

Growing STEM workforce hinges on diversity in education

BY BRIAN BANDELL
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Shahin Vassigh, director of the Robotics and Digital Fabrication Lab at FIU, works with students.

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Recruiting a diverse workforce has been a major challenge for many companies in technology, life sciences and other STEM fields. But in South Florida, this could be a great opportunity.

Many universities in the tri-county region are among the national leaders in graduating diverse groups of students in science, technology, engineering and mathematics. According to CBRE's 2021 Scoring Tech Talent report, 62% of South Florida's 2,770 tech degree graduates in 2020 were from a minority background. Nearly half of them were Hispanic and 15.1% were Black. However, only 20.3% were women.

Certainly, there's more work to be done so the STEM workforce is more reflective of the makeup of the community.

Matt Haggman, an executive VP at the Miami-Dade Beacon Council, said the county's diversity is the great differentiator from other markets when it looks to attract tech companies. It's a huge plus for companies considering locations here that most people in the county were born outside the U.S., so they bring many different life experiences to the table.

"One might argue that diversity is a social good, but it's also a competitive advantage," Haggman said. "Miami has moved from a brain drain to a brain gain. People who have left are now moving back with new skills."

John Machado, chief technology officer of software company Ultimate Kronos Group, which has its headquarters in Weston and Lowell, Massachusetts, said the extensive pipeline of diverse tech talent in South Florida has provided it with many employees who bring unique perspectives and fuel innovation. With more tech professionals relocating here during the pandemic, it truly feels like the "next Silicon Valley," he added.

Connecting people with opportunities

South Florida has experienced strong growth in technology jobs, but many people on the low end of the socioeconomic spectrum are not in a position to take advantage of the high-paying positions, said Leigh-Ann Buchanan, president of Miami-based Aïre Ventures, a nonprofit that fosters racial and social equity in technology fields. Many Black students aren't receiving the math and science training they need in the K-12 system in order to enter a college STEM program, she said. Miami-Dade also ranks low for the number of households with internet access.

However, Buchanan is highly encouraged by the work at Miami Dade College, which launched separate partnerships with Microsoft, SoftBank and IBM this year that will help diverse students pursue careers in technology.

MDC President Madeline Pumariega said it has placed extra emphasis on encouraging diversity in the STEM fields, where there is often less diversity than in the college's other programs. Because this issue is so important to many companies, it's partnered with firms such as Amazon Web Services and Tesla to help students learn specific technology skills. The companies end up hiring many of these students, she said.

MDC was also awarded federal grants to support minority students in STEM fields, including full scholarships for women.

“Talent is the new economic currency,” Pumariega said. “These companies look to MDC because we have a tradition of serving the diverse students in our community.”

One area where she’d like to see MDC improve is paid internships at tech companies so students can gain real-world experience.

Hispanic Outlook at Education ranked Florida International University first for awarding degrees to Hispanic students in computers and IT and second for engineering. It hopes to build on that after receiving a \$4 million federal grant to increase diversity and female participation in engineering of new materials.

“In science, it’s important to approach a problem from multiple points of view,” said Daniella Radu, an associate professor of materials science and engineering at FIU who is managing the grant. “You want to bring along people from different backgrounds for a comprehensive picture of a problem and the solutions that might be provided for it.”

With the grant, Radu hopes to increase participation of Black, Native American and female students in the graduate program so they can become industry leaders or professors. At least 80 diverse students will receive tuition support, including full stipends in some cases.

Increasing diversity in FIU’s STEM programs has taken sustained effort, said Laird Kramer, director of the STEM Transformation Institute. Many students take introductory courses in STEM subjects, so FIU has made them more compelling – with hands-on learning and peer-to-peer interaction – to encourage them to consider these fields for careers. It also worked with local high school teachers so they encourage diverse and female students to consider STEM.

Eighteen years ago, FIU had only a handful of majors in the physics department where Kramer works, and now it has 180. Over 30% of them are women, which is higher than the national average.

“If you Google famous physicists, you won’t see a lot of diversity,” Kramer said. “There is a certain reputation we have, and we are trying to change that.”

Faculty key when recruiting diverse students

The University of Miami is striving to increase its diversity in STEM fields, and a big part of that is having a more diverse faculty, said Maria Galli Stampino, dean of undergraduate affairs at the Coral Gables-based university.

Having students from different backgrounds is crucial in research, Stampino said. For example, in a biomedical engineering class, work on creating artificial skin for burn victims should cover all types of skin.

Black students make up 11% of the incoming class – up from 8% three years ago, although it still needs to go higher, Stampino said. It helps that, for the past three years, UM has met all Florida-based students’ demonstrated financial needs for tuition. But the university also needs to make diverse students feel welcome. To that end, UM hired 20 Black faculty members in the past year, many of them in STEM fields, she said.

When diverse students don’t have role models on the faculty who look like them, they are more likely to leave the program, Stampino said. And having female faculty members conducting job interviews makes it easier to attract more women, she added.

“What is important at the university is we need to pay attention to the funnel, meaning to attract more diverse students as undergraduates and get them their Ph.D.s so they become faculty,” Stampino said. “We can develop our own diverse faculty.”

Increasing both gender and racial diversity in faculty has been a big focus at Florida Atlantic University’s College of Engineering and Computer Science, Dean Stella Batalama said. It also conducts faculty training to address bias that may impact students in the classroom.

For high school and middle school students, FAU has sponsored engineering summer camps in schools with many minority students. When students from diverse backgrounds enroll at FAU, they sometimes take “math boot camp” courses over the summer to prepare for success, she added.

The number of female engineering and computer science students at FAU increased 130% to 145 over the past four years, Batalama said. The retention rate increased 65% and their grades have also improved.

“It is clear that the more attention we pay to our diverse population, the more successful these students are and the more we are successful in tapping the resources we have around us,” she said.

Help outside the classroom

The work of building a diverse STEM workforce doesn’t just take place inside the classroom. Many students with lower income levels don’t enroll in classes because they struggle to afford household expenses.

Nicole Vaughan, dean of science and wellness at Broward College, said it has programs that provide free Lyft transportation and food pantries to students in need. It provides stipends so they can work on campus and continue providing for their families while getting an education.

“We can’t just focus on the academic,” Vaughan said. “We have to focus on the whole student and relieve the pressures and stresses they have.”

Broward College has been going into low-income minority communities, both schools and neighborhood centers, to tell residents about the high-paying opportunities in local tech jobs, including through certificate programs that can be completed in a relatively short time.

“Once you tell them how much they can earn, you get their attention,” Vaughan said.

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<https://www.bizjournals.com/southflorida/news/2021/11/04/stem-workforce-diversity-south-florida.html>