



News Letter of the Retirees' School Volunteer Association, Incorporated

# 2008 RSVVA *News*

September 2008

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## **RSVA President's Message 2007/2008 School Year And Invitation to Annual Meeting**

**The Retirees School Volunteer Association (RSVA) is continually trying to expand our membership so that we can have a larger positive impact on the students in our local communities. In order to encourage more students, in particular females and minorities, to pursue technically oriented careers, we need more retirees helping in the schools. With their vast knowledge and depth of experience in science, math, and engineering, retirees are a valuable resource to be utilized to help show students how much fun science and math can be and the types of rewarding careers that are available in related fields.**

With that in mind, the RSVVA invites you to join us at our Annual Meeting on Wednesday October 15, 2008. The meeting is at Raytheon Global Headquarters, 870 Winter Street in Waltham, Massachusetts. The meeting runs from 2 to 4 PM and is followed by a wine and cheese social hour from 4 to 5 PM. You will hear stimulating speakers in the education field including nationally renowned Dr. Yvonne Spicer, who leads the Boston Science Museum's National Center for Technological Literacy (NCTL). You also will meet our members, learn more about what we do, and have a chance to see if you might be interested in getting involved.

If you think you may want to volunteer, getting started is very easy. We have training available plus help from all of our members. Normally you would start by accompanying one or two (we frequently work in pairs) of our members to their activity to see if you would like to do a similar thing. Our activities include aiding teachers with classroom instruction, helping with labs and demos, tutoring, mentoring after school science and math clubs, curriculum development, and working on various committees in the education community. Please visit our web site [www.rsva.org](http://www.rsva.org) and to learn more about specific activities involving our members, please see the town captain reports in this newsletter.

This past year our members have volunteered over 4,000 hours of their time and have impacted over 1,000 students in schools in Eastern Massachusetts. While we feel very good about these results, we would like to have more people involved so that we can help even more students. We are fortunate to have the continued support of Raytheon Company and also the help of an increasing number of active Raytheon employees donating their time to participate with us. This year we have also added several new members, including Rob Moolenbeek from Ashland, Marty Schecter from Holliston, and Mel Weinzimer from Framingham. We also continue to partner with various other organizations in the area that are involved with volunteering and/or math and science education.

Again, we always need new members in order to sustain our current efforts, to add more volunteers in schools we're already involved with, and to expand into other communities. Please come and join us at our Annual Meeting, learn how you can enhance your retirement, and help our young people enjoy their math and science education!

Rod Girard  
RSVA President

**Note: If you plan to attend the RSVVA Annual Meeting you must RSVP to Rod Girard, via e-mail at [adlermf@verizon.net](mailto:adlermf@verizon.net). You will find directions to Raytheon at end of this newsletter.**

## **Town Captains Report**

The following reports from the town captains highlight the activities of RSVA members during the school year 2007-2008.

### **Bolton**

#### **Bill Cridland reports:**

I continue teaching C and C++ at the Nashoba Regional High School. They added a new computer language section with two computers (Windows 98 and XP) and Microsoft Compilers Version 5.0 funded by RSVA. One student, suffering from an immune deficiency illness, is unable to attend class at school. Arrangements were made for him to complete the course via e-mail. Michelle Hoover, Director A.S.C Nashoba Regional High School also received e-mail copies. This outstanding student and his parents appreciate that he can continue with his studies. The 'First Robotics' group held the annual 'First Robotics Competition' in Boston and finished 14th. I have also put together a written Basic C++ Course that is made available to the students. Bolton volunteer, **Richard Perry**, has been assisting a business class teacher 2 days per week.

### **Framingham/Natick**

#### **Gerry Brody reports:**

Nine volunteers worked in the Framingham and Natick Public schools for the 2007/2008 school year; seven at two elementary and the three middle schools in Framingham and two in a Natick middle school. A tenth volunteer was a judge at the annual Fay School "Rube Goldberg" competition. And an eleventh was a mentor for the Mazie Foundation Program at Framingham High School. They contributed over 1,000 hours of service.

**Barry Altschul** worked his sixth consecutive year and reported, "I mentored the RAP version of FFSE (Fuller Future Scientists and Engineers) with Joanne Rogan at Fuller Middle School. Our projects were the FSEA catapult, FSEA gameboard, FSEA tower building, and FSEA ice cream. What made these sessions very special was the 100% non-Anglo club population. In spite of some communication problems (I speak pocito Espanol), the club members were amongst the most intelligent, industrious, and polite students I've had the honor of working with. They were

from the 6th, 7th and 8th grades. Club population averaged 10 members".

**Gerry Brody** worked at Fuller Middle School for the ninth consecutive year. As last year, he worked in the Title 1 math "help" classes for eight 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> grade students with Math Specialist Barbara Rappaport. He also worked at Cameron Middle School with Math Specialist Bill Paquette, where he supported Title 1 classes, the Math Club and the MATHCOUNTS team. On occasion he would mentor needy students in 6<sup>th</sup> and 7<sup>th</sup> grade math classes. He also was a scorer at the METROWEST regional MATHCOUNTS competition, along with a group of RSVA members and Raytheon volunteers (some repeaters from last year) and at the state MATHCOUNTS competition. He also mentored an after-school LEGO club at Hemenway elementary school where the students built solar powered cars and raced them. As town captain, he participated in a focus session held by SOAR 55 (Service Opportunities After Reaching 55) to discuss ways of recruiting retirees for volunteer activities at not-for-profit institutions and a planning meeting with the Cameron Middle School principal and two science teachers in preparation for the ELT (Extended Learning Time) program they expect to initiate next year. Retired engineers **Marty Schecter** and **Frank Elms** also attended and are planning to participate.

**Gene Brundage** continued his Math tutoring at Barbieri Elementary School. He tutored one Third grade student, five Fourth grade students and four Fifth grade students. **Malcom Greene** was a judge for the Rube Goldberg contest at the Fay School in Southboro. The teacher (organizer) was Chris Schoberl and the Chief Judge was Raymond Urtz. About 150 (middle school) kids participated in the contest.

**Karl Kelber** reported that the decision was made at Hemenway Elementary School to have all 4th graders concentrate on "test taking" in regular class study. However, there were two 4th grade students that were far ahead of the rest of the class and so he met with them for a half hour each week. "We worked on material they wouldn't see again for years, such as history and theory of numbers, numerical functions, probability,

geometry, multidimensional representation and algebraic solutions, all in an introductory way but deeper than I usually go in order to increase their appreciation of math and because I had the extra time". According to their comments, the material varied from "interesting" to "real cool".

**Dick Pabst** spent a couple of hours a day, 2 to 3 days a week at Natick's Kennedy Middle School in Barbara Kane's 7th Grade math classroom and has been available, with Barbara, for extra help after school, before tests or if requested. He's made the same offer to the other 5th-8th grade classes for which he substitute teaches - but no takers!

**Sorin Rosenberg** helped Tina Aguiar's ESL class at Fuller Middle School two to three times a week, most of the time with the same two students who needed individual and dedicated help. He also worked with other students, individually or in groups of two. In addition, he corrected several quizzes.

Sorin said, "I have enjoyed working with Tina and her students, and I am looking forward to next year. I am also ready to dedicate more hours and work with other teachers to help needy students."

**Ed Uftring** reported that it was another fun year at Fuller Middle School. He said, "working with Phil Reitz is a pleasure; he is terrific with the kids". The year was spent with a mixture of 6th, 7th, and 8th graders. They worked on mousetrap cars, Rube Goldberg machines and robotics. Ed had fun working directly with the kids, showing them how to use tools safely which for many was their first opportunity to work with both hand and power tools.

A half-hearted attempt was made to set up a project using mag-lev equipment that came from MassPEP. The biggest challenge was to set up the track "With luck, I can work it out with Phil and one of his smaller classes. One of the vehicles that I put together was to use sail power - perhaps next year".

**Ron Evett** spent another year mentoring a Framingham student under the Mazie Mentoring Program. His mentee graduated and Ron plans to

be matched with another mentee next year. Ron also tutored a Mazie mentee in chemistry and reviewed middle and high school math projects at events coordinated by Focus on Math at Boston University.

**Mel Weinzimer** was a mentor for the math club at Walsh Middle School in Framingham. He also helped coach their MathCounts team and was a scorer at the MetroWest regional competition. Mel, along with Barry Altschul, Ron Evett and Gerry Brody, were reviewers at the Metrowest Junior First LEGO League (JFFL) Expo, attended by 36 teams with up to six 6-9 year olds. Their challenge was to a) perform an energy audit of a room at school or home, b) build a LEGO model that shows where the energy comes from and how it gets to the end user, using at least one simple machine and c) present the model to a pair of reviewers with a "Show me" poster. This was the first large scale public JFFL Expo to be held in Massachusetts.

**Tom Toomey** volunteered at Natick's Kennedy Middle School: "My efforts were to mentor and provide a technical resource for programming and robot building, then assist with team competition strategy and rule interpretation The Robotic Club has 40 students that meet once a week from September through May. The Robotic Team has 15 members that meet two or three times a week from September through February. The team entered three competitions during the school year".

### **Hopedale**

#### **Allan Kent reports:**

I assisted Ms. Sandy D'Amico's four sections of 7th grade science classes one day per week. I gave a short lecture on the metric system of measurement to each class and prepared a classroom chart of things to look for on a utility pole. I accompanied Ms. D'Amico and other teachers with the students on a field trip to the EcoTerrium in Worcester. Occasionally, I also assisted Ms. Mary Adu-Gyamfi with her 10th grade chemistry classes and once assisted Ms. D'Amico with her 11th grade biology class.

Allan is also a recent graduate of the Northeastern University's RE-SEED (Retirees Enhancing

Science Education through Experiments and Demonstrations) program, which trains retiree volunteers for working with students in the physical sciences.

### **Hopkinton/Ashland/Holliston**

#### **Rod Girard reports:**

The Hopkinton/Holliston/Ashland group grew significantly this year, with the addition of two new members, **Marty Schecter** and **Rob Moolenbeek**, both recent “graduates” of the Northeastern University RE-SEED program.

This year we again held the after school science club for 6<sup>th</sup> grade students in Hopkinton. We had about 45 students, a number sufficient for 2 science clubs, but we run it as one club since we have 2 teachers and 3 volunteers. **Bill Howard** and **Joanne Grant** are the 6<sup>th</sup> grade science teachers involved, along with RSVA volunteers **Bill Greene** and **Rod Girard**. We welcome **Marty Schecter** to the group. The club called EUREKA meets once a week. Students chose the name in a prior year.

We model the club after the Future Scientists and Engineers of America (FSEA) clubs that we’ve guided in the past. Projects last for about 3 to 6 weeks each. Students work in teams of 2 or 3, and hold a competition at the end of the project time. Winning students are awarded 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> place ribbons, and sometimes special awards like best looking design, etc. This year we did about five projects, ranging from simple ones like Das Boat, where they design boats from aluminum foil sheets and load them with marbles until they sink, to more complicated ones like electronic game boards and land yachts. The electronic game board utilizes a LED, a battery, current limiting resistor, and wiring from a series of questions to an associated series of answers, which are in a different order than the questions. The object is to then use a probe to touch one of the questions and a second probe to touch the selected answer. The LED lights if the correct answer is selected. The land yacht uses a block of wood with 2 axles and 4 wheels. The mast is a wooden dowel, and the sail is made from aluminum foil. A large floor fan is then used for wind to power the yachts, and the competition is to see whose yacht goes the

farthest. The last project of the year was Water Bottle Rockets. The students make these from 2-liter plastic soda bottles and design and attach the nose cone and fins. They are powered by compressed air supplied via a floor model bicycle pump, and the rockets are partially filled with water to slow down the release of the air pressure to give the rocket some sustainable thrust. Some of the designs attain heights of about 200-250 feet. This is always a great fun project to end the year, with the outdoor activity a good energy release for 45 sixth graders.

The students learn about the engineering process, i.e., teamwork, contributing ideas, taking data, interpreting results, analyzing failures, reworking to correct problems, and also learn some scientific principles. As a bonus they also learn that science can be a lot of fun.

Besides helping with the EUREKA science club in Hopkinton, Marty mentored a math club in Millis, which had a team entered in the MathCounts competition. Marty has also met with some Holliston school personnel to explore what volunteer help they might be interested in for next year. Our second new member, **Rob Moolenbeek** has been working with sixth through eighth grade students in a robotics club in Ashland, as well as helping four eighth grade science classes with their experiments.

**Bill Greene** from Milford, in addition to his activities in the Hopkinton science club, mentored students in Westborough in a Lego Robotics competitive program. He has also been working with fourth grade students in Ashland to get a robotics program going.

#### **Lawrence**

Last March, **Jim Ross** was honored with the Essex County Anti-Crime Council Good Citizens award. He was pro active and originated several programs towards reducing Lawrence’s crime rate. In the past he volunteered three days per week “enhancing science education through experiments and demonstration” and produced videos on several subjects for the town local media channel. These videos may also be borrowed from RSVA.

## Lexington/Boston

### Mike Adler reports:

I continue to assist in the science classroom one day a week at the James P. Timilty Middle School in Roxbury. This past year I worked with Ms Penchos' 8<sup>th</sup> grade classes, completing a three-year cycle, 6<sup>th</sup> through 8<sup>th</sup> grade. Many of the students were the same as in the previous years and this afforded me the opportunity to see the students mature physically, behaviorally and in learning. Although not members of RSVA, there are four other RE-SEED trained retirees at the school assisting in other classrooms. Next year, with an additional volunteer, every science class will have a volunteer. The school, through the efforts of the MGH liaison and volunteer coordinator Ms Bergland, very enthusiastically supports the volunteer program.

The 8<sup>th</sup> grade curriculum included chemical interactions, planetary science, populations and ecosystems and genetics. I helped with class instruction, assisted students with lab investigations and mentored individuals. I also performed additional demonstrations to amplify principles covered such as mixing different quantities of fluids at different temperatures, and density and specific heat to show calories gained and lost in the heat exchange. In a popular demonstration, illustrating phase change and pressure, a small amount of water in a soda can was heated to the boiling point to fill the can with steam and then immersed in ice water. The resulting implosion impressed the students. I helped students with their science fair projects. Four students advanced to the state science fair competition. I was also a judge at the Timilty School's science fair and again at the citywide Boston science fair competition. In June, I accompanied two classes on a field trip to the Deer Island Water Treatment Plant where, besides touring the plant, the students performed water quality testing of treated water (see photo). Next year, I will again volunteer at the Timilty School in the sixth grade.



As part of planetary science, students created impact craters by dropping marbles from increasing heights into flour covered with a dusting of cocoa. The greater the impact energy, the longer the emanating rays of flour (ejecta) and the greater the size of the hole created.



Testing treated sewage water at Deer Island

**Charlie Martin** and I are currently members of the Lexington K-12 Science and Technology/Engineering (STE) Curriculum Review Committee with the aim of providing curriculum recommendations based on National and Commonwealth of Massachusetts STE Frameworks and the introduction of STE MCAS testing. We participated in several all day working sessions and trip to the Science Museum, which is also heavily involved in STEM curriculum guidance and development. They have developed several teaching modules particularly aimed at K-5 classes. In June an interim report with preliminary recommendations was presented to the Superintendent, Dr. Ash and the Lexington School Committee.

## Marlborough

**Baha Javid**, town captain for Marlborough, coordinated report inputs from several volunteers for.

**Jon Roberts:** This year we all had to cope with

the changes in teachers leading the Mentorship program. In spite of the shifts in directions, a number of excellent activities were offered. Two snap-in electronic circuit kits were used to explore radios, motors, sound-effect devices and more. Some groups studied Ohm's Law and found the characteristic curve of a light-emitting diode. Everyone had fun with the propeller blade made to fly up off a spinning motor. Toward the end of the session, some students began to experiment with TruBasic programming language.

**Tom Gluszcak:** The Marlboro School System set up a new math program called Math Lab. In this program, one teacher spends one class session a week reviewing math topics in a "lab" type environment with 4-5 working □ groups of 4-5 students each. It is an ideal environment for getting volunteers face-to-face with the kids to help them with solving problems. The classes are at the Middle School level. Math Lab was introduced as an experiment. Three volunteers joined some of the □ classes usually with one volunteer per class. In one case, a particular class needed "reinforcements" and two volunteers were in that class. In this class environment the role of the volunteers was very helpful. Unfortunately for reasons beyond the volunteer's control, the Math Lab □ program will not continue into the next school year. □ □

□ **Mort Levin** helped 6th graders with several experiments:

*Pendulum* - The experiment began by releasing two different weights from equal heights at the same time. Because they simultaneously hit the floor, the students learned that the acceleration of gravity is independent of weight. Thus, they were able to explain why weight has no effect on the period of the pendulum. A change in string length causes the pendulum weight to fall through a different height and results in different times for reaching the bottom of the swing. This means that the pendulum period will be a function of string length. Their experiments demonstrated this.

*Conservation of Energy Potential equals Kinetic Energy* - A toy car was released from the top of a ramp. Time to the bottom was measured with an electronic timer. The time and the ramp length

allowed the velocity at the bottom to be calculated. The ramp height and the car weight determined the potential energy. The bottom velocity and car weight allowed the calculation of the kinetic energy. There was a loss of energy. Discussion described the friction sources that caused the inequality between the two energies.

*Kinetic to Potential Energy* - The experiment utilized a ballistic pendulum that consisted of a spring-actuated marble, a catcher and a pointer that measured the height of the marble and catcher. Marble weight and final height were used to calculate the potential energy of the marble. Assuming little loss of energy, the potential of the marble equals the kinetic energy at marble release. The marble velocity could then be calculated. □ The bridge experiment and learning Basic were not done this year. □ □ □ □

**Merle Dence** again assisted 7<sup>th</sup> grade students build and program LEGO robots. They start in September taking apart last year's robots and sorting the parts into individual kits. This activity familiarizes the students with the individual parts and gives them an appreciation of just how complex a robot can be. After learning to build a ROVERBOT, they then follow a tutorial that works them towards programming them. The software programs evolve from instructing the robots to go a planned distance in a certain amount of time, to learning how to avoid obstacles using touch and infrared sensors. The final programming challenge is to enable the robots to navigate a complex maze. This ends the structured portion of the workshop.

The next phase is building an elective robot. Usually the student teams choose to build SUMOBOTS. As the name implies, the bots challenge each other and attempt to push an opponent out of a circle. If you are pushed out you loose. As you can imagine this is a really fun and spirited activity. This challenging phase usually lasts to the end of the school year.

Some students choose to build an ACROBOT that can perform tricks such as spins, whirls, and even flips. This can be a pretty spectacular show. From sorting LEGOS at the beginning of the year to the contests at the end is a wonderful learning

experience for the students, and also for the volunteers.

We also helped the 6<sup>th</sup> graders learn about pendulums, the metric weight system using balance scales, and about the laws of motion and kinetic energy by building roller coasters. In the next unit they learned about structural engineering by building various bridges using paper as the construction material. They tested their bridges' strength by loading the roadbed with weights to a deflection of ½ inch and measuring the weights on a balance scale. There was a contest between teams that showed weight carrying capability from 70-80 grams, to a whopping 350 grams. This was done on a span of two feet on a bridge built entirely of paper.

We added a program that allows students to build electronic devices using a building block process. The students can choose to build a wide range of projects from simple sirens to am/fm radios. They learn a great deal of basic electronic theory and the functions of resistors, capacitors, coils, and speakers/microphones, all the way to various integrated circuits. The kits allow building over two hundred projects. It was wildly popular.

It was very gratifying to witness the excitement of learning and the remarkable progress of these students!

### **Stow**

**RSVA** received a thank you letter from Stow's Destination Imagination (DI) team for RSVA's contribution that in part enabled them to participate in the Global Finals in Knoxville TN. They placed 9<sup>th</sup> out of 72 teams.

### **Sudbury**

#### **Milton Jones reports:**

Science Olympiad (SO) is a state-level interscholastic competition designed to increase student interest and enthusiasm in science in middle schools. The SO tournaments consist of 20-25 individual and team events that cover Technology and Engineering, Earth and Space Science, Physical Science and Chemistry, Life/Social Science and Inquiry and Nature of Science. SO events challenge and motivate

students from different ability levels to prepare for the competition at the state and national levels during the school year. The emphasis is on participation, interaction, learning, having fun, and developing team spirit. Raytheon retirees **David Carey, Dick French, Ron Riggert** and others have been coaching students in Sudbury for a number of years. The Sudbury (Ephraim Curtis) Middle School won 2<sup>nd</sup> place at the state tournament on 3/15/08. You can see their robots in action at:

<https://home.comcast.net/~richard.d.french/RoboCrossState2008m.wmv>

SO is an after school activity usually from October to March with 2-hour practice sessions on a weekday afternoon through December when practice is expanded to include Saturday morning sessions also of 2 hours duration. There are some 30-odd students who comprise a Varsity and a .JV team. All students participate voluntarily. They are eager to learn and a pleasure to coach.



**Retirees School Volunteer Association, Inc.**

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### **Directions to Raytheon Company, 870 Winter Street, Waltham, MA**

*From the East (Boston and Logan Airport) or West (Worcester):*

From the Mass. Pike, exit at the 1-95/128 interchange after the tollbooth, and follow the signs for 1-95/128 north. Follow 95/128 North for approximately 2 miles to Exit 27B (Wyman Street/Winter Street). At the lights, turn right onto Wyman Street. Remain in the right lane and bear right at the yield sign onto Winter Street. Remain in the right lane and cross back over Route 128. (Continue with "Directions for All" below.)

*From the North (Burlington/Lexington) or South (Dedham/Newton):*

Take Route 128/1-95 to Exit 27B (Winter Street). When coming off the exit, stay in the far right lane and follow Winter Street. (Continue with "Directions for All" below.)

*Directions for All:*

Remain in the far right lane through two sets of lights, passing the Doubletree Hotel on your left. Travel around the Cambridge Reservoir (on right) for approximately 0.5 mile (pass AstraZeneca on left). Turn left at the granite sign announcing HealthPoint and Waltham Woods Corporate Center. Travel up the hill approximately 0.3 mile to a second granite sign for Waltham Woods (860-890 Winter Street) on the left. Follow the road sharply to the right passing the Massachusetts Medical Society on left (860 Winter Street). Continue approximately 0.2 mile. Green signs with arrows announce the Raytheon entrance on your left.