

## As manufacturing jobs pour into SC, how is virtual reality shaping workforce training?

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**WEST COLUMBIA** — On a sunny day in early March, Larry Nipper, a utility worker with Aiken Electric Cooperative, stands tall in the white bucket of a work truck.

Carefully going through a safety maneuver intended to keep him and other linemen from accidentally interacting with live wire, he works to address a downed power line.

But Nipper is nowhere near an actual downed line.

He's standing in a dated classroom in a small, dingy building in rural Lexington County. A pair of white virtual reality goggles are strapped over his eyes. The safety procedure he's walking through, known among linemen as lockout-tagout, is aided by the headset and a pair of handheld controllers.

"It's a new way of training in a new world," the safety class instructor, Travis Renwick, told the handful of linemen attending the training.

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It was Renwick's third time showing off the VR headset to a class of utility workers in what's become a growing trend of using virtual and augmented reality to train mostly blue-collar workers across South Carolina. Companies and colleges across the state have started focusing on the virtual aspect of workforce development — a system that many said is safer, cheaper and just as effective at preparing workers.

The shift to training occupations like linemen or construction and plant workers using virtual reality comes at a time when workforce development and training is top of mind for state leaders. As South Carolina pushes to become a leader in advanced manufacturing, government officials have put an emphasis on workforce training and the state's technical college system.

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Travis Renwick speaks to a class of linemen as Larry Nipper performs a safety procedure using virtual reality goggles.

HANNAH WADE/STAFF

## Augmented reality training at BMW

Workers at the [BMW Plant in Spartanburg](#) stare at the screen of an iPhone. Through the screen, which uses the camera to show what's directly in front of the workers in real life, the employees — some training for the first time and others getting a refresher on procedures — can walk through assembly line processes without ever picking up a tool. It allows the company to more efficiently train employees on assembly lines where technology is constantly evolving, said John Mitchell, who works in innovation and digitalization for the Spartanburg plant.

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"In 48 hours, we can turn it around and have the new training modules updated with all the new processes and on somebody's tablet or device, and they can be training immediately. So speed is the biggest (benefit)," Mitchell told The Post and Courier.

The company leans mostly on augmented reality. Augmented reality is similar to virtual reality, but instead of placing participants in a virtual world, AR integrates the physical world with virtual additions. At the BMW plant, that means workers can hold their phone or tablet up to a car and emulate using different tools through the device.



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## Virtual reality for onboarding

Virtual reality, essentially a simulated experience that uses video goggles to immerse users in a virtual world, is not meant to entirely take the place of in-person, hands-on training, safety training experts said. For the most part, it's meant to introduce workers to new training concepts before jumping to the real thing, or to serve as a refresher course.

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"Virtual reality can play a really big role in the onboarding process of bringing a new employee up to speed quicker because they may be timid," Michael Ross, program director for industrial technologies at Midlands Technical College, said. "It lays some really good foundation for people to be more confident in their roles."

The technical school, one of the state's largest, has two programs that rely on simulations for job training. One, an HVAC simulator, allows for trainees to practice repairing an HVAC system without the school having to manually construct real HVAC systems. Ross said that new software has saved the college money and effort.

The other training tool at Midlands Tech is [through a heavy equipment operator program](#), which brought two mobile simulator machines. The machines allow trainees, like students or employees sent to the technical college for workforce training, to operate large equipment like bulldozers and excavators without ever actually stepping into one.

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"It's a lot easier to break something that has a reset button in virtual reality than it is to break something in real life," Ross said. "It teaches people not just to think about the 'Part A goes into part B and then it goes down the line,' but also saying 'Oh, my actions here, if I do them wrong, have repercussions down the line.'"



#### **BUSINESS**

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In Charleston, the state's Ports Authority uses similar technology to help new employees learn how to use ship-to-shore cranes, which move containers on and off cargo ships and rubber-tired gantry cranes, used to move containers around the port's container yards.

The Ports Authority first began using the technology in 2019 and now has three simulators.

Before this, the only way a new ship-to-shore crane trainee could get any time training would be when a crane was not in service or if it was getting repaired, Laura Clifton, a spokesperson for the Ports Authority, explained. With the simulators, trainees don't have to wait for this to happen, which expedites the training process.

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The use of the simulators has cut training time for newer employees in half — from around a year to six months.

## **Introducing students to trades, virtual reality**

A few times a week, a semi-truck with prominent blue lettering that reads "Be Pro Be Proud" makes its way to high schools across South Carolina.



The truck, which houses virtual reality simulations in a wide range of trade and manufacturing skills, targets students who need help choosing a career. It's part of a growing effort to draw more students to careers in trade industries.

"What we're doing is not technically training anyone, it's introducing kids to the idea that 'This is what's out there. You might want to explore this (career) more,'" SuzAnne Driscoll, a project manager for the group, explained.

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High schoolers try out a simulator from BeProBeProud SC.

PROVIDED/BEPROBEPROUD SC

Older middle schoolers and high schoolers can try their hand at trades like plumbing, welding and construction work through the group's virtual reality simulator.

**BeProBeProud SC** partners with companies across the state to introduce students to new types of careers and travel across South Carolina.

One of those partners is the Midlands-based Hood Construction.

"We've got an inherent problem in our industry of a labor shortage," owner Mark Hood said. "We don't have enough electricians, we don't have enough equipment operators ... you name the trade, there's not enough of them. So anything that can encourage people at a younger age to get involved in our business."

The virtual training push comes as state leaders work to make South Carolina a leader in advanced manufacturing. But with upcoming economic developments like Scout Motors, a \$2 billion electric vehicle plant set for northern Richland County, leaders also grapple with how to fill the thousands of jobs the investments will bring to the state. Part of the plan to address that is to encourage more students through programs like BeProBeProud SC.

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Gov. Henry McMaster has called technical schools one of the keys to the state's future, hammering home their importance to the state's blue-collar workforce.

"We're building on (the technical school system), expanding on that, providing hundreds of millions of dollars in scholarships to help have that workforce, which is broad and expanding," McMaster said at an economic development summit in Columbia Jan. 29.

The state started putting more of a focus on its technical college system in the '60s. South Carolina has 16 technical colleges spread out across the state. The S.C. Department of Education and the S.C. Technical College System **announced an \$11.5 million partnership in February 2022** to expand career programs and provide scholarships for high demand programs.

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Larry Nipper, a lineman with Aiken Electric Cooperative, watches as Travis Renwick showcases virtual reality technology to perform a lockout-tagout procedure.

HANNAH WADE/STAFF

"There's a lot of potential for these kinds of technologies to change workforce development," said Kapil Chalil Madathil, a Clemson professor and director of technology for the university's Center for Workforce Development. "When you're looking at skills that require a lot of procedural training you can definitely use these kinds of virtual reality-based tools."

As SC companies and colleges use the futuristic technology to train the next generation of workers, there's still space for teaching old dogs new tricks.

"Technology man ... it's come a long way," Nipper, the Aiken utility worker, reflected with goggles over his eyes.

Another lineman interjects: "Can you imagine if we had this type of technology when we were coming up?"



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## HANNAH WADE

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