

Mashpee High uses computer wizardry to teach technology

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MASHPEE --102710 -- Technology education teacher Salvatore Nocella helps senior Steven Bowker with a project designing a ray gun. Cape Cod Times/Christine Hochkeppel 102710ch13 **Cape Cod Times/Christine Hochkeppel**

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MASHPEE — The sound of explosions echoes as bullets whiz through the air all over the darkened classroom at Mashpee High School.

Though it sounds like a scene from some post-apocalyptic horror movie, it's exactly what's supposed to be happening in Room A132, as long as the two dozen students in Sal Nocella's gaming design class are following his instructions.

The teacher, along with the rest of the school's small technology department, instructs students in high-tech classes including 3-D animation, computer-game programming and design, and drafting, all with the goal of encouraging students to animate and program their way to an understanding of the state-sponsored science, technology, engineering and mathematics curriculum, known by the shorthand STEM.

"There are a lot of steps to getting a game done," Nocella said. "But they are all math and science."

On Thursday, Nocella's 3-D animation class spent the hour transforming a basic computer background — shadowy blue mountains, an image found on millions of personal computers — and video of explosions downloaded from the Internet into a short film.

But it's more than computer wizardry and creating cartoons that students are learning, said Mike Looney, a technology and engineering teacher in the department.

"The best way to say it is that we're taking theory and applying it," Looney said.

Looney sits on the advisory board for the state's Southeast Regional STEM Network and the Governor's STEM Advisory Council.

During a recent game design class, Nocella worked with students to begin the creation of a bare-bones game, using pre-made images to create a program in which a robotlike "powercore" shoots bullets and moves from side to side.

Though the ultimate goal is creating a fun distraction, inherent in the game are somewhat complicated equations and calculations. In this case, students used an X and Y axis to graph the robot's movements, while in other applications they might use equations to calculate the size of an object they want to turn into a 3D computer image.

"It's all math and physics, all kinds of channels and graphs and charts," Nocella said.

During a 3-D animation class on Thursday, senior Cray Wunder said he first takes measurements of objects he wants to render into 3-D images on the computer, then calculates the items' volume and inputs those numbers into the computer to transform those objects from lifeless to pop-off-the-page dynamic.

Since first signing up for one of Nocella's technology classes as a freshman, Wunder has created realistic-looking pictures of several cell phones, an iPod, screwdrivers, swords and more, he said.

Sophomore Aaron Higgins concentrates more on creating the fanciful robots and fantasy landscapes of popular modern video games, but he is nonetheless learning the same skills, Nocella said. "This pulls in creativity with mathematics," he said.

It's that work-meets-play mentality that makes classes like Nocella's perfect introductions to the jobs great for helping students comprehend the sometimes abstract tenets of STEM, Looney said.

An added bonus to using the state-of-the-art software Nocella provides his students is that, come college or career, they'll already be entrenched in a field that's exploding in Massachusetts and elsewhere.

"This is where the jobs are," he said. "This is how to compete with the global economy."

One such software application, called Autodesk Maya, has been used in dozens of recent movies, including the "Shrek" and "Ice Age" franchises and James Cameron blockbuster "Avatar," Nocella said.

The drafting program he teaches is used at such companies as Mercedes Benz and Boeing, he added.

By the end of the school year, "kids are really well-rounded as far as different types of software," he said. "This is the stuff that's actually being used."

Lory Stewart, director of instructional technology for the Dennis-Yarmouth Regional School District, said D-Y High students in game development and robotics classes deliberately use the same textbooks as similar classes at Cape Cod Community College.

And, she added, more colleges add gaming design degrees to their offerings every year.

"It makes perfect sense to prepare our kids with these skills," she said.

Wunder, who spent last week looking at colleges that offer engineering degrees, agrees that the work he does in Nocella's class will help him with his chosen career of mechanical engineering.

"I'm not really good at drawing on pens and paper," he said. "So this class is a way of making sure that these things could actually be made that way."