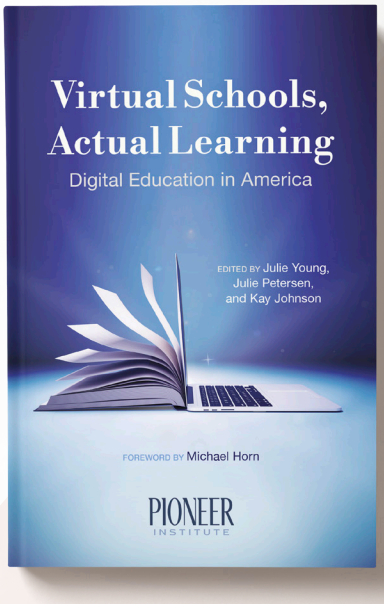
PIONEER
EDUCATION

Virtual Schools, Actual Learning

Digital Education in America

Companion Toolkit for State Policymakers (2025)



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Julie Young is an edupreneur—an educator, innovator, and visionary leader, renowned for her expertise in school design for diverse educational models, including virtual, blended, and technology-enhanced learning. As the Vice President of Education Outreach and Student Services at Arizona State University (ASU), and in her former role as CEO and Senior Advisor to ASU Preparatory Academy and ASU Prep Global, she has played a pivotal role in integrating innovative digital strategies into education. Young's pioneering work began as the founding President and CEO of Florida Virtual School in 1997. In that visionary role, she not only embraced virtual schooling but helped lay the groundwork for an entire industry. She envisioned and built FLVS into a trailblazing incubator, continually testing and evolving innovative digital learning models while cementing Florida's reputation as an epicenter of virtual school advancement. Young led FLVS as its President and CEO for over 17 years, building one of the nation's first fully-online public schools, while exploding enrollment made it the largest state virtual school in the United States. Her transformative tenure set key precedents for the future of education reinvention in the digital age.

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This toolkit was developed in 2025 in conjunction with the publication of Pioneer Institute's volume *Virtual Schools, Actual Learning: Digital Education in America.* Its primary audience is state policymakers, whose work frames the policies and resources that may help or hinder the availability and quality of virtual learning. As such, this toolkit features a summary of the book's key findings as well as new content, including several state case studies and a state policy design framework.

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Executive Summary

Introduction and Early History

The development of virtual schooling began many years before most realized and it has progressed relatively slowly compared to other technology-based advances in society. Online or virtual learning is a form of distance education (defined as a learning process in which the teacher and student are in separate locations) and refers specifically to using the internet to connect a student with a teacher or instructional materials. Early uses of distance learning in K–12 schools prior to the 1990s included instructional film, a program that offered correspondence education in Nebraska, and the use of educational radio in Ohio School of the Air, all in the early twentieth century. These were later joined by educational radio and television programming.

Online education as we know it today really started to take shape in the late 1990s, beginning with text-based courses that were a far cry from today's highly interactive, highly visual, data-driven platforms that can adapt and personalize for every learner. At the time, terms like "virtual schooling" and "e-learning" were largely foreign, with a limited number of K–12 students just beginning to participate in computer-based distance education. The virtual school was perceived at the time as a niche alternative, primarily for students who could not attend physical schools due to geographic, health, or personal reasons. For educational leaders across the country who were open to the idea, online learning became an effective solution for a variety of problems: filling hard-to-staff courses; expanding foreign language offerings; augmenting elective options; adding higher level math, science, and humanities courses, or providing access to Advanced Placement options. In Florida's case, a driver of online learning was also the desire to offer home-schooling families state-funded access to structured curricula with official transcripts.

Reports summarizing the emergence of virtual schools began to appear in the early 2000s, beginning with two reports in 2000 and 2001 written by consultant Tom Clark for the Center for the Application of Information Technologies and WestEd.[1] In 2004, Learning Point Associates published the first in a series of annual reports, *Keeping Pace with K–12 Online Learning*,[2] a year before the US Department of Education released its first summary of the sector's reach, "Distance Education Courses for Public Elementary and Secondary School Students: 2002–03."[3] Over the years, the *Keeping Pace* series published by the Digital Learning Collaborative (which later became the *Snapshot* series) has tracked the evolution of online and digital learning across the states on a near-annual basis, from 2004 to 2024.

As internet-based businesses proliferated across every sector in the 2000s, privately held K–12 online learning providers and charter networks also cropped up, including for-profit and nonprofit organizations. As would also become true of state and district programs over the years, these entities brought a mixed bag of quality to the table—some creative, well-considered models and some that were harmful both to kids and to the advancement of online learning. Thankfully, a codified set of respected standards soon emerged to define what "quality" online learning means. Organizations like Quality Matters worked with states and districts to define "quality" and to vet and build programs that would meet the needs of their students. Also, the National Standards for Quality Online Learning, Teaching, and Programs evolved from many years of piloting, testing, and refining online learning; they were originally developed in 2007 by the Southern Regional Education Board (SREB), later published by the International Association for K–12 Online Learning (iNACOL), and are now managed by DLAC—the Community Advancing Digital Learning (formerly the Digital Learning Collaborative) in partnership with Quality Matters and the Virtual Learning Leadership Alliance.

Over time, a body of research emerged to attest to the fact that students in quality online learning environments can be just as successful, and sometimes more so, as students in traditional programs., although there is surely just as much variability in the quality of online schools and classrooms as there is offline. However, studies of online learning or schools rarely take into account the academic, social, personal, or logistical issues that lead students to choose online education in the first place;[4] students in virtual schools are far more likely to report challenges at their previous school such as bullying, trouble with teachers, or academic needs not being met.[5] A 2010 meta-analysis conducted by the U.S. Department of Education found that students in online learning conditions performed modestly better than those receiving face-to-face instruction."[6] A 2021 federal What Works Clearinghouse evidence review of distance learning programs found that students can learn at a distance as well or better than in a traditional classroom, with strongest evidence in particular subjects and grades such as middle school English language arts.[7]

Virtual Schools in the 2010s: Rising Numbers and Increased Expectations

In 2008, then-Harvard Business School professor Clayton Christensen and his co-authors Michael Horn and Curtis Johnson famously predicted that half of all K–12 classes would be taken online by 2019.[8] (While this prediction would not quite pan out, by the end of the decade millions of students were in fact using digital tools in brick-and-mortar classrooms and/or taking supplemental online courses.) A few years later, in 2011, Pioneer Institute published its first paper on the online learning phenomenon, now included in this book's volume as its first chapter. At the time, there were online and blended learning opportunities in all 50 states plus the District of Columbia. Many states offered a variety of online courses for secondary school students and 30 states had full-time, multi-district schools that enrolled an estimated total of 250,000 students.[9] But no state had a full suite of full-time and supplemental options for students at all grade levels.

While the number of students enrolled in full-time virtual schools continued to rise, the number of "course enrollments" in supplemental and virtual options climbed higher still over the decade from 2010 to 2020. An increasing number of schools and districts acquired iPads or Chromebooks for student use at school and home, with more than half of high schools and middle schools reporting that 100 percent of their students had access to non-shared devices by 2018.[10] Still, about a third of low-income households lacked high-speed internet connections at home.[11]

Along the way, an increasing number of schools embraced and experimented with "blended learning," a mechanism by which "a student learns at least in part at a supervised bricks-and-mortar location away from home and at least in part through online delivery," according to the definition created by the Innosight Institute (now Clayton Christensen Institute) in 2011.[12] Throughout the 2010s, the number of state-run, statewide virtual schools began to drop—from 28 in 2012[13] to 21 in 2019[14]—and the number of district- or charter-run virtual schools and blended learning programs rose. The 2015 *Keeping Pace with K–12 Digital Learning* report counted hundreds of thousands of students enrolled in full-time virtual schools and millions more who attended physical schools but took supplemental online courses.[15]

By the end of the decade, many students and teachers were using digital tools as part of their daily work, and their numbers outpaced those learning exclusively online. Those in full-time online learning were more likely to attend programs operated by local schools and districts rather than separate institutions and courses operated by state entities. That said, virtual schooling had grown significantly, with more than 350,000 students enrolled in full-time online schools (still less than 1 percent of all K–12 students) and with state virtual schools serving over one million course enrollments.[16]

Schooling Goes Remote During the COVID-19 Pandemic

In spring 2020, the pandemic forced schools to reckon with online learning as they scrambled to set up some form of learning via internet when they closed their buildings. Practically overnight, "emergency remote learning"—or "Zoom school" as it became known—became the primary method of education for billions of students. Most schools chose hastily organized attempts to replicate the physical classroom through video and online platforms, rather than take advantage of content, systems, and instructional methods already designed and tested specifically for learning online. *(See Figure 1.)* The result was nothing short of disastrous for many students and for their teachers. By contrast, considerable design goes into a virtual school program, taking an average of 55 hours of work to develop 25 minutes of online training.[17] Online curriculum design also requires significant expertise: user interface designers, graphic designers, instructional experience designers, and curriculum experts work together to design learning journeys that lead students to the desired objectives.

As with so many education phenomena, students' experiences with remote learning varied by school, by district, and by state. States with higher virtual enrollment before the pandemic had the greatest percentage growth in virtual enrollment during the 2019–2020 school year, likely due to the availability of established online providers and enrollment, as well as cultures and policies supportive of online learning. The number of students enrolled in online schools roughly doubled during the 2020–2021 school year, and although those numbers dipped in the 2021–2022 and 2022–2023 school years, they remained far higher than pre-pandemic numbers *(see Figure 2 below)*.

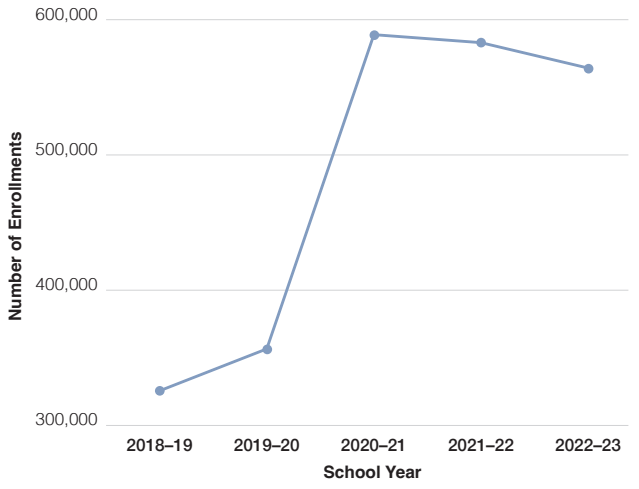
On the upside, $120 billion for states from the federal American Rescue Plan Act of 2021 did help put a device in every student's hands. Before the pandemic, 45 percent of elementary school educators and 65 percent of secondary educators said their schools offered a one-to-one ratio. By spring 2021, those numbers were 84 percent and 90 percent, respectively.[18]

Figure 1. Emergency Remote Learning Was Not Online Learning

Source: Snapshot 2024[19]

Figure 2. Virtual Student Enrollments Remained High

Full-time virtual school enrollment over the last five school years



Source: 2024 Snapshot[20]

Many parents were significantly affected by the up-close-and-personal view of their child's learning they gained during the pandemic. Armed with greater insights into their students' needs and into how their schools were working, parents began to demand new options and changes to what schools were offering.

The *Associated Press* found that the number of home-schooled students "increased by 63 percent in the 2020–2021 school year, then fell by only 17 percent in the 2021–2022 school year."[21] The Johns Hopkins School of Education found that those numbers increased again in 2023–2024.[22]

Unfortunately, at the same time, "a negative narrative about virtual learning emerged, leading many educators, leaders, students, families, and policy makers to question the efficacy of virtual and hybrid learning," explains The Learning Accelerator (now FullScale), a national nonprofit.[23] While research did suggest a correlation between the amount of remote instruction students received and the extent of their learning loss, correlation does not equal causality. It would be useful to control for variables like social distancing and COVID-related economic impacts while also contrasting the experiences and outcomes of students who attended established virtual programs during the pandemic with those who participated in emergency virtual learning. We know of no such formal analysis, although several virtual schools sought to make this comparison themselves: a 2020 study surveyed parents on their students' experiences in online schools operated by K12 Inc. (now Stride Inc.) compared with their siblings' in brick-and-mortar schools,[24] and a 2021 study found that fewer students in Stride K12 schools moved down one or more achievement levels between 2019 and 2020 on the NWEA MAP Growth assessment compared to national averages.[25]

Post-Pandemic Policies Snapped Back

As educators and students came back together on school campuses, the instinct of many educational leaders was to focus more on low-tech, in-person supports like tutoring and counseling rather than on tech-enabled supports like virtual and blended instruction and remediation software. By fall 2021, the Center on Reinventing Public Education found that at least 29 of the 100 districts they reviewed had set enrollment caps or introduced waitlists for virtual options.[26] Although a significant number of districts had created online or hybrid programs that combined online learning with in-person socialization and support, a third were shut down by fall 2022, leaving thousands of students in the lurch.[27] In addition, many state policies that had been developed to respond to school closures were unwound or revised, including policies that allowed remote instruction, defined instructional time, and determined whether a virtual school day counted as a school day, as well as funding and other support for technology infrastructure.

One policy change unrelated to the pandemic was the elimination of some states' requirement that students complete an online course in order to graduate from high school. At one point, at least 10 states had this requirement, but as of 2024 only Alabama, Michigan and Virginia maintained it.[28] The original requirements reflected early efforts to prepare students for digital learning and work environments, but their rollbacks were driven by a sense that such experiences had become so widespread that a formal graduation requirement was no longer necessary.

In the meantime, few states and schools put in place measures to better manage remote learning in the event of future school closures, whether from a future pandemic, natural disaster, or other cause; this is despite regular warnings issued by various federal agencies as early as 2006[29] and the tens of thousands of prolonged, unplanned school closures in the years leading up to the pandemic.[30] Investing in technology platforms and teacher training that make quality remote teaching and learning possible—as well as policies that make short-term and longer-term school closures possible and effective—would help ensure that schools, teachers, and students are better prepared for future emergencies.

Looking Ahead

"There has never been a more critical time to explore the role virtual learning can play in educating our children. Districts are grappling with a student mental health crisis, learning loss spread unevenly within schools and unprecedented burnout among teachers —all while feeling the pressure to prepare students for a rapidly changing and uncertain future."

—Liz Cohen and Evo Popoff, "A Human-Centered Vision for Quality Virtual Learning"[31]

By empowering parents to choose from a range of both public and private school options, the rise of educational choice legislation creates new opportunities to increase the uptake of virtual learning. As of July 2025, 18 states had passed educational savings account (ESA) legislation that allows families to use tax-supported funds on a wide range of educational expenses, including those offered by private and nonprofit providers.[32] Eligibility may begin with low-income students or students with disabilities but often expands to include all students. As ESAs and other school choice policies put more funding and options in the hands of parents, the investment strategy firm Tyton Partners says districts can hang onto enrollment by "standing up fully online and virtual programs that can serve as in-district alternatives."

Likewise, the emergence of other types of school providers—including private microschools, homeschool co-operatives, and hybrid schools that integrate virtual and face-to-face learning—has been influenced and enabled by digital learning advances, and will in turn shape the future of how digital and online learning evolve. RAND Corporation estimates that between 750,000 and 2.1 million students may have attended microschools in 2024,[33] roughly the same number as attend Catholic schools nationally.[34] The availability of strong virtual schooling practices and digital learning tools have enabled microschools to thrive, but their critical ingredient is relationships with students and families. "Microschools build and iterate around the specific needs of the kids, and can change their curriculum easily as they go, thanks to the golden age of digital content," says Don Soifer of the National Microschooling Center.

On the technological front, advances in artificial intelligence hold great promise for personalizing learning and for offering real-time coaching and tutoring that truly meet students where they are and help them progress at a pace and in a manner that honors their unique needs. Within virtual learning specifically, generative AI could drive down the cost of developing curriculum or modifying lessons for specific populations or individuals. Generative AI can not only analyze video[35] but can also gather real-time insight into users' emotional state[36] or a teacher's lecturing style[37] through a video camera, applications that could be harnessed to turbocharge virtual instruction at a lower cost.

Virtual schools are experimenting with using artificial intelligence to reduce their own costs while also maximizing the amount of student learning and personalized support they can offer. The ASU Prep network of physical and digital charter schools and a national provider of content, training, and services first used AI to test a new version of an existing adaptive math tutoring tool, Math and Computer Science Curriculum (MACS), that required significant time and cost to hard-code. With the advent of generative AI, ASU Prep was able to accelerate the tool's development, now called Digit+, adding an AI-powered dashboard to provide visibility into student content mastery across all disciplines.

Conclusion

Online learning can open the doors to significant innovations in teaching and learning that allow districts and schools to better serve students and families. It can create opportunities for work- or place-based learning in collaboration with colleges and businesses, allow educators and students to design learning around a problem

to solve, and give students a chance to manage their own learning journeys. While online learning will continue to be offered in standalone virtual schools, it will also be increasingly combined with other learning choices to further augment the options available to students. However, it is vital that we examine virtual and blended learning programs and their outcomes closely, including those that have posted lower proficiency and graduation rates as well as those that have increased student learning. There is significant room for more research on the characteristics of students who thrive in these environments to better inform and optimize future efforts.

Likewise, there is a need for research to inform effective design and practices. Many virtual schools and providers have developed techniques to overcome challenges, such as limited broadband in rural areas, disabilities, limited English proficiency, and under-resourced communities. For example, some students with Individualized Education Plans (IEPs) may actually fare better in virtual environments because of the pacing flexibility and the 1:1 nature of virtual learning. At the same time, serving students who need physical accommodations or special services such as speech therapists is a challenge for virtual schools—one that requires focus, creative design, special hardware, and/or local partnerships. Often, state policies and program leaders neglect to account for these very real differences in student readiness and resources rather than maximizing accommodation options.

Indeed, the online environment is not optimal for every student. The point of online learning is to broaden learning options, not pigeonhole students into a learning mode that doesn't work for them. But as we approach 30+ years of online learning, we have more opportunities than ever to re-imagine education and transform student engagement, foster greater equity, and deliver more sustained effectiveness. Online learning is one valuable tool in an ever-growing tech-supported toolkit to support the design of new, student-centered learning models.

State Policy: Key Considerations and Case Studies

"Whether or not a student has the option to participate in either a supplemental or full-time online program is largely a matter of state policy and laws where the student lives."

—Matthew Wicks, co-founder and the principal of Illinois Virtual High School, 2010[38]

As William Donovan wrote in Pioneer's first paper on virtual schools in 2011, "the growth of virtual schools has been a grassroots movement, led by districts and individual states, rather than a policy orchestrated by the federal government. Consequently, its development has been uneven around the country." Indeed, state policy has been pivotal to the development and availability of robust online and virtual learning, and in some places, it has restricted and hindered that potential. "In some states, students in all districts have access to a variety of providers of full-time and supplemental options, where in other states the only options are those made available to a handful of students by their own districts,"[39] noted the *2018 Handbook of Research in K–12 Online and Blended Learning.*

While many things have changed about K–12 virtual learning in the United States, it is still regulated (as with so much of public education) primarily at the state level. State education agencies and legislatures establish guidelines for the operation, funding, and accountability of virtual schools, with policies on everything from curriculum standards and teacher certification requirements to attendance tracking and performance assessments. States' myriad approaches to virtual learning reflect a wide span of beliefs about its value and role in education overall, ranging from those wide open to significant innovation, those that seek to roll it out slowly, those that only want to allow a select few to tinker at the edges of learning models, and those that view virtual schooling primarily as an option of last resort for students who cannot succeed in traditional settings rather than a legitimate educational choice for all.

States have several primary levers for organizing online and digital learning activity:

- **Approvals and Management:** which entities may approve and manage online course and schooling providers, which providers may enroll students in supplemental courses or in part- or full-time online schooling, and what limits are placed on their enrollment (including size and geography).

- **Funding:** the amount of public funding available to online learning providers and in what form, such as startup funding to develop their programs, annual appropriations approved by the legislature to support ongoing operations, per-student funding, or funding awarded based on student course completion.
- **Accountability:** the quality of virtual courses and schools, including the ways they measure student engagement and how they assess student learning gains.
- **Teachers:** who is allowed to teach online in a state and the amount of targeted preparation or professional development they must have for designing and delivering virtual instruction.

Below, we'll outline some information related to each of these policy levers, propose recommended considerations and actions for state policymakers to consider, and include case studies for how some states are handling each lever in ways that may be instructive (or, in some cases, destructive).

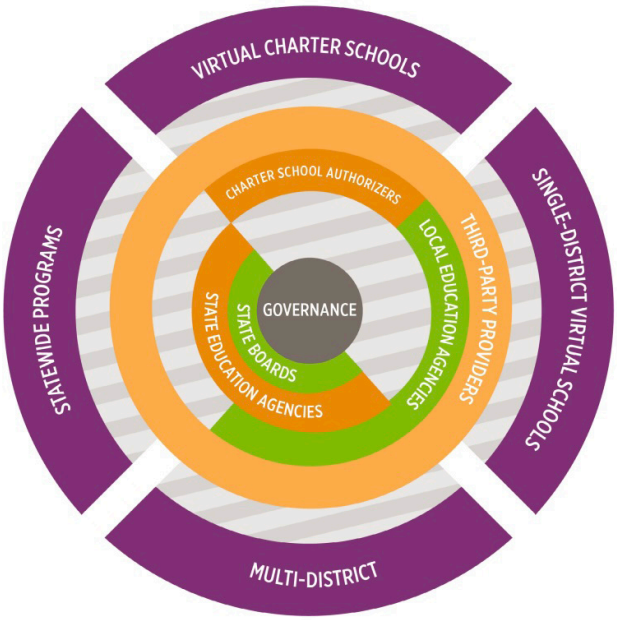
Approvals and Management

The first decision a state must make when considering online courses and schooling is who will be allowed to offer it and who will make that decision. The number of states offering full-time online school options had grown to 40 by 2024–2025, reflecting a trend towards more widespread acceptance and provision of online education options in response to evolving educational needs.[40] While online programs may be operated by a district or a collection of local education agencies, some states permit local education agencies (LEAs) to contract with third-party providers.

Education Commission of the States categorizes virtual schools into charter schools, single-district schools, multi-district schools and state schools. They note that state education agencies and state boards of education, charter school authorizers, LEAs and third-party providers all play a role in the governance and administration of these schools, in different combinations across the states *(see Figure 3 below)*. As of September 2025, 42 states approve virtual schools and course providers at the state level[41], while others delegate the decision to local districts or other entities. In many cases, this process is similar to how states authorize charter schools.[42]

In addition, at least 15 states have state virtual schools that provide either part- or full-time instruction, with supplemental courses or comprehensive curricula, that they either operate directly or contract with other entities to operate.[43] The best-known example is Florida Virtual School (FLVS), run by a governor-appointed board of trustees with oversight from the state department of education, which had more than 500,000 semester course enrollments in 2022–2023 and serves many more through district franchises that license the FLVS technology.[44] *(For more on FLVS, see Florida case study below.)*

Figure 3. School Types and Governance



Source: Education Commission of the States[45]

Case Study

Limiting Providers and Enrollment: Massachusetts Policies

Massachusetts was one of the first states to address virtual learning, with an early consortium of high schools that participated in virtual supplemental courses as well as a virtual district school launched in 2010. However, state oversight policies slowed down online learning innovation and participation and kept Massachusetts from fully benefiting from digital learning.

The 2010 "Act Relative to the Achievement Gap" limited charter expansion in underperforming districts to "proven providers," or operators with an existing track record. That same act's "Innovation Schools" initiative permitted educators to form in-district virtual schools that operated with greater flexibility than traditional schools, but capped enrollment at 500 students, requiring at least 25 percent to be students residing in the host district.[46]

Initially, the rural Greenfield school district, with just 1,400 students, planned to open the Massachusetts Virtual Academy at Greenfield for 1,500 students statewide in kindergarten through grade 12. However, the 500-student cap policy limited that option, as did the enrollment regulations. During the school's first year, about 300 students enrolled statewide, with just 2 percent from Greenfield versus the 25 percent required by law, thanks to a state waiver.[47]

In 2012, the state's Act Establishing Commonwealth Virtual Schools updated these policies but with restrictions: it capped the number of virtual schools that can operate in the state at 10; it allowed school districts, education collaboratives, public institutions of higher education, non-profits, teachers or parents to apply to open a Commonwealth Virtual School; and it prohibited for-profit entities from doing so.[48] (These conditions mostly ignored the advice given by Susan Patrick, then-president and CEO of the International Association for K–12 Online Learning.[49]) The act also limited the number of students who could attend those schools to 2 percent of the state's public-school population.[50] Reimbursement tuition could not exceed 75 percent of the state's average "foundation budget" per pupil[51] which was "under half the national funding average, roughly 40 percent of the funding level across Massachusetts, and lower than the level of funding for online schools in most states."[52]

To date, statewide virtual school activity in Massachusetts has lagged the nation. During the pandemic, the state did begin to allow "single district virtual schools" that only enroll students who live in the district operating the virtual school; in 2025, there were just seven of these statewide.[53] However, as has happened in every other state, many alternative school models have cropped up in response to parent demand, including the Wildflower Montessori private microschools network and the hybrid KaiPod Learning network that meshes online curricula with in-person "learning pods." Both networks were born in the state, but due to Massachusetts' restrictive regulations, they have expanded more rapidly elsewhere.[54]

Funding

In the 1990s, virtual learning programs were sometimes funded through annual legislative appropriations in state budgets, sometimes through grant programs, and sometimes through grassroots agreements to share resources, as in Wisconsin. In the early 2000s, K12 and Connections were already tapping into per-pupil funding allotments.

Over the last decade though, many states have followed suit by formally incorporating virtual learning to their per-pupil student funding formulas. These per-pupil allotments vary from state to state, with some lowering the amount available to virtual versus site-based schools. Because virtual schools don't have facilities, some originally assumed that they needed less money; however, developing and operating quality virtual programs are not inexpensive endeavors. As the Digital Learning Collaborative (DLC) put it in their 2022 funding review, "every important academic function that is performed by a physical space or object in a mainstream school must be provided in some form or fashion by an online school, often in the digital realm."[55] Learning management systems take the place of buildings, digital curriculum takes the place of books, teachers are still employed, wrap-around services must still be provided, and all these things cost money.

Moreover, while some are skeptical about the role of for-profit companies in this space (and in education overall), we have observed for-profits as well as nonprofits and public sector entities in creating online schools ranging from microschools to large-scale education management organizations. Some of these entities find ways to create economies of scale, address student needs, and generate a return on their investment, while others struggle to make ends meet, but no one sector appears to hold a monopoly on strong results or efficient operations. What's more, the variability in the costs of developing and administering online learning ranges just as wildly as the relative prices of running physical schools in different parts of a state or the country.

Despite this challenge, the study found that states like Arizona and Colorado gave fully online schools 85 percent or more of the per-student funding a brick-and-mortar student receives, but levels in Florida, Ohio, and Texas were closer to half of traditional student funding.[56] DLC recommended equal funding for students in both online and face-to-face instruction, without which they may not be able to fully fund student support resources. "Limiting funding constrains the school's ability to pay for the people who create the relationships with students that are most likely to lead to student success," DLC suggests.

The DLC study also analyzed the various state funding mechanisms, typically based on attendance similar to regular schools. Some of these methods, such as count days or periods, are difficult to apply to online schools due to the flexibility of asynchronous learning (not all students are present at the same times), while average daily attendance or membership is a bit easier to apply but may require online schools to maintain onerous records. The state of Florida compensates Florida Virtual School upon students' course completion, while New Hampshire's Virtual Learning Academy earns funding when students meet certain competencies throughout their coursework.

At the end of the day, it is difficult to estimate the per-student cost of setting up or operating a virtual learning program, although it is likely that upfront costs—developing courses, acquiring learning management software, training teachers, and so forth—will be higher than ongoing operational costs. Districts will want to perform a cost-benefit analysis (and their states should allow them to do so) to evaluate whether to hire and onboard their own staff or partner with a provider to fill specific instructional gaps. As of 2025, the cost of purchasing one semester of an online course from a virtual school provider, including an instructor to teach it, is roughly $400–600 per student. A school or district that is losing student enrollment should be able to calculate the costs of adding virtual or hybrid programming to recapture those students versus swallowing that lost revenue. For most districts—especially in smaller, rural areas—this calculation may lead them to explore partnerships or programmatic consolidation.

Being clear about student needs is a critical first step to creating a quality online program and vital to calculating what it will cost to develop and implement. "When a program is specifically designed around the needs of a more focused population of students, as opposed to trying to be all things to all people, they tend to do quite well in terms of performance because they can devise a delivery model and provide the types of support that they know are needed," explains longtime education professor and scholar Michael Barbour of Touro University California.

Case Study

Strategic Use of State Virtual School Funding: Florida Policies

Since the late 1990s, Florida has been a leader in virtual schooling policy and practice, largely because of its deep and ongoing investments in the country's first statewide K–12 virtual school, Florida Virtual School. (FLVS went on to become the first public diploma-granting statewide virtual school, the first fully online virtual school to be accredited, and the first to be funded directly by a state's education funding system.)

For its first six years, FLVS received a set amount from the state to run the program. However, in 2003 the state legislature included FLVS in the state funding formula when passage of a class size amendment resulted in most line items being eliminated to free up funds for smaller class sizes. Not only did this give FLVS "a self-sustaining funding model by which FLVS could grow organically and according to student demand," it also came with "a performance-based provision, by which the school would receive per-pupil funds only for those students who successfully completed and passed their courses," explained Michael Horn, then co-founder and executive director of the Innosight Institute think tank (now the Clayton Christensen Institute).[148]

Setting the courses and program up as a supplemental program—rather than a full-time option that was competitive with traditional brick-and-mortar schools—also helped FLVS reach scale in its early years while avoiding the combative financial dynamic that battered virtual schools in other parts of the country. Over the next several decades, Florida encouraged the growth of virtual learning through legislation like the 2008 Virtual Instruction Program (VIP) law that required school districts to make online and distance learning instruction available to students in kindergarten through grade 8 either directly or through franchise partnerships with other providers like FLVS. As a result, before the pandemic, hundreds of thousands of students were enrolled in FLVS. District franchises enrolled nearly tens of thousands more. By 2016–2017, FLVS tallied more than 485,000 course enrollments taken by just over 200,000 students.[149]

When the COVID-19 pandemic hit, Florida wasted no time directing students and schools toward FLVS as a resource for virtual learning. In 2020–21, FLVS saw over a 100 percent increase in full-time students.[150] As COVID-19 waned, many students opted to return to face-to-face schools, leading to a drop of 15,000 FLVS elementary students in 2022–23.[151] Florida legislators have since removed the requirement that students take an online course to graduate from high school[152] and reduced the number of online students a district online school can enroll from outside district boundaries.[153] Still, Florida remains one of the friendliest states to virtual learning and FLVS is still the nation's largest state virtual school, serving more than 350,000 students with over 500,000 course completions in 2022–2023 and another 130,000 course completions through district franchises that license the FLVS technology and curriculum but use their own teachers.[154]

Accountability

As researchers from Teachers College, Columbia University and the University of Maryland have noted, "The quality of instruction in a virtual school, similarly to the quality of instruction in brick-and-mortar schools, is one of the most predictive factors in a program's success and how meaningful the virtual learning experience will be for its students.[57]" States also have choices when it comes to how they measure the quality of online offerings to ensure that students are learning adequately, just as they do with traditional brick-and-mortar schools.

However, as noted above with funding, attendance as a fundamental measure of student participation remains a challenging starting point for online courses and schools. Just as with brick-and-mortar schools, attendance alone does not guarantee learning; students can be physically or virtually present without being engaged or mastering content. Beyond whether students are showing up, states also have choices to make regarding their quality expectations for online courses and schools, such as requiring alignment to either the National Standards for Online Learning Quality[58] or a state-specific framework.

States must also determine whether accountability and assessment mechanisms will be the same for virtual schools as for traditional public schools. "Because online schools have high rates of student mobility, and many of the students changing schools are disadvantaged, at-risk, or under-credited, conventional graduation rate calculations may not be providing an accurate picture of the school," explained John Watson and Larry Pape in a 2015 policy brief on school accountability, noting that graduation rates are often one component of state accountability ratings or mechanisms. "Situations in which students maintain progress towards their academic goals should be seen as successful, and should be distinguished from situations where students fall behind."[59] That said, 15 states provide an annual state-level report or other form of comprehensive data on online learning, although many focus solely on full-time virtual schools.[60]

The challenges of measuring student learning online are in some ways operational. "Annual state tests administered on specific days in the spring are not an effective way to measure growth for students who may be studying material that doesn't match what is being tested," noted Greg Richmond of the State Charter School Commission in Illinois in a 2014 report on virtual schooling.[61] A 2025 analysis by DLAC—the Community Advancing Digital Learning (formerly the Digital Learning Collaborative) of mechanisms for remotely "proctoring" or supervising tests for online students explains that for online students to take an average of 112 required standardized tests in grades 3-12, they must often drive long distances and take multiple tests in unfamiliar environments, leading to testing fatigue and cost burdens that often cause families to opt out of testing entirely. While some states have implemented remote proctoring for some tests or grades, DLAC found that half the 22 states with 10,000 or more students in online schools had not taken any action toward allowing remote proctoring.[62]

Of course, effectively measuring gains in online learning requires several types of data, including information about a student's context as well as about the learning they obtain relative to the instruction provided: Why did they choose an online course or school? What knowledge and skills did they have already? Analyzing the performance of students who chose online learning because they struggle with learning in general, with a particular subject, or because they have logistical needs is far different than evaluating the performance of students whose sophisticated understanding and academic mastery has outpaced local school offerings. Indeed, digital learning accountability (and arguably educational accountability overall) ought to go further than averages and school quality: it should measure individual student growth and mastery.

Teacher Preparation and Professional Development

As the *2019 Snapshot* report noted, "the technology used in online, blended, and digital learning always supports teachers and other professional adults who work with students in a variety of ways. There are no examples of successful, scalable educational programs in the United States that operate without teachers."[63] That said, there are differences between teaching online and in a face-to-face classroom, including understanding the psychology of online learning, knowledge of how to meet the needs of students with disabilities in an online classroom, competence promoting student responsibility for learning, facility with encouraging parental involvement, and skilled use of technology.[64] "K–12 teachers are often thrust into the role of instructional designers without specific training in the nuanced differences between face-to-face and online modes of instruction," noted a group of North Carolina State University professors in 2022.[65]

At the start of the pipeline, there is painfully little preparation in online instruction for most pre-service teachers, with a 2016 study finding that just 15 programs across

nine states (4.1 percent of responding programs) provided candidates with any field experiences in online teaching.[66] Indeed, a 2018 survey of the leaders of teacher preparation programs found that "the majority of teacher preparation programs do not formally prepare teacher candidates to teach online."[67] "At present, teacher education does not prepare pre-service or in-service teachers to teach in a K–12 online environment," say education professors Michael Barbour and Charles Hodges. "Despite the increasing prevalence of online and blended learning, many teacher education programs have not yet integrated the necessary coursework and practical experiences to equip future educators with the skills required for these modalities."[68]

While providers like state virtual school FLVS and university-based public online school ASU Prep Digital developed their own virtual internship programs, only a few states have developed state-mandated K–12 online teaching endorsements. Georgia's Online Teaching Endorsement, enacted at the end of 2006, is an optional endorsement granted to teachers who successfully complete an approved program at an approved teacher education institution that addresses the Georgia Online Teaching Standards.[69] Idaho's online teaching endorsement was originally required when it was introduced in 2011 but later made optional and can be earned through coursework or online teaching experience.[70] Idaho also requires virtual charter schools to include role-specific duties and professional development plans for teachers in their application for authorization.[71] In addition, many of the standards in Michigan's Educational Technology endorsement focus on online learning.[72]

Several states have taken more recent steps to ensure teachers are prepared for online instruction. Massachusetts and Wisconsin require virtual school teachers to be certified in the subject and grade level they are teaching,[73] while in 2021 Texas passed SB 15, which states that teachers could not teach a virtual course in a full-time virtual learning program unless they had completed a professional development course on virtual instruction. The following case study on Michigan *(see page 15)* also includes several state policies designed to ensure that educators are prepared to teach online.

To create a sufficient pipeline of teachers prepared to use online tools, curricula, and platforms to teach effectively, states should also consider ensuring teacher certification reciprocity with other states so teachers certified to teach online in other states can teach across state lines. Although most states have signed the National Association of State Directors of Teacher Education and Certification (NASDTEC) Interstate Agreement that makes it possible to grant reciprocity, many require additional coursework, exams, or a probationary period.[74]

Putting It All Together: Creating Comprehensive Virtual School Policies That Work

While earlier digital learning frameworks often assumed state agency leadership in establishing vision, oversight, and funding structures, the current policy environment has shifted toward pluralism and choice. In its 2023 policy toolkit for leveraging virtual learning, policy advocacy organization Excel*in*Ed recommends that states begin not with a top-down regulatory framework but by convening educators, families, and others to establish a clear vision for how virtual learning complements other educational options. [75] This approach reflects the rise of education savings accounts (ESAs), private school vouchers, and diverse provider ecosystems, which collectively decentralize control and make traditional state-centric models feel outdated to some advocates.

Therefore, state and local policymakers can still use this table as a discussion framework, but it should be reinterpreted as a collaborative, ecosystem-wide process rather than a state-agency implementation plan—emphasizing facilitation, transparency, and alignment rather than control. States should be enablers and stewards, creating conditions where diverse, high-quality options can thrive while protecting students and families through transparency, accountability, and continuous improvement.

The following policy design framework *(see page 16)* is designed to help facilitate the process. For further detail, see the following three case studies covering very different states that have considered these questions in unique ways: Colorado has established a fertile ground for virtual and hybrid school innovation *(see page 19)*, Utah has remained a longtime leader in educational technology and virtual school policies that prepare students and teachers for the future *(see page 20)*, and Texas has recently overhauled its virtual school policy to correct for its own previous limitations by learning from other states' experiences *(see page 21)*.

Case Study

Supporting Educators to Teach Online: Michigan Policies

Michigan has been a longtime leader in online learning and today has more full-time virtual schools than any other state[155] with 154,000 students (about 11 percent of all K–12 students) in the state taking at least one virtual course in 2023–24 and nearly 50,000 enrolled full-time in one of the state's 77 virtual schools.[156]

In 2000, the state enacted legislation to create and fund Michigan Virtual School as a provider of online courses, later adding appropriation support for K–12 online professional development in 2004 with the idea that it might fuel greater comfort with online teaching and learning, says Michigan Virtual President and CEO Jamey Fitzpatrick. Other policies that fueled the growth of virtual teaching and learning in the state included a 2006 law making Michigan the first state to require that students have an online learning experience before graduating from high school[157] and a 2013 revision to the state's "21f" legislation allowing any student to enroll in up to two online courses per term,[158] which was expanded and reinforced over the next several years. Like many other states, Michigan has a shortage of qualified teachers, with a 50 percent drop in teachers enrolling in and graduating from the state's teacher preparation programs between 2010 and 2018.[159]

Along the way, Michigan Virtual also added a research institute, which has issued regular reports on the effectiveness of virtual courses and schools in the state including enrollment, completion, and overall student impact. "The state-funded Michigan Virtual Learning Research Institute (MVLRI) has had significant positive effects," noted education professor and scholar Michael Barbour in 2021. "Since the pandemic forced schools to close and implement online learning, MVLRI has provided: research-based guidance for students, parents, school-based mentor teachers, online teachers, school board officials, and administrators; a tool for school leaders to review online curriculum; orientation modules for students new to online learning; access to webinars and courses for teachers; and, a series of resources and learning opportunities specific to remote teaching."[160] Over the years, Michigan legislators have developed new policies to ensure that educators are prepared to teach online, including a 2021 bill (MI HB 4411) that required the development of virtual teacher evaluation systems and a 2022 bill (MI SB 845) that requires teachers of record in virtual schools to be certified for the grade level and subject.[161]

State Policy Design Framework

Policy Area	Key Questions	Action(s)	Timeline	Owner(s)	Other Considerations
Vision & Goals	What role should virtual, hybrid, and microschool learning play in enhancing access, personalization, and innovation across all sectors (public, charter, private, ESA-funded, and home)?	Convene a cross-sector task force of educators, parents, students, providers, and employers to articulate a shared vision and guiding principles. Include explicit focus on hybrid models and AI integration.	6–12 months	State coordinating body or nonprofit intermediary	Frame as shared stewardship, not agency control. Align with broader state goals for choice and access.
Governance & Oversight	How can state ensure quality and accountability without stifling innovation or favoring one delivery model?	Establish a lightweight, transparent framework for reporting outcomes. Encourage voluntary participation in quality assurance networks.	1 legislative cycle	State board + independent consortium with parent and student representation	Avoid heavy-handed regulation. Focus on outcomes, data-sharing, and consumer transparency.
Funding	How can equitable funding follow the student across different learning models (district, charter, virtual, hybrid, microschool)? How should funding differ for part-time vs. full-time virtual enrollment?	Create a transparent, student-centered funding model. Develop course-level or tiered funding for flexible enrollment patterns. Consider how ESA and similar funding structures might strengthen options for students	Draft in 12–18 months	State finance office + legislative budget committee	Align incentives to outcomes and access, not institutional control; include startup and innovation grants. Address the reality that many students blend traditional and virtual learning.
Provider Participation	What eligibility or performance criteria should apply to diverse providers (district, charter, nonprofit, for-profit, ESA-approved vendors, microschools, hybrid, home-based programs)?	Set clear expectations for transparency and learner outcomes. Publish performance dashboards accessible to families.	Draft in 6–12 months; review bi-annually	Independent quality review group, parent/learner advisory council	Ensure consistency across provider types while protecting innovation. Create pathways for new models to demonstrate quality over time.

Policy Area	Key Questions	Action(s)	Timeline	Owner(s)	Other Considerations
Enrollment & Access	How can state ensure equitable access while preserving family choice and avoiding unintended fiscal or enrollment shocks? How should full-time virtual enrollment be addressed differently from part-time virtual enrollment (students taking 1–3 courses)?	Model fiscal impacts of growth scenarios. Design enrollment reporting that allows portability across systems. Develop tiered funding and tracking mechanisms for part-time vs. full-time enrollment patterns.	Draft in 6–12 months; review after 2–3 years	State budget office + cross-sector advisory group	Consider implications for district sustainability, ESAs, and student mobility. Address mental health support, chronic absenteeism patterns, and students who may not return to traditional settings.
Quality Assurance	What shared standards or metrics will define high-quality virtual learning across sectors?	Adopt or adapt standards (such as Quality Matters or National Standards for Quality Online Learning, Teaching, and Programs) and publish outcomes, including graduation rates and college acceptance, disaggregated by subgroup. Establish minimum quality thresholds for new providers.	Within 1 year of policy launch	Multi-sector quality council	Encourage continuous improvement and public transparency. Balance consumer protection with innovation space.
Assessment & Accountability	How will state assess performance across different instructional models and non-traditional learning pathways? How will state recognize competencies through portfolios and real-world demonstrations of learning (e.g. microcredentials, industry certifications)?	Pilot flexible, competency-based assessments and explore cross-sector data linkages. Pilot portfolio-based assessment models. Explore career-readiness outcomes.	Pilot in 1–3 years; scale after 3–5 years	State assessment office + testing providers	Maintain consistency in outcomes while recognizing different learning environments. Move beyond seat-time and test scores to real-world application.

Policy Area	Key Questions	Action(s)	Timeline	Owner(s)	Other Considerations
Teacher Preparation & Support	How can educators in all settings gain experience in technology-supported learning environments—including in virtual and blended teaching approaches—through pre-service preparation and in-service professional development?	Embed online pedagogy into licensure pathways. Fund collaborative PD networks across sectors. Require AI literacy and responsible AI use training for all virtual educators.	1–2 years for prep programs; PD ongoing	State board + higher ed + provider consortia	Encourage peer mentoring and credential reciprocity across public, charter, and private systems.
Career Pathways & Industry Partnerships	How can virtual learning expand access to career pathways, apprenticeships, and industry credentials? How should states validate career readiness in virtual and other digital environments?	Create frameworks for virtual internships and work-based learning. Partner with industry and employers. Pilot competency-based credentialing systems that employers trust.	1–2 years	State CTE office + workforce development and industry partners	Career readiness is vital, and virtual learning can democratize access to career opportunities.
AI & Emerging Technology	How should state guide responsible AI use in virtual and traditional learning environments while fostering innovation in personalized learning? What guardrails are needed to protect student privacy and ensure fairness?	Develop AI use frameworks. Establish data privacy standards. Pilot AI-enhanced instruction with guardrails. Require transparency in AI-driven decisions affecting students. Establish academic integrity policies.	6–12 months for policy; ongoing pilots	State board + industry advisory group + data privacy office	Balance innovation with student privacy; address equity in AI access; prevent over-reliance on AI.

Case Study

Portfolio of Flexible Options: Colorado Policies

Over the last several decades, the state of Colorado has created a robust landscape of online learning opportunities. Indeed, state policy has long allowed and encouraged its school districts to exercise autonomy and control over their school designs, which has led to "the proliferation of diverse designs such as STEM schools, schools with International Baccalaureate programs, Alternative Education Campuses (or AECs), magnet programs, early colleges, community schools, and many others," notes the Foundation for Excellence in Education (ExcelinEd). "Beginning in 1990, every school district was required to adopt policies and procedures allowing open enrollment in any program or school operated by the district—for both resident and nonresident pupils."[76] These requirements have fostered not only online learning but also school choice more broadly in Colorado, as in other states with such policies. In addition, the presence of an Office of Online and Blended Learning within the Colorado Department of Education has also supported the development of online learning.

In 2007, the state's Online Education Programs legislative declaration authorized the State Board of Education to establish quality standards for all online schools and programs and to certify Multi-District Online Schools.[77] It also established the Statewide Supplemental Online and Blended Learning Program.[78] Additional state policies that have opened up opportunities for virtual learning have included the Innovation Schools Act of 2008 which encouraged "intentionally diverse approaches to learning and education within individual school districts,"[79] competency-based graduation guidelines adopted in 2015,[80] and a 2021 State Board declaration in support of choices for students and flexibility for schools and districts.[81] Legislators have also taken steps to ensure quality, including a 2019 bill that requires performance ratings to follow a school even if it closes and reopens with a new name.[82] The state also provides funding to the nonprofit iLearn Collaborative, which provides district consulting services and teacher training in online and blended instruction.

Several of the state's districts have been longtime supporters of and innovators in virtual learning. In 2001, K12 Inc. opened Colorado Virtual Academy, authorized by the Adams 12 Five Star Schools district north of Denver. Jeffco Public Schools, west of Denver in Jefferson County, launched its own Jeffco Virtual Academy in 2008 and a districtwide blended learning program in 2019. In 2019, St. Vrain Valley School District northwest of Denver partnered with the iLearn Collaborative to recruit and train teachers to incorporate digital learning into their face-to-face classrooms, with funding from the statewide Colorado Empowered Learning program[83]; in 2022, St. Vrain partnered with the Colorado Association of School Executives to allow high school students to take courses online, such as Advanced Placement classes.[84]

Although fully online enrollments have declined since a peak during 2020–2021, there are still more Colorado students enrolled in virtual schools and courses than prior to the COVID-19 pandemic.[85] That includes state-provided courses (through Colorado Empowered Learning, a state virtual school), multi-district online programs, single-district virtual programs, and an increasing number of hybrid schools that bridge online and face-to-face learning. Hybrid programs are particularly prominent in the state's relatively affluent and highly populated "Front Range" region including PSD Global Academy serving students in grades K–12 in the Poudre School District, Cherry Creek Elevation for students in grades 6–12, multi-district program Springs Studio for Academic Excellence for students in grades 5–12, and Village High School in District 20.[86]

Case Study

Consistent Educational Technology Support: Utah Policies

Utah has been one of the most active virtual schooling states, beginning in 1994 with its Utah Electronic High School (EHS), one of the first statewide virtual schools offering supplemental courses operated through the state's office of education with line-item funding (albeit a rudimentary text-based curriculum with limited teacher-student and student-student interaction).[87] Over the next several decades, state policymakers connected teachers and students with technology in a wide range of other initiatives.

In 2011, the state passed one of the country's first course-choice policies, the Statewide Online Education Program (SOEP), enabling students to take up to six full-credit courses annually from any state approved provider (including virtual charters and district programs) with open-entry, open-exit flexibility.[88] Inspired by states like Florida, Utah's credit reimbursement formula included half the money up front and the other half when a student completed the course.

In 2015, former Utah state Senator Howard Stephenson sponsored a bill establishing the nation's first master plan for digital teaching and learning, which laid the groundwork for a Digital Teaching and Learning (DTL) Program passed the following year that offers millions in educational technology and professional learning grants to districts and charter schools that create their own five-year plans for using the technology.[89]

The state's investments in digital learning may have helped prepare its educators for remote instruction during COVID-19 closures. By early 2020, 730 of the state's 950 schools had participated in the DTL program.[90] More than 90 percent of Utah district and school-level administrators believed the program helped prepare them for school closures, with two-thirds of teachers reporting that they were prepared to use videoconferencing and other applications for remote instruction,[91] compared with half of teachers nationwide who said they were unprepared to do so.[92]

Utah is also one of the few states where full-time virtual enrollments increased both during the pandemic and afterwards, with nearly 7,000 students in 2019–2020 rising to over 30,000 enrolled full-time in online schools during the 2022–2023 school year.[93] State policies helped facilitate this expansion, including legislation that expanded the array of online providers and that allowed middle school students to earn more credits online.[94]

Together, these efforts may have helped Utah students forestall some of the learning loss evident elsewhere. In 2022, Utah was the only state whose eighth grade students did not suffer declines in math performance on the National Assessment of Educational Progress (NAEP) exam.[95] More recently, a 2025 bill (S.B. 35) changed the SOEP funding model to prioritize funding for small or underserved schools, and add an annual reporting process that includes student participation levels and achievement outcomes.

Case Study

Learning from the Past and From Others: Texas Policy

In 2025, Texas state legislators passed a new virtual school law that amends its earlier legislation, but only after several years of study and discussion. Senate Bill 569 creates a "modern, unified framework for virtual instruction for all Texas schools" by "streamlining outdated and piecemeal virtual learning laws into a single structure that emphasizes flexibility, accessibility, and accountability."[96]

The state's original 2007 legislation included the Texas Virtual Schools Network (TXVSN), a statewide supplemental course catalog that allowed students to take up to three yearlong courses annually, and later legislation permitted online programs operated by the state's universities and by some districts. However, a 2013 statewide moratorium on approval of new local programs limited activity to only the existing eight approved programs, which in 2018–2019 enrolled close to 16,000 students.[97] While some temporary additional activity was permitted during the pandemic, these policies and related waivers were piecemeal and cumbersome.

In 2021, Texas legislators launched a commission to study the issue and recommend revisions, with input from experts across the country.[98] Although the commission delivered its final report with comprehensive recommendations in 2022,[99] in part because of the Texas legislature's biannual schedule, it wasn't until 2025 that the law finally passed. However, it does address many of the virtual schooling issues that Texas and other states have grappled with, including approvals, funding, and accountability. According to consultant D. Thompson, who worked with the commission and legislators to craft and pass the law, the new policy:

- lowers the bar for entry and raises the bar for quality, requiring new programs to undergo one year of operational and academic planning,
- allows districts or charters to partner with outside providers,
- creates greater parity with traditional schools so virtual and hybrid programs are not held to an unreasonably high standard as they innovate,
- creates a hybrid funding model based on enrollment and the home district's average daily attendance rate, and
- "stacks" with other policies to incentivize districts and charter schools to work with businesses and post-secondary institutions to launch virtual and hybrid learning programs that creatively meet the needs of students and communities, including: Rural Pathway Excellence Partnerships (R-PEP) program, Pathways in Technology Early College High program, House Bill 8 (focused on community college funding), and Education Savings Accounts.[100]

Appendix I: Key Dates and Milestones

Figure 4. Growth of Online Education

Year	Reach
1991	1991: Laurel Springs School, a private school based in California, established as one of the first online K–12 schools in the United States[101]
1994	Choice 2000 established in California as one of the first full-time public online K–12 schools, serving high school students[102]; Utah Electronic High School established as one of the first state providers of supplemental online courses[103]
1997	"Break the Mold" grants awarded by the state to the Orange (Orlando) and Alachua County (Gainesville) districts to create what later became Florida Virtual School (FLVS)[104]
2001	At least 14 states have a planned or operational state-sanctioned, state-level virtual school in place, and 40,000 to 50,000 K–12 students enrolled in an online course[105]; WestEd publishes earliest report on virtual schools in the United States[106]
2003	60 cyber charter schools in 13 states[107] and 328,000 enrollments in distance education courses among students regularly enrolled in public school districts[108]
2006	38 states have established state-led online learning programs, policies regulating online learning, or both; 25 states have state-led online learning programs, and 18 states are home to a total of 147 virtual charter schools serving over 65,000 students[109]
2007	1,030,000 K–12 students engaged in online courses[110]
2008	245,000 students enrolled in 24 state programs[111]
2009	1.5 million+ K–12 students engaged in online and blended learning[112]; 55 percent of school districts enroll 1.8 million students in district-run distance education courses[113]
2010	200,000 students attend full-time online schools across 27 states[114]
2011	Online and blended learning opportunities exist for at least some students in all 50 states plus DC; 30 states offer full-time, multi-district schools that enroll about 250,000 students[115]
2012	31 states have full-time online schools for K–12 and 28 states offer supplemental online courses through a statewide virtual school[116]; 275,000 students attend fully online schools and 619,847 course enrollments across 28 state virtual schools[117]
2013	400 full-time virtual schools enroll close to 261,000 students[118]; multi-district fully online schools serve an estimated 310,000 students in 30 states; state virtual schools operate in 26 states, serving 740,000 course enrollments[119]
2014	30 states have fully online schools with 315,000 students attending[120]; 478 virtual schools enroll 199,815 students nationwide (0.4% of total enrollment)[121]
2015	State virtual schools in 24 states serve over 462,000 students with a total of 815,000 semester-long courses[122]
2016	State virtual schools serve 523,000 students in about 935,000 supplemental online course enrollments[123]
2017	501 full-time virtual schools enroll 297,712 students, and 300 blended schools enroll 132,960 students[124]
2018	691 fully virtual schools and 8,673 not fully virtual schools nationwide enroll 293,717 (fully virtual) and 4,751,775 (not fully virtual) students[125]; full-time online schools enroll 310,000 students across 32 states; state virtual schools in 23 states serve about 420,000 students with almost a million online course enrollments[126]

2019	477 virtual schools and 306 blended schools operate in 40 states[127]; full-time online schools enroll 356,608 students; state virtual schools operate in 21 states collectively serving 1,015,760 course enrollments[128]
2020	653 virtual schools[129] and full-time online schools enroll 588,924 students[130]
2021	726 virtual schools[131] and full-time online schools enroll 583,022 students[132]
2022	State virtual schools operate in 18 states with a million supplemental online course enrollments and full-time online schools enroll 564,235 students[133]
2023	State virtual schools operate in 15 states with 1,199,968 course enrollments and full-time online schools enroll 831,574 students[134]

Appendix II: Key Terms

Distance education / learning	A structured learning environment that is expected to be completed by a learner away from a brick-and-mortar school setting.[135]
Digital learning	Any instructional practice in or out of school that uses digital technology to strengthen a student's learning experience and improve educational outcomes.[136]
Virtual or online learning	Teacher-led education that takes place over the Internet, with the teacher and student separated geographically, using an online instructional delivery system. May be accessed from multiple settings (at home, in school and/or out of school buildings).[137] May be offered as a full-time program (see next definition) or as supplemental courses for students who are otherwise enrolled in some other form of physical or virtual school.[138]
Virtual or online school	A program intentionally designed for the online environment in which students enroll and earn credit towards academic advancement (or graduation) based on successful completion of the courses (or other designated learning opportunities) provided by the school.[139] May be private and charge tuition, or may be public and receive per-pupil funding from the state as a charter school or other form of public school. If public, may be an online charter school, a single-district online school that serves only students who reside within that district's geographical boundaries, or a multi-district online school that serves students in two or more districts. In all these cases, program may be operated directly by districts, by nonprofit or for-profit management organization, or in partnership with a third-party provider.[140]
State or state-sponsored virtual school or program	Online learning program created by legislation or by a state-level agency, and/or administered by a state department of education or another state-level agency, and/or directly funded by a state appropriation or grant for the purpose of providing online learning opportunities across the state.[141] (Note: Do not grant diplomas and are not responsible for the assessment and reporting functions performed by schools, with a few exceptions, such as Florida Virtual School.)
Synchronous / asynchronous	Synchronous: Learning in which the participants interact at the same time and in the same space, such as Zoom meetings. Asynchronous: Communication exchanges that occur in elapsed time between two or more people, such as email, online discussion forums, message boards, blogs, podcasts, etc.[142]

Blended learning	Mechanism by which a student learns at least in part through online delivery with some element of student control over time, place, path, and/or pace.[143] May include asynchronous elements (see definition above), but requires in-person attendance on a daily basis to receive instruction at a local school or facility.[144]
Hybrid learning	Combination of traditional classroom instruction and online instruction to meet the educational needs of the learner.[145]
Hybrid school	Combines online and face-to-face instruction and may be private or public; public hybrid schools have the following characteristics: The school enrolls students, receives per-pupil funding, and is listed as a school by the National Center for Education Statistics (NCES). The school has a physical location which students attend at least occasionally for instructional purposes. The large majority of students must take part in learning activities at the physical location. Students are not required to attend the physical campus on a schedule that approaches a regular school schedule.[146]
Emergency remote teaching and learning	Temporary shift of instruction to an alternate delivery mode due to crisis circumstances. Involves the use of fully remote teaching solutions for instruction or education that would otherwise be delivered face-to-face or as blended or hybrid courses, and will return to that format once the crisis or emergency has abated. Primary objective is not to re-create a robust educational ecosystem but rather to provide temporary access to instruction and instructional supports in a manner that is quick to set up and is reliably available during an emergency or crisis.[147]

Appendix III: Additional Resources

Overviews Of Virtual/Digital Education

Snapshot 2024: The post-pandemic digital learning landscape emerges Digital Learning Collaborative
February 2024
https://www.deelac.com/wp-content/uploads/2025/02/Snapshot-2024.pdf

Where, Why, How: Deepening Analysis of the U.S. K–12 Virtual Learning Landscape
The Learning Accelerator
September 2024
https://practices.learningaccelerator.org/artifacts/report-where-why-how-deepening-analysis-of-the-u-s-k-12-virtual-learning-landscape

Virtual Schools in the U.S. 2023
National Education Policy Center
May 2023
https://nepc.colorado.edu/publication/virtual-schools-annual-2023

A Human-Centered Vision for Quality Virtual Learning
Whiteboard Advisors
2022
https://www.edmentum.com/impact/foundational-research/a-human-centered-vision-for-quality-virtual-learning/

Virtual Learning, Now and Beyond
Center on Reinventing Public Education
January 2022
https://crpe.org/wp-content/uploads/final2-Virtual-learning-post-COVID-report.pdf

A Policymaker's Guide to Virtual Schools
Education Commission of the States
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