The science of achievement: Students work with researchers

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Author: Sharon Heilbrunn

Jorge Rivera munched on an apple while concentrating on a PowerPoint presentation on cell biology. Along with about a dozen peers, he began filling out work sheets under the guidance of a graduate student from the University of San Diego.

It was a beautiful Saturday afternoon, 80 degrees outside, with the ocean close enough to smell. But Jorge wasn't looking wistfully out the window. He wasn't forced to be there.

The Herbert Hoover High School student chose to be there.

"There" is a trailer at Camp-land on the Bay in Pacific Beach, the headquarters for Aquatic Adventures, a nonprofit that provides science education and college readiness to more than 5,000 low-income public school students annually in San Diego County. The students in the trailer on this particular weekend were part of BAHIA, one of the organization's flagship programs.

Now in its sixth year, BAHIA takes about 20 Hoover High students annually -- half of them high-achieving, the other half low-achieving but with strong potential -- and pairs them in mentor relationships.

Starting in April, the students commit to an intense regimen of science education, community involvement and swim lessons in preparation for a five-week stay at an ecological reserve in Baja California over the summer. There, students participate in marine-focused research projects with scientists from universities and government agencies.

Although the organization focuses its efforts in San Diego's City Heights, it reaches children and teens from all over the county through programs and workshops.

Besides BAHIA, Aquatic Adventures hosts community-based habitat restoration projects, classroom education and after-school programs for middle school students. Last year, it provided professional development for more than 43 San Diego Unified School District teachers.

The Bahia program is tuition-free, but not commitment-free, said Shara Fisler, executive director and founder of Aquatic Adventures.

"The students have a very significant responsibility," said Fisler, 37. "There's a very strict attendance policy. Mondays after school are swim lessons. Thursdays after school are lectures and labs. And Saturdays are field experiences."
"Where other kids might be hanging out, watching TV and relaxing with friends, these kids are reporting for a full day of science at 9 a.m."

They wouldn't have it any other way.

"The BAHIA program, it's a program that lets you grow as an individual, aside from doing a lot of research, which is great," said Jorge, a second-year participant. "But it lets you try new things, experiment in a new field and get out of your comfort zone. It's definitely a lot of work, but it's not all hard work. I think the reward is far greater than what you put in."

On this Saturday, the students sat on the benches of brightly painted picnic tables in the Aquatic Adventures trailer, their hair wet after kayaking that morning. Sea-inspired pictures decorated the walls, and jars of coral lined the shelves. The hum of fish tanks could be heard in the background. Working in teams, the students created "cell pizza" using English muffins to represent the cell, and toppings -- such as pepperoni, cheese and onions -- to represent the organelles.

Jorge layered tomato sauce on the English muffin. That was the cytoplasm. Then, some olives. Those were the ribosomes. He covered the pizza with cheese.

"That's the cell membrane," he said.

His rationale?

"I love cheese," he said, laughing.

His laughter is indicative of the program's intent: to make students feel that they can take on weighty subjects while having fun.

Built into the BAHIA program is a heavy emphasis on college preparation, which includes academic mentoring, college readiness courses, career exploration and social services support.

"It's a totally transformative experience," said Fisler, who added that all of the 2008 BAHIA high school graduates are now enrolled in college. "These students are so inspiring. The whole program is not about, 'Oh, these poor kids who have been through rough times.' It's, 'You've been given an opportunity, you need to work your butt off. You need to bring your 100 percent game to everything.'"

Now a freshman at San Diego State University, Spring Valley resident Jared Ocampo was accepted into BAHIA when he was a ninth-grader at Hoover.

"I really wanted to go to Mexico for five weeks," Ocampo said. "It looked like fun. At the time, I wasn't taking school too seriously."
He ended up staying with the program all four years of high school. Friends nicknamed him the 'FDR of Aquatic Adventures,' comparing him to the 32nd president who was elected to four terms.

For Ocampo, the experience was life-changing.

"The first year, what amazed me was how we slept outside in Mexico," he said. "The first night was full of stars. I just looked, and I was like, 'Man, I'm actually doing this.'"

The program is full of these experiences, or "firsts," as Fisler calls them.

"It's a million firsts," she said. "First time I slept outside, first time I caught my own food, first time I saw a whale, first time I'm away from home, first time I snorkeled."

Amanuel Weldemariam, 16, came to the United States from Ethiopia in March of last year. He applied for BAHIA because he loves science and is hoping the program will help him figure out a career path.

"I've met wonderful people," he said. "Rock climbers, marine scientists, oceanographers. It's a good way to see if this is what I want to do."

During their stay at a research station near the Gulf of California over the summer, students spend five weeks collecting and analyzing data with scientists.

"They do fisheries research, look at wetlands diversity and study the effects of global climate change, and land and sea connections," Fisler said. "It's real research. It's not a school project."

For many students, that kind of responsibility is priceless.

"When I was actually doing the research, it didn't hit me how huge this actually was, that it was such a huge opportunity for a high school student to be doing this," Jorge said. "And you're meeting other people and making connections with other scientists. Having people notice you is something that's really nice."

Sharon Heilbrunn is a freelance writer in San Diego.