



IN THE SPOTLIGHT: WORKFORCE DEVELOPMENT

Workforce development is so critical to our future economic prosperity that the following three stories emphasize how local corporations support the current workforce, how increased business expectations are changing perceptions for the incoming workforce, and how Utah is responding by building the workforce of the future.

“My goal is to have a labor force in Utah that is second to none in America—that is second to none in the world. Education is what will drive our economy for decades to come. Nothing is more important to Utah’s continued success than education.”

GOVERNOR GARY R. HERBERT

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LOCAL CORPORATIONS SUPPORT THE CURRENT WORKFORCE

By Jeff Vanek

According to various national studies, employing the right people with the right skills is one of the most important factors that contribute to revenue growth and profits. One of the greatest challenges that can face a company is a lack of skilled labor—be it college-degreed positions such as software developers and computer engineers or skilled technical positions such as machinists, medical lab techs and assemblers.

For every one job that requires a master’s degree, there are two jobs that require a bachelor’s and seven jobs that require a two-year certificate, according to the Utah College of Applied Technology (UCAT). Many of those jobs are found in the state’s manufacturing industry. What most people may not realize is that although there is a need for traditional positions like welders and machinists in today’s manufacturing environment, there is a rapidly growing need for lab technicians, information technology specialists, and people skilled in automation processes and composite technologies. It is not uncommon to talk about cleanrooms, composite materials and medical devices when referring to manufacturing.



For example, take Fresenius Medical Care, which manufactures kidney dialysis services and renal care products in Ogden. It also has a research and development facility in the state.

“We need employees in a variety of roles,” said Steven Marler, senior director of operations and general plant manager. “We have need of electrical, mechanical and chemical engineers, as well as scientists. But we also need lab technicians, electrical technicians and skilled production people at the associate degree level who understand medical device production.”

Companies like Hexcel Corporation, which manufactures high-performance carbon fiber, continue to expand their operations in the state and employ both engineers and technicians. Other companies, such as ITT Exelis, use the composites manufactured by Hexcel to make components for commercial and military aircraft structures and are also in need of highly skilled technicians.

According to Mike Blair, vice president and general manager of Aerostructures at Exelis, Utah has become an epicenter of the composites industry. Exelis’ Utah facilities design and build parts for Boeing’s 7-series family, the Airbus A380 aircraft, as well as the Sikorsky S-76 helicopter.

“We are growing in terms of employees, about 30 percent each year in the state, and have a wide variety of skill sets needed beyond engineers and scientists,” said Blair.



GOVERNOR GARY R. HERBERT VISITING EXELIS.

THE NEW “WHITE COLLAR”

“Manufacturing often suffers from an image problem—dark, dirty, and dangerous,” said Todd Bingham, president of the Utah Manufacturers Association. “It’s time to change that image to reflect the realities of what manufacturing means in the 21st Century and in the state. Jobs in manufacturing are not low-tech, low paying, or low education. This is not your grandfather’s or even your father’s industry anymore. There is a great need for engineers as well as highly skilled technicians.”

Manufacturing in Utah includes many companies that span a wide range of industries from high-tech to low-tech and include computer products, electronics, microchips, scientific instruments, medical devices, metals, composites, as well as food and beverages. A very short list of companies that “make things” in the state includes Intel/Micron, IM Flash, Merit Medical, Fresenius, Edwards Lifesciences, Varian Medical Systems, Boeing, L-3, Lifetime, Blendtec, Pepsi, Boeing and ATK. As is readily apparent from this list, manufacturing spans a wide range of industries and employs people in a wide range of jobs.

In an effort to ensure the state has a well-prepared workforce, a wide coalition consisting of the Governor’s office, the legislature, chambers of commerce, educational boards and many industrial associations created Utah’s Prosperity 2020 campaign. One of the campaign’s primary goals is to ensure that Utah will rank among the top 10 states for percentage of adults with a postsecondary certificate or degree by the year 2020. Although a part of obtaining this goal will come from graduating students at the traditional four year colleges and universities in the state, a large part of it will be fulfilled by those who seek a less traditional route of education.

This less traditional route is where a vast amount of jobs can be found. Companies are either creating their own in-house training programs, like Vivint, Adobe

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TODD BINGHAM,
PRESIDENT OF THE UTAH MANUFACTURERS ASSOCIATION

and Boeing have done, or they must rely on the technical and trade schools to supply them with qualified candidates.

Vivint has three main lines of business: home security and automation, data management and wireless internet service. Its employment needs fall into five large categories—sales people, customer service, field technicians, innovation and technology workers, and corporate support personnel.

“We do a great deal on internal training in all of these areas,” said Starr Fowler, vice president of human resources. “We have developed training programs to give our people the skills they need.”

For leadership skills, Adobe created and launched a new development program called “Leading@Adobe.” The program is designed to be practical, engaging, collaborative, available 24/7, and combines both digital and live learning. In addition, Adobe is implementing a new learning management system to significantly improve the way employees learn, consume and engage with career development resources.

Boeing has two principal businesses in the state. The largest manufactures major structural components for Boeing’s commercial jetliners and their military derivatives and is based in Salt Lake County. Boeing’s second facility in Ogden supports the U.S. Air Force’s ICBM Program. The skills needed at these facilities include light metal structure assembly, hardware design and fabrication, composite fabrication and structure assembly, as well as engineering, software development and testing, quality assurance and general production support.

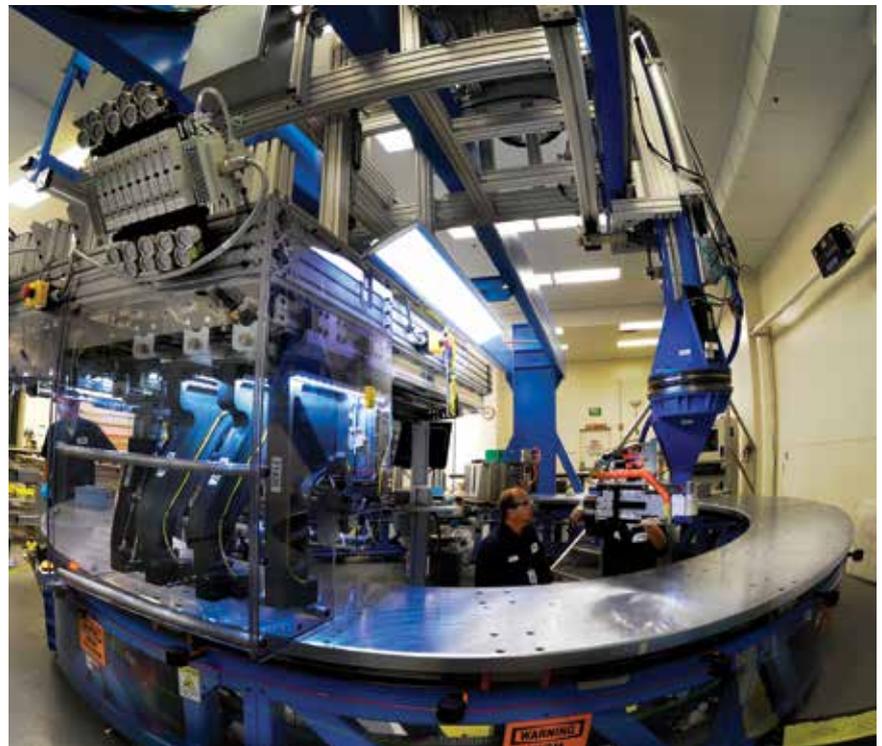
“We look for employees who value being lifelong learners,” said Larry Coughlin, Boeing Salt Lake general manager. “The local advanced technical colleges and universities have been a great resource for training Boeing employees who want to expand their skills and move to a higher level within Boeing. Utah schools help fuel our company’s future. It starts with the state’s investment in early learning and rolls all the way up to higher education. Throughout the year, we also provide our team with in-house training to supplement our machining, assembly, policy and procedure and information technology requirements.”

EDUCATING TODAY’S WORKFORCE

The dual nature of the need for highly trained workers in the state, including those with college degrees and those with certificates in technical areas, is illustrated by the types of employees needed by L-3 Communications Systems-West. L-3 is a supplier of wideband data links and mobile surface and airborne satellite terminals for military applications throughout the world. The company’s major customers are the Department of Defense, the Department of Homeland Security, and other government agencies including allied governments.

“The company is always looking for both engineers—primarily electrical and computer engineers—on the one end, and highly trained technical and trades professionals with electromechanical assembly and electronics testing skills, on the other,” said Ci Ci Compton, human resources and community relations representative at L-3. “We design and manufacture many different products so we don’t have redundant assembly environments. We have to constantly improve and modify our products to meet our customers’ needs.”

L-3 engages in a number of internal and external programs to cultivate the



ATK

skills needed by its employees. For example, in 2011 the company partnered with Salt Lake Community College (SLCC) to create the University of Manufacturing. As part of this agreement, SLCC offered classroom space for training sessions and to teach coursework by their certified professors. L-3 outfitted the SLCC space with all the equipment and materials needed to hold the classes. L-3 subject matter experts trained and certified both students and professors.

SLCC offers certificate programs as well as Custom Fit training programs to meet the needs of employers. Often the college will partner with organizations such as the Manufacturing Extension Partnership (MEP), a national organization with a state chapter, to create training programs for business. Hunter Douglas for example, which fabricates high-end window coverings, partnered with both the college and the MEP to make sure its growing workforce was properly trained.

MEP has been instrumental in providing a wide range of specialized training for a number of companies, such as weBoost, Halverson and Tahitian Noni. Training has included a wider range of skill sets, everything from skills in communication to leadership to increasing the effectiveness of sales processes to Lean 101 Manufacturing.

The state educational system takes technology training for the future very seriously. With eight regional campuses, the Utah Colleges of Applied Technology (UCAT) offers well over 300 certificate programs in more than 70 areas of training. Student completion and job placement were both near 90 percent in 2014. The vast majority of its students are adults who are seeking new skills to obtain employment or currently employed workers who are upgrading their skills.

“Most of the people who complete a certificate program obtain employment,” said Jordan Rushton, director of public relations at UCAT. “This is because we work very closely with industry and local businesses to make sure our programs are actually meeting the needs of businesses. We consider our number one client to be the businesses that employ our students. Each program is overseen by an employer advisory committee made up of the CEOs, executives and owners of the businesses we serve.”

In addition to the regular established certificate programs at UCAT, the colleges also offer Custom Fit Training programs for industry. Custom Fit programs are customized state-of-the-art training programs. A part of the cost of the program is born by the business and part of the cost is born by the state as an investment in the economy.

According to Rushton, SyberJet Aircraft in Cedar City manufactures one of the world’s fastest and longest range seven-seat light business jets. It will be using a Custom Fit program to train over 1,200 employees.

It is not only big employers that use the Custom Fit program. Last year more than 1,200 businesses in the state used the program to train more than 14,000 employees. Programs covered certificate areas for professional development, trades skills, and topics in health and safety. They also covered technical skills for manufacturing and professional careers, as well as employee and business development skill-sets.

BOEING 787 FLIGHT DECK



“We look for employees who value being lifelong learners. The local advanced technical colleges and universities have been a great resource for training Boeing employees who want to expand their skills and move to a higher level within Boeing. Utah schools help fuel our company’s future.”

LARRY COUGHLIN,
GENERAL MANAGER, BOEING SALT LAKE



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STEM EDUCATION AND THE WORKFORCE OF TOMORROW

Many jobs, regardless of industry, now require some knowledge or skills in science, technology, engineering or math—often referred to as STEM. STEM jobs don't just include engineers and scientists. The competencies needed in science, technology, engineering and math have become essential in every industry and profession—from manufacturing to finance. For this reason, the state created the STEM Action Center and funded it with \$30 million. STEM AC coordinates STEM education in the state and is housed in the Governor's Office of Economic Development (GOED).

"We are more than just a math center," said Tami Goetz, executive director of the STEM AC. "Our job is to coordinate and sponsor STEM-related curricula and activities between state government, private industry and education. Our initial focus has been K-12 education but as our funding and success has expanded, we are focusing on adult education as well."

One important initiative of the STEM AC is the STEM Utah Coalition. Consisting of more than 25 leading Utah companies and organizations, the coalition launched a media campaign entitled "Curiosity Unleashed" to increase awareness of the importance of STEM education among parents in the community and to increase the "cool" factor among students. Sponsors represent a wide range of industries and organizations that include Goldman Sachs, Fidelity Investments, Chevron, Adobe, Comcast, doTerra, eBay, Rocky Mountain Power, the Larry H. Miller Group of Companies, Regence BlueCross BlueShield of Utah, IM Flash Technologies, Utah Department of Workforce Services, Utah Technology Council, Merit Medical Boeing, L-3, ATK and JPMorgan Chase.

Benjamin Hart, former director of employer initiatives in the Department of Workforce Services, who has now joined GOED as a managing director of urban and rural business services, explained that, "a few years ago during the big recession, we were concerned about job creation. These days, we are concerned with filling jobs. This is why we are working with the STEM Action Center, Utah Technology Council, Utah Manufacturers Association and the Utah College of Applied Technology to create a skilled workforce that can fill those jobs."

Utah's economy is thriving and continues to grow. With job growth breaking 4 percent and unemployment heading toward 3 percent, the challenge the state faces isn't a lack of business and industries wanting to locate here. The challenge is supplying those businesses with the skilled employees they need now. However, Utah is well-poised to meet that challenge. The state is aggressively preparing its incumbent workforce with improved skills and recruiting talent who want to enjoy the family-friendly communities and incredible quality of life. And, most importantly, Utah is focused on highly educating its more than 665,000 K-12 students to be well-prepared as the workforce of the future.

Todd Riesterer, senior vice president of talent acceleration at InsideSales.com put it simply: "The state has an amazing infrastructure in place. The lifestyle here is terrific. We are often able to find or train the people we need. Not that there aren't some challenges, but we are very pleased with what is happening here. It feels like the Silicon Valley of 30 years ago—vital and on the cusp of huge growth." ■



THE STEM ACTION CENTER, WITH HELP FROM GOLDMAN SACHS, THE UTAH TECHNOLOGY COUNCIL, COMCAST AND REAL SALT LAKE ARE HOSTING A STEM UTAH CORPORATE SOCCER TOURNAMENT, SEPTEMBER 22 FROM 2 P.M.-4P.M. AT RIO TINTO STADIUM, IN A JOINT EFFORT TO SUPPORT MARKETING THE STUDY OF SCIENCE, TECHNOLOGY, ENGINEERING AND MATH (STEM) TO UTAH'S SCHOOL POPULATION.

"We work very closely with industry and local businesses to make sure our programs are actually meeting the needs of businesses. We consider our number one client to be the businesses that employ our students."

JORDAN RUSHTON,
DIRECTOR OF PUBLIC RELATIONS,
UTAH COLLEGE OF APPLIED TECHNOLOGY



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The New White Collar

INCREASED BUSINESS EXPECTATIONS ARE CHANGING PERCEPTIONS: TECH TRAINING IS WHERE IT'S AT

By Rachel Madison

***What is it that companies look for in new employees? Technical skills?
A four-year degree? Years of experience?***

While all of those issues are important, the answer is more basic than that. Employers simply want job candidates who can communicate and think critically.

That's according to a 2014 study conducted by the Sandy Area Chamber of Commerce, along with Zions Bank and The Cicero Group. For the study, more than 80 company executives and high-level managers from more than 30 companies were interviewed about what they look for in an employee and what their needed skill sets are.

“The interesting thing is that the No. 1 need was communication skills and the No. 2 was critical thinking,” said Stan Parrish, president and CEO of the Sandy Area Chamber of Commerce. “If they could find students who had those skill sets, then they said they could train them in other skills.”

Mountainland Applied Technology College

A Utah College of Applied Technology Campus

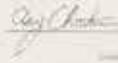
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A SOLID FOUNDATION

Considering that a person's working years can span up to five decades—or more—today's employees can expect their careers to evolve over time. Technology changes rapidly, and so whole industries can grow and die just as quickly. Not to mention that life has a way of throwing curve balls that may call for a career change—and additional education.

The key to being successful in this labor market is flexibility and an ongoing approach to education, along with a solid base of critical thinking and communication.

This way of thinking about education and the labor market has led to a new interest in two-year associate degrees.

These degrees used to be the first big step for students who were on their way to earning a bachelor's degree, but because Utah's job market is ever changing, an associate's degree is no longer just a stepping stone—it comes with its own set of unique merits.

"We have to give a lot more respect to associate degrees these days," said Parrish, who also pointed out that a traditional, two-year associate degree provides those all-important communication and critical thinking skills.

"It really doesn't matter what field you're in—if you can solve problems and you can communicate, you can find a job," said Val Hale, executive director of the Governor's Office of Economic Development. "Every employer is looking for someone with those skills."

That's why he believes associate degrees are such a valuable option. "Many people don't understand the value of a two-year degree and what they can do to prepare you for a good profession," he said. "There are a lot of great jobs that people can get with two-year degrees. You don't always need to have a four-year degree."

Hale said the community college route is a great option for people who want to earn a two-year degree but need affordability. "For people who have a hard time funding their education, it's so much less expensive to go to a community college like Salt Lake Community College (SLCC) for two years," he said. "You can still get your four-year degree if that's your goal, but you've got the option to go to a community college such as SLCC and get your associate degree first."

A QUICK CHANGE

Whether students start with an associate degree or jump right into a bachelor's program, the most important thing is an attitude of flexibility and the pursuit of ongoing education. Education and skill certificates can be stacked up continuously as a worker's needs and goals change or as the needs of industry change.

In fact, the most flexible component of an education may be the oft-overlooked certificate of a specialized skill. In today's marketplace the "stackable credential" has become a useful key to career advancement. A person can add one or more certificates of advanced study to their resume over the years they are in the workforce.

When Grantsville resident Wanda Held starting working on her medical assistant certificate at Tooele Applied Technology College (ATC) in early 2014, she knew her life was about to get significantly better. Held had endured a long list of difficult situations in the last year—from her husband leaving her and their three children to being hospitalized for a serious illness to losing her job—and she was in dire need of a change for the better.

"I was in a very difficult situation and [the ATC] got me out of that situation," she said. "I needed to get back to work fast, but I was a middle-aged woman who didn't have a degree. When I lost my husband, it became extremely important for me to get an education at an affordable rate very quickly."

A traditional four-year degree used to be the main avenue people would consider when they thought of higher education, but the options students have today reach far past that and provide jobs that are just as lucrative and appealing.

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OF ECONOMIC DEVELOPMENT



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WANDA HELD,

TOOELE APPLIED TECHNOLOGY COLLEGE
GRADUATE



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DIXIE ATC GRADUATE

“We’re seeing a trend where people are realizing the benefit of short-term technical education, not just because it’s short and affordable, but because the jobs that people are able to get upon completion are often as high paying as people graduating with a bachelor’s degree.”

ROBERT BREMS,
PRESIDENT OF THE UTAH COLLEGE
OF APPLIED TECHNOLOGY

Hale researched going to a traditional university, but after learning about the flexibility, affordability and successful placement rates at the Tooele ATC, she quickly decided that was the path for her.

“It was very appealing to me that I was able to manipulate my own education and set it up the way I wanted it set up,” she said. “I got to pick when I was in school, when I was going to graduate, and I built my own education from the ground up. Being a single mom, it was important to me to be home for my kids before and after school. I was also able to speed up my graduation rate a lot. I went from start to finish and got a job in nine months.”

WORKFORCE ALIGNMENT

Hale explained that workforce development is at the forefront of everyone’s minds, and the key to a great workforce is education.

“If we want our economy to continue to grow for the long term, we need to produce students who are prepared for the workforce when they come out of high school and college,” he said, adding that local universities are increasingly aligning themselves with Utah’s workforce needs, so they don’t have students graduating who aren’t able to get a job. “They’re trying to make sure their output is relevant with the jobs out there.”

Robert Brems, president of the Utah College of Applied Technology (UCAT) believes that Utah has a great educational system in both public and higher education. But several years ago, Utah leaders recognized the state would also benefit from targeting a part of its educational system to the workforce and employers’ specific needs. That’s when technical college campuses began to spring up. UCAT oversees all of the state’s ATCs.

Today, Utah is home to eight ATCs that span from Logan to St. George, all with the same mission to provide highly-skilled technical workers and to meet the needs of the state’s businesses.

“Certificates are different from a college degree,” Brems said. “It’s focused on exactly what the competencies are that employers indicate to us are needed for someone to come into the workplace and be successful.”

That’s why each of Utah’s ATCs provides their own unique set of advanced certification programs. In fact, at the end of FY2014, UCAT had a total of 389 programs across its campuses. A group of more than 1,300 employer representatives who serve on advisory committees across the UCAT system provide direction to the colleges so the certificate programs directly match with employer needs.

“We don’t make the decisions by ourselves,” Brems said. “We allow employers to tell us what training needs to take place. We really rely upon on their expertise, and sometimes a program that has the same name in one region might be a longer or shorter program in another region simply because employers are doing something different there.”

Employers are turning to their local ATCs more and more because it’s a perfect way to obtain specially trained employees. “Employers say, ‘If you will work with us to develop a customized certificate program that meets our needs, we will certainly be hiring these people,’” Brems said.

Currently, about one-fourth of students enrolled at Utah’s ATCs are high school students. They’re able to attend their local ATC during high school and graduate with a certificate at the same time they graduate with their high school diploma. They’re also able to attend tuition free. According to Jordan Rushton, director of public relations at UCAT, “It allows them to get a great deal of training finished before high school graduation, and it’s easier for them to find a job.”

UCAT is also working with local colleges and universities to have credit hours from certificate programs become transferable for college credit.



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“We are all striving to fulfill Governor Herbert’s goal, which is 66 percent of people with certificates or degrees by 2020,” Brems said. “UCAT is working to contribute as many certificates as we can to that goal.” In FY2014, UCAT’s eight ATCs contributed 7,904 certificates—6,971 that were program certificates and 933 that were occupational upgrades.

SHIFTING TRENDS

“We’re seeing a trend where people are realizing the benefit of short-term technical education, not just because it’s short and affordable, but because the jobs that people are able to get upon completion are often as high paying as people graduating with a bachelor’s degree,” Brems said.

Rushton added that even if someone has a goal to earn a master’s degree, they can still start their education at an applied technology college, where in three to nine months they can earn a certificate that will help them land a high-demand, high-paying job to help fund the rest of their education.

One new trend is to start with an associate degree to gain those valuable critical thinking and communication skills, then, instead of going for a four-year degree, turning to an ATC to earn a highly-specialized, advanced certificate. Some now call these “AC degrees” because they often take up to two years to complete, just as academic majors require two years of study following completion of general course studies. The workforce demands a high skill level, and it’s turning up the heat for tech training programs to produce true professionals. In fact, some even say that these jobs can be classified as the “new white collar.”

As yet another option, those who already have degrees can use their local ATC as an avenue to switch career paths, like Layton resident Ty Jarry recently did.

Jarry already has a bachelor’s degree in management and spent more than two decades working as an electronics engineer in the U.S. Air Force, but he decided when he retired from the military that he wanted to go in a different direction.

Enter the Davis ATC. Jarry was able to earn a nursing assistant certificate, which he graduated with in April 2013, and then he moved on to earn a national certification in surgical technologies. Soon after starting the program, Jarry was diagnosed with cancer and had to quit attending school for about nine months. But when he entered remission and regained his strength, he started the program once again. Currently, he is working on the first of two externships and hopes to graduate with the certificate by April 2015.

“The flexibility the programs offered is tremendously helpful for busy individuals or people who are sick or have any unforeseen circumstances,” he said.

Jarry is completing his first 300-hour externship at Ogden Regional Medical Center, where he works as a scrub technician. His second will be done at the University of Utah Hospital.

“Ogden Regional is already asking me if I’d be interested in staying with them [after I graduate],” Jarry said “They put me right in the operating room on day one, but I was able to swim when they threw me in the lake because my education and training was great.” ■



UNITA BASIN ATC GRADUATE

The workforce demands a high skill level, and it’s turning up the heat for tech training programs to produce true professionals. In fact, some even say that these jobs can be classified as the “new white collar.”

FAST FACTS

For every one job requiring a master’s degree, there are two jobs requiring a bachelor’s degree and **SEVEN** requiring a one- to two-year certificate.

On average, UCAT graduates earn **20 PERCENT** more than high school graduates.

Nearly **90 PERCENT** of UCAT graduates are hired in their field of study.

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FILLING THE PIPELINE

By Emma Penrod

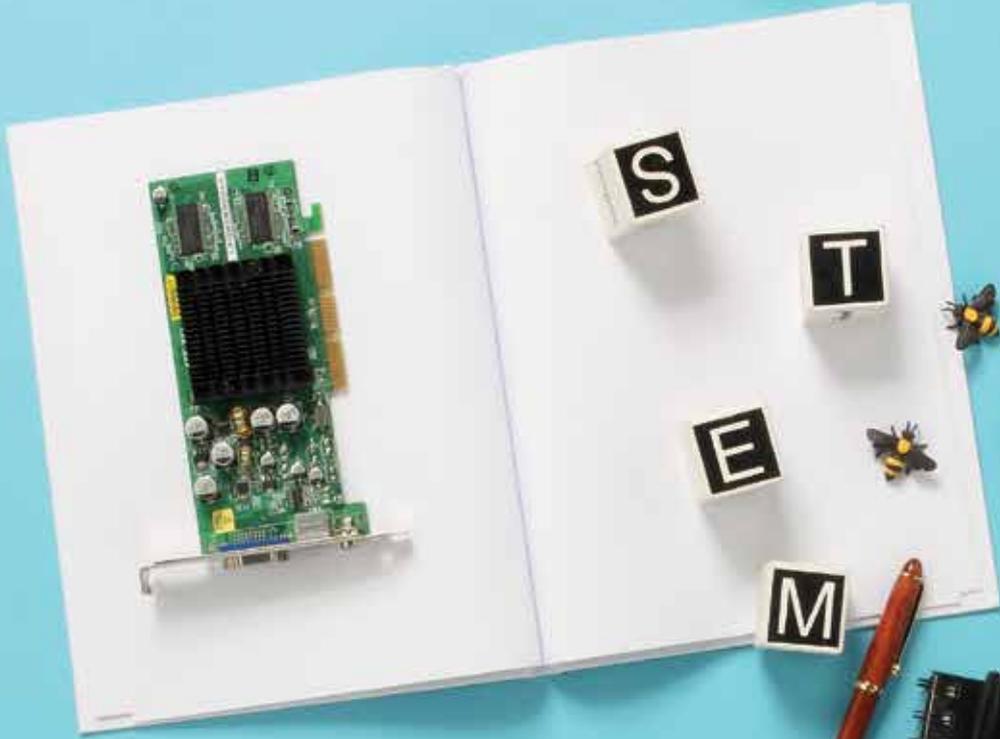
UTAH IS BUILDING

Business. Most of the time, we think of it as a verb—something that you do. Or as a noun—a place of business, a company, a store or an office.

But business is also very much about the *who*. Businesses need skilled employees to make their products and services a reality, and yet there is a growing disconnect between the thousands of available jobs and the thousands of young people looking to fill them.

The need to bridge that gap has led Utah's business men and women to invest directly in their future employees by supporting the state's STEM (science, technology, engineering and math) education initiatives financially as well as in person. This time, it's not just about pocket books—business leaders have joined education's frontlines right beside the teachers.

THE WORKFORCE OF THE FUTURE



UNFILLED JOBS, UNEMPLOYED GRADUATES

Across the nation, businesses and industries face a growing problem: a shortage of skilled, educated laborers to fill thousands, if not millions, of available jobs.

A recent survey conducted by the Utah Technology Council found more than 1,800 unfilled job positions dispersed among 38 Utah businesses; another informal survey, taken at a meeting of state business leaders last November, had some 40 CEOs also reporting nearly 2,000 positions they had been unable to fill.

Nationwide, the numbers are even more dramatic: an estimated 2 million unfilled jobs in tech-related sectors—jobs with salaries averaging \$80,000 a year, according to Chet Linton, CEO and president of School Improvement Network and chairman of the Utah Technology Council. And there's another 1 million similar jobs available in manufacturing.

“That’s 3 million jobs that Americans aren’t qualified for,” Linton said. In Utah, the number averages out to two or three jobs for every resident with the technical skills to fill them.

Yet at the same time, Linton said, 52 percent of last year’s collegiate graduating class remains either unemployed or underemployed.

Both problems come from the same set of circumstances. The first contributing factor is an issue of demographics, according to Kimberly Henrie, deputy director and COO of the Governor’s Office of Economic Development (GOED). The Great Recession caused many experienced workers to delay retirement, decreasing the number of jobs available to new graduates. Consequently, the improving economy has begun to unleash a backlog of retirees, which in turn creates a jobs vacuum across all sectors of the U.S. economy. This increases the number of job openings above and beyond what is typical, even in periods of growth. This trend is expected to continue for the next five to 10 years.

Meanwhile, Linton said, there is a noticeable disconnect between the skills needed by modern, technology-driven businesses and industries, and the skills recent graduates acquired during their education.

BRINGING BUSINESS AND EDUCATION TOGETHER

Because business and industry leaders consistently identify the skilled workforce shortage as their No. 1 concern, Linton said the State of Utah is committed to creating a partnership between businesses and educators to help prepare Utah’s youth—all 665,000 kids K-12 and all 200,000 college students—for the workforce of the future.

In 2013, an act of the Utah legislature created the STEM Action Center to research and implement best practices for improving instruction in science, technology, engineering and math. The \$10 million in funding appropriated in 2013 was further expanded the next year, making nearly \$30 million available to the center to further prepare and educate youth for their future careers.

Most of that funding has been invested directly in the classroom to support educators as they strive to develop and implement new teaching methods to improve their students’ skills, particularly in math. Between fiscal years 2015 and 2016, Utah has invested \$8.5 million to improve math education for the 7-12 grades, and another \$5 million for K-6.

These funds help train teachers, develop and implement new curricula, and even help put new technology and software into the hands of kids as early as kindergarten. Education in the classroom has become more technology-centric, more hands-on and more collaborative.



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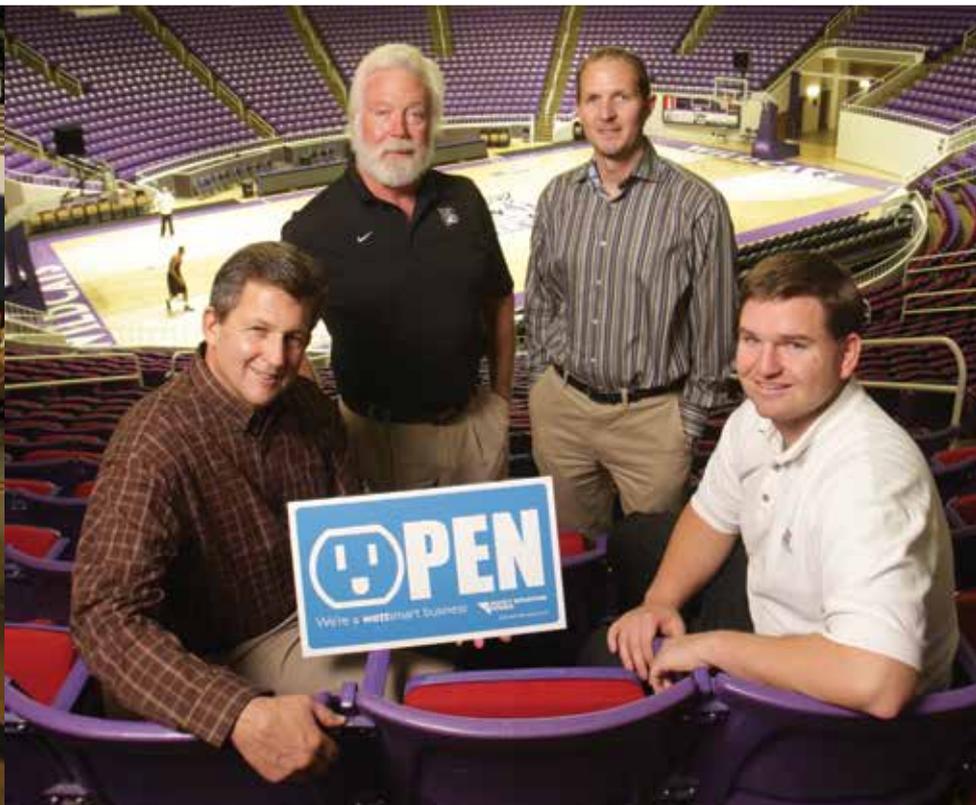
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Though the startups themselves often provide necessary training, BioInnovations Gateway also includes an educational component where the students are taught skills necessary to bridge the gap between a classroom education and the positions available with the startup companies.



GRANITE SCHOOL DISTRICT STUDENT INTERNS WORK WITH AN ENGINEERING INTERN INSTRUCTOR AT BIOINNOVATIONS GATEWAY.

But what's happening in the classroom, while exciting, often isn't enough, because students need more than math skills to succeed in today's economy, said Henrie, whose office supports the STEM Action Center.

"There is demand for students who can be critical thinkers and who can communicate," she said. To learn how to apply those skills, she added, children need to be exposed to what the workforce actually looks like as early as kindergarten.

"We find that the earlier they are exposed to [STEM careers], the more likely they are to pursue it later in life," Henrie said. That exposure is especially important for girls.

This is where the education-business partnerships become critical. The STEM Action Center not only collaborates with Utah's business and industry leaders to create new curricula for students and new training opportunities for teachers, but in many cases the businesses themselves have become directly involved in the education process. These STEM business partners put their own funds and time on the line by facilitating field trips, job shadow and internship opportunities, or by taking hands-on learning directly into the classroom with presentations and in-class projects.

PARTNERSHIP IN ACTION

BioInnovations Gateway in the Granite School District has been called a quintessential example of this type of business-education partnership, one that not only develops student's skills, but also helps new biotech businesses get off the ground.

BiG serves as a full-time incubator space for new businesses in life science and biotechnology—important economic sectors where entrepreneurs face steep barriers to entry because they often need access to full-scale laboratories and expensive equipment.

But BiG also has a multi-million dollar laboratory, a full-scale machine shop, all the latest technologies and a fleet of teens from Granite schools that are ready and able to work as interns.

Scott Marland, executive director of BioInnovations Gateway, said he has high school students performing light manufacturing and assembly work, and even working in the lab's clean room to assist with everything from building new medical devices to developing new cancer drugs.

Biotechnical research may not seem like the most intuitive after-school job for a teen, but Marland has found his students able and willing to contribute. Though the startups themselves often provide necessary training, the Gateway also includes an educational component where the students are taught skills necessary to bridge the gap between a classroom education and the positions available with the startup companies.

For example, a tech company might require interns capable of doing some soldering, so BiG will take interested students and teach them to solder. From there, it's possible for the student to pursue and acquire certification in that skill, which they could then turn into a career straight out of high school, or, as many BiG alumni have, use that skill to pay for further education.

But the greatest benefit for the students, Marland said, is not the on-the-job skill training. It's the opportunity to explore careers to which many of these students have never been exposed.

BiG serves as a window into what really goes on inside science- and technology-based businesses. And when students can see what working in the sciences really looks like, they are better able to envision a future of their own.

"I want them to leave our program with excitement about their future, whatever that is," he said. "I want them to come in and experience things that are going to guide them into a career."



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EMPOWERING STUDENTS

While hands-on STEM initiatives such as the BioInnovations Gateway are about encouraging youth to pursue technical careers, Marland, Linton and others say it's not just about getting students out of the classroom and into the lab. Their main goal is to give students the tools they need to make educated decisions about their own careers.

"What we're hoping is that this is something that could really be impactful, if we can help students learn about jobs they could get passionate about," Linton said.

In many cases, Linton said, students who don't discover their passion during their primary education often end up casting about later in life. These are bright students who go to college after high school, but who may enter their university studies with an undeclared major. Eventually they pick a major just to "fill in the blank," he said, and then perhaps go on to advanced training.

This is where the trouble of "mismatched skills" tends to arise, because in many cases the students who follow this path cannot find jobs after graduation.

Another more successful path occurs when students discover a career that gets them excited early in life, Linton said. When they have that passion and that direction early on, they are better able to make choices about their education and training. After graduation, these students have less trouble finding jobs and often land higher-paying jobs and lead more successful careers than their late-blooming peers.

"It's very important for these kids to understand what the real workforce is like," said Benjamin Hart, former director of employer initiatives for the Utah Department of Workforce Services and current managing director of urban and rural business services at GOED. "Being in a real workforce setting really allows kids the opportunity to understand that it's not just about a specific curriculum or the skills they have."

When children see real workforce scenarios in action and begin to understand what their future career might actually look like, they are empowered to make decisions about their own educational path, Hart said. The end goal is to expose kids to a variety of career options, especially those little-known STEM opportunities, so they have the knowledge and experience necessary to take control of their future.

EDUCATING EDUCATORS

This kind of talk of young children choosing a career often invokes a feeling of fear for American parents, Linton said. But that is also part of the state's goals—to dispel some of the misconceptions and to educate parents, teachers and school counselors as well as the students.

One of the great benefits of educators partnering directly with the businesses, Hart said, is that it also allows the teachers and counselors who guide students to see how the business world really functions. "When they understand what those business needs are really like, they can better help guide students to their chosen career paths," he said.

Sometimes, the education necessary is as simple as exposing educators to the same opportunities as the students. Many teachers have come away from business-educator conferences saying they were unaware that such jobs even existed, said Linton.



A GRANITE SCHOOL DISTRICT STUDENT INTERN WORKS ON PURIFYING SAMPLES AT BIOINNOVATIONS GATEWAY.

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SCOTT MARLAND,
EXECUTIVE DIRECTOR, BIOINNOVATIONS GATEWAY

But he said it is also important to address beliefs that math is scary and that the skills necessary for STEM careers are difficult to acquire. “I’ve talked to a lot of teachers who teach elementary who say they wanted to teach elementary because they didn’t want to do the math,” he said. “These perceptions trickle down to the students.”

The state also aims to demonstrate to educators and parents that certain industrial sectors, such as manufacturing, have evolved beyond what they were in the past. Manufacturing, for example, is now a technical, high-paying field, but still suffers from the perception that work in that sector is dirty and undesirable, leading parents and educators to steer youth away from those careers, Henrie said. It is important that social perceptions of CTE-type education and careers change.

As students begin to realize the vast opportunities available in the world of science, technology and engineering, Hart said he hopes Utahns will realize that the economy of the future has a place for everyone—yes, for the doctor and the research scientist and software programmer, but also for the welder, the machinist and even the writer.

“We have to teach kids to think critically and adapt their skills,” Hart said. “It’s difficult to keep up in this economy, but we do see education rising to meet that challenge. Kids seem better prepared than in the past, and I think we’re seeing more kids getting prepared—we’re losing less.” ■

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BENJAMIN HART,
GOVERNOR’S OFFICE OF ECONOMIC DEVELOPMENT



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