NPS Professor Brings 'Elementary' Lessons in Coding to Regional School
By PO2 Michael Ehrlich

In support of National Computer Science Education Week, NPS Department of Applied Mathematics Associate Professor Dr. Ralucca Gera helped plan a series of educational events for second, third and fourth-grade students at nearby Bay View Academy (BVA) Elementary School in Monterey. With collaborative efforts from NPS faculty and staff, BVA teachers, local organizations and parent volunteers, students were introduced to the fundamentals of computer science and coding through a program called Computer Science Unplugged.

"Computer Science Unplugged are activities without a computer … Students are learning about computer science, of what's behind the screen," said Gera, who teaches discrete mathematics and network science for computer science, operations research and applied mathematics students at NPS.

"This helps create a hands-on understanding of mathematical skills at their level, such as sorting numbers. Then they have plugged activities on the computer, or on tablets, so they can practice both plugged and unplugged activities," she continued.

Annalisa Fiorenza, a second-grade teacher at BVA, says the activities are a great way to teach fundamental concepts of coding and problem solving to young minds.

Figure 1 – Dr. Gera interacting with BVA students during CS Education Week. U.S. Navy photo by PO2 Michael Ehrlich

"Coding can be done with or without technology, and can scaffold from very easy to complex. The activities that they are doing have that full range," she noted. "They are using their brains for problem solving without technology … [helping us] reach different levels of learning."

The enthusiasm for learning displayed by these elementary school students during the week of activities will continue, Gera says, with more opportunities coming in the future.

"Starting in January, there will be a club collaboration with Bay View Elementary teachers and parent volunteers," said Gera. "The core principles founding Bay View Academy are community, innovation, and passion for learning. This was a fantastic event supporting these principles by teaching coding to second through fourth graders with volunteers from NPS, Monterey's Girls Who Code Club, and several parent volunteers."

Gera was supported by a number of NPS personnel in making the event happen. Defense Analysis lecturer Kristen Tsolis lent equipment from the RoboDojo lab to demonstrate robotics coding applications with the help of the Hartnell College math club.

Also volunteering during the week was Graduate School of Business and Public Policy Associate Professor, U.S. Air Force Maj. Karen Landale, who says the education the students received will be a great foundation for the future world.

"They need it now, think about the world they are going to grow up in," said Landale. "When I went through my Ph.D. program, I learned how to code for statistics. This was a brand-new thing for me, where there are some kids who are learning that in high school. These students will be the ones to learn how to analyze big data in the same capacity that we were learning algebra."