Genetics, Evolution, the Latest Scary Virus. These Volunteers Bring Real Life Science to the Classroom

Alan Rubin, a retired nuclear engineer who volunteers in Montgomery County, Md., classrooms, works with an eighth-grade class at Farquhar Middle School in Olney. (Courtesy of AAAS STEM Volunteer Program)

By Donna St. George, Education Reporter: Washington Post, Metro Section, August 19, 2016

Shortly after the start of the school year, Gary Temple will be back in a Maryland classroom to help students get excited about science and unravel the mysteries of topics such as genetics, evolution and the latest scary virus.

But it’s not because he’s a teacher. Temple is a scientist who was once a program director at the National Human Genome Research Institute, part of the National Institutes of Health. Now retired, he has become a classroom regular — part of a band of science and engineering volunteers who support teachers in the region’s schools and bring a working-world perspective to thousands of students.

“I’d like them to know science can be fun and interesting and relevant to their lives,” said Temple, a molecular biologist who once focused on genetic diseases and now spends a day or two a week with students at Earle B. Wood Middle School in Rockville.

The volunteer program (www.seniorscientist.org), which started in Montgomery County in 2004, includes more than 170 people working across 10 Washington-area school systems, including those in Fairfax, Arlington and Prince George’s counties. Program leaders say demand for the volunteers is rising and that in an area flush with professionals in the fields of science, technology, engineering and math — or STEM — they are hoping to get more people to sign on.

“We are only in a relatively small fraction of the schools we want to be in, and we’d like to make a larger impact,” said Don Rea, a retired chemist who once worked for the Jet Propulsion Lab in California and leads the STEM volunteer program, which is affiliated with the American Association for the Advancement of Science.

Educators say the volunteers often help make lessons lively while adding expertise and real-life connections. Some see their efforts as especially notable in elementary grades, where fewer teachers have degrees in science, much less experience in professional research labs.

Doug Rambo, a retired physicist who volunteers at Sugarland Elementary School in Loudoun County, brought in kits he made for third-graders so they could construct their own wind turbines — a way to enrich class lectures about renewable-energy sources, he said.

“The kids had a blast,” he said.

Rambo said he wants students to see science as approachable and themselves as potential scientists or engineers. “It’s not as hard as they might think,” he said. For retirees, he said, the program means rewarding work in classrooms without the administrative burdens of teaching.

“All I have to do is show up and do good science with the kids,” he said.

Elementary grades are a key time to spark interest in science — and the program’s volunteers help make that happen, said Peter Moran, principal of Glenallan Elementary, a high-poverty school in Silver Spring, with a focus on STEM.

“It’s really been a wonderful partnership for us,” he said. “It’s like having a science expert in the building.”
Rea and two engineer acquaintances began developing the concept of bringing the region’s scientists into schools in 2004 after mulling over an editorial in Science magazine lamenting the public’s lack of science literacy. They knew about school volunteer programs focused on scientists in Northern California and Boston, Rea said, and they thought they could start a similar program in the Washington area.

The program began in Montgomery that year with eight volunteers. Last year, more than a decade later, the county had 63 volunteers supporting 87 teachers in 45 schools, said Rob Thomas, leader of Montgomery’s program. But schools across the region need more.

“We will disappoint a large number of teachers this year if we don’t get significantly more people,” Thomas said.

About 80 percent of the volunteers are retirees, and those who are still in the workforce often have jobs or schedules that allow for community service. In the District, a team from the National Transportation Safety Board helped with the robotics program at the School Without Walls last year. Betty Calinger, a project director with the American Association for the Advancement of Science who has helped support the effort, said she has watched it grow, with admiration. The schools benefit, she said, and the volunteers enjoy it. Some of the volunteers are in their 80s and find the work rejuvenating.

“It keeps them engaged with their discipline in a different way,” she said.

At Forestville Elementary School in Fairfax, fourth-grade teacher Lisa Goglio-Zarcynski praised her classroom volunteer — Dave Conover, a mechanical engineer — saying the two collaborate well. Last year, her students would ask after “Mr. Dave” if he missed his weekly Wednesday stint.

With his engineering background, she said, Conover sometimes knows the answer to a student’s question — say, about the structure of a bridge — before she does.

“It’s another voice in the classroom to emphasize to the kids the importance of what they’re doing in the long-run so that it’s not, ‘Oh, I’m never going to use this,’” Goglio-Zarczywnski said.

Volunteers with the program are a steady classroom presence, not one-time lecturers. Teachers’ needs drive their work, and some say they prepare extensively for the topics their classes cover. Retirees typically come to class one day a week for the full school year.

Science supervisor Dat Le said that Arlington schools welcome the outside talent, focusing their efforts on the Virginia system’s elementary schools. Twenty people volunteered last year.

At one school, Stephen Mamber, a biologist, helped students learn about bacteria by taking swabs of their hands, samples he then cultivated in agar-filled petri dishes in his lab. Mamber brought in photos of the bacterial growth for students to see, Le said.

“He made connections to what they learned about cells and helped them understand that bacteria are examples of cells that are all around us,” Le said.

Others say the volunteers make a difference for older students, too. At Wheaton High School in Montgomery, the program enables teenagers to meet people who have had careers in fields they want to pursue, said Principal Debra Mugge. The volunteers also help make the material engaging, she said.

“When you have scientists, mathematicians and engineers in the classroom standing beside the teacher and working before the students, it brings the curriculum to life,” Mugge said.

Four miles away, at Wood Middle School, Temple — the retired NIH molecular biologist — said his partnership with teacher Sumaya Fahmy has made a big difference. “She’s very good at knowing when I can make a contribution and pulling me in,” he said.

Temple has done a range of work with students at Wood during his five years as a volunteer there. He cut windows into eggshells so students could peer in at developing chicken embryos from the very early stages until hatching. He has given topical talks on the Zika and Ebola viruses. He led a genetics lab that involved inserting a gene from a jellyfish into a single-cell organism, which turned the organism from white to green.

“He’s very generous with his time and his knowledge and his resources,” said Mike McGough, formerly head of the science department at Wood. “The kids love him.”