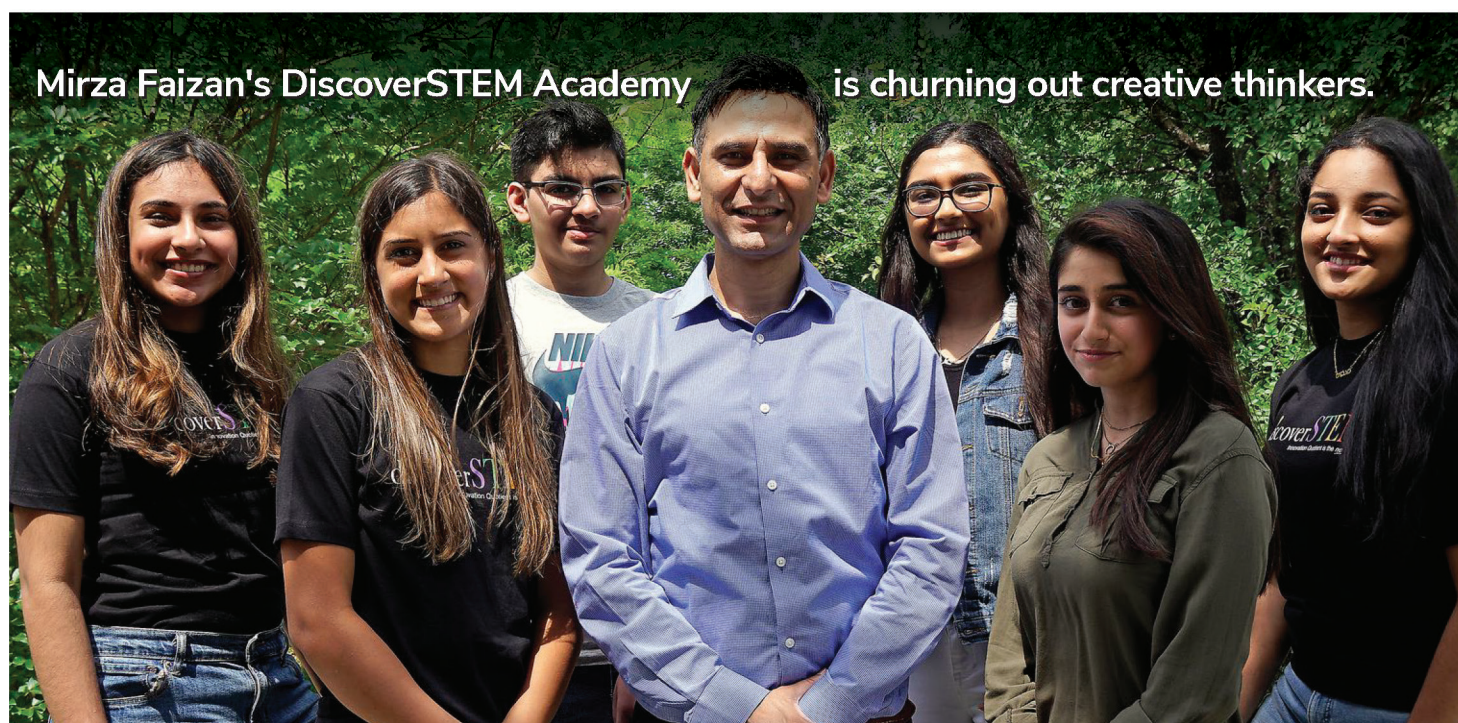


The Dallas Morning News

Patently inspiring: An Irving scientist mentors young inventors - with impressive results



Mirza Faizan's DiscoverSTEM Academy is churning out creative thinkers.

"Do you know who Glenn Curtiss is?" It's a question Irving scientist and tech entrepreneur Mirza Faizan loves to ask and, he says, invariably provokes the same blank expression.

"But when I ask if they know the Wright Brothers, everyone knows they designed and flew the first plane." He then delivers his scientist punch line: "In fact, Curtiss was the aviation pioneer who made the first officially witnessed flight in North America, but because the Wright Brothers got the patent for their aircraft design, it's they who went down in the history books."

In his DiscoverSTEM Academy in Plano, students are encouraged to follow a five-step program of "think, analyze, ideate, create and innovate" patentable solutions to real-world problems. Mentoring young inventors to patent their innovations is the primary goal of India-born Faizan, who came to the United States in 2013 and was later awarded a coveted "Einstein" visa, for those acclaimed in their fields, with NASA and Pentagon backing.



Last year, Faizan resigned as head of engineering services (USA & Canada) at Capgemini, a multibillion-dollar, multinational, France-based company, to focus full-time on developing the academy, which he started four years ago. It has produced almost 200 young inventors ages 10 to 18.

The decision to focus on youth came from his frustrations as a judge evaluating students' submissions to prestigious competitions such as the annual R&D 100 Awards (the equivalent of the Oscars) and the Conrad Challenge held at the Kennedy Space Center in Florida each year.

"Many times, I could see the young kids had some very bright and promising ideas at these competitions, but they didn't know how to proceed with their idea, to convert it into an innovation or invention," Faizan says. "So, they drop the idea."

This conviction was reinforced last February when he spoke at an event in Frisco ISD where he asked around 400 students and parents if they had ever thought of inventing something. Practically everyone's hands went up, Faizan says. But when asked if they knew how to invent? "Almost all the hands went down."

Launchpad for success

Faizan's mission to reverse the status quo has garnered him a local reputation as the "space whisperer," and 25 of his students have won NASA innovation competitions. More than 50 students have patents pending after winning international competitions. Some of his alumni have gone on to Harvard, Stanford, Duke and MIT, with cumulative scholarships totaling \$3.5 million.

One admirer of Faizan's mentorship program is Hashima Hasan, a renowned NASA scientist with a doctorate in theoretical nuclear physics from Oxford. She has made annual visits to Dallas to meet Faizan's students over the years and advise him on his innovation work.

"The program brings to life the true scientific process," says Hasan, whose love of astronomy was inspired by meeting Yuri Gagarin, the first man in space, as a child. "DiscoverSTEM encourages students to make their own discoveries. By working together in groups, they feed off each other's energies as each has his or her own 'Eureka' moment. ... I will add that I was particularly impressed at the number of young girls in the DiscoverSTEM program."

Engineer Nusrat Husain Khan of Irving enrolled his daughter Mariam in the mentorship program when she was 18 and says it played a central role in her academic success. She received a full-ride scholarship worth over \$300,000 to study biology at Duke University. Now 22, the younger Khan says finishing first in her team's category at the international Conrad Challenge awards in 2016 certainly boosted her application.

"A team of five of us went to Orlando hoping we might win, but you just don't know. When we were called out from the stage and realized we beat kids from like 50 other countries, it was surreal. It was unbelievable." Khan, who plans to study medicine, says the win helped her secure a coveted research job at UT Southwestern.

This past February, DiscoverSTEM held its first graduation ceremony at the University of Texas at Dallas with Hasan and a retired SR-71 pilot, Col. Richard Graham, in attendance.

www.discoverSTEM.info

Important inventions

One of the timelier patent-pending inventions Faizan's mentees are working on is a modified COVID-19 helmet, which is due to be tried out on front line health professionals in a New York City hospital.

Sixteen-year-old Raghavi Danduboyina, who will be attending Southlake's Carroll Senior High School in the fall, says it was a team effort. "I worked with about five people on the COVID helmet, but there were many more different groups of kids, and in the end all our ideas were put together and we came up with this sort of 'super-idea.' It just makes me feel so proud to apply our learning to a real-life scenario, which could help save lives."

Fourteen-year-old Maya Kusumakar from Carroll High School shares this sentiment.

"As a kid, it's not easy to make a big difference in the world because you don't get opportunities like that, so a chance to help people in a time of crisis gives so much satisfaction," she says.

Other patent-pending inventions include a plastic bottle that releases fungi to destroy the plastic when empty and an alarm system that uses artificial intelligence to help prevent pool drownings. Both were alternate finalists in international competitions at NASA's Kennedy Space Center. Another timely innovation Faizan is excited about is a "self-disinfecting" aircraft tray table.

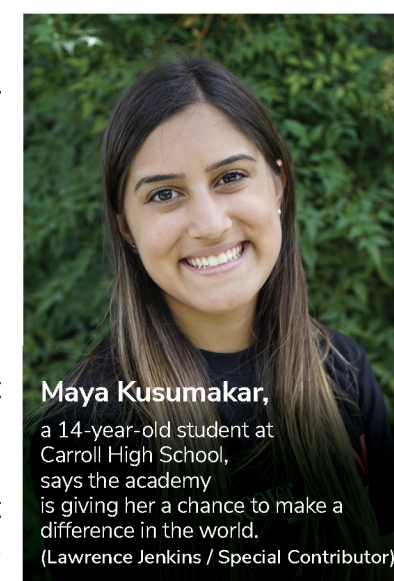
The tray table is one of three products currently going through the DiscoverSTEM Incubation Center. Here, junior innovators are mentored to develop a prototype and launch it while seed funds are arranged.

"We provide all support to our kids to launch their startup and take their product to the market," Faizan says. "Creating an innovation, developing it into a product, and then taking it to market in itself is a great experience for these kids. For that to happen, obtaining a patent is very important to protect intellectual property."

The cost for the five levels of programs at DiscoverSTEM ranges from \$1,000 to \$5,000, and Faizan is committed to increasing access with scholarships for low-income students and former or active-duty military. This policy was adopted after an inspiring chance meeting with disabled veteran Jeanette Goodrich at the Dallas STEM Expo last January.

The ex-Air Force officer says this was a lifeline for her and her 13-year-old daughter, Kayla. "I was going through a difficult time, and my disability was my primary source of income. But Mr. Faizan just met us and was so impressed with Kayla and so respectful of my service he actually said, 'Your daughter is everyone's daughter.' I was just blown away by that."

Kayla, a student at DeWitt Perry Middle School in Carrollton, is keeping mum about her innovation while her patent is being processed. She appreciates the DiscoverSTEM method. "In school we just memorize things, but here they really make us understand concepts and promote creative thinking, and we learn to work together as a team. These are life experiences you can't get anywhere else."



Maya Kusumakar, a 14-year-old student at Carroll High School, says the academy is giving her a chance to make a difference in the world. (Lawrence Jenkins / Special Contributor)



Kayla Goodrich, 13, a student at DeWitt Perry Middle School in Carrollton, is keeping mum about her innovation while her patent is being processed. (Vernon Bryant / Staff Photographer)

A valuable skill

Faizan says the central focus of DiscoverSTEM is to resurrect logical thinking, a skill he believes is dwindling due to instant-gratification technology that provides answers at the touch of a button.

"I remember when I was a middle school kid, growing up in India, I used to live next to an airport," he recalls. "This was India in the '90s, with no internet access. Every time I see a plane take off and land, I used to sit and think for hours as to how does a plane fly? Today, if a child is struck with the same curiosity, she won't even think for a second about this problem. What will they do? Ask Google or watch YouTube."

That is why he argues nurturing critical thinkers is the future. "Ten years from now, when these kids enter the job market, 40 to 50 percent of the jobs are going to be automated, especially anything repetitive," he says.

The only jobs that will remain for people are those that require intensive critical thinking.

"Innovation and invention, of course, require such analytical thinking," Faizan says. "And this is why I believe my kids will excel, because they trained as innovators."



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