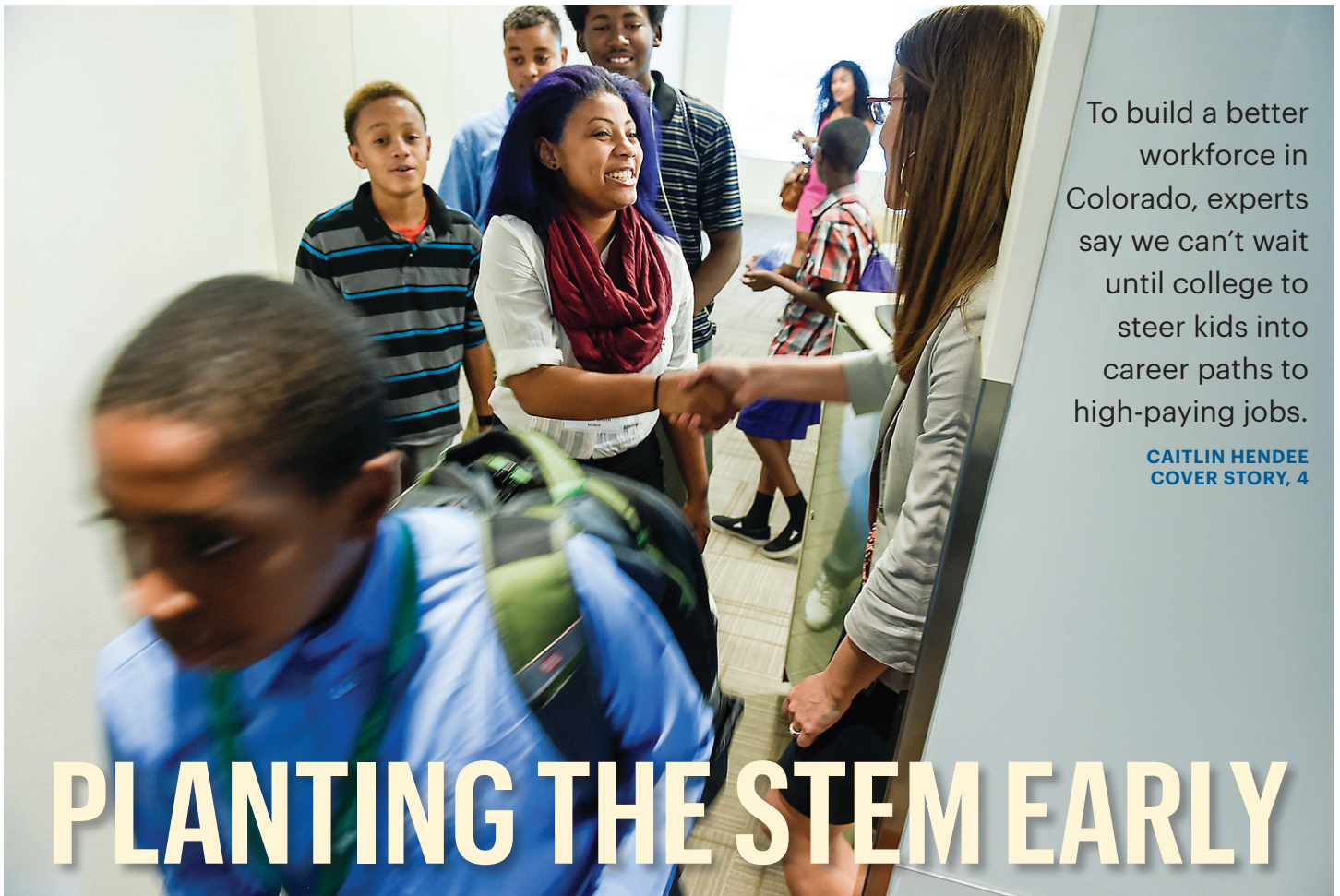


# DENVER BUSINESS JOURNAL

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To build a better workforce in Colorado, experts say we can't wait until college to steer kids into career paths to high-paying jobs.

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Colorado ski resorts are developing, but long-term terrain expansion plans are still in the works.

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# DENVER BUSINESS JOURNAL

## It's never too early to build a better workforce

New efforts to get students ready for careers in tech, engineering and other skilled fields are focusing on kids even before they get to college – and businesses are stepping up to help.

BY CAITLIN HENDEE  
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There's a buzz in the air at the STEM School and Academy in Highlands Ranch. Classrooms are filled with students using mathematics to create music for their instruments, tapping equations into computers and talking excitedly about the wind tunnel or robotics projects they did over the summer.

"We supercharge our curriculum with technology," said Penelope "Penny" Euker, executive director of the charter middle and high school, part of in the Douglas County School District.

"And we try and make our teachers come from non-traditional backgrounds – they come from the business world; they want to carry that knowledge over," added Leanne Weyman, middle school principal.

The STEM School and Academy is diving headfirst into a plan put forth last year by the Colorado Education Initiative (CEI) – a nonprofit backed by United Launch Alliance, Encana, Kaiser Permanente,

Ball Corp. and several other locally prominent businesses as well as state education agencies.

Other Colorado schools – such as Skyline High School in the St. Vrain School District, Graland Country Day School in Denver and Colorado's Finest High School of Choice in Englewood – are also on board.

These schools are part of a heightened push to foster financial literacy, innovation and STEM subjects – science, technology, engineering and math – in the classroom as a way to prepare students for the highly skilled, high-paying jobs being created at Colorado businesses.

Much of the conversation about building a better trained workforce in Colorado has focused on college. But programs like these are targeting students in high school, middle school and even earlier.

CEI in August 2014 rolled out its "Colorado STEM Education Roadmap," a plan to help lead K-12 students into STEM subjects to prepare them for the estimated 55 percent of the "best" jobs in Colorado – those with projected high openings, above average growth rates and offering a family-supporting wage



Amhad Patterson, center, looks at the Encana suite on the 40th floor of Republic Plaza in downtown Denver while on a visit with Junior Achievement.

– that will require skills in STEM, according to a report by the Colorado Department of Higher Education.

"If we're going to continue to be an innovation economy, we can't do that without having a local talent pipeline," said Angela Baber, CEI's STEM director. "If we're not prepping (kids) for our high-wage jobs, we're not preparing them for the opportunities our economy offers."

And Colorado is definitely in need of the help.

The state's public school system ranked 21st out of all 50 states in Education Week's 2014 "Quality Counts" report. But the state ranked lower – 43rd in per-pupil spending,

38th in spending on education, 47th in pre-school poverty gap, 41st in the reading gap and 45th in the math gap – in the latest education stats from Great Education Colorado, an educational activist organization backed by businesses and foundations.

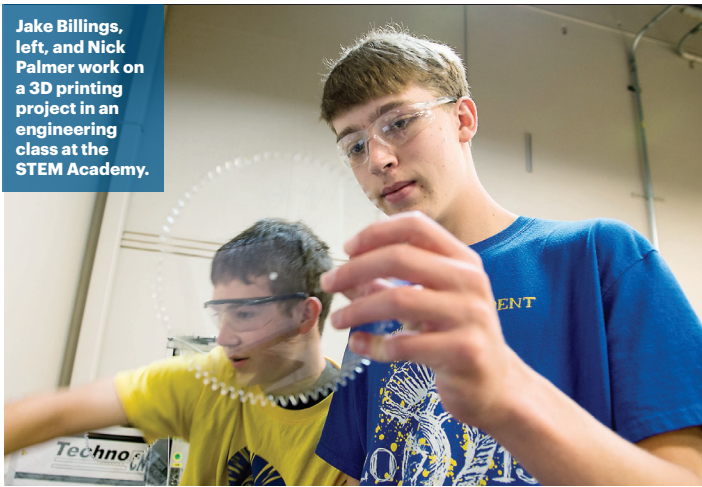
### Starting out early

Increasingly, businesses are seeing a need to get involved in efforts to steer students at an early age into education paths leading to highly skilled jobs.

"Our business leaders need to care deeply about whether or not our schools districts around the state are produc-



Jake Billings, left, and Nick Palmer work on a 3D printing project in an engineering class at the STEM Academy.



PHOTOS: KATHLEEN LAVINE, BUSINESS JOURNAL

## FAILING GRADES

How Colorado fares among all 50 states in a report from Great Education Colorado.



**43rd** Rank in per-pupil spending

**38th** Rank in spending on education

**47th** Rank in pre-school poverty gap

**41st** Rank in reading gap

**45th** Rank in math gap

ing kids who are ready for college,” said U.S. Sen. Michael Bennet, D-Colorado, a former superintendent of Denver Public Schools. “If we want to keep these businesses strong and be a competitive and thriving democracy, we need a highly educated workforce.”

Bennet in April joined U.S. Sen. Lamar Alexander, a Tennessee Republican who chairs the Senate Education Committee, as well as the panel’s

ranking Democrat, Sen. Patty Murray of Washington, in introducing the Every Child Achieves (ECA) Act. Backers see the measure as taking a major step towards replacing what many call the “test, blame, punish” legacy of the No Child Left Behind bill passed in 2002.

In July, the U.S. Senate passed ECA in a 81-17 vote, a level of bipartisanship rarely seen in Congress.

ECA includes dedicated funding for STEM education and teacher professional development by updating the Math and Science Partnerships Program, which brings together teachers with scientists, engineers and mathematicians to keep skills polished.

It also provides funding specifically dedicated to STEM instructional materials and pulls away from the rigidity of No Child Left Behind to allow schools flexibility to innovate, such as doing more job shadowing and hands-on experimenting.

“We’ve done an incredible job at making sure that math and science is some of the most boring teaching we do,” Bennet said. “But when kids can see it, touch it, that’s life-changing.”

ECA also will make computer science a core subject and provide greater access to coursework students in high

school can use to earn college credit.

“It’s important that our business community think about education ... as the most important issue of our time,” Bennet said.

Kelly Brough, president and CEO of the Denver Metro Chamber of Commerce, agreed, saying that for businesses, filling the talent pipeline is critical, and should start at the elementary-school level.

“We have to fill the 74 percent of our jobs in five years that will require postsecondary education,” Brough said. “To make those numbers, we must have a huge improvement in the education of Colorado’s kids. And the business community takes that very seriously.”

Part of the challenge, she said, is determining exactly how STEM skills should be incorporated in the classroom while maintaining a curriculum that still teaches the critical thinking, conflict resolution and interpersonal skills that are also crucial to success in the workforce.

## Answering the call

CEI’s Baber said to be effective in that aspect, STEM education should incorporate hands-on, real-world problems, collaboration and teamwork, personalized lessons, where businesses part-

ner directly with schools and organizations to ensure that their workforce needs are being met.

And many Colorado companies are answering that call.

United Launch Alliance, for example, is one of CEI’s 24 supporters that donate time and money to the program.

Centennial-based ULA, along with companies like CH2M and Encana, work closely with state programs with a mission of providing students with relevant, hands-on learning that will demonstrate to them how they can apply the STEM skills they learn in the classroom into their careers. They’re also major donors to the STEM School and Academy.

In 2012, the Highlands Ranch school, which includes grades 5 through 12, was struggling and on the verge of closure when Euker was hired as executive director and tasked with trying to save it.

Euker quickly overhauled the system in place, shifting its traditional curriculum to one that focuses on teacher collaboration and a “game-layer” awards system that rewards students with privileges and points they can spend in a virtual world.

And, most importantly, she said, the school now implements technology to teach students how the skills they learn in the classroom will be used in real-world careers

Josh Nelson leads an engineering class at the STEM School and Academy in Highlands Ranch.



# 55 percent

Portion of the top jobs that will be in the STEM fields and require postsecondary education by 2020, according to the Colorado Department of Higher Education.



Junior Achievement participant Marjorie Merced listens as Encana's Matt Most, vice president of government relations, speaks to the group with the help of environmental health & safety risk management manager Melanie Holt.

PHOTOS: KATHLEEN LAVINE, BUSINESS JOURNAL

– and how to keep up with evolving technology.

“Students often don’t see why they have to learn something,” Euker said. “But when it’s framed in a problem they can understand, they suddenly get it, which motivates them to use it.”

For example, the school’s music program teaches students how to digitally produce music, its engineering classes have kids inputting mathematical equations to do real 3D printing and its computer classes require students as young as fifth grade to write code.

## And the effort is working.

Students at the STEM School and Academy – such as Olivia, a 15-year-old 11th grader; Tallhu, an 11-year-old sixth grader; and Licia, a 16-year-old 11th grader – are involved in a number of programs, such as internships at local tech firms, robotics teams and engineering contests.

“Everything here is about hands-on learning,” Olivia

said, adding that she wants to be an engineer one day. “It gives you the opportunity to be more creative ... to be a leader.”

The STEM School itself is thriving – earning a 9 out of 10 on GreatSchools.org, a school rating website, and an “A+” from ColoradoSchoolGrades.com, another rating site sponsored by the nonprofit business-backed group Colorado Succeeds.

In August, it saw its largest enrollment ever, adding 400 new students, as well as 34 new staff. It also is in the process of doubling its campus size after acquiring the 65,000-square-foot building next door, and plans to become Colorado’s first K-12 STEM school with the addition of kindergarten through fourth grade by fall 2016.

## JA makes matches

Beyond schools, other organizations with business ties are answering the call to prep young students for the workforce, too.

Junior Achievement–

Rocky Mountain, for example, matches students at metro Denver schools with volunteer mentors and job shadows that teach kids work-readiness and financial literacy.

“[Kids] aren’t going to get interested [in jobs] unless someone makes it relevant to them,” said JA CEO Robin Wise. “Show them why they should have it.”

JA takes kids out of the classroom and out to businesses, such as Arapahoe County-based Air Methods Corp., to see the convergence of mechanics and health care; Denver-based DaVita Healthcare Partners Inc., to learn health sciences; the Lone Tree campus of Charles Schwab Corp., to see the critical role math skills play in the financial world; and the Denver offices of Encana Corp., to meet petroleum engineers and tour a space that they might one day work in.

“It’s how what you’re learning in school applies to the real world, and that’s critical to keeping kids in school,” Wise said.

It also gives the kids, often from low-income neighborhoods, the chance to ask questions and explore companies they may one day work in.

“How long did you go to

college?” and “When you were a kid, did you plan on being in this job?” were just a couple of the questions asked by a group of about 20 kids dressed in their Sunday best while touring Encana’s offices for a job shadow Aug. 6.

“You can have the best teachers in the world, but if it’s not relevant, kids check out psychologically and later physically,” Wise said.

Many businesses and Colorado schools are really taking that philosophy to heart – JA has 5,700 local volunteers, a presence in 550 metro Denver schools and reached more than 125,000 Colorado students last year.

“It’s progressively grown, but really exploded in the last few years; we have more demand than we can deliver,” Wise said. “And we can’t do anything we do without business involvement, because they give us those 5,700 volunteers. It’s a huge commitment from the business community to make this work.”

Bennet added that business involvement, along with freedom to allow states to innovate within their school systems, will propel Colorado’s education to the next level.

“We want to free local communities to innovate, to free that judgment for states ... so that we can be assured that we are driving kids to success,” Bennet said.



Felicia Monteiro, left, and Dakota Crowson in music class at the STEM Academy.