



Derek Dudek, manager of the Simulation Training Center at UC San Diego School of Medicine, demonstrates how "Bobby" the patient simulator helps medical students learn to diagnose and treat patients. Photo courtesy of Kyle Dykes/UC San Diego Health.

Teaming up with the Padres on STEM

"I don't feel well," Bobby said. He blinked. His breathing slowed. His face started turning blue.

The roomful of teenagers watched Bobby. They giggled.

"Alright, I guess he's had enough of that," Derek Dudek said, tapping a button on his tablet. Bobby's face returned to normal: shiny and plastic.

As manager of the Simulation Training Center at the UC San Diego School of Medicine, Dudek uses high-tech manikins (or patient simulators) like Bobby to mimic the verbal and physical symptoms of a disease, such as irregular heart rhythms, difficulty breathing, sweating and bleeding. Medical students

and residents do a lot of their clinical training this way—working in small teams to spot and interpret symptoms, and take the correct course of action to help the “patient.”

Earlier this month, Dudek introduced Bobby to about 90 scholars from grades 9-12 at e3 Civic High, a unique charter school located in the Central Library. UC San Diego Health staff walked with them from their school to Petco Park for a STEM (science, technology, engineering and math) career day.

“UC San Diego Health has always been deeply involved in our region, and when the San Diego Padres selected us as their official health care provider earlier this year, both organizations felt it was important to collaborate on health and education outreach efforts in the local community,” said Patty Maysent, CEO of UC San Diego Health. “These students represent the next generation of physicians and scientists at UC San Diego or beyond.”



UC San Diego Health and San Diego Padres staff held a STEM career day at Petco Park for about 90 scholars in grades 9-12 at e3 Civic High, a unique charter school located in the San Diego Central Library. Photo courtesy of Sienna DiMuro, e3 Civic High scholar.

The e3 school attracts students who live in the downtown area and are interested in technology- and project-based learning. Many of these scholars (as the school calls their students) are from historically underserved communities and backgrounds. They are interested in pursuing careers in health care, or learning about how technology is used in a variety of professions.

During the event, Dudek, Eric Hernandez, community health program representative from the Shiley Eye Institute at UC San Diego Health, and Brian McBurney, Director of Baseball Research and Development for the Padres, spoke about nontraditional STEM careers available in health care and sports.

“We have the types of careers nobody ever says they’re going to be when they grow up because they didn’t exist back then,” Dudek said. “Now, STEM is the foundation for many careers, even if you don’t plan to become an engineer or a doctor. And even if you do, doctors can’t purely specialize in medicine without also incorporating technology — from learning a new procedure using virtual reality to using electronic medical records or robots that assist in surgery.”

As part of the EyeMobile program, Hernandez brings vision screening and education to preschool children in low-income neighborhoods, helping to identify, prevent and treat vision disorders before they become barriers to learning. He showed the e3 Civic High scholars an autorefractor, a hand-held machine that measures refractive error or how light is changed as it enters a person’s eye. By simply holding the autorefractor up to a child’s eyes, Hernandez obtains a complete, personalized prescription in seconds.



e3 Civic High scholars took a behind-the-scenes tour of Petco Park. Photo courtesy of Kyle Dykes/UC San Diego Health.

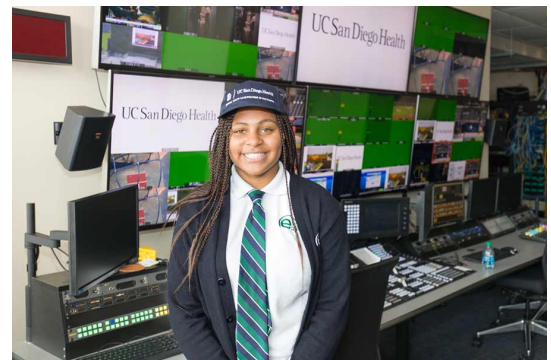
“Mobile technology helps us bridge health care disparities by allowing us to go out into the schools and give kids the help they might not get otherwise — the healthy vision they need to succeed in school and in life,” he said.

McBurney is a software developer who worked in missile defense before joining the Padres. He explained how he develops computer models that provide objective information to the team’s coaches and scouts. His ability to analyze a player’s swing and stance directly influences recruiting, coaching and play during games.

After lunch, the high school scholars split into groups for behind-the-scenes tours of Petco Park.

“This just solidifies everything I’ve thought I might want to do in the future,” one scholar said enthusiastically, as she took pictures in the San Diego Padres’ media control center.

Petco Park’s media control center is a technological marvel. One entire side is a massive window overlooking the ball field; the other three walls and in between are filled with large digital screens, some stacked three or four high, and panels of buttons, levers and LED lights. The Padres’ producer of game presentation explained how each station in the high-tech command center is dedicated to a different function during a game, such as instant replays, music, digital displays, even adjusting sound levels in the stadium’s elevators — all of the meticulously coordinated information and entertainment that most baseball fans take for granted while enjoying a game.



Zora Williams, e3 Civic High sophomore, learns about STEM careers in the media control center at Petco Park. Photo courtesy of Kyle Dykes/UC San Diego Health.

The talks and tour made tangible connections between health care and sports and the critical role of STEM learning.

“Today has really been a reality check to show we’re not learning STEM just because... there are actually a lot of uses for these subjects,” said Zora Williams, an e3 Civic High sophomore. She hopes to pursue a career in which she can use her favorite STEM subject — mathematics.

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