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Integrating Ham Radio in the Classroom

Amateur radio is very popular among many adults and now is gaining popularity among kids, even as young as elementary age. Hams are known for their eagerness to share their knowledge and introduce others to this great hobby, and bringing radio to the classroom is yet another example of their outreach efforts. The American Radio Relay League (ARRL), The Radio Amateur Satellite Corporation (AMSAT), and other organizations are making it possible for teachers to integrate Ham Radio into classroom instruction in fun and meaningful ways.

Use of amateur radio in the classroom really changed in 2000 with the flight of the space shuttle Atlantis on STS-106. During this mission, the crew transferred the initial radio equipment to the space station. The Amateur Radio on International Space Station (ARISS) was formed to build and operate the equipment. This is truly an international organization with hardware donated by the ARRL and AMSAT in the U.S., training from Russians, Italian supplied antennas, and German supplied repeaters. Most importantly to educators though, is the prospect of bringing a little bit of space into the classroom walls through this program.

ISS013-E-38321 (17 June 2006) --- Astronaut Jeffrey N. Williams, uses the amateur radio system in the Zarya functional cargo block to talk with school children during an Amateur Radio on the International Space Station (ARISS) contact. Two amateur radio stations are currently installed on the station. http://spaceflight.nasa.gov/gallery/images/station/crew-13/html/iss013e38321.html

The ARISS program gives educators the ability to make contact with the space station in a classroom setting. Schools must apply in advance to give their students the opportunity to chat with astronauts aboard the station and ask them questions. Communications with the space station may be in voice, packet, or television, but most of the scheduled sessions with schools are voice. Applicants must submit ways they will integrate the contact into the curriculum and involve as many grade levels as possible as well as how they plan to get as much media coverage as possible.

Even without a scheduled QSO with the station, however, schools can always listen in. Many school clubs like to monitor where the station is going to be and get practice using their equipment to try to make contacts. The Goddard Amateur Radio Club and some VHF and UHF repeater groups, will often re-transmit planned conversations with schools so amateurs and students from other schools can hear the astronauts and other ARISS activities.

In 2000, the ARRL founded the Education & Technology Program (ETP) to help bring Amateur Radio to the classroom, and to help improve education by providing teachers with resources to bring wireless technology experiences to their students. The ETP, now

known as “The Big Project”, brings together schools, teachers, and ham mentors to help provide an integrated curriculum, prepare students for a future in technological fields, and grow the Amateur Radio community.

Schools that participate in the project receive the *Classroom Bookshelf*, which is a collection of ARRL publications that can be used for instruction. Qualifying schools also receive a complete Amateur Radio Station. While these are free resources for schools that qualify, there are also resources on the web available to all classroom teachers. *The On-Line Scrapbook* and *Radio Lab Handbook* have information on everything from grants and scholarships to setting up a school station, as well as lesson plans and activities. For teachers who are already involved in using Amateur Radio in their classroom, the program offers progress grants of up to $500 for upkeep and maintenance on the school station.

Katie, KD7NPN, a sixth grader at Franklin Elementary School in Kirkland, Washington, has her Technician License. http://www.arrl.org/FandES/tbp/

So far, more than two hundred schools have participated in the ‘Big Project’ and have used the materials in a variety of ways. Some schools implement it as a full-curriculum course for credit. Others use it as in-school or after-school enrichment. It is expected that qualifying schools use Amateur Radio within the school in some capacity, either as enrichment, curriculum, or a club activity. It is recommended that schools build partnerships with local ham volunteers and other organizations dealing with wireless technology to provide guest speakers and field trips, seek funding for ongoing support, and to provide technical assistance. Teachers are expected to use hands-on experiments as part of the curriculum and have a great deal of support for that with the provided materials.

While these programs are wonderful resources, many schools have been able to incorporate ham radio into their curriculums without extensive grant writing and proposals. School ham clubs have become very popular, especially at the intermediate level. The Clear Lake Amateur Radio Club (CLARC) sponsors an intermediate school ham club in Clear Creek ISD. The school offers a nine-week course on ham radio and the club meets after school weekly. Most of the students in this club have their technician license, which they earned through a class taught by their sponsor.

School clubs often participate in public service events, and various contests that allow them to both practice their skills and chat with other hams. One of these contests for school clubs is School Club Roundup. This is a contest in which clubs work to make as many contacts as they can. This year, the 20th annual event, saw seventy two entries. In

fact, the event has become so popular that an annual event is no longer enough and this year, there will be a fall event in addition to the spring. When there is not an event to participate in, schools make contacts during their club meetings to 'rag chew'. Collecting QSL cards from contacts made around the world is both exciting to kids and gives them the opportunity to learn about other places and cultures, not to mention a meaningful geography lesson. Of course, there is always the added bonus of students learning about electronics and wireless communication in the process.

There is definitely a place for ham radio in schools. Opportunities range in level of commitment of time and resources but there is something for everyone. Many schools take it slow and simply have volunteers from local ham clubs come in to do demonstrations for the kids and even give them the opportunity to talk on the air. Some teachers may focus on ham radio as part of a unit on disasters, to better understand the role of the radio in times of communication crisis. Others may take advantage of the many possibilities for teaching electronics in a real-world context. Regardless of how it is integrated, ham radio activities can really engage students and provide them with rich educational experiences. Through these experiences, many students are inspired to become active in amateur radio themselves, which benefits them as well as the community.

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