Colorado breaking with tradition

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Ola Najm Alasaadi watches the women who ride the train with her.

She's heading for classes at the Community College of Denver. They're heading to jobs downtown.

"I see them going to work at a nice company, wearing a nice suit, and I say to myself: One day I'm going to be one of these women," Alasaadi, 29, says.

The Iraqi immigrant, who came to the United States in 2012 and recently applied for citizenship, wants to be an engineer — a future she never dreamed of until she met women engineers at the "Women Rocking the Rockies Empowerment Conference" organized in July 2016 by the Colorado Petroleum Council, the local chapter of the American Petroleum Institute (API), a national oil and gas trade group.

KATHLEEN LAVINE, DENVER BUSINESS JOURNAL

Community College of Denver student Ola Najm Alasaadi, left, works with Imane Benjelloun, program specialist in TRIO Student Support Services.

The conference is one of many efforts underway in Colorado to encourage girls and young women to prepare for jobs in

fields that require skills in science, technology, engineering and math, often referred to as STEM.

Such programs have been underway for years and studies show that even a brief exposure can have a long-lasting influence and lead participants into STEM-related jobs.

If girls and young women stick with it, the payoff will be big in terms of well-paying jobs, but it's also big for the state, which needs people to fill an expected increase in STEM-related jobs in the future.

"Talent is the most powerful incentive a state can offer and directly impacts a company's bottom line," Gov. John Hickenlooper said in 2015 at the launch of "Colorado STEMworks," an effort to find and promote effective STEM programs across the state.

Last July's day-long conference in Aurora included hands-on science experiments for students — middle school through college — as well as speakers and panels of professional women talking about their lives and their jobs.

Alasaadi was stunned by what she saw and heard.

"As a woman from the Middle East, seeing all those successful women. I always had an idea that a woman can be amazing in her professional life or family life — not both," Alassadi said.

"But these women, they had balance. That was new to me. I love my country. I love my culture, but it's not the same as here for women.

"When I saw them, those women, I thought — I want to be like them. I want to sit on a panel, like they did, and tell people how I started. They inspired me.

"It was one of my favorite experiences since I came to the United States."

Alasaadi has signed up for more math classes, including calculus, and expects to get her associate's degree next spring.

The day-long conference last summer is part of API's national effort to introduce women, girls and minorities to opportunities in the oil and gas industry — and a chance to diversify the sector's workforce.

"We know that the next 10 years will provide the largest opportunity for the oil and gas industry to diversify its workforce ever," said Tracee Bentley, the Colorado Petroleum Council's executive director.

"A lot of the oil and gas workforce tends to be older and white male, and many of them are approaching retirement. We

have a huge opportunity to fill the pipeline and we want to make sure that we capitalize on that opportunity by attracting and retaining women and minorities to our industry," Bentley said.

"But in order to do that we have to get them excited about science, technology, engineering and math — STEM," she said.

The oil and gas sector isn't alone in its effort to encourage and attract girls to the STEM fields.

The state of Colorado wants to boost the number of students and girls in STEM classes because more of the state's jobs are expected to require additional levels education and more STEM skills in the future.

Women underrepresented in Colorado STEM jobs

Women make up 46 percent of Colorado's workforce, yet only 29 percent of the people working in the state's STEM-related jobs are women, according to a 2016 report titled "Gender Equity in Colorado's STEM Industries: The Case for a Focused Workforce Investment" done for the Women's Foundation of Colorado.

By 2020, 74 percent of Colorado jobs are expected to require more than a high school education, according to the "Colorado STEM Education Roadmap," a plan issued in 2014 by the Colorado Education Initiative (CEI) to boost the number of STEM-related graduates in the state.

More than half of the "top jobs" in the state — defined as jobs in expanding fields with many openings and paying good wages that can support a family — will require skills in STEM, according to the Roadmap.

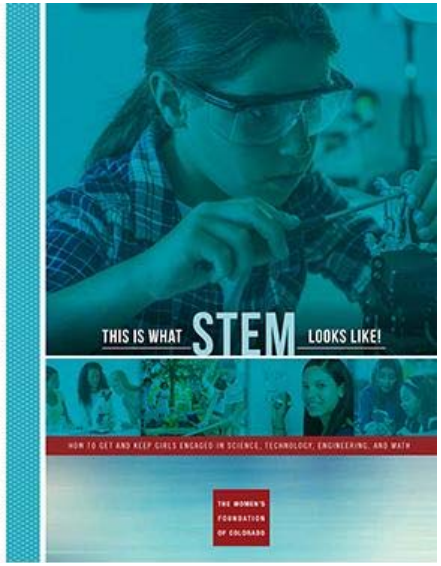
CEI is a Colorado nonprofit focusing on K-12 public education and working with the Colorado Department of Education and businesses.

Diversity is also a crucial element into the workforce of the future, meaning Colorado doesn't only need to lure more students int the STEM pipeline, but it also needs to bring more girls and minorities into that pipeline, according to the Women's Foundation of Colorado.

The Women's Foundation has recently produced a 160-page guide to help family members, educators, mentors and others encourage girls to build STEM skills, said Louise Myrland, the foundation's vice president of programs.

The guide includes tips on how to talk to girls about science and math, as well as books to read and organizations with programs targeted at girls.

“Girls are curious, they’re interested in things from a young age and there are a number of ways that family members can encourage that,” Myrland said.



“This is What STEM Looks Like” is a 160-page guide created by The Women’s Foundation of Colorado with tips on how to encourage girls in science and math. It is available for download at bizj.us/1p4k6d.

It’s well-documented that girls’ interest in science and math tends to wane as they get older, but if they can be encouraged to pursue STEM in their educational choices, there’s a big payoff, she said.

“The earnings potential in STEM fields tends to be higher than in non-STEM fields, and there’s less of a wage gap between men and women,” Myrland said.

Myrland said many programs to encourage STEM education across the country have existed for years, meaning that some of the early participants are now entering the workforce.

“It seems that momentum has been building,” she said.

Involvement in the programs have can have long-lasting effects, according to a 2013 study on “Cascading Influences” of STEM programs for girls conducted for The Franklin Institute, a museum and science research center in Philadelphia.

The study tracked 174 girls and young women who had participated in STEM-focused programs at least five years ago.

Most were at the beginning of their careers, 152 of the respondents were between the ages of 18 and 30.

But 53 of the respondents who shared their college major with the researchers said they majored in STEM-fields — far higher than the national figures of 15 percent for female freshmen nationwide. About 48 percent of all the respondents were working in STEM-related fields, according to the study.

Programs made an impression

Those surveyed said they clearly remembered the programs, even details of experiments or people they'd met — such as women in STEM fields or other girls who had STEM interests.

And they credited the programs for changing their lives.

Said one respondent: "It [the program] encouraged me to get a job in a science or engineering field to help pave the way for more women who want to have science or engineering jobs. It influenced me to have the confidence to be smart, and to own my intelligence.

"It also allowed me to find out that I deserve to be smart."

Something as simple as meeting a women working in a STEM-related job can have amazing impacts — not only for the girls, but for the women themselves, said Hollie Velasquez Horvath, Xcel Energy Inc.'s director of customer and community relations in Colorado.

Xcel has supported STEM programs for the last several years, contributed hundreds of thousands of dollars per year, Horvath said.

"We've seen tremendous response, not just with the customers we work with but the employees, too — they have tremendous passion and excitement in wanting to participate in the opportunities to spread the word about being interested in engineering and science," she said.

At Xcel, building excitement for math and science in the next generation isn't solely about good community relations. It's a crucial part of the utility's business plan.

"Over the next five to 10 years we're going to be losing 50 percent of our employees at Xcel Energy due to retirement, and we have to figure out how to fill that pipeline," Horvath said.

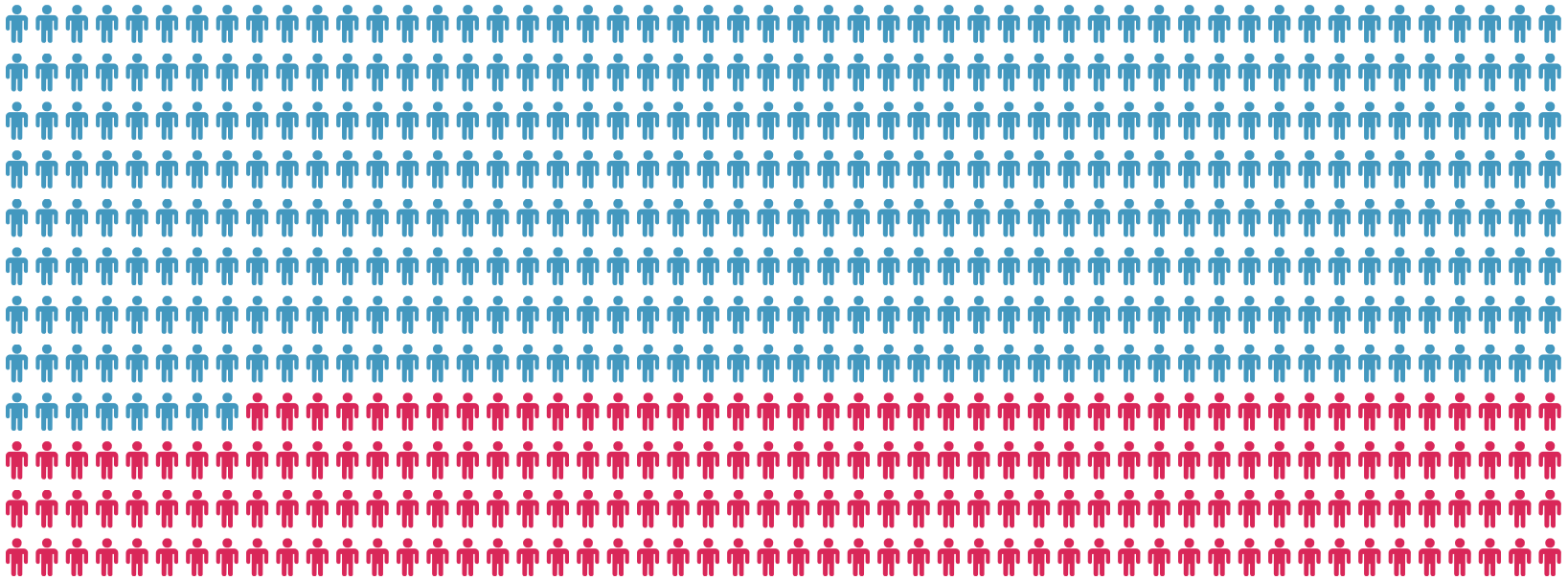
And it's never too late to expand one's horizons, said Horvath — who has a background in government relations and is now working through a management rotation at Xcel and learning the operations side of the business.

"I'm a poli-sci, history person — not an engineer," Horvath said.

"But I've built an acumen for the operation and technical side of the business. The hardest thing was getting to know the technical piece of the industry — how a gas plant works, the coal plant, the different kind of substations. But it's never too late."

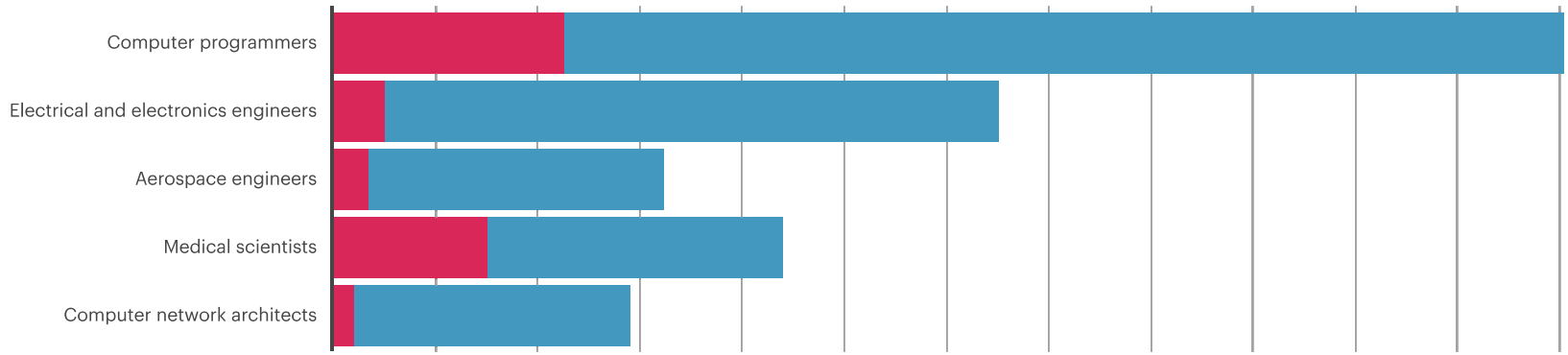
Percentage of U.S. women in selected STEM occupations

Total U.S. workers: 143,929,000



Total U.S. workers Women

Although women account for almost half of all workers, they are often underrepresented in the nearly 8.6 million STEM fields nationwide.



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