



Transforming K-12 Learning Experiences





Transforming K-12 Learning Experiences

To meet the needs of a generation of students who have grown up with touch screens and personalized experiences, K-12 school districts have been undergoing a digital transformation for many years.

Forward-thinking school systems have found that, when used effectively as an instructional tool, technology can help engage students. It can give teachers the insight they need to address students' specific learning needs. It can empower students with hands-on learning experiences. It can open up new learning opportunities for everyone.

COVID has accelerated these changes. To continue instruction when schools were shut down, districts have put digital learning devices into more students' hands. They've added new instructional tools and platforms, and teachers have learned new digital skills and pedagogies.

These investments have put school districts in a good position to continue innovating. Now, districts can build on these investments to take digital transformation to a whole new level. Here's a look at what's possible for the future of education—and how districts can get there.

Collaborative hybrid and online learning

Although in-person instruction has resumed, many school systems continue to offer hybrid and online learning options for students.


When implemented well, hybrid and online learning can add significant value to students' K-12 experience. For instance, they give students more choices in how to attend class and engage with instruction. Learning online is a more convenient option for students who live far from school, or who need a more flexible learning schedule.

After experiencing the benefits of online and hybrid learning, many students now expect to have a choice in how they'll attend class—and some K-12 leaders [say there's "no going back"](#) to the pre-pandemic way of doing things. In fact, [nearly a third of high school students say](#) they'd like to retain a virtual learning component as part of their post-pandemic education.

Deanna Marie Lock, a veteran educator and K-12 leader with nearly two decades of experience, notes that the elements of high-quality instruction are the same regardless of how lessons are experienced—in person, online, or both.

In all cases, she observes, students learn most effectively and are more engaged in their education when they're actively learning, as opposed to just watching a video or listening to the teacher talk. Students need to think about and analyze content, work collaboratively, and solve problems for themselves.

29% of high school students favor a hybrid arrangement with up to half their time spent in a virtual learning environment.

Source: eSchool News 



“That does not mean direct instruction has no place in hybrid learning; there are going to be times when it’s the most effective way to convey information,” [Lock writes](#). “However, teachers should combine direct instruction with opportunities for more active and collaborative learning as well, in which groups of students work together to discuss the material and create a product that applies their new knowledge.”

Facilitating this kind of active, collaborative learning in a hybrid or online environment requires tools and platforms that enable students to connect from different locations and work collaboratively.

For hybrid and online learning to be successful, students also need reliable, high-speed connectivity from home or wherever they might be learning. Ensuring that all students have access to high-quality learning experiences is essential; it’s a matter of equity.

During the pandemic, Chief Leschi Schools—the largest tribal school system in Washington state, serving more than 600 students from the Puyallup Tribe—partnered with Verizon to provide robust connectivity for all students to learn remotely with LTE service on students’ digital devices.

Now that in-person learning has resumed, students can still learn from home as needed with their LTE-enabled devices. They can also complete online assignments while traveling to and from school, which is a huge benefit in a remote school system where the ride to school for some students can take an hour or more.

See also:

How Verizon enabled remote learning for Chief Leschi Schools

<https://www.verizon.com/business/resources/casestudies/chief-leschi-schools-remote-learning.pdf>



Augmented and virtual reality

Augmented reality (AR) is a technology that layers computer-generated enhancements on top of existing reality. Virtual reality (VR) is a fully immersive experience in a computer-generated environment. No longer just emerging technologies, augmented and virtual reality are making a real impact on teaching and learning as hardware costs have come down and new applications have emerged that make AR and VR more accessible for schools.

These technologies have already transformed instruction in thousands of classrooms worldwide, and they're poised for even further growth. In fact, analysts from market research firm The Business Research Company project the AR/VR ed-tech market will reach \$32 billion by 2026—a nearly five-fold increase since 2020.

The market for instructional AR/VR technologies is expected to reach \$32 billion by 2026.

Source: Government Technology 

K-12 educators have found many [effective uses for AR](#) in education. Using an app on a smartphone or tablet, for instance, students can interact with artwork and cultural artifacts, manipulating them and investigating their properties. Because AR technology is mobile-friendly, it's an ideal option for enhancing field trips to aquariums or [museums](#). Simply by viewing a specific item or object from within the AR app, students can access a wealth of information about it.

AR can be useful when exploring complex subjects like mathematics, biology, chemistry, and physics, which are often more challenging to learn using traditional methods. This technology also has special value for visual learners and some students with disabilities, who might find the graphical format more intuitive and engaging than text-based learning or lectures.

VR offers students an even more immersive experience than AR. Instead of physically traveling on a field trip to a museum, students can visit it virtually by putting on a VR headset or using an affordable VR-enabled mobile device.

VR allows students to experience environments they wouldn't be able to visit in person. For example, students can travel back to a significant place or time in history, like [China's Great Wall](#) or [Egypt's ancient](#)

Pharaonic period. They can even leave Earth altogether and travel back through space and time for an introduction to the Big Bang and the formation of the universe.

Because VR allows students to virtually experience events and places, it has a higher potential not only for engaging their senses but for inspiring their empathy. It's well suited for visual learners, students with physical disabilities, special education students, students who speak a different language at home, immunocompromised students, and those with limited economic means. High-quality instructional uses of VR can put all students on a more level playing field than they might be in a traditional classroom environment, ensuring greater equity in education.

As Eduporium reports, research has shown that VR can be more effective at engaging kids from today's generation. It keeps their attention for longer periods of time and can enhance learning outcomes. In one study, administrators found that students who learned with the help of VR had higher positive emotional responses to the content and said they found their learning to be much more engaging.

AR and VR can provide transformative learning experiences for K-12 students, but they depend on strong network performance to work well. They typically consume more bandwidth than other classroom technologies, and they're especially sensitive to latency. Because 5G connectivity can offer higher speeds, more abundant bandwidth, and lower latency, it's a crucial enabler for both virtual and augmented reality in education.

See also:

Augmented and virtual reality in education

<https://www.verizon.com/business/resources/articles/s/augmented-and-virtual-reality-in-education/>



AI-driven instruction

Artificial intelligence (AI) can provoke negative reactions among many people, calling to mind the idea that machines might render humans obsolete. The truth is that AI has been a key part of our daily lives for years.

AI helps make our lives more efficient by taking on time-consuming tasks we might not want to do (or don't have time to do) ourselves. Within education, AI allows educators to be more effective in the classroom. It can help stimulate learning, while also freeing up teachers to focus on their most important task—the learning and development of every child.

AI plays a role in many classrooms already, and Market Research Engine estimates that the global market for AI-driven educational solutions [will increase to about \\$12 billion by 2027](#), representing a compound annual growth rate of 45% over the 2022 market value.

With the help of AI-powered tools, *Education Week* reports², schools can track student progress and flag those who are at risk of failure. Teachers can personalize lessons to meet individual students' needs, and school or district leaders can customize professional learning for individual teachers.

One way that AI is transforming instruction today is by personalizing the learning process for every student through the use of adaptive learning technology. Adaptive learning uses machine learning algorithms to quickly identify a student's precise academic needs and deliver highly targeted instruction that addresses those needs. Teachers have always adapted learning to the needs of learners, but [adaptive learning takes personalization to a new level](#).

² Langreo, Lauraine. "What Teachers Should Consider Before Using AI-Powered Tools in the Classroom." *Education Week*, Dec. 15, 2022. <https://www.edweek.org/technology/what-teachers-should-consider-before-using-ai-powered-tools-in-the-classroom/2022/12>

**The market for
AI-driven educational
solutions will increase
to \$12 billion by 2027.**

Source: Market Research Engine 

A new AI application that has garnered a lot of attention from educators and students alike is ChatGPT, a publicly available tool released in November 2022. Created by OpenAI, a San Francisco-based research laboratory, the free app can generate text that appears to have been written by humans—and it has already made inroads in many corners of society.

Many educators are concerned about the possibility of students using ChatGPT to cheat by having the app create their papers, essays, and other writing assignments, and some school systems have banned ChatGPT outright. However, Kevin Roose, who hosts a podcast that makes sense of the rapidly changing world of technology, argues that educators shouldn't prohibit tools like ChatGPT; instead, they should leverage these tools for teaching and learning.

"After talking with dozens of educators over the past few weeks, I've come around to the view that banning ChatGPT from the classroom is the wrong move," Roose writes for the *New York Times*.¹ "Instead, I believe schools should thoughtfully embrace ChatGPT as a teaching aid—one that could unlock student creativity, offer personalized tutoring, and better prepare students to work alongside AI systems as adults."

Banning ChatGPT won't work in the long run, he argues, and its potential as an educational tool outweighs its risks. But perhaps the most compelling reason not to ban AI-based tools from the classroom is because today's students will graduate into a world full of AI programs, and they'll have to understand these tools to work alongside them.

"To be good citizens, they'll need hands-on experience to understand how this type of AI works, what types of bias it contains, and how it can be misused and weaponized," Roose concludes. "This adjustment won't be easy. Sudden technological shifts rarely are. But who better to guide students into this strange new world than their teachers?"

See also:

AI in education: The role of AI in schools

<https://www.verizon.com/business/resources/articles/s/the-role-of-artificial-intelligence-in-schools/>



"I believe schools should thoughtfully embrace ChatGPT as a teaching aid—one that could unlock student creativity, offer personalized tutoring, and better prepare students to work alongside AI systems as adults."

— Kevin Roose, Technology Columnist, The New York Times

¹ Roose, Kevin. "Don't Ban ChatGPT in Schools. Teach with It." *New York Times*, Jan. 12, 2023. <https://www.nytimes.com/2023/01/12/technology/chatgpt-schools-teachers.html>

How Verizon can help

Effectively leveraging technologies like these to transform instruction requires a robust IT infrastructure, with secure, dependable, high-bandwidth connectivity at school, at home, and everywhere in between. Verizon has a wide range of proven solutions that help schools meet these needs.

LTE Business Internet

Get business-grade wireless internet connectivity, any time and almost anywhere in the United States:

<https://www.verizon.com/business/products/networks/connectivity/lte-business-internet/>

Private IP

Access scalable connectivity, backed by secure network technologies:

<https://www.verizon.com/business/products/networks/connectivity/private-ip/>

Managed SD WAN

Get all your network deployments working toward a common goal and help your entire network run more intelligently:

<https://www.verizon.com/business/products/networks/managed-network-services/managed-sd-wan/>

Dedicated Internet Services

Share information quickly and easily with reliable, flexible connectivity:

<https://www.verizon.com/business/products/internet/internet-dedicated/>

5G Ultra Wideband

With ultra-fast, ultra-powerful connectivity, Verizon is going Ultra so the learning experience can, too:

<https://www.verizon.com/business/solutions/5g/>

Network as a Service

The Verizon Network as a Service (NaaS) platform helps you support the delivery of dynamic applications and services while enabling advanced 5G technologies:

<https://www.verizon.com/business/products/networks/>

One Talk

One Talk delivers mobile unified communications, so you can engage with students, teachers, parents, and others in new ways while simplifying IT management:

<https://www.verizon.com/business/products/voice-collaboration/unified-communications/one-talk/#public-sector>

Audio and Video Conferencing

Gain the flexibility needed to hold classroom and team meetings anytime, virtually anywhere, using web, voice, and video conferencing:

<https://www.verizon.com/business/products/voice-collaboration/conferencing/web-voice-video/>

Cisco Webex

Cisco Webex® from Verizon provides a virtual classroom and online collaboration experience with flexible application and enterprise-grade security integration:

<https://www.verizon.com/business/products/voice-collaboration/conferencing/webex-meetings/>

Cybersecurity Assessment

Get an objective review of your school system's cyber defenses and implement assessment activities based on expert analysis:

<https://www.verizon.com/business/products/security/cyber-risk-management/governance-risk-compliance/cybersecurity-assessments/>

Mobile Device Management

Help mitigate mobile risk across schools by streamlining how you manage mobility and protect data using a single management portal:

<https://www.verizon.com/business/products/security/mobile-device-end-point-security/mobile-device-management/#public-sector>

Rapid Response Retainer

Let Verizon's team of highly trained security experts help you plan your defense against possible attacks using accessible threat intelligence:

<https://www.verizon.com/business/products/security/incident-response-investigation/rapid-response-retainer/>

DDoS Shield

Use this highly scalable, cloud-based Distributed Denial of Service protection platform to detect and help mitigate large attack volumes:

<https://www.verizon.com/business/products/security/network-cloud-security/ddos-shield/>





Verizon Communications Inc. (NYSE, Nasdaq: VZ) was formed on June 30, 2000 and is one of the world's leading providers of technology and communications services. Headquartered in New York City and with a presence around the world, Verizon generated revenues of \$136.8 billion in 2022. The company offers data, video and voice services and solutions on its award-winning networks and platforms, delivering on customers' demand for mobility, reliable network connectivity, security and control.

To learn more about how Verizon can help transform K-12 learning experiences, go to www.verizon.com/k12.



This ebook was produced by eSchool News, the online platform that delivers daily technology news and information to K-12 education administrators, educators, and technology professionals, and dedicated to the advancement and wise use of technology to improve teaching and learning for all. eSchool News offers ed-tech decision makers a wide range of informative content — including newsletters, webinars, case studies, white papers, websites, and more — that provide in-depth coverage of the latest innovations, trends, and real-world solutions impacting the education community.

Explore more at www.eSchoolNews.com.