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GO Valiant User Group Magazine

Evergreen Elementary School is on the US Fort Lewis US Army in Washington State. In 2004 one of their Kindergarten teachers Jeffery Thompson won the Disney Foundation Teacher of the Year Award. This brought the Army and Disney together to build a very unique school. Evergreen teacher Kenton Morrison describes his school and how Roamer and MathAmigo help solve its unique problems.

The school is built in a huge hanger and entering it is like walking into a small town. Hallways look like small streets and classrooms look like small buildings or homes. Each hallway is out of Disneyland: Frontier Land, Adventure Land, Tomorrow Land… The main hallway is Main Street USA and the Library is Sleeping Beauty's Castle leading to Storybook Land. We designated Evergreen "The happiest school on earth".

Evergreen has around 800 pre-school to Grade 5 students. This constantly changes as the army shuffle their personnel from base to base. The transience is exacerbated because soldiers are posted here for treatment at the nearby Madigan Army Medical Center. The school is also a center for students with special needs. So we have to deal with students with severe physical or cognitive issues as well as those who qualify for gifted and talented programs testing in the top 98th percentile of students in the school district.

With such a wide variety of student needs to meet, the school has been designed to function as several small schools. The building is designed into wings each accommodating a different grade. Life Skills and Self Contained Special Education classrooms have specially designed rooms in the building as well.

I was introduced to MathAmigo as part of the Federal Edit Program. This was aimed at improving the technology[1] skills of individual teachers. I struggled to start with. This was partly me and partly the product. I persisted and so did Valiant in systematically resolving issues. I am glad I did. Its benefits made the effort worthwhile.

We started using MathAmigo with the AlphaSmart Dana. By connecting to a hub, we can set up 30 Danas simultaneously with the activities to support lessons for different classrooms. For us, assessing the needs of new students is a constant process. We get students at all different levels, many two or three years behind where they should be. The ability for MathAmigo to assess and personalize learning is invaluable.

[1] Technology in the USA is equivalent to ICT in the UK.

The portability plays a big part in improving our scores. We normally designate 15 to 30 minutes of practice. However, because students view it as a game they are willing to use it in all sorts of situations. I have seen them using it in breaks between classes, while waiting for the bus or going to lunch and even as they wait for their turn to appear in a school musical. Any time a students says "I am finished with my work" or "I have nothing to do" I offer them Math Amigo. One unanticipated benefit of this has been the reduction in discipline problems.

We are now using MathAmigo in our Computer Lab. The lab can be used by any classroom in the building to access a variety of Math Practice programs to reinforce a variety of math concepts. One of the most encouraging signs of its overall effect was when a student referred to something they had learned when using the product.

The newest application of this will be in our after school remediation program. Students with difficulty in Math will receive tutoring and practice a number of math skills using Math Amigo. It promises to be a valuable tool in assisting students who are 1 to 3 years behind in their Mathematics studies.

MathAmigo introduced me to Valiant and their products so I decided to look at their robot: Roamer. I use the Roamer Robot to further the students understanding of specific Mathematic principles in the area of geometry. The State of Washington requires that 5th grade students have a clear understanding of measurement and the tools used to measure distance and angle. Students are also required to develop a clear understanding of obtuse and acute angles. Further, they need to be able to draw and measure angles. In the past we have had students use protractors to measure angles within shapes drawn on paper. This is one practical application of the concept but student interest in drawing and measuring angles on paper is limited at best. My students need a more practical application of the concepts and Roamer provides this.

Students begin by putting a pen in Roamer and placing the robot on a large sheet of paper. This allows Roamer to draw a line as it moves. They then begin experimenting with moving Roamer forward, backward, and programming Roamer to turn. Through discovery they learn that Roamer advances and moves backward at a set increment. Through experimentation they learn to control Roamer by estimating and then calculating the distance Roamer will travel in a straight line forward and backward. They begin using Rulers, yardsticks, tape measures, and even distance wheels, to accurately measure Roamer's desired path. Then they begin to experiment with turning Roamer and quickly discover that Roamer turns in degrees. They immediately begin using protractors to estimate and measure the degree or angle of the turn they wish to program. Rather than drawing lines on a paper, measurement tools gain a whole new relevance through the use of Roamer.

Once students have learned to control the movements of the Roamer, they begin using it to create programs to draw geometric shapes. They draw rectangles, squares, equilateral triangles, and right triangles with Roamer. Then they are challenged to learn the angles within more advanced shapes and begin programming Roamer for them as well.

The next challenge I give them is to take the robot off of the paper and design obstacle courses for Roamer. Now they must use their estimating abilities to estimate distance and angle as they navigate Roamer though increasingly difficult obstacle courses. Often students simply set up chairs, desks, or paper cups for Roamer to navigate. As this is a discovery type of teaching, students are encouraged to create their own puzzles and problems, then work to solve them. They may work with any materials available in the classroom or request specific materials to help them design their obstacle course.

Once students are able to maneuver Roamer through the obstacle courses, they begin designing Roamer Missions. A Roamer mission may be to run from the classroom to the Music Room, play a tone and then return. (One mission students designed was to deliver the daily attendance to the main office.) To complete the mission correctly students estimate distance and angle of turns. Then they precisely measure the course. Finally, they program the robot, run the program, and make corrections.

Roamer has allowed me to provide students with a relevant application of concepts required by Washington State Learning Standards. It helps student move from knowledge acquisition to knowledge application. Through application students gain a clear understanding of Geometric concepts. Students tell me that working with Roamer is more like playing than learning. Once they have mastered controlling the robot, they love to teach it to others. My students have presented their work to parents, the district school board, and at regional technology conventions. I have used Roamer for the past 8 years and will keep using it as long as the robots will run.