teachers interested in ARISS. They were, but backed out because of other curriculum projects. Carla was transferred to Midvalley as principal in June of 2005. In 2007 David Bettinson, KE7LMH, entered the picture as one of Carla's teachers. She recalls asking Dave, "How hard would I have to twist your arm to try to get ARISS at Midvalley?" His response: "Not hard at all."

Lighting the Fire

At about that time, the ARISS team thought it would be great to whet the interest of schools in states that had not yet applied for an ARISS learning event. ARRL section managers in those states got phone calls, one being Mel Parkes, NM7P, of Utah. Mel spoke to Carla about the Utah Amateur Radio Club's (**www.xmission.com/~uarc**) interest in helping a school support an ARISS contact. That just added fuel to Carla's fire.

Next came a meeting with Mel, Carla and Dave. The latter had begun reviewing Education & Technology Program materials on the ARRL Web pages (**www.arrl.org/education-technology-program**). As Carla and Dave finalized their ARISS school application in March 2008, Mel mentioned the ARRL Teachers Institute professional development workshop (**www.arrl.org/teachers-institute-on-wireless-technology**) and Dave decided to apply. He was selected and attended that summer, and after returning home, added some of the activities to his sixth grade curriculum.

ARISS Education

Carla explained: "Dave spearheaded the educational part of ARISS at Midvalley." That fall, he focused on the radio wave portion of the electromagnetic spectrum with each of the sixth grade science classes.

David reports: "That piece of the curriculum gave me the opportunity to address with students the science of radio and radio wave propagation. We reviewed some of the basic electricity concepts the students learned in fifth grade. Then we moved through the broader concepts of wireless communication. I used some lesson plans derived from my experience at Teachers Institute plus other educational resources from ARRL and AMSAT."

On December 2, 2009, the Midvalley Elementary School ARISS contact was an exciting success. The contact was between NA1SS and W7SP (the UARC's club call) and began at 1613 UTC, lasting for approximately 9 minutes and 30 seconds. Students interviewed Astronaut Jeffrey Williams, KD5TVQ. Here is a small sampling of the questions students asked:

- How do you decide which experiments to take into space and which is the most important one onboard ISS?
- What do you do to get ready for a spacewalk and how long does it take?
- How do you get cold, warm or hot water up there to take showers?
- What does your spacesuit do for you and what would happen without it?

Dave reports, "We focused on, and feel we achieved, the fulfillment of the following

Anna, Nikole and Jacee were keen on earning about wireless control and robots.

Jaycee and Shayla learned "fun serious stuff" — the electromagnetic spectrum, radio waves and propagation were folded into their science curriculum.

objectives in the Utah State Core Curriculum:

"1) Manifest Scientific Attitudes and Interests

"2) Understand Science Concepts and Principles

"3) Demonstrate Awareness of Social and Historical Aspects of Science

"4) Understand the Nature of Science

"For years I have enriched my space-related curriculum with NASA materials and resources pulled from their workshops. I shared those materials with other teachers in the school as well. As part of our ARISS contact, I emphasized the technology and history related to the International Space Station, as well as the subjects of microgravity and physiology in space. I will use these as a springboard for additional in-depth exploration throughout the rest of the school year."

And the Winner Is…

Carla reported: "Student interest in science and Amateur Radio has accelerated." Dave explained further: "The students continue to be excited about the ARISS events and continue to show increased interest and motivation in science and the technology topics they generally take for granted. I field questions on almost a daily basis about Amateur Radio and look forward to moving ahead with our plans to make it not only a regular addition to the sixth grade curriculum, but providing an enrichment experience for other interested students.

"The students who participated in this event recognize the significance of what we did, and it has piqued their interest in our science curriculum, especially as it relates to space. Our challenge will be to keep those fires burning and to ignite others. I intend to use this experience and the recorded experiences of other schools to keep the interest up."

Beyond Midvalley

Other schools watched Midvalley Elementary School's ARISS experience. The Canyons School District Technology Department Webcast the event throughout the entire school district. Carla provided neighboring school districts with the information they needed to connect their students to the Webcast. Some of these schools have started expressing interest in ARISS. Dave reported that UStream (**www.ustream.tv/recorded/2693694**) and YouTube videos of the event are available. [The ARISS contact can be seen at **www.youtube.com/watch?v=0wE2EAirEX4** and an interview with Dave Bettinson, KE7LMH, can be seen at **www.youtube.com/watch?v=0kZNPM-vdrw&feature=related** — *Ed.*]

Local hams put together the Amateur Radio station for the ARISS contact. Carla thanked Randy Kohlwey, WI7P, as the key to success with the ARISS contact due to his expertise in satellite communications. She said, "Randy was definitely the brain behind us. He pulled in Steve Olsen, AE7AC, an engineer who provided us with our assembly and testing facility. They put together a successful ham station." Dave said, "We learned a great deal under Randy's tutelage, and Steve was an immense help."

Carla noted that the whole community showed great interest: "The school district superintendent spent the day of the ARISS contact at Midvalley along with other school board members and district directors. The two major Salt Lake City newspapers, the *Salt Lake Tribune* and the *Deseret Morning News* reported stories, as did ABC, Fox and the community newspaper."

"This has been a fantastic event that will reap rewards in science interest for years to come."

Midvalley Elementary School Principal Carla Burningham, KC7HON, brought ARISS to her school to inspire students to study science and math. These sixth graders were anxious to implement what they learned.

Julian, Landon and Preston experiment with modeling. Teacher Dave Bettinson, KE7LMH, used lesson material from NASA, ARRL and AMSAT in his classes during the school year.

Lexi's and Maddie's interest in technology resulted from Principal Burningham's dream. She and teacher Dave Bettinson intend to make Amateur Radio and technology not only a regular part of the sixth grade curriculum, but also an enrichment class with a ham station.

What's Up Next

Dave and Carla have discussed establishing a class as an extension/enrichment activity in the school. Dave wrote: "With Carla's background in Amateur Radio, and my relatively recent entry into Amateur Radio, we have the ability to set up a class with the support of the Utah Amateur Radio Club. We have begun to assemble some of the equipment necessary to set up a station at school. The experts who assisted us with equipment for the ARISS activities have expressed their willingness to assist. This was one of our desires from when our interest first began in ARISS."

Carla's sentiments are as follows: "The ARISS activities brought us a most exciting time and experience! During the contact people in the audience were crying tears of joy. This was the highlight of my 29 year career in education. It inspired many students. We appreciated ARRL's encouragement to Mel, his to us and to dozens of area hams."

Dave added: "We certainly appreciate your assistance and that of the entire ARISS organization. This has been a fantastic event that will reap rewards in science interest for years to come."

In July 2010 Dave participated in ARRL's TI-2 on "Space in the Classroom" where he received the equipment and the training to make Amateur Radio contacts with satellites from the classroom. More exciting learning opportunities will be coming for Midvalley students!

Photos by David Bettinson, KE7LMH.

Rosalie White, K1STO, an ARRL Life member, was Field and Educational Services Manager at ARRL headquarters for 24 years before leaving in 2005 for her native Indiana where she was first licensed in 1970 as WN9FJT. Currently, she is ARISS-International Secretary-Treasurer and one of two ARISS US Delegates. She consults for ARRL as its ARISS Program Manager and shepherds authors through electronic self-publishing at Author Solutions Inc, in Bloomington, Indiana. She enjoys contesting and can be reached at **rwhite@arrl.org**.

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