

# Rural Broadband and the Next Generation of American Jobs

Rural broadband providers are leveraging their networks and working closely with educational institutions to provide the training necessary for jobs in industries ranging from health care to technology.

By Joshua Seidemann / *NTCA—The Rural Broadband Association*

**T**echnology is shaping the next generation of American jobs. Manufacturing, agriculture and health care are among the sectors that demand more highly skilled employees than in the past. The need for increased training and education is imperative for many rural areas that face demographic and economic challenges.

Although some rural areas have enjoyed population increases in the past several years, many rural areas are challenged by static or decreasing population. Likewise, some rural areas have exhibited reassuring recovery from the Great Recession, but others continue to face the lingering impacts of economic struggle. These changes come at a time when many jobs demand increased skills.

In rural areas, broadband helps provide these necessary skills. Broadband can support secondary and postsecondary education and training, and broadband-enabled services can overcome instances in which small or insular areas lack sufficient economies of scale to support interest in advanced or specialized courses. This can improve local economic stability because data indicate that higher wages correlate to education.

Small rural communications providers can play a critical role in these efforts. Many offer fiber-based broadband services that can support distance education, and many also work

closely with educators and industry to develop opportunities for teaching students the skills they need to succeed. Work-training programs, apprenticeships and focused classroom instruction can help students develop skills and lay the groundwork for economic opportunities in rural areas.

## ADVANCED TRAINING

Before we look at the important role of broadband in preparing American workers for the next generation of jobs, it's important to examine what jobs of the future will look like – and the training they will require.

A U.S. congressional report predicts that by 2020, nearly 66 percent of all jobs will require some postsecondary training or education. The acquisition of those credentials can take the form of career and technical education (CTE) or traditional postsecondary college (either two-year or four-year) and should bode well for workers when held against long-standing findings that education is a key element for high earnings.

Science, technology, engineering and math (STEM) jobs are predicted to continue to grow. Although some STEM jobs require a college degree, many do not, including web developers, geological and petroleum technicians, and agricultural and food science workers. But traditional “blue collar” STEM jobs in industries such as manufacturing, health care and construction increasingly will require postsecondary certificates or associate degrees.



Nex-Tech in Lenora, Kansas, works with local charitable foundations and public utilities to support high-school and college internships. Here Ashtin Heath, intern for Rush County Memorial Hospital in LaCrosse, Kansas, assists in the ER.

There's also a predicted increased demand for workers with "middle-skill" abilities. Middle-skill jobs include those in which one-third of workers have some college or an associate degree, including emergency medical technicians (EMTs), therapists, teacher assistants and information technology workers. Some define middle-skill jobs as those requiring problem-solving and human intervention that cannot be automated, such as those in health care, high-tech manufacturing and information technology. About one-third of current U.S. jobs and one-third of the 30 fastest growing jobs are considered middle-skill.

Management, finance, information technology and health care are often referred to as high-skill but include many middle-skill positions. Health care, in particular, cannot be automated or outsourced. Nor can jobs that require solving problems and demand a "human touch"; these jobs include computer support specialists, web developers and engineering technicians.

In 2017, the Bureau of Labor Statistics predicted health care occupations to increase 23.6 percent and health care and technical practitioners to increase 15.3 percent from 2016 through 2026. STEM occupations are expected to increase 8.8 percent from 2018 to 2028; median annual wages for STEM occupations in 2018 were 78 percent higher than non-STEM wages. CTE training, also called vocational training, will be increasingly important as consumer and industrial goods become more complicated and require more skilled workers for manufacturing and repair. Careers defined by automation and internet of things (IoT) evolutions will demand computer and digital skills alongside problem-solving and critical thinking.

With this outlook, there is sufficient support to create curricula at the secondary and postsecondary level to prepare students for middle-skill jobs.

### **EDUCATION AND THE ECONOMY**

Successful postsecondary education for rural America should be considered

a key factor in ensuring long-term economic viability for rural regions that seek to attract businesses and provide local labor forces. Growth can be impeded if employers cannot fill critical positions in health care, technology and skilled manufacturing.

The Economic Research Service (ERS) reports rural counties with low levels of educational attainment suffer poor economic outcomes compared with counties that have higher levels of educational attainment. The BLS reported in 2017 that adults 25 and older who lack a high school diploma have unemployment rates of 7.7 percent; those with a high-school education have unemployment rates of 5.3 percent. Proportional gaps in unemployment rates as they correlated to educational attainment remained fairly constant in the decade between 2007–2017.

Fortunately, rural America appears to have taken a head start on the challenge of providing the right education for workers of the future. ERS reports educational attainment in

rural areas is increasing. In 1970, more than half (56 percent) of rural adults 25 years and older did not have a high school diploma. That share dropped to 15 percent in 2015. Most rural adults have a high school diploma or equivalent (GED), and nearly 30 percent have a bachelor's degree or higher.

Educational achievement among young rural adults is increasing, a trend that bodes well for strategies aimed at meeting evolving labor market needs. Youth who live in areas with broadband are found to earn higher scores on college entrance exams such as the SAT or ACT.

## RURAL BROADBAND'S ESSENTIAL ROLE

Rural broadband providers play vital roles in improving educational opportunities, leveraging their networks and working closely with local educational institutions. More than 70 percent of NTCA—The Rural Broadband Association members can provide 25 Mbps and higher to their customers.

Rainbow Communications of Hiawatha, Kansas, provides fiber connectivity to Highland Community College, the oldest college in the state. The network enables the college to offer numerous courses at various sites. CTE courses include building trades and medical coding. The college also supports the agricultural industry through courses that include precision agriculture and diesel mechanics; both are necessary as farms rely increasingly on precision agriculture that blends traditional mechanical equipment with analytical tech and GPS-guided systems.

Webster-Calhoun Cooperative Telephone Association in Fort Dodge, Iowa, provides broadband that enables local high school students to earn college credits through distance education. Students can take up to 23 credits of college courses through a partnership with Iowa Central Community College.

In Brainerd, Minnesota, the broadband provider CTC works with Bridges Career Academies & Workplace Connection, which brings together high schools, local colleges and businesses to provide career guidance

and training. The initiative focuses on building local career opportunities.

Nex-Tech in Lenora, Kansas, works with local charitable foundations and public utilities to support high school and college internships. Students earn at least \$10 per hour and are offered technical and nontechnical career experiences, including agriculture, economic development, automobile restoration, medical services, computer technology, art, banking, legal services and others. Similar to CTC, the program works to highlight local job market opportunities.

Matanuska Telephone Association in Wasilla, Alaska, gives young students a head start, sponsoring the MTA Coding Academy. Each year, this program offers more than 500 middle school students a chance to experience computer science through coding, art, STEM and industrial tech. The program is part of the everyday curriculum for the students. These courses offer opportunities to learn, among other things, binary conversion, basic programming, HTML/CSS, App Lab (App Inventor through MIT), robotics and 3D design and printing.

Efforts are strong in tribal lands as well. In New Mexico, the Mescalero Apache School captured a \$20,000 Samsung Solve for Tomorrow award. The nationwide competition develops STEM research and applications. Student members of the Mescalero Apache STEM Group addressed the nutrition needs of local elderly people and developed solar-powered aquaponic systems to grow vegetables. The school is served by Mescalero Apache Telecom, a tribally owned broadband provider.

## A TOOL, NOT A SILVER BULLET

Rural broadband can play a critical role to prepare students for the next generation of American jobs. Distance education is compiling a strong track record: A 2005 study found no significant difference between the writing skills of on-campus and off-campus students. Studies examining student satisfaction found no statistically significant differences.

Distance education, made possible by broadband, can be a tool to correct lack of specialization that may exist in small rural schools that cannot provide as broad a range of courses as larger schools can, either because of affordability or demand. Distance education can also assist early college, particularly in rural areas that lack resources to support the increased expenses these endeavors may demand. Moreover, distance education can mitigate ancillary conditions that can affect early college initiatives: Researchers propose that in areas where public transportation is not readily available, participation in off-campus courses could be limited to those students who have access to private transportation.

Broadband-enabled distance education allows all eligible students who have access to broadband to participate. Distance education also can provide flexibility for working students and accommodate ongoing family obligations.

Broadband-enabled education offers promise, but there are some limitations. Apprenticeship-type programs and other opportunities for middle-skill building will continue to require opportunities for hands-on experience. Certain aspects of health care education are obtained through texts and classroom instruction, but clinical experience is a necessary component as well. Accordingly, distance education is not a “silver bullet,” but rather “silver buckshot” – a critical tool in the overall effort to enable greater education and job-training opportunities. Combined with other local and regional strategies, broadband-enabled instruction can enable the acquisition of critical skills necessary to fill the next generation of American jobs. ❖

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*Joshua Seidemann is the vice president of policy at NTCA—The Rural Broadband Association. Visit [www.ntca.org](http://www.ntca.org) to learn more.*