By Jerry Hill, KH6HU

Amateur Radio—A Powerful Voice in Education

ARRL members have contributed more than $205,000 to fund the Amateur Radio Education & Technology Program to inspire a new generation of radio amateurs.

The Education & Technology Program was born in 2000 as means to use Amateur Radio to meet two of America's challenges: (1) to improve the educational experience by enticing students to greater participation in science, math, language arts and social studies, and (2) to create a skilled technological workforce for the future. Of course, another goal of the program is to ensure the growth of Amateur Radio by introducing the service and its traditions to a new generation.

The goal is to have 300 schools participating in the program by 2006. This is a $1,000,000 multiphase program based on partnerships between educators and radio amateurs as mentors in classrooms, enrichment programs and after-school activities. Major contributions totaling nearly $140,000 in 2000 and 2001 from a few extraordinary individuals also helped make this dream a reality: The Brandenburg Life Foundation; Kay Craigie, WT3P; Carter Craigie, N3AO; Walter Craigie; Jim Dicso, K2SZ; Bob Heil, K9EID (of Heil Sound); Robert Lees, W3ZQN; Robert Schuetz, W2BDG, and seed grants from the ARRL Foundation and the Gryphon Fund. In 2002, nearly 3500 ARRL members have contributed more than $205,000 to the program, bringing the total funding to $345,000.

How Does the Program Work?

The Amateur Radio Education & Technology Program is composed of a powerful partnership of schools, educators and ham mentors who bring Amateur Radio to life in middle schools in a variety of educational scenarios. This is done *at no cost to the teachers*.

The ARRL designed the six vital components:

• *Outreach* to the educational commu-nity. This involves introducing teachers to the Amateur Radio Education & Technology Program through educational conferences such as those sponsored by the National Science Teachers Association (NSTA), National Council of Teachers of Mathematics (NCTM) and the International Technology Education Association (ITEA). Outreach also involves local volunteers presenting information at local, state and regional educational conferences.

• The *Classroom Bookshelf*, a resource library, includes 18 selected ARRL publications to assist teachers in providing information to their students. It includes technical manuals, educational materials, licensing manuals and a novel about Amateur Radio adventures for young people. To encourage the formation of a partnership between the schools and a local Amateur Radio club, we ask a local clubs to purchase the classroom bookshelf for the schools. The books are discounted so the school receives over $300 worth of materials for a flat cost to the club of $200.

• The *On-Line Sourcebook* is a Web site with information and ideas valuable to teachers and others interested in working with youth. On the Web site, teachers will find educational materials and activities, ideas for recruiting youth, information on grants, scholarships, awards and certificates. They will also find information on registering their school to talk to the astronauts on the International Space Station. The information is organized and presented on the ARRLWeb (**www.arrl.org/ead** and **www.arrl.org/FandES/ead/teacher**), so teachers and others who work with young people can access it at no cost.

• *Progress Grants*, with a limit of $500 are made available to schools already offering Amateur Radio to their students. The purpose of the Progress Grant is to give financial assistance to teachers for upkeep and maintenance of their school station, upgrading software or for purchasing various supplies and consumables that often become out-of-pocket expenses for teachers.

• The *Radio Lab Handbook* is a practical handbook for classroom teachers that acts as a guide for bringing Amateur Radio and/or shortwave listening into their students' experience. In an easily updateable format, the *Radio Lab Handbook* includes information, guidelines, resources and a middle school level curriculum with text, lesson plans and activities. It also includes information on safety, suggestions for laying out a school station and suggested adaptations for students with physical disabilities. This handbook was developed by a group of teachers from around the US.

• With the *Stations In Schools* component the ARRL is not just talking the talk, but walking the walk. As part of the Education & Technology Program, each Pilot School receives a complete Amateur Radio station, including transceiver, power supply, antenna, coax and connectors—*at no cost to the school*.
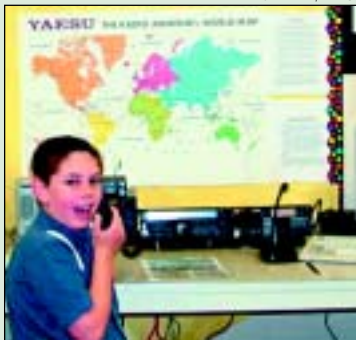
Amateur Radio Education & Technology Program in Full Swing

Iowa Street School
Fallbrook, California
Teacher: Phil Leonelli, WF6L

The ARRL Amateur Radio Education & Technology Program has literally opened up a "new world" for my students and me. Iowa Street School's selection as a pilot school has not only allowed us to achieve our goal of starting a ham radio club but exceed it! We have received a tremendous amount of support from our school population (including our Fallbrook Union Elementary School District Office that had our two 36 foot masts installed), the Fallbrook Amateur Radio Club and the Palomar Amateur Radio Club. The "Earth" station that was sent from the ARRL really excited our students. They love to "show off" what they know about our new antennas.

Iowa Street School provides a ham radio enrichment program for home school students.

DeGolyer Elementary School, *Dallas, Texas,*
Teacher: Sanlyn Kent, KD5LXO

At DeGolyer we had a "ham" burger cookout to kick off the second phase of our program. We now have over 30 licensed hams (two teachers, three parents and the rest students) and our goal this year is to explore all the different ways we can use and enjoy ham radio. Among our plans, a DX overnight in the school gym, a trip to the IMAX theater to see the movie *Space Station*, hopefully a contact with the ISS, a tour of Channel 4 given by the weather man (who is also a new ham), and a session to design and print everyone's individual QSL cards. Most of our students have ICOM handhelds with 2-meter antennas installed on their roof, and we are in the process of getting our own repeater so we can have our own net twice a week without bothering the old hams. Also we plan to help out the experienced hams on some of the marathons this year. Oh, and the students are dying to start organizing our own fox hunts.

DeGolyer student and Amateur Radio club member Nick, KD5OJB, at the microphone of the newly equipped K5DES.

Central Square Middle School
Central Square, New York
Teacher: Jim Kuhl, N2STK

Students at Central Square Middle School (CSMS) in Central Square, New York (packet station N2STK) recently exchanged call signs in a QSO with Martin, XE2ML, in Durango, Mexico using the digipeater aboard the International Space Station. The distance between the two stations is approximately 2095 miles! Mike and Amanda of CSMS (see photo) think that's pretty good range for VHF.

Central Square Middle School students worked the digipeater station on the International Space Station.

Richwood High School
Monroe, Louisiana
Teacher: Don Wheeler, KD5MWL

As a promoter of unique science projects, it was a great thrill and honor to become a part of the Amateur Radio Education & Technology Program family. Our equipment arrived only a few weeks before school ended; however, it did not stop the enthusiasm of the students. After a quick lesson on etiquette, a few students made their first 2-meter contact. What a thrill it was for all of us. This project has my utmost recommendation as a science tool. The program will positively touch many students in the years to come.

The latest activity for Richwood High School hams was participating in the SET exercises in Monroe, Louisiana this fall. As part of the school's radio club activities, students have become regular participants in the SKYWARN network in Monroe.

SKYWARN is an important part of Amateur Radio at Richwood High School. This year students participated in SET exercises.

Franklin Elementary School
Kirkland, Washington
Teacher: Dave Condon, KI7YP

Last year, we licensed over 30 students here at Franklin Elementary School. Many of our graduates have moved on to Rose Hill Junior High School, which also has an Amateur Radio station, including packet radio. This year we have 75, 4th graders under study. Thanks to AA7UJ's donated repeater, we now have our own repeater which will provide Seattle wide coverage for kids to use and will offer an open autopatch as well. The AA7UJ site will be a kids' radio site.

Franklin Elementary School has 75 fourth graders studying for their Technician licenses.

Once selected, schools were offered a series of equipment packages consisting of a transceiver, power supply, antennas, coax and even connectors. The schools were encouraged to choose the equipment package they feel would best help them meet their program objectives.

Where Do We Stand?

As mentioned above, there are 18 Pilot Schools and another 8 schools that have received Progress Grants, giving a total of 26 Amateur Radio Education & Technology Program schools. The first group of seven Pilot Schools received their equipment in January 2002. The second group of 11 Pilot Schools received their equipment in May, just before the end of the school year. Progress Grants were distributed at the same time, giving all the schools their materials in time to prepare for the 2002-2003 school year.

Where are the Amateur Radio Education & Technology Program Schools?

As you can see from the sidebars, the schools are well distributed throughout the country. These schools have already received a technical library, the draft curriculum and a complete Amateur Radio station. They are now providing instruction in wireless communication to their students.

Schools are using one of three delivery systems for the program: as a full curriculum, an in-school enrichment program or an after-school enrichment program. The schools are as diverse as the areas of the country in which they are located. They represent the full spectrum of social economic levels and cultures. Elementary, middle and high schools are participating in the project. Some are public, some are private, some are in cities, some in the suburbs and others, like Stenhekin School in Washington State, are in remote areas with no roads. The common thread that binds them together is the commitment to use Amateur Radio as an educational resource in their schools.

Some schools have been using Amateur Radio as an educational tool for years. For these schools the program offers assistance in the form of Progress Grants. These grants were used to upgrade equipment, maintain the schools existing equipment, purchase license manuals and other wireless communication publications, as well as to purchase coax and antennas.

How Do I Approach a School about Offering Amateur Radio?

Starting an Amateur Radio class or club at a school is usually not a top-down decision. It usually begins with a teacher within the school deciding to share his or her hobby with students. To succeed in convincing a school to implement an Amateur Radio program, find a local teacher and excite them about Amateur Radio. Share the joy—it's contagious!

Remember that the teachers do not have to be hams. Non-licensed teachers can offer Amateur Radio as an enrichment program. These enrichment programs can be offered during the school day by individual teachers or as an after-school program. This requires licensed volunteers from the community coming into the school several times per week to teach the class. A teacher within the school usually sponsors the program and supervises the volunteers. This is where a club can play a key role. You need your best members, your most articulate speakers, to make Amateur Radio come alive for the students.

What's Next?

Applications for new Amateur Radio Education & Technology Program schools for the initial phase of 2003 funding were submitted to the selection committee on November 1. The committee will make their selections and the schools will be notified in December, and by January there will be additional Pilot Schools to join the group. They will receive their equipment and be encouraged to join the activities already underway at the other Amateur Radio Education & Technology Program schools.

All participating schools will be testing the curriculum during the 2002-2003 school year. Through this process, teachers will be participating in the curriculum development by reviewing the text, lesson plans, activities and projects, making recommendation for change, deleting items and adding others. The final curriculum will be ready for distribution for the 2003-2004 school year to all participating schools and will also be posted on the ARRL Amateur Radio Education & Technology Program Web site **www.arrl.org/FandES/tbp**.

The ARRL would like to expand the program up to a total of 100 schools for the 2003-2004 school year. Mary Hobart, K1MMH, ARRL Chief Development Officer, has been working tirelessly, seeking ARRL member donations and foundation grants to fund this expansion. With additional funding, it is hoped to expand the Amateur Radio Education & Technology Program to 300 schools nationwide by the year 2006.

Still in its infancy, this program is a bold step forward with its goal of improving the quality of education by providing an educationally sound curriculum focused on wireless communications, emphasizing integration of technology, math, science, geography, writing, speaking and social responsibility within a global society.

The Amateur Radio Education & Technology Program will build a firm foundation for the future of Amateur Radio. By inspiring the next generation and helping to improve all aspects of education, Amateur Radio is making a significant and lasting impact.

Jerry Hill, KH6HU, came out of retirement from the Hawaii school system to help launch the Amateur Radio Education & Technology Program. He can be reached at **kh6hu@arrl.org**. *For information on how your school can become involved in The Big Project, go to* **www.arrl.org/FandES/tbp**.