Diving In
IMMERSIVE TECHNOLOGY AT MID-PACIFIC
BY LAVONNE LEONG

Artist Kelly Sueda ’91 paints in 3D using the HTC Vive and Google’s Tilt Brush software while visiting Mid-Pacific this fall. Sueda is a professional artist who received his bachelor’s degree in fine arts from the Academy of Art College in San Francisco and the University of San Francisco. His work is featured in the collection of the Honolulu Museum of Art.
MY WATCH SAYS 10 AM, but in the virtual world, it's approaching high noon. The sun beats overhead as I stand on the dusty main street of a Wild West town, complete with hitching posts, horse troughs, a rickety church, and a run-down hotel. I turn and spot a lone cowboy moseying toward me. As he passes, he seems so close I could reach out and touch his Stetson. It's mesmerizing.

Then I hear a voice.

"It demos really well, right?" That's Tony Johansen, Mid-Pacific’s education technologist, talking about the HTC Vive, the virtual reality headset I’m wearing inside one of Mid-Pacific’s multimedia studios.

Virtual reality does demo really well. As two small "lighthouses" mounted on the ceiling grid help track my location, Johansen and Marcie Moura, who teaches game design and 3-D animation in the high school, walk me through more animated VR scenarios: a cartoon cat who flies a kite in a pastel-colored rooftop garden; a city full of curious robots who convene, unnervingly, on the viewer.

It’s hard to communicate how different this feels from watching a movie. It’s the difference between drinking a glass of water and jumping into a swimming pool—and that feeling has become the umbrella term for this new frontier of storytelling tools: immersive tech, which covers any interactive digital experience that feels 3-D.

In one sense, my immersive tech experience was not unusual, says Mid-Pacific’s Chief Innovation Officer Brian Dote: "There is a famous quote that says any truly advanced technology for all intents and purposes appears magical, and that’s what VR is. You put it on, and it’s amazing.”

But in another sense, my experience was very unusual indeed. Each of those virtual worlds was created wholly or in part by Mid-Pacific students, using the technology that the school has been mindfully assembling and integrating into both the middle and high schools, funded in part by a grant from alum Ron Yana,’65.

Immersive technology is still so new that anyone working with it is by definition at the cutting edge. Leilani Sills, whose middle school students use 360° video in their advanced design thinking class, says they hosted a “brand ambassador” for the GoPro, their 360° video rig: “He said he hadn’t had a class like this—that they’re doing stuff that even high school students aren’t doing a lot of. People don’t see this until grad school.”

Mid-Pacific is special, confirms Lisa Castaneda, executive director of foundry10, a Bay-Area-Based nonprofit devoted to cutting-edge educational research. Last year, we were one of just seven schools asked to take part in foundry10’s inaugural study of virtual reality in education. This year, the number of participating schools has expanded to 20, with schools from across the continental United States, Canada, and Europe.

The schools foundry10 is studying are using immersive technology to imaginatively transport their students to places they might never experience any other way: to undersea reefs, where they can both watch sea life swim by and see information about the species pop up in their frame of vision; to world landmarks like the Tower of London or the Taj Mahal; or to re-created events from the past, to witness history being made.

But Castaneda says Mid-Pacific stands out even among this select group of schools, both in terms of the depth of teacher expertise and the number of classes that are making use of the technology. “A lot of the other schools, there are maybe one or two teachers on board,” says Castaneda.

And while most schools use existing immersive tech content, she continues, Mid-Pacific students are actually shaping and creating their own narratives and experiences. “Immersive technology is amazing,” agrees Dote, “but it gets even more exciting when our students have the ability to create that content. Digital storytelling is a primary goal of our tech vision statement, and we want our students to tell stories, to be able to give their perspective, to be able to convince you of their viewpoint or engage you with an experience.”

That doesn’t mean that every student needs to become a computer programmer, says digital arts teacher Jen Goya: “Not everybody’s going to be a coder, but there’s something cool about VR. I have a wide variety of students, and they’ve all been interested in this.” Seen in that light, the school’s immersive technology tools become another medium for self-expression, like writing implements, paint brushes, dance shoes, or the stage—one that already feels familiar and fascinating to a generation of digital natives.

“The students love it,” agrees middle school teacher Sumoja Jani. “It’s so cool, it’s so interesting for them. There’s so much chatter.”

A Tech Continuum

How do Mid-Pacific students encounter immersive technology? Since there’s no existing playbook, a core group of teachers are working together to “develop a continuum for technology and innovation,” says Jani, and immersive tech is becoming an integral part of that.

It begins in middle school, where Jani teaches project inquiry to all 6th graders. She makes sure to use easily accessible tools like Google Cardboard Expeditions and Google Streetview, which offers thousands of 360° views of landmarks and sites across the globe. This year, Jani may ask students to collect and curate Google Streetview information for their “Big Idea Culture” project, in which they study and present a single culture in-depth. “It’s a really great way to explore different parts of the world,” says Jani.

Being able to curate existing information in an interactive environment, where viewers can look wherever they like, is a first step, says Jani. “We want them to do cool stuff, but they need to be thinking about what they’re doing and how they’re doing it. As they get older, they will use the tech for the purposes of actually getting a message out there.”
This semester, Jani will also convene the first middle school VR club. 20 students have already signed up. Jani says with a laugh that since there are students who already have VR setups at home, “I’m hoping to attract kids who are super savvy about it, so I can learn from them.”

Eighth graders taking Leilani Sills’ advanced design thinking class start to apply their design thinking skills to real-world immersive-tech projects. “In the second year (of design thinking), we’re more consulting client based,” says Sills. “We work with another teacher or organization, and the students use the design thinking process to create a solution for them or accomplish a task.” This year, their primary tool is the GoPro 360° video rig, and one of their clients is Catalog.Earth, a nonprofit organization that captures endangered or transforming landscapes in 360° video for the public domain. After Sills contacted them, Catalog.Earth asked Sills’s class to document the volcanic landscape of Hawaii Island for inclusion on their site.

There was a steep learning curve. Sills says her eighth graders, who had had no prior 360° video exposure, “hit the ground running” in August, learning the ins and outs of shooting with the GoPro and stitching the resulting footage together afterward. Then, in September, Sills, Johansen, and six students flew to Hawaii Island and went from makai to mauka, documenting sights and sounds that many of their future viewers will never get to see in person: ancient petroglyphs, waves crashing through a stone sea arch, the crunch of lava underfoot, steam from a natural thermal vent surrounding the camera.

Wherever her students go with the GoPro, there has been a high level of public interest, says Sills. When they went to film the Hikianalia (the Hokule’a’s companion canoe), the excited captain of a neighboring voyaging canoe from Maui asked the class to document his craft, too.

In addition to Hawaii Island, this fall Sills’s advanced design thinking students will make a trip to commemorate another changing environment: Kaka’ako. They have already had a visit from an artist who has created some of Kaka’ako’s many temporary murals, and will document this urban landscape before it transforms again.

Castaneda, of foundry10, says that when people ask her whether kids are equipped to handle the challenges of 3-D video, she tells them about Mid-Pacific students. “It’s really pretty advanced,” she says. “It’s so inspiring that these kids are able to navigate that—it wasn’t even the hard part for them. We really underestimate what students are capable of.”

Castaneda adds, “These kids come from a very different technological upbringing than you or I did. They have that desire to see something and say, ‘I can create something better than that.’ Mid-Pacific is among the schools that really exemplify that mentality.”

Branching Out

In high school, students can take game creation or 3-D animation with Marcie Moura, who joined Mid-Pacific’s faculty after
ten years at Dreamworks, working on films like Puss in Boots and The Croods, or digital arts with Jen Goya, who worked with New-York-based oral history organization StoryCorps after taking her MFA in computer and video art.

Moura’s 3-D animation class produced the experiences I saw when I put on the HTC Vive headset. The Western scene was was the product of a collaboration between Daven Hee’s sculpture class and Moura’s 3-D animators, who scanned the intricate building sculptures and incorporated them into a fully realized world. Although it’s easy to grab already-modeled objects online, with very few exceptions Moura makes sure that her students are building everything from the ground up: “We’re not downloading anything—all my students are creating everything from scratch.”

Moura, like other teachers, finds that because adults don’t hold all the answers, students using immersive tech feel empowered to problem-solve on their own and with each other. “I was absent once,” she says, and although there’s no substitute teacher on-island with her skill set, she found when she returned to class that they were still on track: “One kid had helped everybody else!”

That sense of ownership is obvious in her classroom when I visit. Junior Anthony Gambelucci is modelling a rocky planet and the spaceship that will eventually crash-land on it. Calling up on his screen the human model for his ship’s pilot, he knowledgeably discusses the

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**Try It**

If you don’t have a VR headset at home, here are a few ways to experience the basics of some of the immersive technology Mid Pacific Students have access to:

- **Google Street View**
  - [https://www.instantstreetview.com](https://www.instantstreetview.com)
  - Type in an address or the name of a landmark, and see a 360° view.

- **Tilt Brush**
  - [https://www.tiltbrush.com](https://www.tiltbrush.com)
  - This 3-D tool can be used to paint with light, in space.

- **Chris Milk, “Clouds Over Sidra”**
  - [http://with.in/watch/clouds-over-sidra/](http://with.in/watch/clouds-over-sidra/)
  - Working with the United Nations, filmmaker Chris Milk presents an immersive 360° documentary about the life of a 12-year-old Syrian refugee.
different kinds of joints in the human body, and how he plans to make them move.

Next to him, junior Matthew Tamashiro builds a digital corn plant, using visual references pulled from the web. Tamashiro, who hopes one day to become an animator, has had to consider everything from the jointed corn stalks to the tassel at the top of each plant, and shows me how to create those intricate shapes from the basic blocks of the Maya modeling program. Eventually, with small modifications to make each plant individual, he'll populate a cornfield that will serve as background for his own animated scene.

“A lot of my (Dreamworks) colleagues have gone into VR,” says Moura. “It’s the next step. And it’s great for (students) to be able to come to school and do this—this could be their future. They don’t have to wait.”

Jen Goya, who teaches digital arts, approaches immersive technology from an arts background, and she sees the deep impressions it makes on the people who use it. “VR stimulates the brain so it makes these connections, complex thoughts, empathy, compassion, anger, fear, sadness,” says Goya. “It’s the part that makes it really different (from other media), and really powerful.”

This semester, she's excited about a program called Tilt Brush. Introduced in May of this year, TiltBrush lets users create 3-D paintings while wearing a VR headset. For a user, painting with light directly onto the space around them is another magical experience—but Goya emphasizes that its purpose in her classroom will be to create meaning: “This is a new drawing instrument, and I want them to make a connection with it. ‘Now I can use this technology? What meaningful thing can I make out of it? How can I tell these immersive multimedia stories?’”

A New Frontier

These are questions to which no one yet has definitive answers, says Dote, and that’s important: “Today, we have students on campus who are doing cutting-edge content creation, and it’s not cutting edge for students, it’s cutting edge for the world. And they’re doing it in curricularly relevant ways. To me, that is unique. It’s very exciting. These are pioneers.”

That pioneering spirit goes back to the heart of education at Mid-Pacific, says high school principal Tom McManus. “The more you can get kids to have authentic experiences, where they interact with the community, where they do something that is real, that is meaningful to somebody else, the better it is for them. To me, that’s what education has to be, to be relevant.”

“It’s beyond gaming,” agrees Goya, mentioning the many real-world fields to which immersive technology is already being applied, including NASA training simulations, museum displays, education, mental health, ecotourism, art, diplomacy, and journalism: “Those are really important uses, but I also want students to do something that hasn’t been done before.”

Goya says she hopes the presence of immersive tech on campus, and the fact that there is no set path to follow, will allow the students to feel empowered to dream big: “It’s exciting that we’re taking a young person, whose mind is a sponge, and giving them the tools so they can come up with: ‘Let’s go to the moon.’”