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Keely Krueger, Assistant Superintendent for Early Childhood and Elementary Education for Woodstock Community Unit School District 200 in Illinois.

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Creating Opportunities to Immerse Students in Learning



Schools leverage interactive technologies to create educational experiences students won't forget.



by [Erin Brereton](#)

Erin Brereton has written about technology, business and other topics for more than 50 magazines, newspapers and online publications.

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The experience at the Challenger Learning Center is not like that of a typical classroom.



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It's where students engage in STEM activities through space-themed missions in a replica space station. In one room, a wall of 42-inch LG flat-screen TVs enables them to view orientation information and a live feed of the International Space Station. Students and teachers use Promethean whiteboards and Airtame hardware (which allows for sharing among devices) for interactive activities involving science, technology, engineering, art and math. In another area, after students take their seats, rumbling "engines" (actually, subwoofers) signal they're blasting off into outer space — all from the small city of Woodstock, Ill., located about 51 miles northwest of Chicago.

This is a slice of the experience for students at the Challenger Learning Center, operated by Woodstock Community Unit School District 200. It all comes together with a bit of imagination combined with a fleet of technology.

The center is an example of an immersive experience educators use to better engage students and to help make academic lessons stick.

For students, the experience involves solving problems and collaborating on activities that require speaking, critical thinking and analyzing — and that may spark interest in science careers, says Keely Krueger, the district's assistant superintendent for early childhood and elementary education.

"Kids walk through a decontamination space into the transport room and sit in racing-like chairs," Krueger says. "We hooked up a subwoofer system to the bottom of chairs, so they rumble, and it feels like you're taking off to Mars in a transport vehicle. That's one of the most exciting times for kids."



Immersive Experiences Link Classrooms to the Real World

The concept of immersive learning isn't new. Researchers [link high-quality immersive experiences](#) to increased learning for



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students.

Technology — from laptop computers to virtual reality headsets — offers other ways for educators to create immersive experiences, such as virtual reality field trips through [Google Expeditions](#), or more elaborate setups in dedicated spaces, such as the space travel simulations at the Challenger Learning Center.

For example, the nonprofit organization JASON Learning offers videos, articles that can be read aloud in a native speaker's voice, games and other interactive elements to engage K–12 students in STEM topics ranging from geology to engineering. Its core weather unit, for instance, uses a game to challenge students to view radar maps and data overlays to make storm predictions, teaching concepts such as extreme weather formation and what causes a hurricane to increase in intensity or change path.

"Eventually, they're in Miami and learn it's going to be a Category 4 hurricane," says Sean Smith, CIO and COO of JASON Learning. "At the end of the game, they're told, 'Here's what actually happened' — because the game is based on real data sets from the National Oceanic and Atmospheric Administration. We do everything we can to connect kids with real science."

A number of districts use Chromebooks to access JASON Learning's experiences, Smith says, but the company aims to be device agnostic.

"If they want to use Google Classroom, we'll set Classroom up to have a single sign-on," he says.



“There's a lot of development in oral language, speaking and analyzing in activities we do — as well as sparking an interest in a career in science.”

Keely Krueger, Assistant Superintendent for Early Childhood and Elementary Education, Woodstock Community Unit School District 200

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Students, Smith says, sometimes utilize learning elements at their own pace; content can also be viewed in a classroom environment, with smaller groups discussing what they've watched.

"Kids are exposed to different disciplines — listening, design thinking. They start problem-solving really naturally but design a solution that keeps it at the right temperature and physically protected," he says.

Immersive learning can also offer a dose of inspiration.

"You're breaking down mental barriers for kids, where suddenly they're having this realization that you don't have to be a 60-year-old guy in a lab coat to do STEM," Smith says.

Students often will have an epiphany, seeing themselves in the role of the professionals they learn about through games or other content, he says.

"That's a great moment."

***MORE ON EDTECH:** Discover how immersive technology fosters the four C's of learning.*

Experiences Spark Interest in STEM Careers

In Woodstock, district administrators have a similar goal for seamless connections between classrooms and experiences at the Challenger Learning Center.

The Woodstock learning center is part of a global network of 44 operations providing interactive space mission simulations for students. The Woodstock school district took over the center in spring 2019 from Aurora University in Aurora, Ill. District leaders' academic goals inspired elements of the center's redesign.

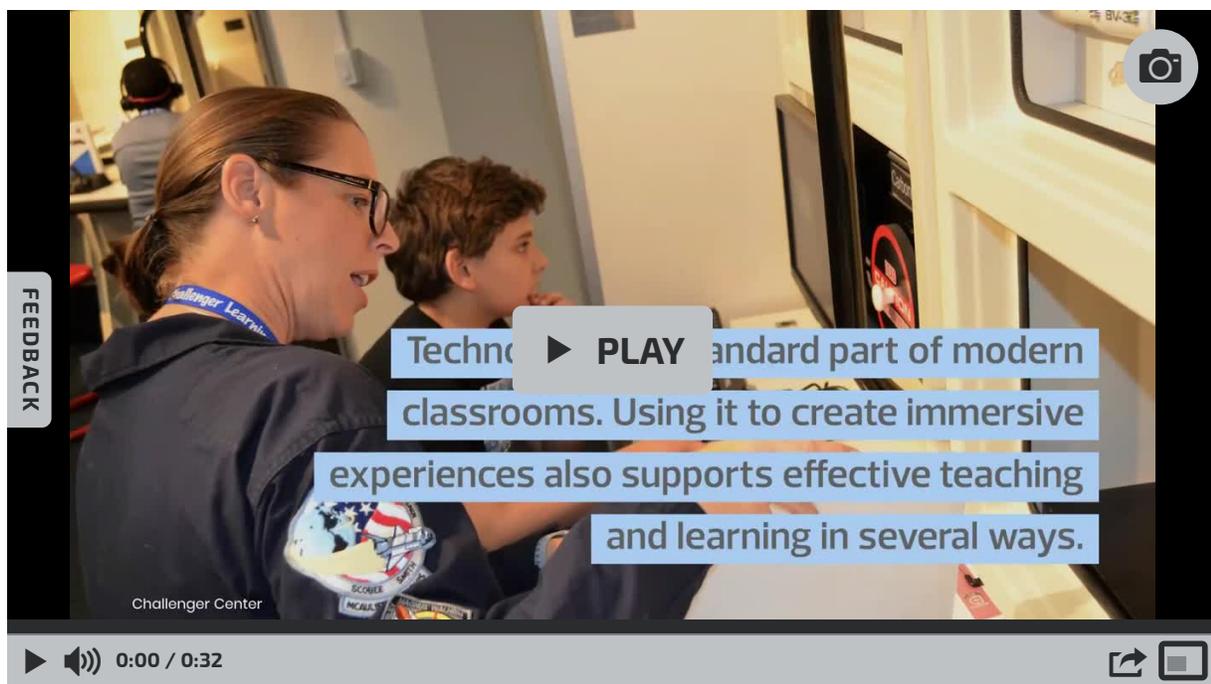
"We wanted to make sure we could offer the same experience — and move that experience to the next level," says George Oslovich, director of technology for Woodstock schools. "We tried to expand the activities and tie them even more closely back to some of the learning standards in Illinois in the science and technology area."

The district transformed storage space and a former locker room in Olson Elementary School into a replica mission control room,

space station, laboratory and transport room – the setting for student-centered simulated space expeditions combined with STEM lessons such as programming robots and coding. Working with an expert from CDW, district leaders' vision for the space expanded from just hanging LCD projectors to designing a more interactive experience and making the center a showplace, Oslovich says.

Technology is interwoven into the experience, from Promethean interactive whiteboards to Dell PCs and intercoms students use to communicate during missions, Oslovich says.

"We really feel we're at the early stages of understanding how impactful the equipment we have is," he says.



Learn how immersive learning technology benefits K–12 students.

Woodstock fifth graders take annual trips to the center, which is also open to the broader community. District leaders are also thinking about ways to further expand the center, including possibly creating experiences for older students.

For now, students "work with their classmates in a different environment, have roles and are responsible for the mission being successful," says Krueger. "We're trying to promote a lot of problem-solving, collaboration, kids working together; there's a lot of development in oral language, speaking and analyzing in activities we do – as well as sparking an interest in a career in

science."

The simulated space missions at the center also have real-world applications for students' postsecondary goals.

"The whole Challenger experience brings all those pieces together and helps kids see how in real life, you use these skills together, not in isolation," Oslovich says. "Through the problem-solving and critical thinking that goes on, collaborating back and forth, the teachers and Challenger staff who work with them ask questions so they can begin to uncover the correct answers."

The learning doesn't end when students leave the center. After visiting the center, teachers have asked about using Airtame adaptors and replicating other aspects of the experience at their schools, Oslovich says.

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District Invests in More Hands-On STEAM Instruction

Hands-on, immersive learning doesn't have to happen in a separate, elaborately designed space.

In [Ector County Independent School District](#) in Texas, students process materials for paleontologists and researchers. They learn about pushing the raw materials through sieves and identifying fossils, says Jason Osborne, the district's chief innovation officer. Osborne also partners with area universities, businesses and other organizations to create citizen science (or crowdsourced research) experiences for students in paleontology, bioengineering and other high-level sciences. The district is rolling out a virtual reality solution that enables students to simulate tracing brain tissue, he said. Another VR option creates a safe environment to expose students with limited physical mobility to skills such as auto mechanics.

"We're trying to enhance students' natural curiosity and have them do real hands-on learning with real data," Osborne said. "Even at a very young age, if students have something that they're naturally curious about, the teachers get excited, students get excited, and the ownership of learning is amplified as well."



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In Arizona, [Scottsdale Unified School District](#) is leveraging immersive experiences for a greater emphasis on STEAM instruction.

For the past six years, the 23,000–student district has used the Discovery Education Science Techbook, a platform featuring labs and other multimedia content, to supplement its hands–on science program.

Scottsdale students have access to resources such as step-by–step explanations of math concepts as well as illustrations, videos and descriptions that define vocabulary words in an interactive glossary.

"We wanted to have the technology and interactive online resources along with hands–on activities," says Barbara Reinert,

the district's K–12 science curriculum academic coach. "If you just put kids in front of a computer, you don't necessarily get anything other than a lecture. What we know about blended learning is it gives you the biggest growth for student achievement."

Scottsdale schools already use Chromebooks and other mobile devices in classes. To prepare for the added tech, the district IT team updated campus access points and installed more routers earlier this year, Reinert says

That's all part of an ongoing effort to find dynamic ways to teach STEAM and put students on paths for future success, she says.

In October, the Scottsdale governing board approved spending \$126,000 for a plan that supports a greater STEAM focus at two elementary schools and includes training for teachers. Students will also receive STEAM-focused digital content based on the four C's – creativity, collaboration, communication and critical thinking – through Discovery Education's STEAM Connect K–8 platform.

The new approach will be more inquiry-based, with students asking and answering questions through research, Reinert says.

"The goal is to have STEAM learning infused throughout the day every day – into literacy, math," she says. "There are so many jobs available right now that involve STEAM. We have to change the skill set kids are leaving school with so they're able to solve world problems and be part of the global economy."

BENEFITS OF IMMERSIVE LEARNING

Technology is a standard part of modern classrooms. Using it to create immersive experiences also supports effective teaching and learning in several ways:

- **Fosters empathy:** Immersive and mixed reality technologies provide multisensory stimuli that help students see the world from different perspectives, according to research from Microsoft and McKinsey & Company's education practice.
- **Adds real-world relevance:** Immersive experiences support real-world connections to lessons and help students develop soft skills employers increasingly demand. Hands-on experience with tech, including emerging technologies,

benefits students when they enter the workforce. By 2022, 70 percent of organizations will be experimenting with immersive technology for consumer and enterprise uses, according to Gartner.

- Supplements quality teaching: Technology won't replace strong teachers. Educators and other experts interviewed for "Immersive Experiences in Education," a whitepaper from Microsoft, touted the promise of immersive technologies to extend and democratize effective educators' reach.



IMAGE BY CASSIE MAYFIELD



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