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VIRTUAL SCHOOLS IN THE U.S. 2017

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VIRTUAL SCHOOLS IN THE U.S. 2017

Alex Molnar, University of Colorado Boulder

Introduction

In the five years since the first NEPC *Annual Report on Virtual Education* was released in 2013, virtual education has continued to be a focal point for policymakers. Proponents argue that virtual education can expand student choices and improve the efficiency of public education. In particular, full-time virtual schools (also sometimes referred to as virtual charter schools, virtual academies, online schools or cyber schools) have attracted a great deal of attention. Many believe that online curriculum can be tailored to individual students more effectively than curriculum in traditional classrooms, giving it the potential to promote greater student achievement than can be realized in traditional brick-and-mortar schools. Further, the promise of lower costs—primarily for instructional personnel and facilities—makes virtual schools financially appealing to both policymakers and for-profit providers.

The assumption that virtual schools are cost effective and educationally sound, coupled with policies expanding school choice and providing market incentives attractive to for-profit companies, continue to help fuel virtual school growth in the U.S. There is, however, little high-quality systematic evidence that the rapid expansion of the past several years is wise. Indeed, evidence presented in the NEPC annual reports argues for caution. Nevertheless, the movement toward virtual schools continues to gather steam, often supported by weak or even dishonest data. For example, as a part of the confirmation hearings for the current Secretary of Education, National Public Radio reported that Secretary Betsy DeVos responded to a written question from Senator Patty Murray using performance data provided by a for-profit corporation that inflated the four-year graduation rates of virtual schools—in some cases by as much as 300%.¹

The 2017 NEPC Annual Report contributes to the existing evidence related to virtual education, and so to debates surrounding it. It provides objective analysis of the characteristics and performance of full-time, publicly funded K-12 virtual schools; available research on virtual school practices and policy; and an overview of recent state efforts to craft new policy.

In *Section I—Full-Time Virtual and Blended Schools: Enrollment, Student Characteristics, and Performance*, Gary Miron, Charisse Gulosino, Christopher Shank, and Caryn Davidson focus on two specific types of K-12 online and blended learning: full-time virtual schools and blended schools. The authors assigned schools in their study a unique identification code that allowed them to gather complete data about each school from a variety of sources (the National Center for Educational Statistics, individual Departments of Education, and so on). The authors use the terms “full-time virtual school” and “full-term blended school” because they want to link these school types to data sets on school characteristics, student demographics, and school outcomes.

In *Section II—Still No Evidence, Increased Call for Regulation: Research to Guide Virtual School Policy*, Michael Barbour focuses on all forms of K-12 virtual and blended learning. Barbour distinguishes among the different forms of virtual schooling—both supplemental and full-time—and describes the limited reliable research on blended learning programs and blended learning schools.

In *Section III—Key Policy Issues in Virtual Schools: Finance and Governance, Instructional Quality, and Teacher Quality*, Luis Huerta, Sheryl Rankin Shafer, Jennifer King Rice, and David Nitkin use the general term “virtual school” as an umbrella term including all forms of K-12 online learning. When the National Education Policy Center first began this annual examination in 2013, the distinctions among K-12 online learning, virtual schooling and cyber schooling were not as prominent within the academic literature. Additionally, many of the K-12 online learning programs sponsored or supported by State Departments of Education were referred to as virtual schools. Similarly, much of the legislation and policy language used the term virtual (for example, virtual charter school). For these reasons, this annual report was and will continue to use the term *Virtual Schools* in its title. Therefore, unless they are quoting specific language from a given piece of legislation or policy, the authors of this third section will continue to use the term “virtual schools.”

Notes and References - Introduction

- 1 Turner, C. (2017, February 4). Betsy DeVos' graduation rate mistake. *National Public Radio*. Retrieved February 27, 2017, from <http://www.npr.org/sections/ed/2017/02/04/513220220/betsy-devos-graduation-rate-mistake>

Section I

Full-Time Virtual and Blended Schools: Enrollment, Student Characteristics, and Performance

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Executive Summary

This report provides a detailed overview and inventory of full-time virtual schools and blended learning, or hybrid, schools. Full-time virtual schools deliver all curriculum and instruction via the Internet and electronic communication, usually asynchronously with students at home and teachers at a remote location. Blended schools combine traditional face-to-face instruction in classrooms and virtual instruction.

Although increasing numbers of parents and students are choosing virtual or blended schools, little is known about their inner workings. Evidence related to inputs and outcomes indicates that students in these schools differ from students in traditional public schools. And, school performance measures for both virtual and blended schools indicate that they are not as successful as traditional public schools.

Nevertheless, the evidence suggests that enrollment growth has continued. Large virtual schools operated by for-profit education management organizations (EMOs) have continued to dominate this sector and are increasing their market share. While more districts are opening their own virtual schools, district-run schools have typically been small, with limited enrollment.

This report provides a census of full-time virtual and blended schools. It also includes student demographics, state-specific school performance ratings, and—where possible—a comparison of virtual school performance with established norms.

Current scope of full-time virtual schools and blended learning schools:

- In 2015-16, 528 full-time virtual schools enrolled 278,511 students, and 140 blended schools enrolled 36,605 students.
- Thirty-four states had full-time virtual schools and 21 states had blended schools. Four states had blended but no full-time virtual schools (Connecticut, Hawaii, New Jersey and Rhode Island).
- Although private education management organizations (EMOs) operated only 29.4% of the full-time virtual schools, those schools accounted for 69.5% of all students enrolled in virtual schools.
- Virtual schools operated by for-profit EMOs enrolled an average 1,309 students. In contrast, those operated by nonprofit EMOs enrolled an average 248 students, and

independent virtual schools (no EMO involved) enrolled an average 256 students.

- Private EMOs played less of a role in the blended sector. Of blended schools, 72.9% were independent, while 17.1% were operated by nonprofit EMOs and 10% were operated by for-profit EMOs. Blended schools operated by nonprofit EMOs, primarily Rocketship Education, were most numerous and substantially larger than others in the sector. Of those blended schools operated by EMOs, Rocketship Education remained the largest operator of blended schools, with 12 schools that enrolled close to 6,000 students.
- Blended schools enrolled an average of 271 students, reasonably near the averages in virtual schools that are either independent (256) or managed by nonprofit EMOs (248), but far fewer than the average of 1,309 in schools managed by for-profit EMOs.
- Only half of all virtual schools in the inventory were charter schools, but together they accounted for 82.2% of enrollment. While districts have been increasingly creating their own virtual schools, those tended to enroll far fewer students.
- There were more charter blended schools (53.6%) than district blended schools (46.4%), and they had substantially larger enrollments (an average of 339 students) than district blended schools (an average of 193 students).
- Relative to national public school enrollment, virtual schools had substantially fewer minority students and fewer low-income students. Blended schools overall had only a slightly lower proportion of low-income students, and a substantially higher average of Hispanic students. However, in the pool of blended schools, those operated by nonprofit EMOs enrolled a substantially higher proportion of low-income students than their counterparts; it may be that the nonprofits are attempting to provide better learning opportunities to economically disadvantaged students.
- The proportion of special education students in virtual and blended schools was close to the national average. While virtual schools enrolled English Language Learners (ELLs) at a much lower rate than the national average, blended schools enrolled a percentage close to the national average.
- While the population in the nation's public schools was nearly evenly split between girls and boys, virtual and blended schools enrolled more girls—53.4% of virtual school enrollment and 51.8% of blended school enrollment.
- While the average student-teacher ratio in the nation's public schools was 16 students per teacher¹, virtual schools reported more than twice as many students per teacher: 34. The average in blended schools was only very slightly lower: 33. The highest student-teacher ratio was in virtual schools operated by for-profit EMOs (44), while the lowest was in those operated by virtual nonprofit EMOs (19.5).

School Performance Data:

- Many states have frozen their accountability systems as they make adjustments to new requirements under the Every Student Succeeds Act (ESSA) and take advantage of flexibility waivers and extensions granted under the Elementary and Sec-

ondary Education Act (ESEA). Therefore, overall school performance ratings were available for only 18 of the 38 states with virtual and/or blended schools.

- Virtual schools continued to underperform academically, including in comparison to blended schools. Overall, 37.4 percent of full-time virtual schools received acceptable performance ratings, compared with 72.7% acceptable ratings for blended schools. A much higher percentage of blended schools received acceptable ratings in the 2015-16 school year as compared to the prior year, thus reversing their underwhelming academic results: last year's inventory found that blended schools were not doing much better than virtual schools.
- Among virtual schools, nonprofits (33.3% acceptable) and independents (43.6% acceptable) outperformed for-profit EMOs (25.7% acceptable). District-operated virtual schools (55.9% acceptable) significantly outperformed their charter school counterparts (23.8% acceptable). Without clear explanation, 40 virtual schools were not rated or had no rating reported by their State Education Agency.
- Blended schools outperformed virtual schools across all categories: for-profit, independent, nonprofit, charter, and district. Nonprofit blended schools (100% acceptable) emerged as the top performer among blended schools.
- On-time graduation rate data were available for 129 full-time virtual schools and 34 blended schools. The graduation rates of 43.4% in virtual schools and 43.1% in blended schools fell far short of the national average of 82.3%.

As detailed below, the findings outlined in this report align with reports from state auditors and new national studies by other organizations.

Recommendations

Given the rapid growth of virtual schools and blended schools, the populations they serve, and the relatively poor performance of virtual schools on widely used accountability measures, it is recommended that:

- Policymakers slow or stop the growth in the number of virtual schools and the size of their enrollments until the reasons for their relatively poor performance have been identified and addressed. They should prioritize understanding why virtual schools perform poorly under a college- and career-ready accountability system and how their performance can be improved prior to expansion.
- Policymakers should carefully and continuously monitor the performance of full-time blended schools since the data offer some potentially positive signs that they can maintain performance levels even with very large student-to-teacher ratios. This is not surprising despite their earlier poor performance because it seems plausible that small school sizes and in-person contact with adults might be a good fit for typical public school populations.
- Authorities charged with oversight should specify and enforce sanctions for virtual and blended schools that fail to perform adequately.
- Policymakers should specify a maximum student-teacher ratio for virtual and

blended schools to ensure all students receive adequate support and attention from teachers.

- Policymakers should regulate school and class sizes. As the evidence indicates, the virtual schools and blended learning schools have large numbers of students for each teacher. Given the overwhelmingly poor performance evidence, it is surprising that these schools are not investing more on instruction. The likely explanation for this is two-fold: (1) profit motives of the EMOs, and (2) the operators of these schools have learned that they can get away with it year after year, with only the National Collegiate Athletic Association (NCAA)² reacting strongly to the negative performance outcomes.
- State agencies ensure that virtual schools and blended schools fully report data related to the population of students they serve and the teachers they employ. Similarly, state agencies should make every effort to assign all virtual schools an overall school performance rating and clearly explain why a rating has not been assigned to a specific school when that is the case. In 2015-16, a total of 15.6% of virtual schools and 10.8% of blended schools were not rated by states that compiled overall school performance ratings. This lack of data for virtual and blended schools furthers their ability to operate without accountability.
- State agencies should continue the work they've started in revising accountability systems and commit to publicly reporting results starting in 2017-18 as mandated earlier, regardless of changes within the Department of Education.
- State and federal policymakers should promote efforts to design new outcome measures appropriate to the unique characteristics of full-time virtual schools and blended schools. Passage of the Every Student Succeeds Act (ESSA) represents an opportunity for those states with a growing virtual and blended school sector to improve upon their accountability systems for reporting data on school performance measures.
- Policymakers and other stakeholders should support more research to identify which policy options—especially those impacting funding and accountability mechanisms—are most likely to promote successful virtual schools and blended schools. More research is also needed to increase understanding of the inner workings of virtual and blended schools, including such factors as the curriculum and the nature of student-teacher interactions. Such research should help identify and remedy features that are negatively affecting student learning. (Since this report recommended in 2013 that federal and state education agencies begin coding virtual schools in their datasets, NCES has initiated such coding. This will help facilitate further research on this relatively new and rapidly growing model.)
- Policymakers and other stakeholders should also support more research on exactly how special education is being provided in virtual and blended schools. There are many key questions that warrant attention such as: What types of students with disabilities are being enrolled? Are these students receiving any additional services? How are they being served and how are the additional designated funds being used to support them? Indicators that raise concern include the rapid increase of students with IEPs in virtual schools and the extremely large student-to-teacher ratios. For example, a 2012 study of K12 Inc. found a higher proportion of students with disabilities relative to brick-and-mortar charter schools, while that organiza-

tion was spending a third less per pupil for special education teacher salaries—raising questions about the amount and type of services being provided.

Section I

Full-Time Virtual and Blended Schools: Enrollment, Student Characteristics, and Performance

For the past five years, NEPC has been active in documenting and researching virtual schooling at the primary and secondary levels.³ Reports have examined who is enrolling in virtual charter and district schools and how those schools are performing; in addition, they have focused on a wide range of policy issues specific to virtual schools. While the earliest NEPC reports included only full-time virtual schools, last year's report began including full-time blended learning schools as well.

The last two years have shown strong enrollment growth in both full-time virtual schools and full-time blended learning schools—despite the fact that evidence relative to their outcomes is universally negative. As researchers and as educators, we remain optimistic that these new models can work, and we believe they may already be working as school or district programs rather than as stand-alone schools. We also recognize that there are many teachers across various school types who are innovating and implementing blended-learning models likely to have far better outcomes than the results from their stand-alone counterparts.

The last year has seen large changes in this sector, with some full-time virtual schools closing and a larger number opening. Although the evidence base is becoming stronger and more convincingly negative for virtual schools, and although evidence is mixed for blended learning schools, an increasing number of parents and students are opting for full or part-time online options. And, philanthropic groups have provided support to the key operator of blended schools, implying that evidence exists to support expansion. However, evidence detailed in this report suggests that while blended schools earn better state ratings than virtual schools, their graduation rates are similar to the dismal graduation rates in virtual schools.

This report contains detailed descriptions of full-time virtual and full-time blended schools operating during the 2015-16 school year. The annual inventory serves as a key research-based effort to track developments nationwide—which to date have included steady expansion. It helps identify which students these schools are serving, how well the schools are performing, and how quickly their numbers are expanding or contracting. Research questions this report seeks to answer include:

- How many full-time virtual and blended schools operate in the U.S.? How many students do they enroll?
- What are the key characteristics of these schools and who operates them?
- What are the demographic characteristics of students enrolled? How do demographic data for students enrolled in virtual and blended schools differ from those enrolled in brick-and-mortar schools?
- How do virtual and blended schools perform in terms of such school performance measures as state performance ratings and graduation rates?

Student demographics reported here include grade level, ethnicity, gender, socioeconomic status, special education status, and English language learner status. Data on school performance includes a comparison of aggregate performance ratings and national norms. We also include data on staffing, specifically on student-teacher ratios.

This report builds on earlier reports; we have updated earlier inventories with available data for the 2015-16 academic year. In addition, we have provided details on specific schools and states in Appendices A, B, C, and D which can be downloaded from the NEPC website: <http://nepc.colorado.edu/publication/virtual-schools-annual-2017>

Data Sources, Selection Criteria and Aggregate Calculations

The findings presented in this report are based on publicly available data, collected, audited, and warehoused by public authorities. Data from the National Center for Education Statistics (NCES) was particularly helpful relative to key data on enrollment, student demographics and staffing. Data from state education agencies and from individual school websites provided supplemental data not available from NCES.

The scope of this inventory is limited to full-time, public elementary and secondary virtual and blended schools in the U.S. These include virtual and blended schools operated by for-profit and nonprofit Education Management Organizations (EMOs) as well as virtual schools operated by states or districts. Private virtual or blended schools (funded in whole or in part by charging tuition and fees, rather than relying on a public funding program using tax dollars) are excluded. Also excluded are schools offering a combination of programs including traditional face-to-face programs as well as virtual or blended options, unless it was possible to separate data for the full-time virtual or blended school components.

Schools were identified by the unique school ID code assigned by the NCES or, for relatively new schools, by unique building or school ID codes assigned by state agencies. These criteria helped identify and exclude smaller district programs and schools not intended to be full-time, but simply to offer some virtual learning experience for a subset of students.⁴ All schools included had evidence of enrollment in one of the past two years, although schools enrolling fewer than 10 students were excluded.⁵ Such restrictions allow for more confidence in attributing various outcomes to specific types of schools.

Our criteria excluded scores of some virtual and blended schools or programs. For 2015-16, close to 150 schools were excluded because no enrollment data were available during the past three years, either because the enrollment was less than 25 students in 2015-16, or because they were “programs” based in traditional schools and data could not be disaggregated. A total of 67 new full-time virtual schools were added to the inventory, while 13 schools that had been closed were removed from our lists. A total of 528 virtual schools and 140 blended learning schools met criteria and are included in this inventory.

The primary sources for total enrollment and school performance data were the Common Core of Data from NCES, state-level datasets, and school report cards for the 2015-16 school year. Data for grade level enrollment, race-ethnicity and gender were obtained from NCES and represent the 2014-15 school year, the most recent data available.

Aggregated data reflect weighted averages based on enrollment. That is, averages have been calculated so that the influence of any given school on the aggregated average is proportional to its enrollment. Comparisons were made to norms for all public schools in the United States.

Limitations

There are several general limitations that readers should keep in mind. Note that most of these limitations are experienced by other researchers in this area, although they are not always highlighted in reports.

Incomplete demographic, class size, and performance data. The tables in the appendices have several gaps that reflect missing data. Some states combine virtual school data with local district data in ways that make disaggregation impossible. For example, while data on student ethnic background and on free and reduced-price lunch status is relatively complete, data reported at the district level (including, for example, special education enrollment) is much less available. This was particularly problematic in states where charter schools are not considered Local Education Authorities or districts.⁶

Comparison groups. National aggregate results for all public schools provided the base for several comparisons in this report, which profiles 38 states having virtual and/or blended options. While comparisons of two inherently different forms of schooling, each representing different geographic datasets, have some obvious weaknesses, national aggregate data is what state and federal agencies typically use in their reports and comparisons. Following the agencies' lead is intended to allow reasonable comparison of this report with others. An additional consideration is that, because the 38 states represented are among the largest and most densely populated, the national comparison is informative, if not perfect. It is perhaps also worth noting that the national data include data for full-time virtual and blended schools, although it constitutes a relatively small subset.

Instability in virtual and blended schools. Full-time virtual and blended schools are rapidly evolving; currently, the number of such schools, their demographic composition, and their performance data could vary from the 2014-15 demographic data and the 2015-16 performance data presented here (the most recent available for each category). When the fluidity of the terrain is layered onto the scope of this attempt to compose a national portrait, some errors of inclusion and exclusion seem likely. Documented corrections to the data in the appendices are welcome and can be submitted to the authors through the National Education Policy Center.

Growth and Current Scope of Full-Time Virtual and Blended Schools

An array of education services is delivered online. On one end of the continuum, individual courses are delivered to students who are otherwise enrolled in brick-and-mortar schools. The middle terrain includes a wide array of blended programs and schools serving students with a combination of face-to-face and online activities. On the other end of the continuum, full-time virtual schools provide all instruction online.

For the purposes of this report, blended schools are defined as schools in which all students experience the same blended instruction, although there are variations in how blended schools combine virtual and face-to-face activities. It is important to note that this report tracks only full-time virtual and blended schools, not any of the multiple other online offerings. Full-time virtual and blended schools are especially important to track because they receive full funding for delivering what is supposed to be a full educational experience.

Although these schools still account for a relatively small portion of the overall school choice options in the U.S., they constitute some of the fastest-growing options, overlapping with

both homeschooling and charter schools. Appendix A contains charts that depict the number of virtual and blended schools and students by state. During the 2015-16 school year, there were 34 states with full-time virtual schools and 21 states with full-time blended learning schools. While legislation for full-time virtual schools usually precedes legislation for full-time blended learning schools, there were four states that allow blended schools to operate but still have not allowed the opening of full-time virtual schools: Connecticut, Hawaii, New Jersey, and Rhode Island. A total of 17 states have full-time virtual schools although they still do not have full-time blended learning schools.⁷

Beyond the 38 states with either virtual or blended schools, we recognize that other states also offer virtual education options, but in several other formats including, for example, the offering of individual online classes for some students or supplemental coursework facilitated online.

A total of 528 full-time virtual schools met selection criteria for the 2015-16 school year. Change from the 2014-15 school year reflects the net addition of 129 virtual schools. There were more than a dozen schools that either closed or were excluded because they had no evidence of enrollment. See Appendix B1 for a list of identified schools included in this inventory.⁸ These schools enrolled 278,511 students, indicating a net growth of 16,643 students (approximately 6.4% growth since 2014-15).

A total of 140 blended schools met selection criteria in 2015-16. These schools enrolled 36,605 students. The net increase in enrollments in blended schools was 10,490, a very large increase of 40% since the previous school year. See Appendix B2 for a list of identified schools.

Figure 1 illustrates the estimated enrollment growth in full-time virtual schools over the last 15 years.⁹ The International Association for K-12 Online Learning (iNACOL) typically reports a much higher estimate than NEPC reports each year; however, those reports offer insufficient detail on their selection criteria and do not list specific schools on which they base enrollment calculations. It is not clear whether programs (rather than full-time schools) are included. Figure 1 also illustrates the proportion of students in full-time virtual schools operated by the two largest for-profit EMOs, K12 Inc. and Connections Academy LLC. K12 Inc. schools accounted for 36.3% of all virtual school enrollments, a small increase from the 34.4% of the prior year. Connections Academy schools accounted for 22.9% of all enrollments. While enrollments in these providers' schools seem to have grown modestly, their combined market share increased—from 57.4% in 2014-15 to 59.5% in 2015-16.

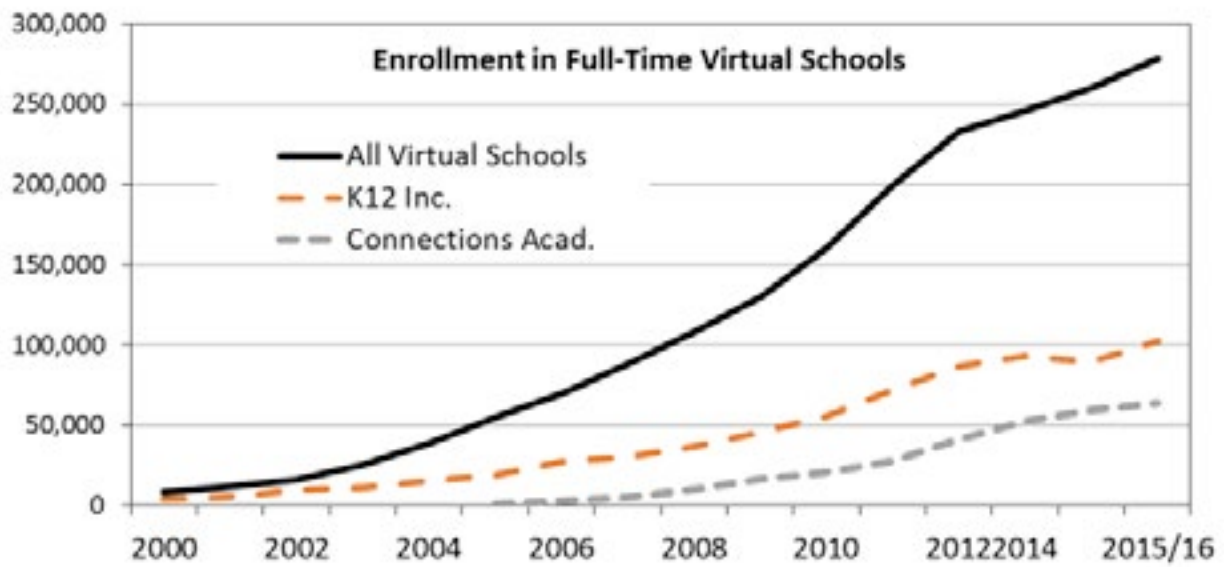


Figure 1. Enrollment Trends in Full-Time Virtual Schools

New district-operated schools continued to add significantly to the pool of full-time virtual schools, although they still tend to be very small (see Table 1). Virtual charters are much larger, accounting for half of all full-time virtual schools and for 82.2% of enrollments. Relative to 2014-15, the charter virtual schools increased their proportion of all virtual schools by 1.5 %, although their enrollments dropped by 0.4%. This indicates that even though the charter virtual schools have average enrollments four times the size of those in district-run schools, the district-run virtual schools are becoming larger: average enrollment per school increased from 194 in 2014-15 to 215 in 2015-16.

Within the virtual school sector, for-profit EMOs play a prominent role. They operate 29.4% of all virtual schools, which together enroll 69.5% of the student population (see Table 2). In 2015-16, for-profit EMOs managed 155 charter and district schools, down from 186 in 2014-15. As noted earlier, K12 Inc. is by far the largest EMO in this sector; in 2015-16, it operated 96 full-time virtual schools enrolling just under 102,000 students. Interestingly, even though K12 Inc. had a net loss of 21 schools since the previous year, it still managed to increase net enrollments by increasing average school size.

Connections Academy, the second largest for-profit operator, operated 31 such schools with just under 64,000 students, an increase of close to 4,000 students between 2014-15 and 2015-16. It is important to note that this report's data on these private operators likely under-represents the role of for-profit EMOs. While this report profiles only virtual schools that EMOs are entirely responsible for, many district-operated virtual schools subcontract to K12, Inc. and Connections Academy to provide online curriculum, learning platforms, and other support services. In contrast, nonprofit counterparts operated only 21 schools, enrolling 4,953 students, a net increase of about 400 students relative to the previous year. Generally, charter virtual schools are much more likely to be operated by an EMO.

Table 1. Distribution of Virtual Schools and Students Across District and Charter Sectors, 2015-16

	Total Number of Schools in 2015-16	Percent of All Schools	Schools with Enrollment Data	Students	Percent of All Enrollment	Average Enrollment Per School
District	264	50.0%	230	49,501	17.8%	215
Charter	264	50.0%	250	229,010	82.2%	916
Total for All Virtual Schools	528	100.0%	480	278,511	100.0%	580

There were an equal number of full-time charter and district virtual schools operating in 2015-16: 264. Although the number of district-operated schools increased more than the number of charters, charters continued to have much larger enrollments. The average enrollment in charters was 916 students per school compared with an average of 215 students in district schools. A possible explanation for this is that district schools are created to serve smaller targeted populations. Another possible explanation is that district virtual schools are seldom operated by for-profit companies motivated to create larger schools to ensure larger profit margins.

EMOs operated 33.4% of all full-time virtual schools, accounting for 71.3% of enrollment. The overall number of EMO-managed schools grew, if modestly. In a few high-profile cases in recent years, EMOs were fired or had their status changed from “school operator” to “vendor.” As an operator, the EMO has executive control of the entire school operation, including curriculum and programs as well as hiring of administrators and teachers. When an EMO shifts to a vendor role, typically the school board has essentially fired the EMO but continues to lease its learning platform and curriculum.

Overall, independent virtual schools showed the greatest growth over the last two years. Even so, they are still relatively small and enroll only 28.7% of all virtual school students. On average, an independent virtual school serves 256 students, while for-profit EMO-operated schools average 1,309 students per school. Between 2014-15 and 2015-16, for-profit virtual schools increased enrollment by an average just over 45 students per school. Variance in this sector’s enrollments is great, with some for-profit EMOs operating schools with more than 10,000 students and one that enrolls more than 14,000 students in a single school unit.

Table 2. Distribution of Virtual Schools and Students by Operator Status 2015-16

	Total Number of Schools in 2015-16	Percent of All Schools	Schools with Enrollment Data	Students	Percent of All Enrollment	Average Enrollment Per School
Independent	352	66.7%	312	79,900	28.7%	256
Nonprofit EMO	21	4.0%	20	4,953	1.8%	248
For-profit EMO	155	29.4%	148	193,658	69.5%	1,309
<i>K12 Inc.</i>	96	19.2%	92	101,915	36.6%	1,108
<i>Connections Academy</i>	31	6.5%	31	63,661	22.9%	2,054
Total for All Virtual Schools	528	100.0%	480	278,511	100%	580

A number of other for-profit EMOs have begun operating full-time virtual schools, including Mosaica Education Inc. (eight schools), Edison Learning (three schools), Calvert Education Services (five schools), and Cyber Education Center (three schools). Noteworthy expansion has come from some for-profit EMOs that formerly operated only brick-and-mortar schools: Edison Learning Inc., Mosaica Inc., and White Hat Management. Given the relatively lucrative circumstances¹⁰ under which full-time virtual schools can operate, it is likely that still more for-profit EMOs will be expanding their business models to include full-time virtual schools. Among nonprofit EMOs, the largest nonprofit are Learning Matters Educational Group (seven schools), Advanced Academics (two schools), and Roads Education Organization (four schools).

As Figure 2 shows, enrollments in blended schools have also been growing steadily. Three prominent education management organizations continued to dominate this sector. Rocketship Education accounted for 16.4% of enrollment, K12 Inc. for 7.1%, and Nexus Academy for 3.1%. Compared to the previous year, all three of these companies experienced decreased market share due to growth and expansion of independent blended learning schools.

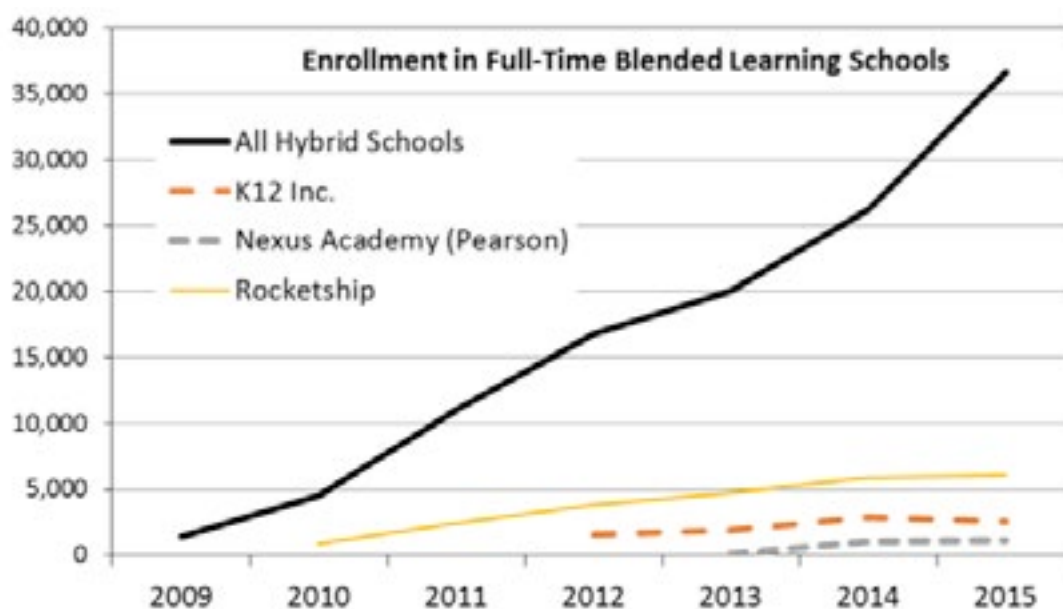


Figure 2. Enrollment Trends in Full-Time Blended Schools

Differing from virtual schools, most growth in the past year in blended learning schools came from new schools not affiliated with an EMO. In 2015-16, 102 blended schools were independent, while 14 were operated by for-profit EMOs and 24 were operated by nonprofit EMOs.

The average size of blended schools decreased from 263 students per school in 2014-15 to 233 students per school in 2015-16. As indicated above, most are independent district-operated schools, and they have smaller enrollments than those managed by private EMOs (see Table 4). For example, while K12 Inc. only had four full-time blended schools in 2015-16, those schools enrolled 2,583 students. K12 Inc. blended schools clearly have much higher enrollment than those run by other operators, such as Nexus Academy (a Pearson company similar to Connections Academy). However, the largest operator of full-time blended schools is Rocketship Education, a private nonprofit EMO based in California that recently expanded to Tennessee and Wisconsin. In 2015-16 Rocketship operated 12 schools enrolling 8,890 students.

The number of both district-operated and charter-operated blended learning schools also increased between 2014-15 and 2015-16, with districts increasing a bit more than charters. Enrollments in the charter blended schools are substantially larger (339 students per school) as compared to the district schools (193 students per school) (see Table 3).

Table 3. Distribution of Blended Schools and Students Across District and Charter Sectors, 2015-16

	Total Number of Schools 2015-16	Percent of All Schools with Enrollment Data	Schools With Enrollment Data	Students	Percent of All Enrollment	Average Enrollment Per School
District	65	46.4%	63	12,170	33.2%	193
Charter	75	53.6%	72	24,435	66.8%	339
Total for All Blended Schools	140	100.0%	135	36,605	100.0%	271

Table 4. Distribution of Blended Schools and Students by Operator Status 2015-16

	Total Number of Schools 2015-16	Percent of All Schools with Enrollment Data	Schools with Enrollment Data	Students	Percent of All Enrollment	Average Enrollment per School
Independent	102	72.9%	100	23,276	63.6%	233
Nonprofit EMO	24	17.1%	22	8,890	24.3%	404
For-profit EMO	14	10.0%	13	4,439	12.1%	341
Total for All Blended Schools	140	100.0%	135	36,605	100%	271

Student Characteristics

The following analysis of student demographics provides context for school performance data comparisons discussed later.

Race-Ethnicity

The proportion of minority students in virtual schools has slowly increased a few percentage points over the past few years. Nevertheless, aggregate data from full-time virtual schools still differs substantively from national averages in terms of student ethnicity. Just over 65% of the students in virtual schools were White-Non-Hispanic, compared with the national mean of 49.8% (see Figure 3). Not surprisingly, then, the proportion of Black and Hispanic students in virtual schools was noticeably lower than the national average. Only 15% of students in virtual schools were Black while the national average was 25.5%; only 12% of students in virtual schools were Hispanic while the national average was 15.5%.¹¹ The fact that

minority and low-income families may have less access to technology may help to explain underrepresentation of these groups, even though most virtual schools loan their students computers and often pay for internet access. There are other possible explanations for the overrepresentation of White students in these schools, including White flight by urban families or the fact that virtual schools often present the only viable form of school choice in rural areas where minorities are less prevalent.

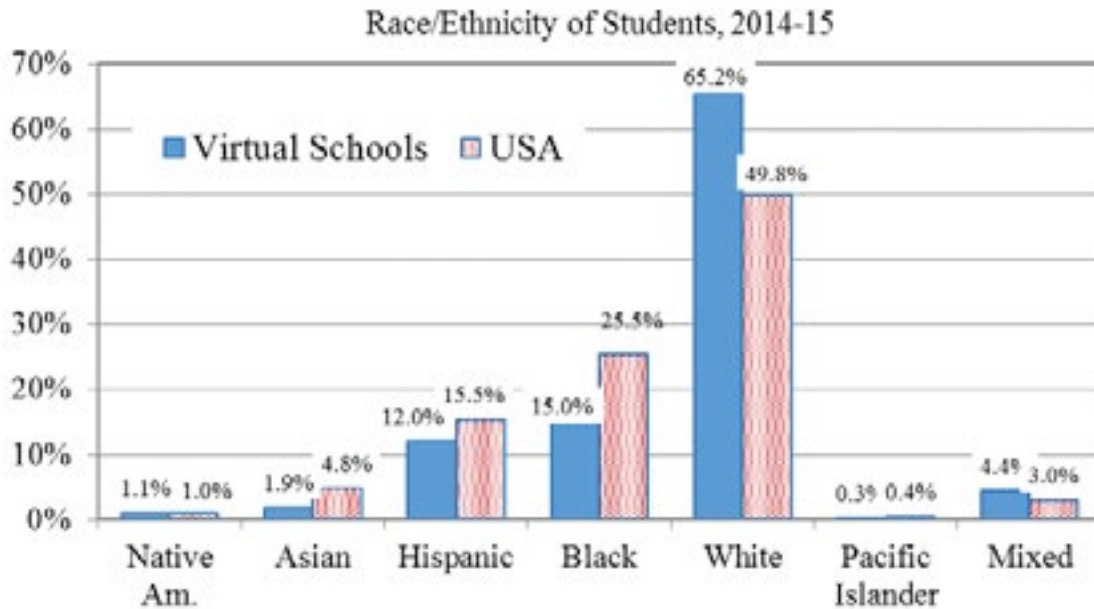


Figure 3. Race/Ethnicity of Students in Virtual Schools Compared with National Averages, 2014-15

Figure 4 displays the demographic composition of students enrolled in blended schools. The population of students in blended schools more closely matches enrollments in public schools. One noteworthy difference is that the enrollments of Hispanic students in blended schools are substantially higher than in public schools. This finding may be explained by the fact that blended learning schools are concentrated in California and Colorado—states with large concentrations of Hispanic students. As blended schools expand in other states, it is likely that their enrollments will become more like those of full-time virtual schools.

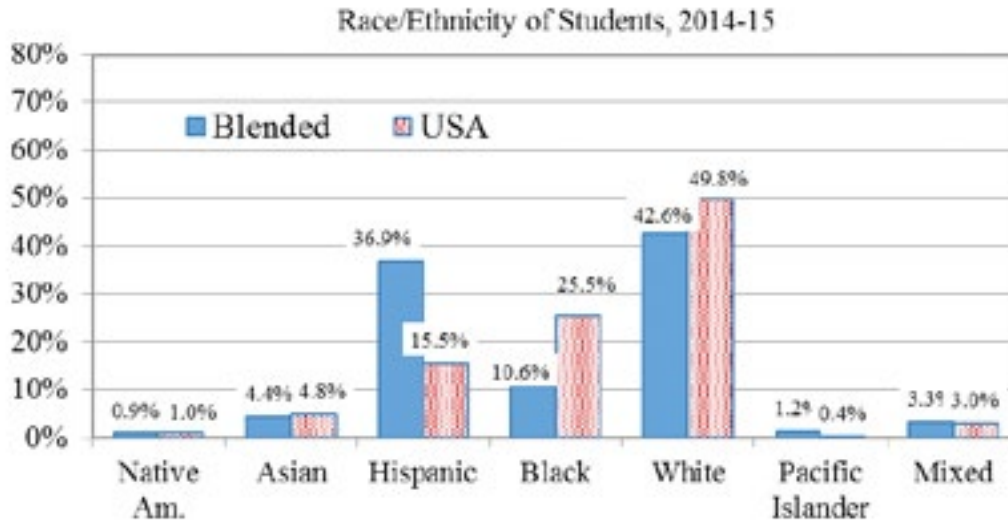


Figure 4. Race/Ethnicity of Students in Blended Schools Compared with National Averages, 2013-14

Data available from state sources for 2015-16 was less complete than the 2014-15 data collected from NCES¹²; still, the pattern of distribution of students by race/ethnicity was largely unchanged except for a very small increase in minority students. Nonprofit EMO virtual schools had some distinct differences, although their very small share of enrollment makes drawing inferences difficult. Similarly, the differences in student ethnicity between district and charter schools and those between for-profit or independent virtual schools are also very small.

Free and Reduced-Price Lunch

As illustrated in Figure 5, in 2014-15 the proportion of students in full-time virtual schools with available data (371 schools) who qualified for free or reduced-price lunch (FRL) was 32.4%—18.9 percentage points lower than the all public school average of 51.3%. Within the full-time virtual school sector, district schools had a greater percentage of low-income students (38.1%) than charters (32.1%), while for-profits had a greater percentage of low-income students (33.6%) than those operated by nonprofit EMOs (15.3%). Of the two largest for-profit EMOs, K12 Inc. schools had 33.9% and Connections Academy enrolled a slightly higher percentage, 42.2%.

Blended schools with available data (91 schools) enrolled a much higher proportion of FRL students than virtual schools. In 2014-15, 44.7% of the students enrolled in blended schools qualified for free or reduced-priced lunch (6.6 percentage points lower than the average in all public schools). For-profit blended schools enrolled 15.3% low-income students, independents enrolled 25.3%, and nonprofits enrolled a substantially larger 85.4%. The difference in this area is stark, and it may point to a genuine desire on the part of nonprofit schools to provide better learning opportunities to economically disadvantaged students.

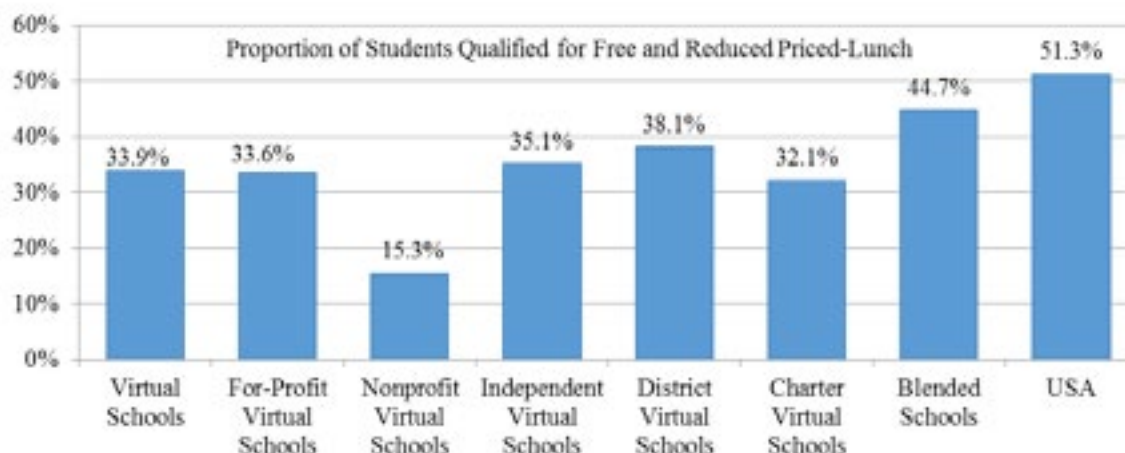


Figure 5. Students Qualifying for Free and Reduced-Priced Lunch, 2014-15

Special Education and English Language Learner Status

As illustrated in Figure 6, the proportion of special education students attending virtual and blended schools was just shy of the national average of 13.1%. Students in this population have an identified disability and an Individualized Education Plan (IEP) on record. The proportion of students with disabilities has grown rapidly—from 6.8% in 2010-11 to 12.9% in 2014-15. Unfortunately, many schools reported no data regarding special education. The proportion of students with disabilities in the 98 blended learning schools with available data was 12.5%.

Although virtual and blended schools appear to be enrolling a high proportion of students with disabilities, it is not possible to determine the relative proportions of students with mild, moderate and severe disabilities, making a comparison with traditional public schools impossible. However, there is reason to believe that the populations likely differ substantially: past research has established that traditional public schools typically have a higher proportion of students with moderate or severe disabilities while charter schools are more likely to have students with mild disabilities that are less costly to remediate or accommodate.¹³

The large overall proportion of students with IEPs in virtual and blended learning schools indicates that these schools have become more attractive for children with disabilities relative to brick-and-mortar charter schools. It is also likely that the companies operating these schools are marketing to this population. For example, one Ohio school with an exceptionally high rate of special education student enrollment (22.1%) actively promotes the appropriateness of their school environment for students seeking a least restrictive environment in a blog post on its website. The post explains that a team of educators meets with each family of a child with disabilities to create an IEP outlining services to be provided by the school.¹⁴ It is possible that such marketing and the large virtual enrollment increases are related to the additional student funding available from federal and state sources for the population of students with disabilities.

The two largest for-profit EMOs, K12 Inc. (80 schools) and Connections Academy (28 schools) enrolled 12.8% and 10.1% special education students in 2014. Little is known about

how virtual schools deliver special education services online. A study from 2012¹⁵ did indicate that while K12 Inc. had a higher proportion of children with disabilities relative to brick-and-mortar charter schools at that time, they were spending a fraction of what charter schools spend for special education teachers' salaries and benefits. This suggests that additional revenues were not translating into increased spending on special education.¹⁶

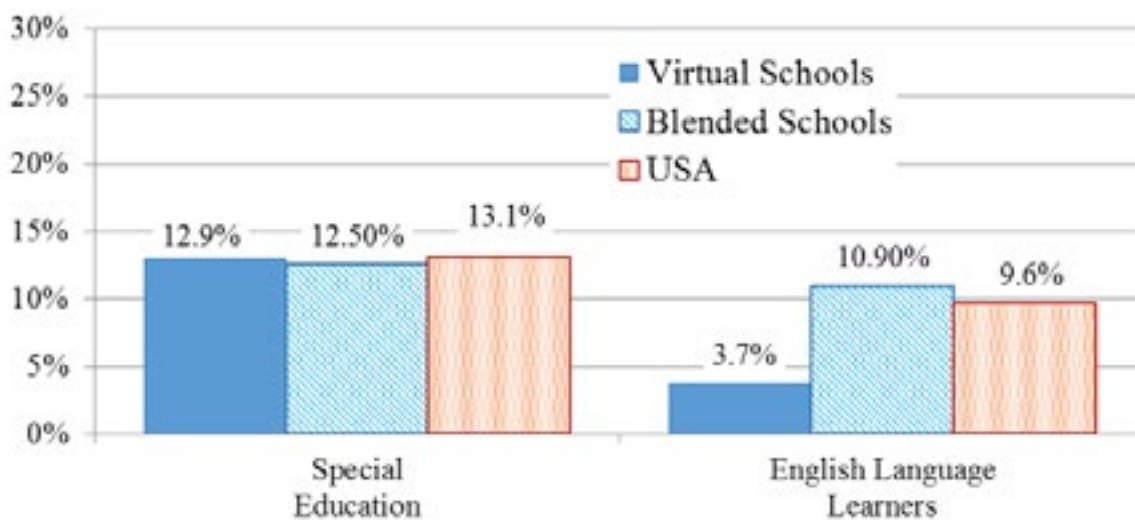


Figure 6. Proportion of Students Classified as Special Education, or Classified as English Language Learners, 2014-15

English language learners (ELLs) represent a growing proportion of students in the nation's schools, especially in the states served by virtual and blended schools. Of the 464 full-time virtual schools with available data, only 3.7% of students were classified as ELL. This is a striking difference from the 9.2% national average¹⁷ (see Figure 6). Specific demographic data for each of the full-time virtual schools can be found in Appendix A. In this appendix, it is also possible to see the number of schools considered when weighted means were calculated.

Available data from 113 schools indicated that English language learners accounted for 10.9% of the blended school population, again, most likely due to the concentration of blended schools in Arizona, California and Colorado—states with large concentrations of Hispanic students. In the 14 for-profit blended schools, 3.2% were ELLs; in the 77 independent blended schools, 5.3% were ELLs; and, in the 22 nonprofit blended schools, 25.2% were ELLs, another suggestion that nonprofit schools may have a genuine interest in providing educational opportunities to students who often struggle in traditional schools.

Sex

While the population in the nation's public schools is nearly evenly split between girls and boys, the population of students enrolled in both virtual schools (528 schools total) and blended schools (140 schools total) during the 2015-16 school year was skewed in favor of girls (53.4% girls in virtual schools, and 51.8% girls in blended schools). These ratios remained when schools were subdivided into charter and district schools and independent and for-profit schools. Only nonprofit virtual and blended schools mirrored the nation's public schools with a nearly even split between girls and boys. Interestingly, these numbers have

flipped since 2010-11 when boys were more prevalent in virtual schools (see Figure 7).

When sex relative to a school's grade levels was considered, some interesting patterns emerged. Virtual schools serving only grades K-5 (16) and schools serving only grades 6-8 (12) tended to have a more balanced mix of girls and boys with a near 50/50 split at each level, whereas schools that served only grades 9-12 (122) tended to have far more female students enrolled (55% girls and 45% boys). Several conjectures as to why this is the case can be made: there may be an emphasis on addressing the needs of teen mothers at the high school level, or struggling males may be more likely to drop out of school entirely whereas females may be more likely to persist in an alternative format like a virtual school. More research on this area is needed. For blended schools, the ratio remained relatively balanced in the K-5 schools (16) and began to diverge in favor of female enrollment in middle schools (4), with girls constituting 52% of enrollment. Similar ratios held in high schools (52), where girls accounted for 53% of enrollment. Schools that served multiple levels (K-12, for example) were not included in these calculations; their numbers might have altered results.

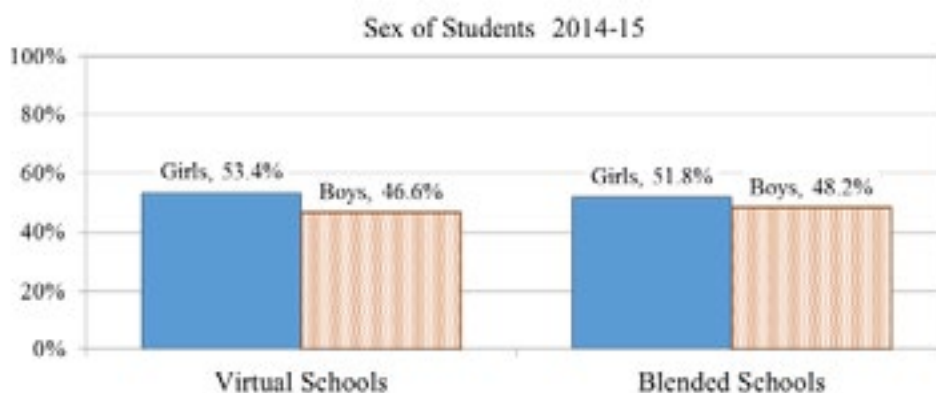


Figure 7. Sex of Students in Virtual and Blended Schools, 2014-15

Enrollment by Grade Level

The National Center for Education Statistics (NCES) uses four school-level classifications: elementary, middle school, high school, or other. “Other” refers to grade configurations that cut across the other three levels. Fifty-nine percent of virtual schools fell into the “Other” category because they were designed or intended to enroll students across two or more levels; in fact, many served students from kindergarten to grade 12. A total of 10.2% were designated as primary schools, 2.3% as middle schools, and 28.6% as high schools. The figures for blended learning schools indicated that 35.7% were classified as Other, while 15.7% were elementary schools, 4.3% were middle schools, and 44.3% were high schools. While these classifications are generally useful for describing traditional public schools, they are less useful for describing student distribution in charter schools, which comprise a large segment of virtual and blended schools. Charters often have permission to serve all grades but may actually enroll students in a more limited grade range. To illustrate the distribution of students in virtual schools as accurately as possible, Figure 8 details NCES data on actual student enrollment by grade; comparisons were based on national averages. A disproportionate number of students in virtual schools were in high school or upper secondary level, in contrast to the national picture where a relatively stable cohort of students was generally

distributed evenly across grades, with a gradual drop from grades 9 to 12. This finding is interesting since brick-and-mortar charter schools were more likely to concentrate on the primary and lower secondary levels, which have lower per pupil costs than the upper secondary level.

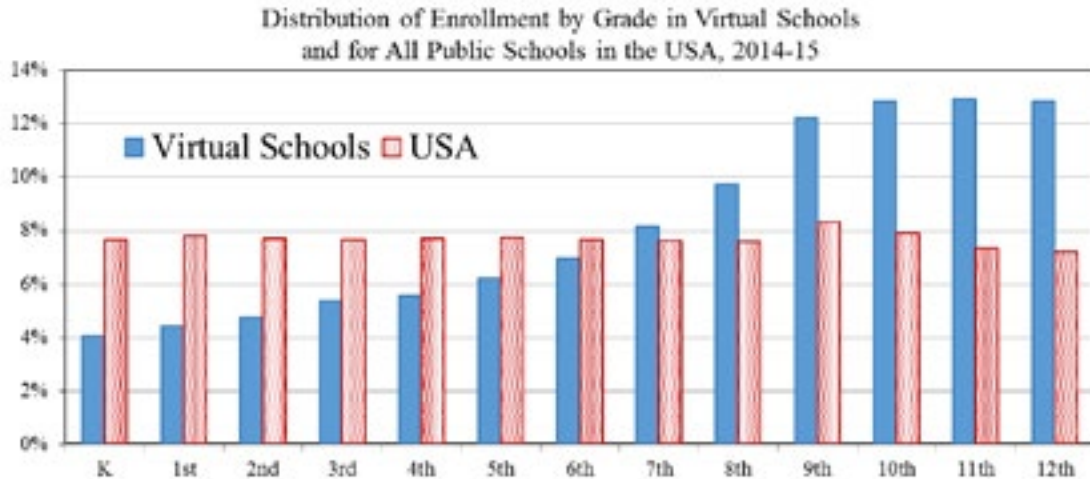


Figure 8. Enrollment by Grade Level for Virtual Schools and U.S., 2014-15

District-operated virtual schools served slightly more students at the upper secondary level than charter schools did. More pronounced differences were evident when for-profit schools were compared with nonprofit EMO-operated schools and independent schools, which both served many upper secondary level students. Virtual schools operated by for-profit EMOs, predominately by K12 Inc. and Connections Academy, served substantially fewer students at the upper secondary level and showed enrollment drop-offs after grade 9.

Figure 9 illustrates the actual number of students served by virtual schools at each grade level. Enrollment increased steadily through grade 9 and then leveled off from grades 10-12. This summary masks some changes by subgroups of schools. For example, the virtual schools operated by for-profit EMOs saw steep declines after grade 9, while many district-operated virtual schools served only students in the final few grades of high school, offsetting the decline in for-profit EMOs. This surprising decline in the grade cohorts in the for-profit EMO schools may be related to the low graduation rates of virtual schools: if dropout rates are high, then a portion of students do not persist into the upper grades.

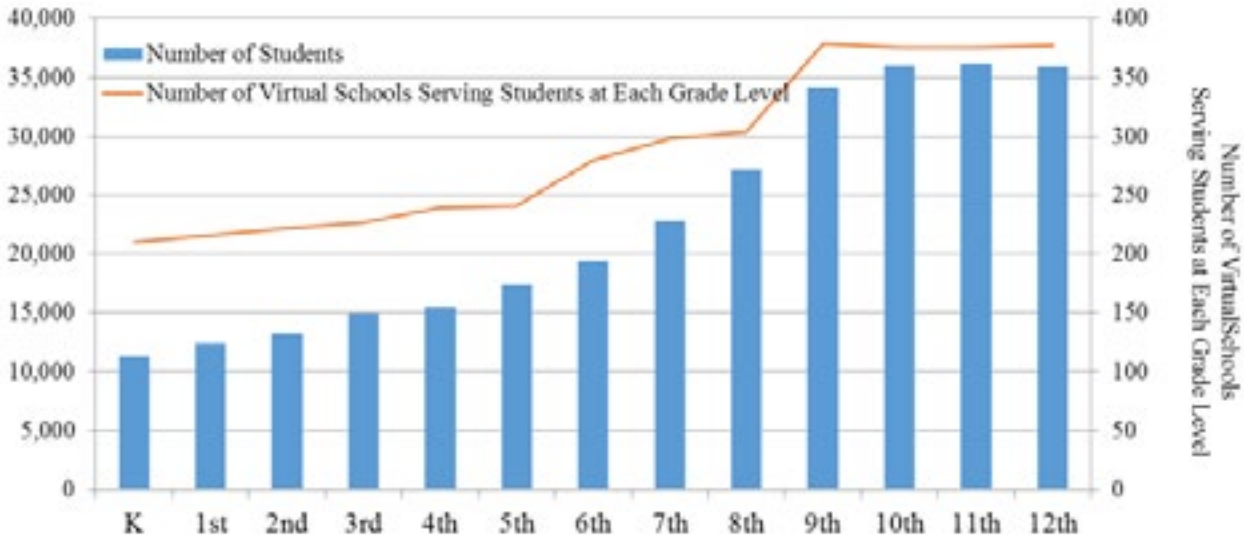


Figure 9. Number of Virtual School Students per Grade Level and Number of Schools that Offer Instruction at Each of the Grade Levels, 2014-15

Figures 10 and 11 illustrate grade level student distribution in blended schools. Interestingly, blended schools had high concentrations of students at the elementary and high school levels and fewer at the middle school level. Higher numbers in the lower grades may have been due to blended schools opening at lower elementary levels and then adding a new grade level each year, a pattern typical of many EMO-operated charters. The large concentration at grade 12 may have been due to students using blended schools for credit recovery or as an alternative for late graduation.

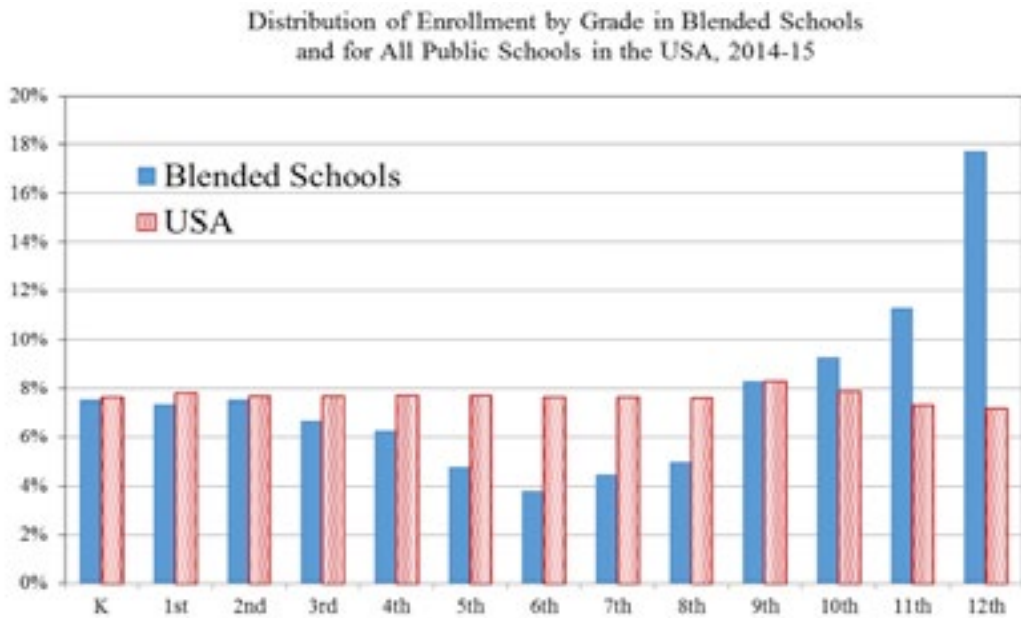


Figure 10. Enrollment by Grade Level for Blended Schools and U.S., 2014-15

Figure 11 indicates that most blended schools catered to high school students. Given that students at the upper secondary level are more technologically savvy and usually are better able to self-regulate and work independently, it makes sense to see concentrations of students and blended schools in those grades. High schools may also have greater expertise and interest in blending learning.

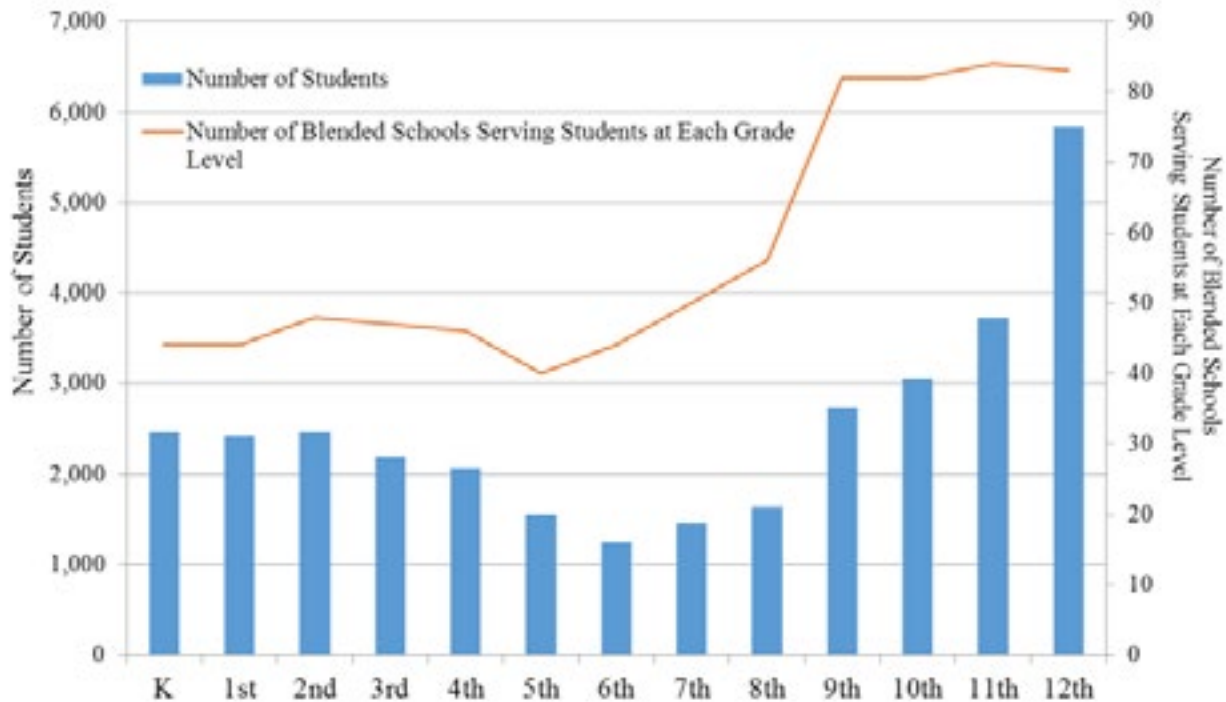


Figure 11. Number of Blended School Students per Grade Level and Number of Schools that Offer Instruction at Each of the Grade Levels, 2014-15

Student-Teacher Ratios

Far more schools reported demographic data than reported student-teacher ratios. Due to a relative dearth of information on student-teacher ratio from state education agencies and from school report cards, the most recent and complete data available was NCES Common Core data for school year 2014-15.

While the average ratio was approximately 16 students per teacher in the nation’s public schools, virtual schools reported more than twice as many students per teacher (34:1). Among virtual schools, those operated by for-profit EMOs had the highest ratio (44:1), while those operated by nonprofit EMOs had the lowest (19.5:1). The raw data showed considerable outliers, with some virtual schools reporting fewer than 2 students per teacher¹⁸ and others reporting more than 300. Table 5 includes data from full-time virtual schools broken out by EMO status and also by district or charter status.

Table 5 also includes data from blended schools, which indicate that they had—on average—relatively similar student-teacher ratios compared with the full-time virtual schools (33:1). One concern about the figure for the blended schools is that only 19 had data available. The

overall high student-teacher ratios in virtual and blended schools are especially surprising given that the virtual and blended learning schools are now reporting proportions of students with disabilities similar to the national average for all public schools.

Table 5. Teacher-Student Ratios, 2014-15

	Number of Schools with Data	Median	Weighted Mean	SD	Max	Min
All Virtual Schools	199	25.6	33.97	36.22	356	1.3
Independent Virtual	119	23.0	28.74	22.19	131.6	2.2
Nonprofit Virtual	7	17.0	19.54	12.89	42	4.9
For-Profit Virtual	73	33.1	43.87	51.20	356	1.3
K12 Inc.	46	30.1	39.18	39.33	265	1.3
Connections Accademy	15	36.6	34.96	6.96	45.6	24
District Virtual	73	26.4	39.41	51.15	356	2.2
Charter Virtual	145	25.4	31.13	23.09	133	1.3
All Blended Schools	19	23.3	33.26	21.98	100.5	15
National Average ¹⁹			16.0 ²⁰			

School Performance Data

This section reviews overall school report card ratings and on-time graduation rates. General findings and trends are presented and discussed here; findings by school appear in Appendix C.

Background and Methodology

Last year’s report calculated mean scale scores and achievement levels based on subject area results in PARCC (Partnership for Assessment of Readiness for College and Careers) and Smarter Balanced tests to determine whether virtual and blended schools were performing at acceptable or unacceptable levels. This year’s school performance analysis, however, is based on individual school report cards for two reasons. First, report cards provide a more holistic picture of a school’s performance. A second, and more compelling reason, is that in 2015-16, many states introduced new tests aligned with college- and career-ready standards, while others made changed their cut scores or expectations for “proficiency,” or adopted a new scoring scale. When states took these actions, test results were no longer comparable and some states reported limited or no school performance data at all.

This year’s performance data is, however, limited by the availability of report cards for schools and districts. As a result of the changing and currently limited database, variations in school performance between this year and last year should be interpreted cautiously.

Annual school report cards often include multiple measures that vary from state to state but tend to include student performance data in Math and English/Language Arts, graduation rates, and achievement gaps. In some states, the following measures are also included: performance in Science and Social Studies; percentage of students taking advantage of advanced coursework like Advanced Placement (AP), International Baccalaureate (IB), and Dual Credit; performance growth; College and Career Readiness; attendance; staff retention; student and parent satisfaction; and/or ACT/SAT scores. Although the type, number, and weighting of such measures vary greatly from state to state, report card ratings do reflect the educational values of a state. Therefore, overall school report card ratings provide a reasonable representation of an individual school's performance relevant to state expectations.

For several reasons, however, there are many gaps in report card ratings. Due to current flux in accountability systems resulting from new requirements under the Every Student Succeeds Act (ESSA) and flexibility waivers and extensions granted under the Elementary and Secondary Education Act (ESEA), many states have put their accountability systems on hold as they finalize new formats and transition to new standards and state tests. States with accountability systems currently on hold are: Alaska, Arkansas, California, Colorado, Hawaii, Idaho, Illinois, Nevada, Ohio, Oregon, South Carolina and Washington. Some states (like Nevada and Hawaii) clearly communicate on their websites that the accountability systems are on hold and explain why, while other states have buried such information in a flexibility waiver posting (Colorado). Several additional states do offer some school report card data but are not currently assigning an overall performance rating, and several more states do not have any current school report card data available and offer no explanation as to why. Finally, Wyoming does not count virtual schools as separate entities and assigns the students who attend these schools to the brick-and-mortar building that they would attend if they weren't attending a virtual school. The state produces a report on virtual schooling in aggregate, but does not separate the achievement data of students attending virtual schools full time from those taking one or two classes online. As a result, overall school ratings for virtual and blended schools were available for only 18 of the 38 states included in this report.

This points to a larger story about school accountability as virtual and blended schools in the United States continue to expand. It is understandable that states are being cautious about holding schools accountable under new provisions; however, gaps in data make it difficult to assess the extent to which virtual and blended schools are successfully meeting student needs. Some states have reported data on individual measures to help parents make decisions about where to send their children to school, but others have not reported any data at all during current transitions. Original ESSA mandates required that school report cards be finalized and reported for school year 2017-18, and if states continue on this trajectory a full picture may materialize then. Given current conditions, the school performance results captured here should be interpreted cautiously, since they are inescapably based on limited data.

State School Performance Ratings

Eighteen states provided overall school performance ratings on 2015-16 report cards. These states include: Arizona, District of Columbia, Florida, Georgia, Iowa, Indiana, Louisiana, Massachusetts, Michigan, Minnesota, New Mexico, Oklahoma, Pennsylvania, Rhode Island, South Dakota, Texas, Utah, and Wisconsin. For the purpose of this report, AYP data for California schools was substituted for overall performance rating to avoid excluding a large number of schools from the dataset. Therefore, this year's performance calculations

are drawn from 19 of the 38 states included in this report; performance ratings were potentially available for 257 (53.6%) of the 479 full-time virtual schools and 74 of the 135 (54.8%) blended learning schools with enrollment during 2015-16.

To determine academic performance, a coding system was used to aggregate results across states. One of three possible ratings was assigned to each school within the 18 states with available overall school performance ratings: “academically acceptable,” “academically unacceptable,” or “not rated” (meaning that the state assigned overall school performance ratings for 2015-16 but did not do so for that particular school). Information from state education agencies provided guidance about how to interpret the overall performance ratings by state. In cases where state agencies did not make clear what constituted an acceptable or unacceptable rating, we determined a cutoff score based on two factors: an interpretation of the scale being used and the number of schools receiving each rating. After applying this common coding system for individual schools, it was possible to aggregate findings within and across states.

It was found that virtual schools continued to underperform academically and not as well as their blended school counterparts. Overall, 37.4% percent of full-time virtual schools received acceptable performance ratings, compared with 72.7% acceptable ratings for blended schools. A much higher percentage of blended schools received acceptable ratings in the 2015-16 school year as compared to the prior year, thus reversing their underwhelming academic results. Our inventory last year found that blended schools were not doing much better than virtual schools.

Table 7. Percentage of Virtual Schools with Acceptable School Performance Ratings, 2015-16

	Acceptable		Unacceptable		Not Rated (or No Rating Reported)
	N	Percent of Schools with Ratings	N	Percent of Schools with Ratings	N
Full-time Virtual Schools	82	37.4%	137	62.6%	40
For-profit	18	25.7%	52	74.3%	13
Independent	61	43.6%	79	56.4%	27
Nonprofit	3	33.3%	6	66.7%	0
Charter	30	23.8%	96	76.2%	17
District	52	55.9%	41	44.1%	23
K 12, Inc.	11	25.0%	33	75.0%	10
Connections Acad.	4	25.0%	12	75.0%	3

Of the 257 virtual schools with potentially available school performance ratings, 82 (37.4%) were rated acceptable (see Table 7). Of virtual schools operated by for-profit EMOs, 18 (25.7%) were rated acceptable. Of these, 11 were K12, Inc. schools (25% of the K12 cohort) and four were Connections schools (25% of the Connections cohort). Acceptable school performance ratings were higher for nonprofit (33.3%) and independently run (43.6%) virtual schools. District-operated virtual schools performed better than their charter school counterparts: 55.9% and 23.8%, respectively. It is worth noting that in addition to the 137 schools that received unacceptable ratings (62.6%), 40 schools were not rated by states without

explanation.

This snapshot of poor performance aligns with other research. The Center for Research on Education Outcomes (CREDO) published a report in 2015²¹ asking the question: How did enrollment in an online charter school affect the academic growth of students? CREDO used what they call the “virtual control record or (VCR)” method to create a virtual twin pairing between online charter school students and brick-and-mortar charter school students. They matched students on the characteristics of grade level, gender, race/ethnicity, free or reduced-price lunch eligibility, English language learner status, special education status, and prior test score on standard achievement tests. The difference in achievement between students in the control group (brick-and-mortar charter students) and the experimental group (online charter school students) were represented as z-scores. A positive z-score indicated that the online charter school students performed better than their brick-and-mortar peers while a negative z-score indicated worse performance than brick-and-mortar peers’. The study found the average online charter student scored -0.25 standard deviations in math and -0.10 in reading. The report claims that the negative score equated to a loss of 180 instructional days in math and 72 instructional days in reading. Equating these outcomes to instructional days is questionable, but still notable is the large difference between CREDO’s tiny positive advantage for brick-and-mortar charter schools and the large, negative results for online schools.²²

How did enrollment in an online charter school affect the academic growth of students?

Comparisons of acceptable school performance ratings in blended schools are weaker because blended schools typically operate in limited urban areas; in contrast, virtual schools generally can enroll students statewide and so have a student population more similar to the state’s aggregate enrollment.

That said, based on last year’s performance ratings for virtual schools (37.4% acceptable), blended schools outperformed their virtual school counterparts by nearly two-fold: 72.7% acceptable. For-profit blended schools also outperformed their virtual school counterparts in acceptable ratings — 72.7% versus 37.4%.^{Ho} However, the largest for-profit EMO, Rocketship, had acceptable ratings for all 10 of their schools with available ratings. Similarly, all the blended schools operated by nonprofit EMOs received acceptable ratings. Independent blended schools (60% acceptable) outperformed independent virtual schools (37%), and district-operated blended schools (67.3% acceptable) outperformed their virtual school counterparts (50%). Charter-operated blended schools (50% acceptable) similarly outperformed virtual charters (23.8%). The top performers among blended schools, then, were those operated by nonprofits EMOs.

Table 8. Percentage of Blended Schools with Acceptable School Performance Ratings, 2015-16.

	Acceptable		Unacceptable		Not Rated or No Rating Reported
	N	Percent of schools with ratings	N	Percent of schools with ratings	N
Full-time Blended	48	72.7%	18	27.3%	8
For-profit	5	71.4%	2	28.6%	0
Independent	33	67.3%	16	32.7%	6
Nonprofit	10	100%	0	0.0%	2
Charter	30	50.0%	30	50.0%	17
District	18	50.0%	18	50.0%	23
Rocketship	10	100%	0	0.0%	1

Graduation Rates

In recent years, schools and states have been standardizing how they record and report graduation rates. The measure widely used today is “On-Time Graduation Rate,” which refers to the percentage of all students who graduate from high school within four years after they started 9th grade. Information on graduation rates was available for 129 virtual schools (24.4% of the total 528) and for 34 blended schools (24% of the total 140). A large number of virtual and blended schools did not report a graduation rate because some do not offer high school grades; others are relatively new and have not had a student cohort complete grades 9-12.

As Table 9 illustrates, the on-time graduation rates for full-time virtual and blended schools (43.4% and 43.1% respectively) were less than the national average of 82.3%. The graduation rates for virtual schools have flattened or declined over the past few years, while the graduation rates for the nation have been improving about 1 percentage point each year. These findings align with other measures of school performance and contribute to the overall picture of virtual and blended school performance.

The graduation rates for 2015-16 are poor across all subgroups of virtual and blended schools. During the same year, independently managed virtual schools had the highest on-time graduation rate, 46.6%. Rates in nonprofit and for-profit operated virtual schools were 35.1% and 39.8%, respectively. Within the subgroup representing EMO-managed virtual schools, high-school students at K12, Inc. had an on-time graduation rate of 37.4%. By contrast, Connections Academy did better at 51.7%.

Charter virtual schools had a graduation rate similar to those of district-operated virtual schools at about 43.9% and 42.1%, respectively. Blended schools with graduation data had graduation rates similar to those of their virtual school counterparts. Overall, average on-time graduation rates remained substantially lower for virtual and blended schools than for traditional public schools in the US: only 43.4% of students at virtual high schools and 43.1% at blended schools graduated on time, whereas the national average for all public high

schools was more than double that at 82.3%. Regardless of setting or school type, graduation rates in virtual and blended learning schools remain far below national averages.

Table 9. Graduation Rates, 2015-16

	Number of Schools with Data	4 Year On-Time Graduation Rate	
		Weighted Mean	Median
Independent	94	46.6%	45%
Nonprofit	16	35.1%	34%
For-Profit	53	39.8%	39.6%
K12 Inc.	24	37.4%	35.5%
Connections Acad.	15	51.7%	53.9%
District	58	42.1%	43.9%
Charter	105	43.9%	42.2%
All Virtual Schools	129	43.4%	43.0%
All Blended Schools	34	43.1%	43.5%
National Average (2013-14)		82.3%*	

*The national figure is for 2013-14. https://nces.ed.gov/ccd/tables/ACGR_RE_and_characteristics_2013-14.asp

Recommendations

Given the rapid growth of virtual schools and blended schools, the populations they serve, and the relatively poor performance of virtual schools on widely used accountability measures, it is recommended that:

- Policymakers slow or stop the growth in the number of virtual schools and the size of their enrollments until the reasons for their relatively poor performance have been identified and addressed. They should prioritize understanding why virtual schools perform poorly under a college- and career-ready accountability system and how their performance can be improved prior to expansion.
- Policymakers should carefully and continuously monitor the performance of full-time blended schools since the data offer some potentially positive signs that they can maintain performance levels even with very large student-to-teacher ratios. This is not surprising despite their earlier poor performance because it seems plausible that small school sizes and in-person contact with adults might be a good fit for typical public school populations.
- Authorities charged with oversight should specify and enforce sanctions for virtual and blended schools that fail to perform adequately.
- Policymakers should specify a maximum student-teacher ratio for virtual and blended schools to ensure all students receive adequate support and attention from

teachers.

- Policymakers should regulate school and class sizes. As the evidence indicates, the virtual schools and blended learning schools have large numbers of students for each teacher. Given the overwhelmingly poor performance evidence, it is surprising that these schools are not investing more on instruction. The likely explanation for this is two-fold: (1) profit motives of the EMOs, and (2) the operators of these schools have learned that they can get away with it year after year, with only the National Collegiate Athletic Association (NCAA)²³ reacting strongly to the negative performance outcomes.
- State agencies ensure that virtual schools and blended schools fully report data related to the population of students they serve and the teachers they employ. Similarly, state agencies should make every effort to assign all virtual schools an overall school performance rating and clearly explain why a rating has not been assigned to a specific school when that is the case. In 2015-16, a total of 15.6% of virtual schools and 10.8% of blended schools were not rated by states that compiled overall school performance ratings. This lack of data for virtual and blended schools furthers their ability to operate without accountability.
- State agencies should continue the work they've started in revising accountability systems and commit to publicly reporting results starting in 2017-18 as mandated earlier, regardless of changes within the Department of Education.
- State and federal policymakers should promote efforts to design new outcome measures appropriate to the unique characteristics of full-time virtual schools and blended schools. Passage of the Every Student Succeeds Act (ESSA) represents an opportunity for those states with a growing virtual and blended school sector to improve upon their accountability systems for reporting data on school performance measures.
- Policymakers and other stakeholders should support more research to identify which policy options—especially those impacting funding and accountability mechanisms—are most likely to promote successful virtual schools and blended schools. More research is also needed to increase understanding of the inner workings of virtual and blended schools, including such factors as the curriculum and the nature of student-teacher interactions. Such research should help identify and remedy features that are negatively affecting student learning. (Since this report recommended in 2013 that federal and state education agencies begin coding virtual schools in their datasets, NCES has initiated such coding. This will help facilitate further research on this relatively new and rapidly growing model.)
- Policymakers and other stakeholders should also support more research on exactly how special education is being provided in virtual and blended schools. There are many key questions that warrant attention such as: What types of students with disabilities are being enrolled? Are these students receiving any additional services? How are they being served and how are the additional designated funds being used to support them? Indicators that raise concern include the rapid increase of students with IEPs in virtual schools and the extremely large student-to-teacher ratios. For example, a 2012 study of K12 Inc. found a higher proportion of students with disabilities relative to brick-and-mortar charter schools, while that organization was spending a third less per pupil for special education teacher salaries—raising questions about the amount and type of services being provided.

Appendices

Appendix A1. Numbers of Virtual Schools and Students by State

Appendix A2. Numbers of Blended Learning Schools and Students by State

Appendix B1. Numbers of Full-Time Virtual Schools and the Students They Serve

Appendix B2. Numbers of Blended Learning Schools and the Students They Serve

Appendix C1. Measures of School Performance: State Performance Ratings, Adequate Yearly Progress Status, and Graduation Rates—Full-Time Virtual Schools

Appendix C2. Measures of School Performance: State Performance Ratings, Adequate Yearly Progress Status, and Graduation Rates—Blended Learning Schools

Appendix D. States' Assessment System, School Performance Ratings Summarized by States for their Full-Time Virtual and Blended Learning Schools

The Appendices as well as links to data sources are available for download as PDF files at <http://nepc.colorado.edu/publication/virtual-schools-annual-2017>

Notes and References - Section 1

- 1 This finding is based on NCES data from the Conditions of Education 2015. Retrieved December 2, 2015, from http://nces.ed.gov/pubs2015/2015144_highlights.pdf and http://nces.ed.gov/programs/coe/indicator_clr.asp
- 2 In 2014, the National Collegiate Athletic Association (NCAA) indicated that it would not consider or accept coursework completed by student athletes at 24 virtual schools operated by K12 Inc.
- 3 Miron, G., & Urschel, J.L. (2012). *Understanding and improving full-time virtual schools: A study of student characteristics, school finance, and school performance in schools operated by K12 Inc.* Retrieved December 11, 2014, from <http://nepc.colorado.edu/files/nepc-rb-k12-miron.pdf>

Molnar, A. (Ed.); Huerta, L., Shafer, S.R., Barbour, M.K., Miron, G., Gulosino, C. (2015). *Virtual Schools in the U.S. 2015: Politics, Performance, Policy, and Research Evidence.* Boulder, CO: National Education Policy Center. Retrieved December 18, 2015, from <http://nepc.colorado.edu/publication/virtual-schools-annual-2015>

Molnar, A. (Ed.); Rice, J.K., Huerta, L., Shafer, S.R., Barbour, M.K., Miron, G., Gulosino, C., Horvitz, B. (2014) *Virtual Schools in the U.S. 2014: Politics, Performance, Policy, and Research Evidence.* Boulder, CO: National Education Policy Center. Retrieved December 18, 2015, from <http://nepc.colorado.edu/publication/virtual-schools-annual-2014>

Molnar, A. (Ed.); Miron, G., Huerta, L., Cuban, L., Horvitz, B., Gulosino, C., Rice, J.K., & Shafer, S.R. (2013). *Virtual Schools in the U.S. 2013: Politics, Performance, Policy, and Research Evidence.* Boulder, CO: National Education Policy Center. Retrieved December 18, 2015, from <http://nepc.colorado.edu/publication/virtual-schools-annual-2013>

Miron, G. & Gulosino, C. (2016). *Virtual Schools Report 2016: Directory and Performance Review.* Boulder, CO: National Education Policy Center. Retrieved December 4, 2016, from <http://nepc.colorado.edu/publication/virtual-schools-annual-2016>
- 4 For example, school districts or schools offer online courses to cut costs or attract students from other schools/districts/states. These are not actually schools in the sense that they offer the complete state-mandated curriculum; they are just basically individual courses that students can take if they want to. Such a program would never receive an NCES ID no matter how many students enroll in these online courses because it's not a school.
- 5 See notes in the appendices for more details regarding inclusion criteria.
- 6 Special education is an obligation of school districts (i.e., Local Education Authorities) and not necessarily individual schools. In most states, charter schools are considered LEAs and therefore their data on special education is included in the NCES district-level datasets. States in which charter schools are not classified as LEAs, such as Florida, do not have special education data attributable to individual charter schools.
- 7 Alabama, Arkansas, District of Columbia, Florida, Georgia, Idaho, Iowa, Louisiana, Massachusetts, Missouri, New Hampshire, Oklahoma, Pennsylvania, South Carolina, South Dakota, Texas, Utah, and Wyoming
- 8 To be included in this inventory and considered in our analyses, a virtual school or blended learning school has to meet our selection criteria. First of all, it must be classified as a school and not a program. For example, it must be classified as a functioning school and not just a collection of individual optional courses. Online courses offered by school districts or schools to cut costs or attract students from other schools/districts/states, as referred to in Note 3, are therefore not included.

Additionally, when separating programs from schools, we look for the existence of unique NCES or State Education Agency ID codes that are designated for school units. We exclude blended schools, and we avoid schools that have both face-to-face instruction and virtual instruction. Further, in order to be included in our inventory, these virtual schools should have evidence of at least 25 students enrolled during one of the last few years. An important part of our analyses examines school performance; by including only full-time virtual schools, we are better able to attribute school performance outcomes to full-time virtual schools.

- 9 Estimates for 2000 to 2010 are based on two sources, the annual Profiles of For-Profit and Nonprofit Education Management Organizations from NEPC, and the annual Keeping Pace reports from Evergreen Education, a consulting group that prepares reviews of policy and practice for online learning.
- 10 Marsh, R.M., Carr-Chellman, A.A., & Stockman, B.R. (2009). Why parents choose cyber charter schools. *TechTrends* 53(4).
Miron, G., & Urschel, J.L. (2012). *Understanding and improving full-time virtual schools: A study of student characteristics, school finance, and school performance in schools operated by K12 Inc.* Retrieved December 11, 2014, from <http://nepc.colorado.edu/files/nepc-rb-k12-miron.pdf>
Woodard, C. (2013, July 3). Special Report: The profit motive behind virtual schools in Maine. *Portland Press Herald*. Retrieved February 28, 2014, from http://www.pressherald.com/news/virtual-schools-in-maine_2012-09-02.html
- 11 Comparisons with demographic composition of charter schools in the nation is also relevant since the virtual schools that enroll most students are charter virtual schools. Thirty-six percent of all charter school students are White, 29.2% are Black, 27.2% are Hispanic, 3.5 are Asian, and 3.2% are classified as “other.”
- 12 Data on ethnicity are from 2014-15, the most recent year from which we could obtain NCES data. The NCES provides the most comprehensive data, all from a single audited source. We also pulled together data on race/ethnicity, sex, free and reduced-price lunch status, English Language Learner status, and special education status for 2015-16 from state sources and from school report cards. The data from NCES for the 2014-15 was more complete which is why we report this data even though it is one year older than our general enrollment numbers.
- 13 Miron, G. (2014). Charters should be expected to serve all kinds of students. *Education Next* 14(4): 58-59.
- 14 <https://www.ohdela.com/media-center/blog/ohdela-fits-all-student-needs.html>
- 15 Miron, G., & Urschel, J.L. (2012). *Understanding and improving full-time virtual schools: A study of student characteristics, school finance, and school performance in schools operated by K12 Inc.* Retrieved December 11, 2014, from <http://nepc.colorado.edu/files/nepc-rb-k12-miron.pdf>
- 16 A recent study on this topic, apparently from smaller virtual schools, used a qualitative approach to explore the experiences of six online teachers teaching students with disabilities. This study found the teachers used a variety of strategies to accommodate students with disabilities, including modifying curriculum, adapting instructional practices, and drawing on outside resources for support. The study recommended that virtual schools should promote a teacher-focused approach to accommodating the needs of students with disabilities and their parents.
Crouse, T.M., Rice, M.F., & Mellard, D.F. (2016). *How did I survive? Online Teachers’ Describe Learning to Teach Students with Disabilities*. Lawrence, KS: Center on Online Instruction and Students with Disabilities, University of Kansas.
- 17 This statistic is based on NCES data from U.S. Department of Education, National Center for Education Statistics. (2015). The Condition of Education 2015 (NCES 2015-144), English Language Learners. Retrieved December 2, 2015, from <https://nces.ed.gov/fastfacts/display.asp?id=96>
- 18 Such a low number of full-time equivalent teachers reported may be explained by the use of larger numbers of teachers who work part-time for the school.
- 21 CREDO. (2015). Online Charter School Study 2015. Palo Alto, CA: The Center for Research on Education Outcomes. Retrieved November 6, 2016, from <https://credo.stanford.edu/pdfs/OnlineCharterStudyFinal2015.pdf>
- 22 Miron, G. & Applegate, B. (2009). *Review of “Multiple Choice: Charter School Performance in 16 States.”* Boulder, CO: National Education Policy Center. Retrieved April 22, 2015, from <http://nepc.colorado.edu/thinktank/review-multiple-choice>
Maul, A., & McClelland, A. (2013). *Review of “National Charter School Study 2013.”* Boulder, CO: National Education Policy Center. Retrieved April 22, 2015, from <http://nepc.colorado.edu/thinktank/review-credo-2013>

Maul, A. (2015). *Review of "Urban Charter School Study 2015."* Boulder, CO: National Education Policy Center. Retrieved February 18, 2017, from <http://nepc.colorado.edu/thinktank/review-urban-charter-school>

Center for Research on Education Outcomes (CREDO) (2015, March). *Urban Charter School Study*. Palo Alto: CREDO, Stanford University. Retrieved April 22, 2015, from <http://urbancharters.stanford.edu/index.php>

Gabor, A. (2015). *New CREDO Study, New Credibility Problems: from New Orleans to Boston*. (Web-based review). Retrieved January 14, 2017, from <https://andregabor.com/2015/04/28/new-credo-study-new-credibility-problems-from-new-orleans-to-boston/>

- 23 In 2014, the National Collegiate Athletic Association (NCAA) indicated that it would not consider or accept coursework completed by student athletes at 24 virtual schools operated by K12 Inc.

Section II

Still No Evidence, Increased Call for Regulation: Research to Guide Virtual School Policy

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Executive Summary

Section II reviews research relevant to K-12 online and blended learning. Studies related to both supplemental and full-time virtual schooling continue to appear, often with a focus on effectiveness of the format. The research has shown that success in the supplemental environment has more to do with who is enrolled than with the nature or quality of virtual instruction provided. The research has also consistently found that students enrolled in full-time virtual schools have performed at levels well below their face-to-face counterparts. Finally, recent research has indicated that even schools identified as blended schools also perform at lower levels than traditional brick-and-mortar schools.

Despite the lack of evidence supporting virtual schooling, however, it continues to grow largely unregulated. Indeed, one of the more interesting developments over the past two years has been an increase in literature focused on increased regulation of virtual schooling, particularly the full-time format. Policy organizations and advocacy groups historically supportive of full-time virtual schooling and other market-driven educational reform initiatives have begun producing research and other literature questioning its effectiveness and calling for additional measures to regulate the field.

Recommendations arising from Section II include that:

1. Policymakers regulate the growth and geographic reach of full-time, taxpayer-funded virtual schools. At present there are serious questions about the effectiveness of many models of virtual schooling. Until these questions can be adequately addressed, policymakers should focus their efforts on promoting virtual school models shown to be successful while limiting those that have had questionable student performance.
2. State and federal policymakers create long-term programs to support independent research on and evaluation of virtual schooling, particularly full-time virtual schooling. More than twenty years after the first virtual schools began, there continues to be a dearth of empirical, longitudinal research to guide the practice and policy of virtual schooling.

In terms of the specific research that is needed, the following topics continue to be recommended as critical areas to help guide policy.

- Research is needed to determine the actual costs for providing a quality K-12 online and blended learning experience. To date the vast majority of literature related to the cost of K-12 online and blended learning has focused on funding in relation to brick-and-mortar schooling.
- Research is needed to determine the appropriate criteria for making initial judgments about the potential of K-12 online and blended learning schools, as well as

identifying appropriate means of regular evaluation. At present there is a wide range of policies and procedures relating to approval and ongoing monitoring.

- Research is needed to determine what constitutes good online teaching, how to effectively prepare teachers for the K-12 online and blended learning environment, and what mechanisms are required to properly evaluate teachers in K-12 online and blended learning environments. It is widely believed that teachers play a fundamental role in the success of students regardless of the setting.
- Finally, additional research is needed to determine whether the business model of for-profit K-12 online and blended learning affects the factors that lead to a high-quality online learning experience. It is unclear, but essential to know, whether alternative management arrangements for K-12 online and blended learning schools affect the quality of education provided.

It is important to underscore that these are the same two policy recommendations and the same four research foci as were presented in the *Virtual Schools in the U.S. 2015: Politics, Performance, Policy, and Research Evidence* report. As described in the research literature, as well as being evidenced in this report's sections, "the current climate of K-12 school reform [continues to] promote...acceptance of any and all [online and blended] education innovations, despite lack of a sound research base supporting claims that technology in and of itself will improve teaching and learning."¹

Section II

Still No Evidence, Increased Call for Regulation: Research to Guide Virtual School Policy

The research and other literature in the field of K-12 online and blended learning is steadily increasing. However, it is important to note that the expansion of these formats continues to outpace the availability of useful research. In fact, it is common for online learning researchers to begin scholarly articles by commenting on the lack of research supporting its practice. They might cite Rice, who has noted that “a paucity of research exists when examining high school students enrolled in virtual schools, and the research base is smaller still when the population of students is further narrowed to the elementary grades,”² or Barbour and Reeves, who have lamented the absence of rigorous reviews of K-12 online learning programs.³ Further, some researchers point to Barbour’s 2011 review of hundreds of articles from distance education journals in Australia, Canada, New Zealand and the United States and found that fewer than 10% of the published research articles related to K-12 online learning.⁴ There continues to be a dearth of evidence to guide both the practice of and research into K-12 online learning.

A similar lack of research exists to support the more recent practice of K-12 blended learning. For example, in their analysis of trends in blended learning research in dissertations and theses, Drysdale, Graham, Halverson, and Spring found that only 8% of theses and dissertations focused on blended learning in K-12 environments.⁵ In fact, when these authors examined the existing body of research, they found that “research in K-12 contexts was not consistently present until 2008.” Some have argued that “in many ways, [these trends are] indicative of the foundational descriptive work that often precedes experimentation in any scientific field.”⁶ However, given that the practice of K-12 online learning is two and a half decades old and the practice of K-12 blended learning is almost a decade old, some have begun to ask “how long must we wait?”⁷

In the research literature and more general literature related to virtual and blended learning that does exist, the most common topics relate to student performance and student achievement. A body of literature related to policy and governance is also growing. However, to appreciate trends in any of this literature, it is important to have a firm understanding of the different types of virtual and blended learning programs and schools.

Defining and Classifying K-12 Online Learning

There are many different ways to describe K-12 online learning. For example, Clark was one of the first to offer a set of categories to describe K-12 online learning programs, based primarily on the entity responsible for administering the program (see Table 2.1).⁸

Table 2.1. Clark’s seven categories of K-12 online learning programs

Type	Description
State-sanctioned, state-level	Those virtual schools that operate on a statewide level, such as the Florida Virtual School (FLVS) or the Illinois Virtual School (IVHS).
College and university-based	Those independent university high schools or university-sponsored delivery of courses to K-12 students, such as the University of Nebraska-Lincoln Independent Study High School or the University of California College Prep Online.
Consortium and regionally-based	Those virtual schools operated by a group of schools or school districts that pool their resources to participate, such as the Virtual High School (VHS).
Local education agency-based	Those virtual schools operated by a single school or school district, such as the Gwinnett County Online Campus or the Cobb County eSchool.
Virtual charter schools	Those virtual schools created under the charter school legislation that has been passed in many states, such as Connections Academy, also commonly known as cyberschools.
Private virtual schools	Those virtual schools that are operated the same as a brick and mortar private school, such as the Christa McAuliffe Academy in Washington state.
For-profit providers of curricula, content, tool and infrastructure	Those commercial companies that act as vendors for the delivery of courses or the use of course materials, such as APEX Learning or Aventa Learning.

However, even within the United States, it is becoming more difficult to place K-12 online learning programs into specific categories. For example, the St. Clair County Regional Educational Services Agency (RESA) operated a Virtual Learning Academy in Port Huron, Michigan.⁹ As a “regional educational service agency” the St. Clair County RESA is responsible for providing “unique, cost-efficient support services to the county’s seven K–12 public school districts.” Under Clark’s classifications this could make the organization either a “consortium and regionally-based” because it is regionally-based and responsible for multiple school districts, *or* a “local education agency-based” because the 57 Michigan RESAs are actual local education agencies. Moreover, the Virtual Learning Academy is actually a public charter school, making it a “virtual charter school” under Clark’s classifications, compounding categorical confusion.

More recently, as a part of their annual *Keeping Pace with K-12 Digital Learning* reports, Watson, Gemin, Ryan, and Wicks introduced a matrix as a more robust means to describe K-12 online learning programs (see Table 2.2).¹⁰

Table 2.2. Dimensions for describing K-12 online and blended learning programs

Dimension	Variables
Comprehensiveness Reach	District; multi-district; state; multi-state; national; global
Type	District; magnet; contract; charter; private; home
Location	School; home; other
Delivery	Asynchronous; synchronous
Operational control	Local board; consortium; regional authority; university, state; independent vendor
Type of instruction	Fully online; blending online and face-to-face; fully face-to-face
Grade level	Elementary; middle school; high school
Teacher-student interaction	High; moderate; low
Student-student interaction	High; moderate; low

These dimensions provide a more comprehensive means of untangling the overlapping illustrated above. For example, a full-time K-12 online learning school operated by K12, Inc.—the Michigan Virtual Academy, for example—would be described along the following dimensions: state; charter; home; independent vendor; fully online; and elementary, middle school, and high school.

Beyond the dimensions in Watson et al.’s matrix, some other general distinctions have developed within the academic literature.¹¹ For the most part, academic authors have used the term K-12 online learning to refer to the general field. Similarly, within the academic literature the term virtual school is generally used when referring to supplemental forms of K-12 online learning (i.e., where students are enrolled in a brick-and-mortar school, but take one or more courses online to supplement their studies). The term cyber school is generally used when referring to full-time forms of K-12 online learning (i.e., where students are engaged in full-time online instruction and do not attend a brick-and-mortar school at all). However, these general conventions are not used consistently in the academic literature. For example, much of the early literature in the field used the term virtual school as a way to describe the general field of K-12 online learning.¹² Further, many scholars adopt the term in the legislation or policy in the jurisdiction where they are conducting the research. For example, policy in Pennsylvania uses the term cyber charter school and much of the research published on that state also uses that term.¹³ In many states full-time online schools are referred to as virtual charter schools in legislation, and researchers working in those states will often use that term to describe a full-time cyber school.¹⁴ Finally, as much of what is known about the K-12 online learning has come from non-academic organizations, various government agencies, and even the popular media, it is important to note that authors are also inconsistent in how they use the terms online learning, virtual schooling, cyber schooling, or derivatives thereof—often using them interchangeably as synonyms. As a result, the usefulness of existing literature is limited not only by its modest size but by a confusion of terms that creates the problem of sorting out the oranges from the apples.

When the *Virtual Schools in the U.S.: Politics, Performance, Policy, and Research Evidence* report was first released in 2013, many of these academic distinctions had not been fully developed. Therefore, the term “virtual school” was used to describe online learning programs. However, the performance and policy sections of these annual reports have always focused

exclusively on full-time virtual schools. The research section has been the only exception to this pattern, as it has included research into both full-time and supplemental virtual schools. In this section, the term “virtual schools” will continue to be used as a general term to describe online learning programs—with careful attention to including detail on whether the research is focused on full-time or supplemental virtual schools.

Research into the Effectiveness of Virtual Schooling

When examining the research into the effectiveness of virtual schooling, it is important to note the specific nature of the program or school itself. For example, those students who are engaged in full-time programs (that is, students are not registered in a brick-and-mortar school, but take all of their instruction online) are generally registered directly and only in their virtual school. Because the virtual school is the school of record, it administers all statewide testing requirements and the results are associated only with that virtual school. In such cases, researchers can determine how students in a full-time K-12 virtual school perform in comparison to students in brick-and-mortar schools or to a statewide average. However, there is now a substantial body of research examining the effectiveness of supplemental virtual schooling (that is, students take one or more online courses, but are registered in a brick-and-mortar school). In these cases, students are formally registered in the brick-and-mortar school and are not—for state reporting purposes—part of the K-12 supplemental virtual school cohort. This context is important because it means that for the vast majority of supplemental virtual schools, the state has no formal reporting requirement and researchers aren’t able to access independent or state-generated data on those programs. As a result, in many instances the research conducted on these programs has focused on non-mandatory assessments given to both school-based and online students, or it has used Advanced Placement (AP) exam scores.

Effectiveness of Full-Time Virtual Schools

While much of the earlier research literature focused on examining the effectiveness of supplemental virtual schooling, the past five years have seen a dramatic increase in research focus on the effectiveness of full-time virtual schooling. It is interesting that much of this research has come from legislative audit divisions, which have greater access to data than academic researchers or investigative journalists. As part of government systems, legislative audit divisions can often access student data completely linked to all of a student’s characteristics. In contrast, an academic researcher or investigative journalist has access only to de-identified data to ensure students’ privacy. This means that legislative audit divisions can make comparisons that academic researchers or investigative journalists cannot. For example, the following section of this report provides data for full-time online schools and compares their performance or their students’ characteristics against averages for the state. However: these comparisons were made only made at the school level because privacy issues preclude access to individual student data.

Table 2.3 presents a summary of the results for students in the full-time K-12 online learning environment, which are quite disheartening.

Table 2.3. Summary of research related to the effectiveness of full-time K-12 online learning

Study	Finding
Colorado (2006)	“Online student scores in math, reading, and writing have been lower than scores for students statewide over the last three years.” ¹⁵
Kansas (2007)	Full-time K-12 online students in Kansas scored lower on state assessments than traditional students, particularly in mathematics. ¹⁶
Ohio (2009)	Online charter school students experienced significantly lower achievement gains compared to brick-and-mortar charter schools in the state. ¹⁷
Wisconsin (2010)	“Virtual charter school pupils’ median scores on the mathematics section of the Wisconsin Knowledge and Concepts Examination were almost always lower than statewide medians during the 2005-06 and 2006-07 school years.” ¹⁸
Idaho (2010)	“Students in virtual charter schools generally achieve proficiency in reading and language arts at lower rates than students in non-charter public schools. Students in virtual charter schools consistently achieve proficiency in mathematics at lower rates than students in non-charter public schools. Students in charter schools generally achieve proficiency at higher rates in all subjects than students in virtual charter schools and non-charter public schools.” ¹⁹
Colorado (2011)	“Half of the online students wind up leaving within a year. When they do, they’re often further behind academically than when they started.” ²⁰
Minnesota (2011)	“Compared with all students statewide, full-time online students had significantly lower proficiency rates on the math MCA-II but similar proficiency rates in reading.” ²¹
Arizona (2011)	“Nearly nine of every 10 students enrolled in at least one statewide online course, all had graduation rates and AIMS math passing rates below the state average” ²²
Ohio (2011)	“Nearly 97 percent of Ohio’s traditional school districts have a higher score than the average score of the seven statewide” online charter schools. Those schools in Ohio also underperformed brick-and-mortar schools in graduation rates. ²³
Pennsylvania (2011)	100% of these online charter schools performed significantly worse than feeder schools in both reading and math. ²⁴
National (2012)	“Students at K12 Inc., the nation’s largest virtual school company, are falling further behind in reading and math scores than students in brick-and-mortar schools.” ²⁵
Ohio (2014)	Cyber charter “schools experienced lower student performance than their traditional counterparts.” ²⁶
Kansas (2015)	Online students (which included a combination of full-time and supplemental students) performed at similar levels in reading, but that online students performed at lower levels in mathematics compared to their face-to-face counterparts. ²⁷
National (2015)	“Across all tested students in online charters, the typical academic gains for math are -0.25 standard deviations (equivalent to 180 fewer days of learning) and -0.10 (equivalent to 72 fewer days) for reading.” ²⁸

Georgia (2015)	“In 2012-13, none of Georgia’s three statewide fully online schools: 1) met all of the standardized assessment goals included in their respective charter contracts; 2) outperformed the state average score on the state accountability metric; or 3) outperformed the state on the value-added performance analysis, which evaluates a school’s impact while controlling for student characteristics.” ²⁹
Tennessee (2016)	“The scores are generally lower [for the full-time cyber schools] than the scores of the districts that established the schools” ³⁰
Ohio (2016)	“Across all grades and subjects, students who attend e-schools perform worse on state tests than otherwise-similar students who attend brick-and-mortar district schools, even accounting for prior achievement” ³¹
North Carolina (2017)	“Both virtual charter schools received an overall School Performance Grade of D... Both virtual charter schools received a School Performance Grade of C in Reading and an F School Performance Grade in Mathematics.” ³²

Whether the format of the research was academic, independent state audit, or investigative journalist’s report, the main theme from this body of work is that in a full-time virtual school setting student performance is considerably poorer than the performance of students in a face-to-face learning environment. In fact, the only groups that have found positive results for full-time virtual schooling have been advocacy organizations supporting charter schools and school choice—and the for-profit corporations operating many virtual schools.³³

These results are consistent with the performance of full-time virtual schools depicted in the previous section of this report. For example, it was reported there that less than one-third of virtual schools were rated as acceptable based on state accountability measures. Virtual schools operated by for-profit educational management organizations (EMOs) had the lowest percentage of acceptable ratings (23%); virtual schools operated by nonprofit EMOs or that were independent performed somewhat better (33% and 38% acceptable, respectively). District-operated virtual schools were rated as acceptable more than twice as often as virtual charter schools (i.e., ~55% compared to 26%).

Studies finding that full-time virtual schools, particularly those operated as charter schools and/or by for-profit EMOs, perform poorly have become so routine that even the

National Alliance for Public Charter Schools issued a 2016 report concluding:

- compared to traditional public school students, full-time virtual charter school students have much weaker academic growth overall;
- full-time virtual charter schools perform worse than traditional public schools in most states;
- all subgroups of students have weaker academic growth in full-time virtual charter schools than in traditional public schools; and
- the vast majority of full-time virtual charter schools perform worse than traditional public schools.³⁴

Because many of the full-time virtual schools are operated as virtual charter schools, the fact that “the leading national nonprofit organization committed to advancing the public charter school movement” has reached these conclusions is telling.³⁵

The operators of full-time virtual schools—often from the for-profit sector—will argue that these results are due to the fact that their programs cater to a weaker class of students, students at-risk, perhaps already multiple grade levels behind and so on. However, research into the characteristics of students enrolled in full-time virtual schools tells a different story. In considering all of the normal markers or demographic predictors as to whether a student is at risk, full-time online learning programs enroll:

- approximately the same percentages of Black students but substantially more White students and fewer Hispanic students relative to public schools in the states in which the company operates,
- fewer full-time online learning students who qualify for free or reduced lunch compared to the same-state comparison groups,
- a slightly smaller proportion of students with disabilities than schools in their states and in the nation as a whole, and
- significantly fewer students classified as English language learners.³⁶

Even more interesting was that the same study reported that full-time online learning programs tended to enroll four times the proportion of gifted students than the same-state comparison group.

This is consistent with the demographic data provided in the previous section of this report regarding students attending full-time virtual schools.

- The proportion of Black and Hispanic students was noticeably lower in full-time virtual schools,
- Considerably fewer low-income students enrolled in full-time virtual schools.
- The number of special education students in virtual schools was close to the national average for that population of students.
- Strikingly fewer students classified as English language learners enrolled in full-time virtual schools.

Beyond the findings from the annual the *Virtual Schools in the U.S.: Politics, Performance, Policy, and Research Evidence* reports, the limited literature available on the topic of student demographics is somewhat mixed. For example, in their examination of student enrollment from 2010-11 in Ohio's full-time virtual schools, Wang and Decker similarly found that the virtual schools had a disproportionately lower proportion of minority and limited English proficiency students.³⁷ However, they also found that virtual schools had higher proportions of economically disadvantaged students and students with disabilities. Another of the independent academic studies to examine the nature of full-time virtual school students focused on special education students in Pennsylvania from 2005 to 2009; it found that the population of full-time special education students in virtual schools mirrored the population of brick-and-mortar special education students.³⁸ A similar study that examined full-time virtual school enrollments from 2008-09 to 2011-12 reported that the population of full-time students with an individual education plan was higher, but that students of color were under represented.³⁹

Unlike the independent literature that clearly indicates full-time virtual school students are

performing poorly, the research into the characteristics of students enrolled in full-time virtual schools is less uniform. Still, the available data allows for the assertion that the uniformly poor student performance in virtual schools comes from—at best, students similar to their counterparts in face-to-face schools or—at worst, from a group of students stronger than their classroom counterparts.

Effectiveness of Supplemental Virtual Schools

While the focus of this report is full-time virtual schools, research into the effectiveness of supplemental virtual schooling merits discussion because considerable thematic consistency appears in its findings. This is not surprising, since the supplemental format is one of the earliest forms of virtual schooling, offered primarily through statewide programs. The table below outlines a selection of research over the past 15 years that compares student performance in supplemental virtual schooling and in face-to-face environments.

Table 2.4. Summary of research related to the effectiveness of supplemental virtual schooling

Study	Finding
Bigbie & McCarroll (2000)	Over half of the students who completed FLVS courses scored an A in their course and only 7% received a failing grade. ⁴⁰
Cavanaugh (2001)	“Effect size slightly in favor of K-12 distance education.” ⁴¹
Cavanaugh et al. (2004)	“Small negative effect size for K-12 distance education.” ⁴²
Cavanaugh et al. (2005)	FLVS students performed better on a non-mandatory assessment tool than students from the traditional classroom. ⁴³
McLeod et al. (2005)	FLVS students performed better on an assessment of algebraic understanding than their classroom counterparts. ⁴⁴
Means et al. (2009)	“Small effect size favoring online cohorts over face-to-face cohorts based on limited K-12 studies.” ⁵
Chingos & Schwerdt (2014)	FLVS students perform about the same or somewhat better on state tests once their pre-high-school characteristics are taken into account.” ⁴⁶

While there are a few exceptions, the main trend from these studies is that students enrolled in supplemental virtual schooling perform as well as or a little better than their classroom-based counterparts. However, it is important to examine this superficial trend in greater depth.

There are potential methodological limitations in these studies. For example, in the classroom setting, all students who are present complete formal assessments. However, in a virtual school setting—where often no physical proctor is present—the percentage of students who complete what is often a non-mandatory assessment is somewhat lower than in classrooms. Further, there is often a fairly high attrition rate in virtual schools, indicating that weaker students may have already been removed from the virtual learning sample. The table below provides a selection of examples of such methodological issues in the studies listed above in Table 2.4.

Table 2.5. Methodological issues with the supplemental K-12 online learning samples in comparative studies

Study	Sample
Bigbie & McCarroll (2000)	“Between 25% and 50% of students had dropped out of their FLVS courses over the previous two-year period.” ⁴⁷
Cavanaugh et al. (2005)	“Speculated that the virtual school students who did take the assessment may have been more academically motivated and naturally higher achieving students.” ⁴⁸
McLeod et al. (2005)	“Results of the student performance were due to the high drop-out rate in virtual school courses.” ⁴⁹

In addition, a well-documented retention issue⁵⁰ affects the methodological validity of this research. In fact, studies’ descriptions of students indicate a highly selective population in supplemental programs—or at least in those programs represented in the research literature (see Table 2.6).

Table 2.6. Description of students enrolled in supplemental virtual schooling based on the research

Study	Sample
Kozma et al. (1998)	“Vast majority of VHS students in their courses were planning to attend a four-year college.” ⁵¹
Espinoza et al., 1999	“VHS courses are predominantly designated as ‘honors,’ and students enrolled are mostly college bound.” ⁵²
Roblyer & Elbaum (2000)	“Only students with a high need to control and structure their own learning may choose distance formats freely.” ⁵³
Clark et al. (2002)	“IVHS students were highly motivated, high achieving, self-directed and/or who liked to work independently.” ⁵⁴
Mills (2003)	“Typical online student was an A or B student.” ⁵⁵
Watkins (2005)	“45% of the students who participated in e-learning opportunities in Michigan were either advanced placement or academically advanced students.” ⁵⁶

One of the best summaries of this situation was provided by Rice (2006), who described research on the effectiveness of supplemental virtual schooling as being “challenged with issues of small sample size, *dissimilar comparison groups*, and differences in instructor experience and training” (emphasis in original).⁵⁷ She finished by stating that “the effectiveness of distance education appears to have more to do with who is teaching, *who is learning*, and how that learning is accomplished, and less to do with the medium” (emphasis in original).

In her assessment, Cavanaugh (2013) indicated that research into the effectiveness of supplemental virtual schooling “suggests that as distance education is currently practiced, student learning on average in well-designed online elementary and secondary environments appears to be equivalent to learning in a well-designed classroom environment.”⁵⁸ Yet to date, the selective group of students that have been enrolled in supplemental virtual school environments have largely underperformed—regardless of how well-designed the virtual learning opportunity was. Over the past decade, there has been a dramatic increase in the number of students engaged in supplemental virtual schooling that are not reflective of this

highly engaged, highly capable student.

Interestingly, much of the growth in supplemental virtual schooling during this period has been with students often described as at-risk.⁵⁹ Many of these at-risk students are engaged in supplemental K-12 virtual schooling in the form of online credit recovery. Recently, several studies have examined the performance of students enrolled in online credit recovery situations (see Table 2.7).

Table 2.7. Research into student performance in online credit recovery

Study	Finding
Hughes, Zhou, & Petscher (2015)	<ul style="list-style-type: none"> Likelihood of a student earning a grade of C or better was higher when a course was taken online than when taken face-to-face, both for general courses and credit recovery courses.⁶⁰
Heppen, Allensworth, Sorensen, Rickles, Walters, Taylor, Michelman, & Clements (2016)	<ul style="list-style-type: none"> Students found the online course more difficult and had more negative attitudes about mathematics than students in the face-to-face course. Online course students had lower algebra assessment scores, grades, and credit recovery rates than face-to-face course students. Longer-term academic outcomes were not significantly different for students in the online and face-to-face credit recovery courses.⁶¹
Stevens, Frazelle, Bisht, & Hamilton (2016)	<ul style="list-style-type: none"> Slightly less than 60% of online credit recovery students receive a passing grade, with passing rates lowest in math and English language arts. Students who take one online credit recovery course per semester have lower passing rates than those who take multiple courses in a semester.⁶²
Stallings, Weiss, Maser, Stanhope, Starcke, & Li (2016)	<ul style="list-style-type: none"> Little difference between the short-term success rates of students who completed state-supported online credit recovery and students who completed other credit recovery options. On measures of longer-term success, students who completed state-provided online credit recovery courses and did not subsequently drop out were more likely than other credit recovery students to graduate on time.⁶³

As the range of students taking supplemental virtual schooling broadens, so does variability in results. All four of these studies found that online credit recovery was an effective way for at-risk students to make up courses that they had initially failed. However, only two of the studies examined the impact on long-term student learning and success. Both found that online credit recovery actually hindered long-term knowledge retention and/or future success in the subject area of recovered credits.⁶⁴

Overall, the evidence seems to indicate that whether virtual schooling is full-time or supplemental, its implementation in the United States has been largely ineffective. Further, it appears that success in the virtual school environment often has more to do with the individual students being served than it does with the conditions of a virtual learning experience. It is interesting to note that one of the few direct comparisons of the different modalities

has been provided by research conducted by the Michigan Virtual Learning Research Institute. Over the past three years, researchers there have consistently found that students in that state who have enrolled in the Michigan Virtual School have had a higher completion/passing rate than students enrolled in online courses offered by local school districts, both of which had higher completion/passing rates than the state's full-time cyber schools.⁶⁵ Such findings should prompt practitioners, policymakers, and researchers to examine the ways that more successful virtual schools are designed, delivered and supported in order to identify promising practices and policies that can be implemented to foster successful forms of virtual schooling.

Defining Blended Learning

Unlike K-12 online learning, which is easily distinguished by the geographic separation of the teacher and student, K-12 blended learning is a little harder to define. At its broadest level, blended learning simply refers to:

any time a student learns at least in part at a supervised brick-and-mortar location away from home and at least in part through online delivery with some element of student control over time, place, path, and/or pace; often used synonymously with hybrid learning.⁶⁶

Basically, if students are engaged in both face-to-face and online learning as a part of their formal studies, then they are engaged in some form of blended learning. This description is consistent with Graham's definition that "blended learning systems combine face-to-face instruction with computer-mediated instruction" (such as online learning).⁶⁷

Regardless of the specific definition adopted, K-12 blended learning—like K-12 online learning—may take several different formats. The Christensen Institute has completed the majority of descriptive work related to the K-12 blended learning models. At present, there are four main models: rotation, flex, self-blend, and enriched-virtual.⁶⁸ In the rotation model, a program is organized around different learning formats—one of which is online learning. Students can rotate among four different instructional modalities: individually, based on their personal needs (individual rotation); or through each of the stations provided in a single classroom (station rotation); or through different classrooms or labs within the school (lab rotation); or as a group through flipped classrooms (flipped classroom).⁶⁹ In the flex model, students complete most of their instruction online, but may interact with their teacher and/or other students for tutoring, small group instruction or group projects. The self-blend model is described in a way that aligns with common descriptions of supplemental K-12 online learning (that is, student takes some courses online and some courses in the classroom). Finally, in the enriched-virtual model, all courses include both online and classroom-based instruction.

One of the difficulties with both defining and classifying blended learning is the distinction between blended learning and technology integration. In fact, Barbour has argued that outside of the United States, blended learning is seen as a form of technology integration.⁷⁰ For example, as a part of the *State of the Nation: K-12 Online Learning in Canada* report, Barbour reported that:

while blended learning is occurring across Canada, practitioners do not always consider it part of the distance education or online learning movement. With-

in the Canadian context blended learning is largely considered an extension of effective ICT, or effective technology integration—to use more of an American phraseology. Many teachers not directly involved with K-12 distance education may not realize they are practicing blended learning according to the iNACOL definition.⁷¹

This perspective is consistent with the national policies of several Asian and Oceanic nations.⁷² For example, the New Zealand Ministry of Education defines e-learning as “learning and teaching that is facilitated by or supported through the smart use of information and communication technologies.”⁷³ Essentially, the use of e-learning in the classroom can be placed on a spectrum with a traditional classroom with no technology on one end and a completely online classroom on the opposite end. Any type of technology usage by the teacher and/or the students could be placed at some point on this e-learning spectrum, and many examples of that technology integration could be described as blended learning using US-based definitions.

Another factor that complicates the understanding of blended learning is the fact that in some instances it is applied to a complete school while in other instances it simply refers to the actions of one or more teachers. For example, the models of blended learning provided by Horn and Staker above can be applied to both complete schools or to individual programs within a school. In fact, if you consider the ways in which blended learning has been defined (that is, blending some form of face-to-face and online instruction), the vast majority of blended learning occurring in the United States is likely not happening at the school level. This means that researchers are limited in their ability to examine the effectiveness of blended learning—beyond instances where a full school is organized as one of the blended learning models. However, even within those complete school environments researchers are still largely unable to discern the level of blending that is occurring (that is, how much online instruction is required for a school to be considered a blended learning school). In many cases, then, scholars are forced to rely upon schools to self-identify as blended learning schools or to have proponents of blended learning identify schools based on their knowledge of the programming. However, many schools identified by proponents are identified specifically for ideological reasons or advocacy purposes.

A final confounding factor is that because blended learning is often viewed as growing out of online learning in the United States, many earlier K-12 blended learning programs are actually referred to as K-12 online learning programs. One example is the Odyssey Charter School in Las Vegas, Nevada.⁷⁴ As Barbour and Plough described, at the high school level students are required to physically attend the school for one four hour session per week (one morning or afternoon). During this session, the students take one face-to-face class for two of the four hours. The remaining two hours they can work on their online courses or meet with their online teachers. With the exception of this weekly four-hour block, students are expected to work on their online courses outside of the school on their own time. Based on the Christensen Institute’s models of blended learning, Odyssey Charter School follows a flex model of blended learning. However, the school self-identifies as a cyber or online charter school. These issues outline some of the challenges that make examining the research into K-12 blended learning, including student success in this environment, problematic.

Research into the Effectiveness of K-12 Blended Learning

There is much less empirical literature examining the effectiveness of K-12 blended learn-

ing and blended schools than there is for virtual schooling. For example, the Christensen Institute and the Evergreen Education Group produced 12 specific case studies focused on how traditional brick-and-mortar schools improved student performance by incorporating blended learning.⁷⁵ One of these briefs focused on the District of Columbia Public Schools, where the authors say the district made significant investments in the redesign of 17 schools to incorporate blended learning; according to the district, student performance improved as a result—as indicated by higher increases in scores on standardized math and reading test scores. Another brief focused on a high school in Salt Lake City that was specifically designed to cater to students who were assigned to alternative schools or who had dropped out of the district’s three high schools. In this instance, the blended learning school reported a higher graduation rate than the district and the state. In considering such examples, it is worth noting that both of the authoring organizations promote online learning. The Evergreen Education Group describes its work as “helping to lay the groundwork for growth of digital learning and inform legislators and other policymakers about the latest developments in the field,”⁷⁶ while the education focus of the Christensen Institute is on increasing access to and use of personalized and blended learning, as well as on promoting competency-based education.⁷⁷ Given those missions, it is not surprising that organizational researchers didn’t explore whether blended learning itself or the fact that an entire school had been created to address the needs of a specific student population caused the high graduation rate in the Salt Lake City school. Similarly, researchers didn’t consider whether the increased investment in resources and teacher training to use those resources had caused the improved student performance in the DC schools. In both instances, blended learning was the only variable considered.

Similarly, the Hybrid Learning Institute studied the performance of students in 31 different hybrid or blended learning programs and found that students in blended environments outperformed their counterparts in traditional classroom settings. Interestingly, in reporting these results the Hybrid Learning Institute indicated that:

each month, program analysts track the fidelity of program implementation and help identify areas that require more training or resources. Periodically, program managers review the intended outcomes with key teachers and administrators to make adjustments. The idea is to improve the program while it is still going on, not just after it is over.⁷⁸

This model of continuous monitoring and improvement is consistent with the model of design-based research advocated by Barbour and Reeves as:

a methodology which is conducted in cycles to allow for results from the intervention to be included in improving the intervention before the next cycle, while developing design principles and theories to explain those results and guide further refinements in the intervention.⁷⁹

In this case, then, it is unclear whether the results touted by the Hybrid Learning Institute resulted from the blended learning programs...or from the design-based research model of continuous monitoring and improvement. These kinds of problematic studies have led Murphy, Snow, Mislavy, Gallagher, Krumm, and Wei to conclude after examining student performance in a series of blended learning schools that “claims are made about the relative effectiveness of various blended learning models relative to more traditional forms of instruction, but thus far little evidence has been collected to back these [actual] claims.”⁸⁰ Essentially, these studies have resulted in little evidence focused specifically on the effectiveness of blended learning; what they have shown instead is that when blended learning

creates systematic change within a school or a district, student performance can be impacted.

In fact, beyond those organizations are that are proponents of educational reform—and have a natural affinity for online and blended learning initiatives (the Christensen Institute, Evergreen Education Group, Hybrid Learning Institute, and others)—as Murphy and colleagues indicated, there is little evidence to support the use of blended learning in the K-12 environment.

As one example, in a study of the effectiveness of online and blended learning in both the K-12 and higher education environments, Means, Toyama, Murphy, and Baki found in their meta-analysis that student performance in face-to-face courses was higher than in blended learning environments.⁸¹

Beginning with the *Virtual Schools in the U.S. 2016: Directory and Performance Review* report, the annual National Education Policy Center study began reporting on student performance in blended schools. In the 2016 report, Miron and Gulosino found that students attending full-time online schools did worse than students in traditional brick-and-mortar settings, and that students attending blended learning schools did even worse than students in full-time online settings.⁸² In this year's "Full-Time Virtual and Blended Schools" section, Miron and his colleagues again reported that while blended schools performed better in comparison to their virtual school counterparts, the blended school student performance and on-time graduation rate was still less than their traditional brick-and mortar counterparts.

It is important to remember that much of the research described above has focused on schools that have adopted a particular blended learning model for the whole school. However, it is assumed that much of the blended learning that is occurring is by individual teachers in individual classrooms, rather than in whole school models. At this time, there is little research on such blended learning—because typically it is difficult to identify the performance of a single class or group of students taught by a single teacher within a larger school. For example, Davis reported on seven initial studies that found modest gains in favor of specific classes of individual teachers using blended learning techniques and tools.⁸³ As these kinds of studies are small, and often use non-standardized and non-validated instruments, they provide little guidance for the field in general. But studies like this do highlight the potential of blended learning under certain circumstances. As Enyedy reminds us:

it may be that we need to turn to new ways of conceptualizing the role of technology in the classroom—conceptualizations that do not assume the computer will provide direct instruction to students, but instead will serve to create new opportunities for both learning and teaching.⁸⁴

The whole school models of blended learning are based on the belief that the computer can, at least some of the time or for certain topics, provide direct instruction to students. However, the instances of blended learning often happening at the classroom level and led by individual teachers frequently focus instead on how technology can change the learning and teaching process for those students and that teacher.

Research on Key Policy Issues Related to Virtual and Blended Learning

Given the poor student performance consistently found in full-time virtual schools and the

questionable student performance reported in supplemental virtual schools, as well as the more general lack of research to support the use of blended learning, one would expect that K-12 policymakers would be interested in enacting regulation to more effectively monitor and govern virtual and blended schools. However, as has been highlighted in the National Education Policy Center's *Virtual Schools in the U.S.: Politics, Performance, Policy, and Research Evidence* reports in 2014 and 2015,⁸⁵ as well as in the following "Key Policy Issues in Virtual Schools" section, this expectation has generally not been the case. Similarly, as highlighted in previous editions of this report, the research focused on the key policy issues has remained relatively consistent.

Accountability and Funding

The *Virtual Schools in the U.S. 2014: Politics, Performance, Policy, and Research Evidence* report indicated that the primary way states had attempted to hold virtual and blended schools accountable has been through the performance of students on statewide standardized assessments. Researchers and the corporate EMOs have both argued that standardized testing, and the subsequent mechanism to determine annual yearly progress based on that single session testing (among other items) are not reliable measures of student performance.⁸⁶ However, even in jurisdictions where performance growth is factored into the measure of school performance (as in Colorado), full-time virtual schools still perform poorly.⁸⁷ As was detailed in the 2015 *Virtual Schools* report, calls for both improved accountability systems specific to virtual and blended schools date back more than a decade.⁸⁸ Yet, the Michigan Virtual Learning Research Institute reported that very few states have any accountability system beyond the initial front-end approval of virtual and blended schools.⁸⁹

In the months following the National Education Policy Center's 2015 report, the Center for Reinventing Public Education released its portion of a larger three-part study of full-time online charter schools.⁹⁰ The findings in that report mirrored many of the results from the earlier Michigan Virtual Learning Research Institute examination:

- many states have initial approval requirements, but very few have any form of ongoing review or accountability,
- only nine states have regulations requiring online and blended schools to provide technology to low-income students,
- a small, but growing number of states have additional reporting requirements for online charter schools (beyond the requirements of brick-and-mortar schools), and
- some states have begun to question the actual independence of nonprofit charter boards from their for-profit EMOs.

One of the important aspects to remember is that in their concluding thoughts, the authors of the Center for Reinventing Public Education report wrote "many states have unique legal requirements related to online charter authorizing, reporting, and operating, but no single state has a complete and robust legal framework for online charter schools." The same is also true for K-12 blended schools.

Similarly, in the introduction to the 2016 report *A Call to Action to Improve the Quality of Full-Time Virtual Charter Public Schools* from the National Alliance for Public Charter Schools, the 50-State Campaign for Achievement Now, and the National Association of

Charter School Authorizers, the authors stated:

The well-documented, disturbingly low performance by too many full-time [online and blended learning] schools should serve as a call to action to state leaders and authorizers across the country. It is time for state leaders to make the tough policy changes necessary to ensure that this model works more effectively than it currently does for the students it serves. It is also time for authorizers to close chronically low-performing virtual charter public schools.⁹¹

Further, the authors of the *Call to Action* report included a number of policy recommendations designed to address the deficiencies of virtual charter schooling, without impacting the ability for traditional brick-and-mortar charter schools to continue to proliferate. However, there was an overall recommendation that is worth repeating: “states may need to consider governing full-time virtual charter schools outside of the state’s charter school law, simply as full-time virtual charter schools.” This is an important acknowledgement—particularly from organizations whose sole purpose is to advocate for increased opportunities for charter schools (as many of the virtual and blended schools discussed in this report are), in that it recognizes that educating a child in a largely independent, often home-based environment is critically different from, and should be regulated differently than, educating a child in a traditional face-to-face, brick-and-mortar school.

In terms of virtual and blended school funding, it is important to underscore that both the 2014 and 2015 versions of the *Virtual Schools in the U.S.: Politics, Performance, Policy, and Research Evidence* report emphasized that except for reports from the providers of virtual and blended schools themselves and their main advocacy organization (the International Association for K-12 Online Learning), all of the literature has indicated that virtual and blended learning costs less to provide than face-to-face instruction.⁹² However, virtual charter schools still tend to be funded at the same or similar levels as brick-and-mortar charter schools—in 11 out of 16 states examined by International Association for K-12 Online Learning); where virtual charter schools received less funding, the reduction was only 5% or 8% in three of the five remaining states.⁹³ It is also worth noting that an analysis of full-time virtual charter schools in Pennsylvania found that all but one reported “significant surpluses of revenue over expenses and [were] amassing significant net assets.”⁹⁴

A few jurisdictions have made changes have to the funding regime for virtual and blended learning. At present four states fund virtual schools using a competency-based system (Florida, Minnesota, New Hampshire, and Utah).⁹⁵ In each of these, the model is somewhat different. For example, two states allow for the virtual school to receive partial payment for the full time equivalent funding (New Hampshire and Utah). The state determines completion of a competency in three of these jurisdictions (Florida, Minnesota, and Utah), while the teacher is the determiner in New Hampshire. Each state has a different standard to measure competency. No research has yet been published on how these funding models have impacted student performance. However, the Consortium for Policy Research in Education report did indicate that the “completion-based funding system reduced the total amount of funding received by online charter schools in New Hampshire and Florida,”⁹⁶ although they also suggested that in the case of New Hampshire the online charter school would “eventually earn all of the funding that [was] available to them” (that is, the student would eventually complete the entire course; it just might take longer than a single semester or school year).

The research in this area is consistent with the analysis of proposed and enacted legislation described in the following “Key Policy Issues in Virtual Schools” section of this report, where Huerta and his colleagues outline an increase in legislative interest in addressing the

accountability and funding challenges of virtual schools. Yet, to date these efforts have generally failed to result in concrete mechanisms to provide oversight and/or accountability.

Virtual Course and Program Quality

Like this year’s report, previous versions of this annual report have focused the issue of virtual course and program quality based on certain student performance measures, as described in Section 1 (primarily comparisons of student test scores and completion rates in virtual and blended environments with those in face-to-face environments). However, there is a larger issue of virtual course and program quality. For example, the Michigan Virtual Learning Research Institute outlined a series of virtual and blended course and program quality variables that should be considered when considering regulation (see Table 2.8).⁹⁷

Table 7. Variables related to the evaluation and approval process for virtual schools

Level of Evaluation and Approval		
Provider level		Course level
Approval Requirement		
Optional approval		Required approval
Geographic Reach		
Multi-district	Multi-district & single district	Single district
Delivery Model		
Fully online		Blended
Evaluation and Approval Procedures		
Front-end approval	Front-end approval & ongoing monitoring	Annual monitoring / audits

In their analysis of approval and evaluation processes across the fifty states, the authors identified isolated examples of effective regime for many of these variables individually. However, as the Center for Reinventing Public Education report stated, “few state laws provide...guidance to ensure robust performance outcomes or instructional quality in the online environment.”⁹⁸

One reason for the lack of robust regime to determine virtual course and program quality may be the lack of specific measures available to legislators and policymakers. For example, Barbour, Clark, DeBruler, and Bruno noted that the International Association for K-12 Online Learning has produced several guide to assist policymakers in determining how to measure virtual course and program quality.⁹⁹ However, none of the guides was based on any independent research; instead, they were largely the creation of stakeholders from the virtual and blended learning community. In fact, Adelstein and Barbour have been examining the validity of the International Association for K-12 Online Learning *National Standards for Online Courses* as a part of a longitudinal, three-part study (content validity using existing research, expert panel review, and application of the revised rubric to determine inter-rater reliability).¹⁰⁰ At each stage of the process, the authors found that there were certain standards that simply were not supported. In the end, the authors concluded that the rubric based on these standards could not meet a reliability threshold as currently constructed.

In fact, to date there have only been two research initiatives designed to create standards to measure K-12 online course and program quality—both of which have focused on the online course design. The first was the NetCourse Evaluation Board, created by the Virtual High School in 1998 to provide instructors with standards and support for designing online courses.¹⁰¹ While somewhat dated, the design principles developed as a part of this design-based research model still represent some of the most comprehensive research in the field to date.¹⁰² The second was the Quality Matters standards,¹⁰³ which were originally focused on higher education; but, in 2010, Quality Matters partnered with the Florida Virtual School to develop a K-12 version of its standards and rubric.¹⁰⁴ Unfortunately, Quality Matters' annual subscription fee puts the use of these standards beyond the reach of many K-12 online and blended learning programs. The age of the Virtual High School standards and the proprietary nature of the QM standards are likely some of the reasons why states like California, Michigan and Texas have selected the non-research-based International Association for K-12 Online Learning standards as a means to evaluate online courses in those states. This is unfortunate, given that the “digital tools available to virtual schools allow them to gather large amounts of student data relative to traditional schools and open the door to frequent formative assessments rather than just point-in-time assessments such as end-of-grade tests” or the initial K-12 online and blended learning program approval.¹⁰⁵ However, as Huerta and his colleagues conclude in the following section, there has been “little continued progress over the past year in proactively addressing issues related to instructional program quality.”

Preparing Teachers for Online and Blended Environments

The 2014 and 2015 versions of the *Virtual Schools in the U.S.: Politics, Performance, Policy, and Research Evidence* report noted that while a growing number of universities have begun to offer graduate certificates in online teaching,¹⁰⁶ a 2007 study found that fewer than 40% of K-12 online teachers received any form of professional development before they began teaching online¹⁰⁷; a 2012 study of teacher education programs found that less than 2% provided any content related to online and blended learning.¹⁰⁸ Like many other policy issues, teacher preparation or development is muddled by the lack of available research into best practice or promising practices related to the design, delivery and support of virtual learning. And yet, a growing number of states have introduced online teaching standards or certifications.¹⁰⁹

Interestingly, a 2016 replication of an earlier study of teacher education programs found a small expansion in the number of programs that included content related to K-12 online and blended learning (3.5% of responding teacher education programs, compared to 1.3% in 2012).¹¹⁰ In a similar study of nine states that offered some form of online teaching endorsement or certification, McAllister and Graham found that 37 of the 248 possible higher education institutions (or approximately 15%) offered a specific online teaching program.¹¹¹ It is such limited progress that led Archambault, Kennedy, Shelton, Dalal, McAllister, and Huyett to conclude that “while signs of progress are evident, significant work to move the field forward with respect to K-12 online teacher preparation remains.”¹¹² Archambault et al.'s conclusion is also consistent with what Huerta and his colleagues will report in the following section.

Summary

In the NEPC's *Virtual Schools in the U.S. 2015: Politics, Performance, Policy, and Research Evidence* report, we described the situation in Michigan where legislators lifted a ban on virtual charter schools, allowing two to be operated by the major for-profit EMOs.¹¹³ The legislation limited the growth of the two new virtual schools during the first two years, and then the Department of Education was tasked with determining future enrollment limits based on the student performance in those programs. However, following two years of sub-par student performance, and only months before the review from the Department of Education would have occurred, legislation was passed in 2012 to remove all meaningful restrictions on the number and enrollment levels of virtual schooling in the state.

That same year the Michigan legislature also directed the Michigan Virtual University to create a Michigan Virtual Learning Research Institute and assigned as one of its duties to “analyze the effectiveness of online learning delivery models... [by] highlighting enrollment totals, completion rates, & the overall impact on pupils.”¹¹⁴ From an external perspective, it would seem that the purpose of such a report would be to provide specific data that would help guide legislators and policymakers in Michigan in making decisions about governance and regulation of supplemental and full-time virtual schools, as well as those schools that

Some have suggested that a profit motive for the corporate EMOs that manage so many of virtual and blended charter schools works against quality in many schools

self-identified as blended schools. However, this has not been the case. In *Michigan's K-12 Virtual Learning Effectiveness Report*, which covered the 2012-13 school year, the authors indicated that the enrollment in virtual learning had doubled over the prior two years. However, the authors also reported that the virtual charter schools had significantly higher rates of students withdrawing from full-time virtual schools, as well as a slightly higher failure rate.¹¹⁵ The following year, the author of the report indicated

that there was still an approximate 25% difference in the completion rate of virtual students compared to that of face-to-face students. Interestingly, while full-time virtual charters and district-based supplemental programs performed poorly, students attending the state-funded Michigan Virtual School performed much better.¹¹⁶ Similarly, *Michigan's K-12 Virtual Learning Effectiveness Report 2014-15* also reported an approximate 30% difference in the completion rate of virtual students compared to that of their face-to-face counterparts. There also continued to be more than a 20% difference between the completion rate of students in full-time virtual charter schools and the state-funded Michigan Virtual School.¹¹⁷

Since this consistently negative data was reported by an independent body specifically tasked with providing the information, one would expect that legislators and policymakers would have moved to enact measures to improve the quality of education provided by the full-time virtual charter schools and/or to foster the success experienced by state's own supplemental virtual program. However, as highlighted in the NEPC's *Virtual Schools in the U.S.: Politics, Performance, Policy, and Research Evidence* reports in 2014 and 2015,¹¹⁸ as well as in the following section, this has not been the case.

The lack of action, at least in the case of Michigan, is not due to a lack of data to guide legislators and policymakers. In fact, since the creation of the Michigan Virtual Learning Research Institute, Michigan has been among the leading states when it comes to the availability of research. Some have suggested that a profit motive for the corporate EMOs that manage so many of virtual and blended charter schools works against quality in many schools.¹¹⁹ The

profit motive was highlighted in a recent series entitled “Rewarding Failure: An *Education Week* Investigation of the Cyber Charter Industry,” where reporters found “exclusive data on how rarely students use the learning software at Colorado’s largest cyber charter, the questionable management practices in online charters, and how lobbying in scores of states helps keep the sector growing.”¹²⁰ In fact, Prothero reported that the two major corporate EMOs spent more than \$14.5 million on lobbying since 2000 (and stated “that dollar amount is likely an underestimate”).¹²¹ A combination of poor student performance and negative media around these lobbying activities recently led to shareholders calling on K12, Inc.—the largest of the two main corporate EMOs for full-time virtual schools—to “disclose its multimillion-dollar state lobbying activities and spending to investors.”¹²² While the measure was ultimately defeated, “nearly 30 percent of shareholders voted for the proposal.”¹²³ In addition to lobbying efforts, it is also worth noting that K12, Inc. was found to have spent over \$21 million dollars on advertising in just an eight-month period in 2012 (the most recent public data available).¹²⁴ Given the amounts of money being spent on lobbying and advertising by corporate EMOs, it is understandable that they oppose any legislative effort to regulate their activities. What is clear from such actions is that those providing many of the full-time virtual and blended learning opportunities are less interested in providing a quality education based upon promising practices from research than on generating profit. As described in detail in the following “Key Policy Issues in Virtual Schools” section, the result is best summarized by *Education Week* reporter Arianna Prothero—“a mix of weak state regulations, the millions of dollars spent on lobbying, and the support of well connected allies.”¹²⁵

Recommendations

Beyond the earlier general recommendation from the National Alliance for Public Charter Schools, the 50-State Campaign for Achievement Now, and the National Association of Charter School Authorizers that virtual and blended schools should be regulated in a manner that is consistent with the kind of learning they provide, based on the research in the field it is again recommended that:

1. Policymakers regulate the growth and geographic reach of full-time, taxpayer-funded virtual schools. At present there are serious questions about the effectiveness of many models of virtual schooling. Until these questions can be adequately addressed, policymakers should focus their efforts on promoting virtual school models shown to be successful while limiting those that have had questionable student performance.
2. State and federal policymakers create long-term programs to support independent research on and evaluation of virtual schooling, particularly full-time virtual schooling. More than twenty years after the first virtual schools began, there continues to be a dearth of empirical, longitudinal research to guide the practice and policy of virtual schooling.

In terms of the specific research that is needed, the following topics continue to be recommended as critical areas to help guide policy.

- Research is needed to determine the actual costs for providing a quality K-12 online and blended learning experience. To date the vast majority of literature related to the cost of K-12 online and blended learning has focused on funding in relation to brick-and-mortar schooling.

- Research is needed to determine the appropriate criteria for making initial judgments about the potential of K-12 online and blended learning schools, as well as identifying appropriate means of regular evaluation. At present there is a wide range of policies and procedures relating to approval and ongoing monitoring.
- Research is needed to determine what constitutes good online teaching, how to effectively prepare teachers for the K-12 online and blended learning environment, and what mechanisms are required to properly evaluate teachers in K-12 online and blended learning environments. It is widely believed that teachers play a fundamental role in the success of students regardless of the setting.
- Finally, additional research is needed to determine whether the business model of for-profit K-12 online and blended learning affects the factors that lead to a high-quality online learning experience. It is unclear, but essential to know, whether alternative management arrangements for K-12 online and blended learning schools affect the quality of education provided.

It is important to underscore that these are the same two policy recommendations and the same four research foci as were presented in the *Virtual Schools in the U.S. 2015: Politics, Performance, Policy, and Research Evidence* report. As described in the research literature, as well as being evidenced in the proceeding and following sections, “the current climate of K-12 school reform [continues to] promote...acceptance of any and all [online and blended] education innovations, despite lack of a sound research base supporting claims that technology in and of itself will improve teaching and learning.”¹²⁶

Notes and References - Section II

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Molnar, A. (Ed.); Miron, G., Huerta, L., Cuban, L., Horvitz, B., Gulosino, C., Rice, J.K., & Shafer, S.R. (2013). *Virtual Schools in the U.S. 2013: Politics, Performance, Policy, and Research Evidence*. Boulder, CO: National Education Policy Center. Retrieved March 30, 2017, from <http://nepc.colorado.edu/publication/virtual-schools-annual-2013/>
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Section III

Key Policy Issues in Virtual Schools: Finance and Governance, Instructional Quality, and Teacher Quality

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Executive Summary

This section draws from a comprehensive analysis of all proposed and enacted virtual school legislation in 50 states during the 2015 and 2016 legislative sessions, building on our earlier work detailing the 2012-2014 sessions. We again focus on whether legislatures have been moving closer to or further from core recommendations advanced in this NEPC series. Our analysis revealed that state legislatures have proposed many bills that attempt to increase oversight of virtual schools; however, we found little evidence to indicate that legislative actions are being informed by the emerging research on virtual schools.

Recommendations arising from Section III are for policymakers to:

- Develop new funding formulas based on the actual costs of operating virtual schools.
- Develop new accountability structures for virtual schools, calculate the revenue needed to sustain such structures, and provide adequate support for them.
- Establish geographic boundaries and manageable enrollment zones for virtual schools by implementing state-centered funding and accountability systems.
- Develop guidelines and governance mechanisms to ensure that virtual schools do not prioritize profit over student performance.
- Require high-quality curricula, aligned with applicable state and district standards, and monitor changes to digital content.
- Develop a comprehensive system of formative and summative assessments of student achievement, shifting assessment from a focus on time- and place-related requirements to a focus on student mastery of curricular objectives.
- Assess the contributions of various providers to student achievement, and close virtual schools and programs that do not contribute to student growth.
- Define certification training and relevant teacher licensure requirements specific to teaching responsibilities in virtual schools, and require research-based professional development to promote effective online teaching models.
- Work with emerging research to develop valid and comprehensive teacher evaluation rubrics that are specific to online teaching.

- Identify and maintain data on teachers and instructional staff that will allow education leaders and policymakers to monitor staffing patterns and assess the quality and professional development needs of teachers in virtual schools.
- Examine the work and responsibilities of virtual school principals and ensure that those hired for these roles are prepared with the knowledge and skills to be effective, particularly with respect to evaluating teachers and promoting best practices.

Section III

Key Policy Issues in Virtual Schools: Finance and Governance, Instructional Quality, and Teacher Quality

As evidenced in this series of policy reports, policymakers continue to struggle to reconcile traditional funding structures, governance and accountability systems, instructional quality, and staffing demands with the unique organizational models and instructional methods associated with virtual schooling. State legislatures continue to respond to challenges raised by virtual schooling, as evidenced by proposed bills that attempt to increase oversight of virtual schools; however, as we discuss below, fewer than 40% of proposed bills have been enacted. In addition, there is little evidence to support the view that legislative actions are informed by the emerging research on virtual schools.

This first section below will revisit the critical policy issues introduced in the 2013-2015 reports, specifically:

- Finance and governance
- Instructional program quality
- High-quality teachers.

In the 2013 report we defined these critical policy areas and presented the emerging research evidence; then, in the 2014 and 2015 reports we shifted our focus to the legislative actions that illustrate how states are addressing evolving virtual school models. The last two reports analyzed legislation, examining all proposed and enacted virtual school legislation in 50 states from 2012, 2013 and 2014. These analyses served as a baseline for this comprehensive analysis of all virtual school legislation introduced in 2015 and 2016 presented here. In addition, we draw on our own research, recent policy reports and research, and popular press accounts. As a reorientation, we reintroduce and provide updates to our earlier tables summarizing critical policy issues, relevant assumptions, and unanswered empirical questions. Lastly, we revisit our policy recommendations and examine multiple data sources to gauge legislative progress toward them.

Comprehensive Analysis of 2015 and 2016 Legislation

Our comprehensive analysis of all proposed and enacted virtual school legislation in 50 states during the 2015 and 2016 legislative session employed the National Conference of State Legislatures (NCSL) Legislative Tracking database. We identified legislation using the keywords *cyber, virtual, online, technology, non-classroom-based, distance learning, digital learning* and *blended learning*.¹ An initial search yielded nearly 1,000 bills in 2015 and 1,400 bills in 2016, with nearly every state considering legislation. Many bills eventually proved related to technology expansion in other public sectors. Closer review targeting new, revised or revoked programs specific to K-12 virtual education narrowed the list considerably. In 2016, 113 bills were considered in 37 states; 33 were enacted, 60 failed and 20 are pending (see Appendix A, which provides a comprehensive listing as well as summaries of relevant bills). In 2015, 98 bills were considered in 28 states; 36 were enacted and 62 failed. The raw number of bills introduced has remained comparable over the last five years.² The

comprehensive bill analysis provides a richer understanding of how legislators are promoting, revising and curbing evolving virtual school models as compared to previous years. In addition, the analysis over the past five legislative sessions has allowed us to track whether legislative trends are moving closer to or further from core recommendations advanced in this NEPC report series.

In 2015, much of the legislative activity on virtual schools occurred within a relatively small number of states, Alabama (n=6), Arizona (n=10), Florida (n=8), Missouri (n=11), Oregon (n = 7), Texas (n=7), and Utah (n=6). As in previous years, proposed legislation ranged from narrow to sweeping. For example, nine states proposed pilot programs, task forces, oversight commissions and state boards to study and oversee the development of virtual schools and their implications (AL, AZ, DE, ID, NJ, ND, OR, UT, VA). For example, the legislatures in Arizona (AZ S1037) and Delaware (DE SCR22) enacted bills that established commissions or task forces to study digital teaching and learning and to explore the expansion of technology in schools. Of the nine bills proposed, five were enacted. This is an increase from the 2014 session, when only four states proposed task forces or oversight commissions.

One important trend to note in 2015 legislative activity is the significant amount of proposed legislation calling for protection of students' online data. In total, 14 bills were introduced in 12 states related to students' online or digital privacy (AR, AZ, CO, CT, DE, GA, NJ, NV, OR, TX, UT, VA). Of the 14 bills, five were enacted. Student privacy protections are an important factor in the growth and development of online learning. Depending on how legislation is written and implemented, it may either inhibit the sector's growth by limiting vendors' ability to use student data or promote the sector's growth by effectively allaying parents' anxiety.

In contrast to 2015, when legislative activity was focused within a relatively small number of states, legislative activity in 2016 was spread across a broader cross-section of states. While 55% of bills were considered in just seven states in 2015, the top seven states considered only 40% of bills in 2016. Indeed, fully 18 states considered three or more bills related to online or virtual instruction in 2016, and 24 states adopted at least one bill.

However, the subjects under debate were broadly similar between 2015 and 2016. In both legislative sessions a significant amount of legislation focused on student data privacy. There was also a continued focus on pilot programs, task forces, oversight commissions and state boards to study and oversee the development of virtual schools; in 2016, 11 bills were introduced in 10 states (CO, MD, MS, MO, NJ, NM, OR, PA, SC, WV). Coupled with the nine similar bills proposed in 2015, these constitute a significant increase in bills focused on oversight and development, compared to 2014 and previous legislative sessions. For example, in Pennsylvania (PA H530) the legislature proposed a bill that would establish a Charter School Funding Advisory Committee tasked with exploring the actual cost of educating a cyber charter school student. Similarly, in New Mexico (NM SM90) the legislature proposed a bill that would establish a study committee charged with examining costs associated with the operation of virtual schools. None of the proposed bills were enacted, and two are pending. In addition, finance and accountability were also significant foci for legislation in 2016, with 12 bills introduced in nine states (AL, KS, LA, LA, MI, MN, NJ, OR, NC, PA, PA, PA) aimed at reducing or limiting virtual school per-pupil resource allocations (seven failed and five are pending). And lastly, bills proposed in five states (PA, GA, NC, ID, CA) aimed to limit profiteering by virtual school operators (three were adopted, one is pending and one failed). For example, in California (CA A1084) the legislature proposed a bill that would have required all charter schools, including virtual charter schools, to operate, or be operated by, only a nonprofit entity. The bill failed.

Two charts in Appendix A highlight the main themes covered by select bills addressing the three policy areas of finance and governance, instructional quality, and teacher quality. Analysis of the substance of select bills is integrated into the following sections with a focus on states exhibiting significant legislative activity and bills that address the three policy areas. Each section concludes with an assessment of how legislative developments during the past five years have moved policy closer to or further from addressing the critical policy issues outlined in our recommendations.

Finance and Governance

Our legislative analysis reveals an increase in state bills proposing task forces and oversight boards charged with overseeing the implementation challenges raised by virtual schools. Despite increased attempts to improve oversight and accountability of virtual schools by identifying funding, governance and accountability mechanisms that would allow better control, such improvements continue to challenge policymakers and practitioners. Table 1.1 reintroduces the policy issues, assumptions and empirical questions related to virtual school finance and governance. Below, we update earlier information based on new research and introduce policy issues that have surfaced since the 2015 report.

Linking Funding to Actual Costs of Virtual Schools

Policy debates persist in some states over how to fund full-time virtual schools, both because of cost differences between virtual and traditional brick-and-mortar schools and because of other policy considerations. Developing a comprehensive formula would involve gathering sound and complete data on virtual schools' costs and expenditures related to governance, program offerings, types of students served, operational costs, student-teacher ratios and other factors. In previous reports we highlighted the work of Baker and Bathon (2013)³ who developed a methodology for estimating the actual costs of virtual schools. They outline how costs in virtual schools vary widely compared to those in brick-and-mortar schools. For example, virtual schools have lower costs associated with teacher salaries and benefits, facilities and maintenance, transportation, food service, and other in-person services than their brick-and-mortar counterparts. However, virtual schools may have higher costs linked to acquiring, developing and providing the digital instruction and materials necessary for full-time

Table 1.1 Finance and Governance Questions for Virtual Schools

Policy Problem	Assumptions	Empirical Questions
Linking funding to actual costs	Lower staffing and facilities costs outweigh higher costs associated with content acquisition and technology.	<p>What are the costs associated with virtual schools and their various components?</p> <p>How do the costs change over time?</p> <p>How are costs affected by different student characteristics and contextual factors?</p> <p>What are the implications for weights and adjustments?</p>
Identifying accountability structures	Existing accountability structures provide sufficient oversight of virtual school governance and instructional delivery.	<p>What forms of alternative financial reporting might be useful to policymakers in monitoring the performance of virtual schools?</p>
Delineating enrollment boundaries and funding responsibilities	School choice with open enrollment zones will increase competition and access to higher quality schools.	<p>Are local district educators or state officials best suited to oversee virtual school operations?</p> <p>Who should ultimately be responsible for funding virtual students?</p> <p>How might state-centered vs. local funding lead to a more stable source of revenue?</p>
Limiting profiteering by EMOs	Diverse educational management and instructional services providers will increase efficiency and effectiveness of virtual instruction.	<p>How much profit are for-profit EMOs earning through the operation of virtual schools?</p> <p>What is the relationship between profits and quality instruction?</p>

virtual instruction; they also need to acquire and maintain necessary technological infrastructure. As yet, no state has implemented a comprehensive formula that ties funding allocation directly to virtual schools' actual costs and operating expenditures, despite attempts in many states to propose legislation that attempts to curb or limit funding. But there is new evidence that shows states engaging in a more methodical approach to measuring cost differentials between virtual and traditional schooling models; such efforts could directly inform policymakers.

Activity in 2015 and 2016, as in previous years, indicates that legislation has been introduced—and in some instances enacted—that revises virtual school funding; in addition, new task forces and oversight committees have begun to study cost differentials. These activities suggest a growing awareness among state policymakers that virtual school funding is an area requiring serious consideration. For example, in Kansas (KA SB7) the legislature enacted a bill in 2015 that increased funding allocations for full-time virtual school students and decreased funding for part-time virtual school students. This bill was prompted by a 2015 audit by the Kansas Legislative Division of Post Audit that involved a comprehensive costing-out of full-time and part-time virtual education models. Based on their cost estimates, auditors concluded that full-time virtual students were consistently underfunded, while part-time virtual students were overfunded.⁴ The bill enacted a 23% increase in per-pupil funding for virtual full-time equivalent students for the 2015-16 academic year, and provided an additional 7% increase for 2016-17 academic year (\$5,000 and \$5,600, respectively). Consistent with audit recommendations, the bill also replaced the previous funding formula for part-time virtual students, providing a new base funding of \$4,045 per-pupil for the 2015-16 academic year and substantially decreasing funding to \$1,700 for the 2016-17 academic year.⁵

Similarly, in 2016 the New Mexico Public Education Department issued a report to the Legislative Finance Committee analyzing the performance, cost and governance of selected charter schools.⁶ The report concluded that the two virtual charter schools operating in New Mexico (run by for-profit companies K12Inc. and Connections Academy) are not cost effective, compared to traditional and charter schools—although the conclusions were based not on a methodical or comprehensive costing-out analysis but instead extrapolated from broad comparisons of expenditures on facilities, maintenance, operations and transportation. The report's recommendations to the legislature included the development of an advisory group to “review online education issues, and create statutory requirements for virtual school funding, and student achievement expectations.”⁷ One month after the report was released, new legislation was proposed calling for the development of a state study group charged with addressing the recommendations specific to virtual charter schools advanced by the New Mexico Department of Education (NM SM90). The bill failed.

Additional attempts to curb funding or align it with actual costs of operating a virtual school are evident in other states. In Michigan (MI H5897) a pending bill proposes to reduce state foundation aid payments (for districts in which a cyber charter school is located) to one-third the amount that would otherwise be provided to non-cyber charter schools (“public school academies”). The Oregon legislature proposed a bill (OR S819, failed) that would reduce General Purpose Fund per-pupil revenue based on weighted average daily membership in schools. Percentages dropped to 80% eligibility for K-8 students in a virtual charter school, compared to 95% eligibility for the same population of students in a brick and mortar charter school. Interestingly, for K-12 students enrolled in either a virtual or brick and mortar charter, the eligibility for the same revenue stream is equal at 95%.

Legislative efforts to adjust funding for virtual schools in Kansas appear to employ a more

methodical approach to assessing real operating costs for virtual schools and adjusting funding accordingly; however, the state audit was limited in that it failed to consider some essential operational elements of an effective and efficient virtual school model. While the Kansas audit is an important step in the costing-out process, no state has yet attempted a more comprehensive assessment that details how resources are allocated and activated (including teachers, materials, hardware and software, facilities, and so on) to effect student achievement. While some states have moved to reduce funding, the changes have not been grounded in supporting evidence. Absent a wider empirical accounting of real costs associated with operating a virtual school, the legislative attempts to reconcile appropriate funding for virtual schools will continue to be fueled more by political motivation than by reliable evidence.

Identifying Accountability Structures

Accountability challenges linked to virtual schools include designing and implementing governance structures capable of accounting for expenditures and practices that directly benefit students. For example, it is important to have oversight for costs and the quality of staff, materials and instructional programs— including technological infrastructure, digital learning materials, paraprofessional services, and third-party curriculum. Oversight of other areas, such as student attendance and learning transcripts, is necessary to identify and evaluate instructional time and outcomes.

In 2015 and 2016, there was a significant increase in a new type of bill focused on student data privacy and protection. As the use of technology and online education increases, many states are responding to the need to protect student privacy, including not only information about students, but also the data they may access on the Internet or educational software they use. In 2015, 14 bills were introduced in 12 states related to students' online or digital privacy (AR, AZ, CO, CT, DE, GA, NJ, NV, OR, TX, UT, VA), and five were enacted. And in 2016, 12 bills were introduced in 11 states (CT, HI, IL, KS, MN, NE, NJ RI, UT, VA, WA), and eight were enacted. The bills aimed at: preventing online product providers who contract with districts or states from selling, renting, or disclosing student information and identifiers; prohibiting Internet providers and online product providers from using student tracking information for targeted advertising to students; and requiring districts to develop security protocols linked to recordkeeping and maintenance of student records.

Several states focused on increasing accountability and oversight of the quality of online instructional providers, the materials they use, and course quality. For example, in Arizona (AZ S1117), the legislature enacted a bill that tasks the “state board of education and state-approved charter authorizers to develop standards for the approval of online course providers.”⁸ The bill also requires all new online providers to operate on a probationary status for up to three years or until they can demonstrate students' academic improvement has met the goals outlined in their application. In Ohio (OH S298) a pending bill proposed oversight of blended learning models and a requirement that the state department of education “develop a metric for measuring student performance in schools that operate using the blended learning model”⁹ Similarly, in Colorado (CO H1222) the legislature enacted a bill that created the Statewide Supplemental and Blended Learning Program, charged with improving the administration of blended learning programs through the development of a new BOCES (Board of Cooperative Services). The bill also limits blended learning providers to nonprofit organizations and existing public local education agencies (LEA).

Below, we outline how other states are attempting to address accountability challenges related to virtual school governance as well as limits on and boundaries for virtual school enrollments.

Governance: Increasing state audits and task forces studying virtual school operations have proven important mechanisms for addressing accountability challenges unique to virtual schools. Task forces, study committees and state boards proposed in state legislation have moved beyond the funding challenges outlined above and focused on broader governance challenges. In 2015, the legislatures in Alabama, Arizona, Delaware, Virginia and Utah enacted legislation calling for the development of digital teaching and learning study commissions with a wide range of responsibilities, including: studying the expansion of technology in virtual schools and developing master plans for future virtual learning; developing and expanding professional development and high-quality professional learning standards for teachers working in virtual environments; developing regulations for virtual schools and the online instruction providers they contract with, including accreditation standards; and developing virtual learning standards for students.

Audits conducted by state legislative analysts' offices and auditor generals, either mandated by law or prompted by public calls for accountability, have uncovered important governance challenges for the virtual school sector. For example, in 2016 the Pennsylvania auditor general released an important audit that detailed the governance operations of the Pennsylvania Cyber Charter School.¹⁰ This report followed a series of reports over the last six years issued by the auditor general, who had repeatedly advanced recommendations to the legislature calling for a revision of the Pennsylvania charter school law,¹¹ calling specifically for funding caps in line with the national average, for better linkage of funding and actual costs, and for increased accountability of virtual charter school operators. In addition, the report came in the wake of numerous bills proposed over the last several years aiming at increased fiscal and governance accountability measures (all detailed in this NEPC series of reports on virtual schools)¹²—nearly all of which have failed to pass. The latest bill relevant to these important accountability challenges (PA H530, pending) calls for establishing a Charter School Funding Advisory Committee tasked with exploring the actual costs of educating a cyber charter school student.

In the case of the Pennsylvania Cyber Charter School (PCCS), the latest audit was instigated after the school's CEO was indicted in federal court in 2013 on 11 counts of conspiracy, mail fraud and tax offenses during his tenure as CEO. Among eight key findings, the report found that the board was negligent in monitoring conflicts of interest in cases where board members voted to approve vendor contracts with entities they owned or had a financial interest in. The board also contracted with entities owned by the founder and CEO of the school, including the management company and a local performing arts center. In total, during the three-year audit period, over \$155 million in public funds (nearly half of the cyber charter's total expenditures) were contracted to these two entities. The school board was also negligent in monitoring student attendance in asynchronous self-paced virtual classrooms, where unexcused absences went unrecorded and the school's attendance policy unenforced. The auditors concluded that the lax enforcement of attendance could be a contributing factor to students' low course completion rate. Lastly, the board failed to oversee the management company responsible for monitoring teacher evaluations and maintenance of teacher evaluation records, which jeopardized teachers' eligibility for a Pennsylvania Instructional II certificate after their initial three years of teaching service. The audit found deficiencies in 75% of the teacher evaluation records they reviewed.

In August 2016, the former CEO of PCCS pled guilty to tax conspiracy linked to his misuse of over \$8 million of taxpayer revenues. PCCS was due for reauthorization in 2015, but the petition to renew its charter has not been granted or denied.¹³ The public's concerns about the governance practices of PCCS, coupled with the audit conclusions and the federal indictment of the school founder and CEO, prompted the governor to address the accountability issues raised by virtual charter schools. On the same day when the CEO plead guilty, the governor announced that the Pennsylvania Department of Education would launch a new division responsible for the oversight of finance and academic performance of charter and cyber charter schools.¹⁴

Enrollment limits and boundaries: Monitoring which virtual schools provide education services and to which students, requires delineating enrollment zones and addressing capacity issues. Careful enrollment audits are also necessary to ensure that resident districts are forwarding appropriate local and state per-pupil allocations to virtual schools. Several bills in this analysis address these issues.

In Pennsylvania, a pending bill (PA S1308) would require parents who chose to enroll their student in a cyber charter school outside their "primary region" of residence to pay tuition (the Commonwealth would delineate eight geographical regions as virtual school enrollment zones). The bill does not specify the tuition amount; instead, the language indicates that the cyber school would "receive for each student an amount agreed upon between the cyber charter school and the parents or guardians of the student." In New Jersey, a pending bill (NJ A2274) proposes a graduated payment of the state portion of per-pupil revenue (general fund tax levy) on behalf of a student's school district of residence when a student chooses a virtual charter outside the district. In this plan, the virtual charter school's district "receives funding based on the school district of residence's general fund tax levy per-pupil amount and equalization aid per-pupil amount" when it enrolls students from outside district boundaries. The state would pay 100% of the general fund tax levy per-pupil amount during the first year of operation and then reduce payments by 20% each year for five years. In Louisiana, a bill (LA S149, failed) aimed to reduce by 50%, both the state and local portion of per-pupil revenue that a virtual charter school receives to educate a non-resident student.

In Colorado, a report issued by the state online education task force (created after Colorado HB 14-382 was enacted in 2014 to oversee authorizers of multi-district online schools) recommended developing new quality standards and practices as well as new mechanisms to monitor multi-district virtual schools.¹⁵ The challenges of overseeing multi-district virtual school operations had been highlighted in previous state audits, which documented deficiencies in the quality of services provided and improper accounting of student enrollment.¹⁶ In the 2014 audit¹⁷ the task force made several recommendations to the state legislature. These included developing a certification process for authorizers of multi-district virtual schools incorporating quality standards and practices developed by the task force as well as creating the state support systems and mechanisms necessary to implement the process. The task force recommendations were advanced in a bill in the state legislature (CO SB15-201) in March, 2015 and failed in the same month. A similar bill, again calling for the implementation of the task force recommendations was re-introduced in 2016 (CO S52); however, that bill also failed.

The bills outlined in this section offer examples of attempts to slow or control the scaling-up of virtual schools while policymakers look carefully at the issues virtual schools are raising, as our earlier work recommends. Overall, our analysis indicates that efforts to study virtual school governance issues in order to inform policy changes via task forces or commissions

are becoming more common across several states. Charged with identifying best practices for governance and delivery of online instruction, the publicly funded task forces and commissions may yield important information for policymakers and practitioners. We will continue to monitor and highlight developments in our future reports.

Eliminating Profiteering by Education Management Organizations

In 2015 and 2016, legislators in several states responded to the complicated accountability issues and public controversies linked to for-profit education management organizations (EMOs) providing products and services to virtual schools—including software and curriculum, instructional delivery, school management, and governance. Virtual schools that have contracts with for-profit EMOs serve more than 62% percent of full-time virtual school students.¹⁸ K12 Inc. continues to be the largest of the for-profit virtual school providers, operating 96 schools and serving approximately 97,000 students in 2016—more than 31% of the estimated 309,190 full-time virtual school students in the U.S.. K12 Inc. profits in 2016 were a net \$21 million and total revenues exceeded \$872 million,¹⁹ compared to 2015 net profit of \$43.7 million and total revenues of over \$948 million.²⁰ Total revenues have steadily increased over the last five years and peaked at \$948 million in 2015; however, profits decreased by 20% in 2015 and by nearly 50% in 2016. K12 Inc. explains that the losses in both operating income and net profits are due to “charges related to end-of-life products, software and inventory, reserves, and severance costs that totaled \$28.4 million” in 2015, and \$7.1 million in fees linked to a 2016 lawsuit settlement in California, discussed below.²¹

On the heels of several lawsuits filed against K12Inc. during the last five years,²² K12Inc. was the target of another lawsuit (*The People of the State of California v. K12 Inc. et al*, 2016) filed by the Office of the Attorney General in California (linked to an investigation by the California Bureau of Children’s Justice and the False Claims Unit). K12Inc. operates fourteen virtual academies in California, including eleven California Virtual Academy (CAVA) sites, two Insight sites, and one iQ Academy site, serving over 15,000 students across the state. The investigation by the attorney general was prompted by a May 2012 complaint filed by a CAVA teacher in Los Angeles. The whistleblower teacher alleged that CAVA teachers engaged in improper student attendance recording practices, with teachers recording student log-on times as short as one minute as meeting daily attendance requirements.²³ CAVA submitted the inflated attendance records to the state, yielding more state revenue than they were entitled to receive. Complaints in the lawsuit also alleged that K12Inc. advanced untrue or misleading statements to the public, including: overstating the academic progress of K12 students on standardized tests; improperly reporting the results of parent satisfaction surveys to parents of potential students; falsely reporting that CAVA schools offered a full range of courses necessary for admission to California public universities; overstating the quality of teaching materials; not revealing the hidden cost of computer hardware and internet access; and understating class sizes.²⁴

After the lawsuit was filed, the Office of the Attorney General conducted an investigation of CAVA practices and discovered evidence consistent with all the allegations in the complaint. The lawsuit ended in a settlement agreement between K12Inc. and the attorney general in July, 2016. In a public statement, the attorney general outlined how “K12 and its schools misled parents and the State of California by claiming taxpayer dollars for questionable student attendance, misstating student success and parent satisfaction, and loading non-profit charities with debt.”²⁵ The last element in the statement, specific to loading nonprofit charities with debt, was a CAVA practice first revealed in an expose by the San Jose Mer-

cury News in April 2016²⁶ and later investigated by the attorney general. The investigations revealed a questionable accounting practice that may have enriched K12Inc coffers. Specifically, K12Inc., which the school boards of CAVA sites contracted to manage nearly all operations and administrative functions, invoiced the nonprofit virtual charters for services at an amount exceeding what those schools could afford. When a school could not pay for invoiced services, the for-profit company would issue credits that amounted to debt for the charter schools. Then K12Inc. would report such credits as losses, reducing the for-profit company's taxable income. The San Jose Mercury News reported that "over the past 10 years, the company has doled out more than \$130 million in credits to all California schools it operates" and that losses amounted by the schools K12Inc. operates nationwide have decreased its taxable income by \$179.5 million over the last three years.²⁷ The settlement agreement issued in July 2016 ordered K12Inc. to "provide approximately \$160 million in debt relief to the nonprofit schools it manages—'balanced budget credits' that were accrued by the schools as a result of the fee structure K12 used in its contracts—and will pay \$8.5 million in settlement of all claims." In addition K12Inc. was ordered to engage 60 corrective actions linked to their governance, teaching and learning, and advertising practices.

Following the settlement, the legislature proposed a bill (CA A1084) that would require "a charter school, only operate as, or be operated by, a nonprofit public benefit corporation, a school district, a county office of education, or the University of California."²⁸ The bill's attempt to ban for-profit companies from operating charter schools failed. However, the lawsuit and the attorney general's investigation prompted the State Department of Education to contract the State Controller's Office to conduct an audit of CAVA and its related charter schools. The audit is due to be completed in March, 2017.

While legislative proposals aimed at curbing profiteering by for-profit virtual charter school operators have not been successful over the last several years, efforts by other state officials have shown some success. The actions of the attorney general in California are consistent with our recommendation calling for policy or other actions by public officials to ensure that for-profit virtual schools do not prioritize profit over student performance.

Recommendations

While it is evident that some states have engaged in efforts to address the important finance and governance challenges of operating virtual schools, additional research is needed to identify funding and governance practices that will increase accountability, identify efficient and cost-effective best practices, and eliminate profiteering. Given the evidence detailed above, we reiterate our recommendations from previous reports.

Specifically, we recommend that policymakers and educational leaders:

- Develop new funding formulas based on the actual costs of operating virtual schools.
- Develop new accountability structures for virtual schools, calculate the revenue needed to sustain such structures, and provide adequate support for them.
- Establish geographic boundaries and manageable enrollment zones for virtual schools by implementing state-centered funding and accountability systems.
- Develop guidelines and governance mechanisms to ensure that virtual schools do not prioritize profit over student performance.

Instructional Program Quality

The 2013, 2014 and 2015 reports on virtual schools in the United States asserted that accountability procedures for virtual schools must address not only their unique organizational models but also their instructional methods. Quality of content, quality and quantity of instruction, and quality of student achievement are all important aspects of program quality.³⁰ Here, we again review and update our earlier assertions. Table 1.2 reintroduces issues, assumptions and questions relevant to instructional quality.

Evidence woven throughout this section suggest an emerging trend appears in 2015 and 2016, evident in both related literature as well as in legislation: an increased focus on individualized instruction, with a shift toward mastery-based outputs rather than inputs. While the trend does not appear limited to the virtual schooling environment, it is certainly more prevalent in this sector.

Table 1.2. Instructional Program Quality Questions for Virtual Schools

Policy Problem	Assumptions	Empirical Questions
Requiring high-quality curricula	Course content offered through online curricula is an effective means for meeting individualized education goals.	How is the quality of course content best evaluated? How will the Common Core impact virtual school content and instruction?
Ensuring both quality and quantity of instruction	Instructional seat time is not an accurate measure of learning.	What is the best method of determining learning? What learning-related factors are different in an online environment? Should outcomes beyond subject-matter mastery be assessed?
Tracking and assessing student achievement	Students in virtual schools perform equal to or better than traditional peers and existing empirical work has adequately measured student achievement. Modest gains can be taken to scale.	As some states move to student choice at the course level, what do they need to implement quality assurance from multiple providers? What are effective measures of student achievement? How does course content affect student achievement?

Evaluating the Quality of Curricula

Virtual instruction holds the promise of efficient, highly individualized instruction, reaching students who seek access to quality courses. Online education has been referred to as a “disruptive innovation”³¹ and Clayton Christensen, who pioneered this concept, has predicted that by 2018, half of all high school courses will be taken online.³² Like other disruptive innovations before it, this prediction is not on track to become reality; however, the online

education industry remains at the intersection of a growth explosion and a legislative gap. Estimates currently indicate 200,000 students are enrolled in virtual schools across 200 schools in 26 states,³³ while approximately 4 million students enroll in one or more supplementary online courses each year.³⁴ Further, a 2016 independent survey finds that millennial parents support alternative educational approaches, with 92 percent believing that students should have access to tuition-free online courses,³⁵ indicating continued demand for the sector.

To comply with 21st century learning standards that require technological literacy, states range from requiring students to complete at least one online course, to requiring students to have an online “experience,” and to encouraging schools to buy digital content rather than textbooks. However, legislation in this area was limited in 2015 and 2016. Failed legislation in Mississippi (MI H392) would have authorized the use of comparable alternatives to bound paper textbooks. Failed legislation in New Jersey (NJ S3039) sought to establish a task force to study and make recommendations regarding educational technology in classrooms as, it claims, “students are digital natives who live in a global, connected world and need to be educated within this context in order to be college and career ready.”

Yet, given the variability of digital materials and formats, authorizers face numerous challenges in effectively evaluating course quality and monitoring student learning. Because the online environment is flooded with content developed by various providers—ranging from large for-profit organizations to local districts—and in various formats—ranging from individual courses to full grade-level curricula—authorizers or parents often have difficulty ensuring quality content in the current, highly decentralized environment. While growth in the online industry may serve many students who currently lack access to required, remedial or advanced courses, it leaves states scrambling to understand the trends and to provide proper guidance and legislation. According to a 2015 study by the Center on Reinventing Public Education (CRPE), “The primary approaches to regulating online charter quality relate to entry barriers and oversight. States restrict the number of online schools permitted, regulate teaching credentials and other inputs, and impose additional application and oversight requirements. Few state laws provide charter authorizers with guidance to ensure robust performance outcomes or instructional quality in the online environment.”³⁶

In 2015 and 2016, legislators devoted some attention to mandating requirements for monitoring quality curriculum and providers in online environments. Like curricula in traditional schools, online curricula should be aligned with a designated set of standards to ensure that students’ individualized online learning experiences provide the information and skills policymakers deem essential. In fact, a 2015 report states, “All states have included specific language to require that online school curricula align with state standards and assessments. This may be in response to the fact that many online charter providers operate across many states with different learning standards.”³⁷ In the 2014 report, we presented data from the International Association for K12 Online Learning (iNACOL) indicating that states are starting to review online courses to determine alignment with standards and other elements of course quality.

Additionally, in an effort to bring order to the plethora of available curricula, states are starting to focus on creating clearinghouses of reviewed and approved online courses and providers. Legislation in 2015 and 2016 addressing both standards alignment and a clearinghouse of reviewed and approved courses and providers includes the following:

- Enacted legislation in Oklahoma (OK S136) provides for a publicly available database of reviewed and approved supplemental online courses. However, the law does

not limit districts to selecting only approved supplemental courses.

- Georgia passed legislation (GA H502) that outlines the state’s goal to “maximize the number of students ... who complete prior to graduation at least one course containing online learning. This legislation also expands the options for online courses students can take to meet this goal. However, this law also eliminates the requirement for the department to provide a list of approved virtual instruction providers.
- Enacted legislation (AL S72) in Alabama requires the Department of Education to provide a repository of quality content and curriculum for virtual education.
- Maine enacted legislation (ME S435) to create a library of digital educational content and learning resources aligned with the state’s educational initiatives.
- The Michigan Virtual Learning Research Institute, authorized in MI S216, will maintain a public statewide catalog of online courses and provide recommendations and statistics on courses.
- Failed legislation in Missouri (MO H902) would have reserved the right of the state board to evaluate online courses and to ensure they aligned with state standards.
- Oregon failed to pass legislation (OR H2817) that would have allowed students to satisfy high school credits through online courses selected from an approved list compiled by the Department of Education.
- Failed legislation in Arizona (AZ H2207) would have established a master list of approved online courses and providers.
- Louisiana failed to pass legislation (LA H976) that would have updated automatic inclusion thresholds for Course Choice Program.
- Failed legislation (MI H202) in Mississippi would have created the Digital Access Learning and Virtual Instruction Program to publish a list of approved digital programs and providers.
- Pending legislation in Pennsylvania (PA H1915) would establish the Online Course Clearinghouse Restricted Account.
- Though not restricted to virtual schools, the Wisconsin Department of Public Instruction has created an online clearinghouse of teacher-vetted curricular materials in WISELearn, “a centralized location for classroom resources and professional learning resources for all Wisconsin educators.”³⁸

Ensuring Quality and Quantity of Instruction

Trends relating to the quality and quantity of virtual instruction that emerged or continued to demand legislative attention in 2015 and 2016 included: seat time, competency-based education, course-level enrollment, blended learning, dual enrollment, credit recovery and remedial coursework.

Seat Time: The national focus on higher standards, particularly a greater emphasis on critical thinking and skills-driven content, is creating ripple-effect shifts in other facets of K-12

education—especially a shift away from time, based on the Carnegie Unit, as a measure of learning.³⁹ Some states have moved away from “seat time” as an appropriate indicator of student learning, recognizing that simply being at a designated site for a particular number of hours does not guarantee student learning.⁴⁰ In fact, the 2015 *Mathematica* study finds that “three quarters (76 percent) of online charter schools include courses that are self-paced rather than tied to the calendar. One-third of online charter schools rely exclusively on self-paced courses. Consistent with the prevalence of self-paced courses, the instructional method used most frequently in online charter schools is individualized, student-driven independent study. Schools reported that teacher-guided synchronous discussion (that is, students and teachers participating in discussion at the same time) is the next most frequently used instructional method for all grades. Collaborative learning is used less frequently, and lectures are not used frequently in more than one-fourth of online charter schools at any grade level.”⁴¹ “In most online charter schools, synchronous instruction occupies less time than it does in conventional schools. The difference is dramatic: students in the typical online charter school have less synchronous instructional time in a week than students in a brick and mortar school have in a day.”⁴²

The Ohio Competency-Based Education Pilot embraces this shift away from the Carnegie Unit of time, instead granting students credit based on demonstrated mastery, not on the amount of time focused on a subject. Failed Utah legislation (UT S285) would have based funding in a Student-Centered Learning Pilot Program on successful completion of a course rather than the amount of time a student receives instruction.

Competency-Based Education: Affecting both traditional and virtual schools, competency-based education (alternately called proficiency-based learning) is another continuing trend and is closely tied to the issues of seat time and individualization. In the 2014 report, we discussed Maine’s adoption of a proficiency-based learning approach in which “time is the variable and learning driven by rigorous standards is the constant.”⁴³ The Maine Department of Education defines proficiency-based learning as “any system of academic instruction, assessment, grading and reporting that is based on students demonstrating mastery of the knowledge and skills they are expected to learn before they progress to the next lesson, get promoted to the next grade level or receive a diploma.”⁴⁴ A 2015 report cites a California requirement for online schools to create Individualized Learning Plans (ILPs) for every student [as] one approach to promoting personalized education by online educators.⁴⁵

Enacted legislation in Ohio (OH H64) established a Competency-Based Education Pilot to award grant funding for districts to design and implement competency-based models, defined as emphasizing “achievement over enrollment and encourag[ing] school districts to adequately address the personalized learning needs of each of their students.”⁴⁶ The pilot further states, “Instruction is tailored to students’ current levels of knowledge and skills, and students are not constrained to progress at the same rates as their peers. Competency-based education allows for accelerated learning among students who master academic material quickly and provides additional instructional support time for students who need it.”⁴⁷ However, Utah failed to pass legislation (UT S285) to establish a Student-Centered Learning Pilot Program that promoted competency-based instruction. Idaho legislation (ID H110) not confined to virtual education directs the process for identifying districts and charters operating as incubators for mastery education; in 2015, Ohio awarded five grants to implement competency-based programs; and the governor of Georgia recommended a transition to competency-based education.⁴⁸

Course-Level Enrollment: The issues surrounding quality and quantity of instruction

may become more complex before they become clearer. The U.S. Department of Education has confirmed that many traditional high schools across the country do not offer the breadth and depth of courses required for college preparation and admission. For example, nationwide only 50 percent offered calculus while between 10 percent and 25 percent offered no more than one of the core courses necessary in a solid math and science sequence that colleges require.⁴⁹ Further, many rural schools cannot offer a wide range of AP classes or world languages. Therefore, to fill such unacceptable gaps, traditional schools are turning to online providers and driving growth in course-level virtual enrollment. In fact, as stated above, approximately 4 million students annually enroll in one or more online supplementary courses. In 2015, Illinois passed legislation (IL SB1679) directing a review committee to make recommendations on virtual course access programs, enabling students to complete courses online.

While some states have initiated efforts to maintain an online catalog of approved courses, as discussed above, companies have also risen to the challenge. For example, *ExcelinEd* advocates Course Access, which is a blueprint for legislation and programmatic elements that states can use to expand course offerings across in class, online and blended environments from multiple providers. The policies offer students “expanded curricular opportunities and alternatives that met their unique preferences, schedules and needs.”⁵⁰ One element necessary for Course Access is that “the state (or state-approved entity, or a consortium of states with reciprocity agreements) should maintain a web-based catalog of multiple providers and courses that have been approved based on demonstrated alignment to state academic standards, adherence to national quality standards, and course effectiveness data.”⁵¹ While this approach holds promise for monitoring course quality as well as student achievement, currently only a handful of states (Arizona, Florida, Georgia, Kansas, Louisiana, Michigan, Minnesota, Oklahoma, Oregon, Texas, Utah, Washington, and Wisconsin) offer Course Access through established programs or policies.⁵²

Blended Learning: An emerging trend at the state and district level encourages the adoption of blended learning, with students learning content partly through in-class instruction with a teacher and partly through digital or online media. In Arkansas, the definition of blended learning has extended to include students not interacting in-person with a teacher but meeting online with teachers twice per week for synchronous lessons and online class discussions.⁵³ According to Education Elements, “successful blended learning occurs when technology and teaching inform each other.”⁵⁴

Perhaps the strongest advocacy of blended learning legislation is found in Colorado law (CO H1222), the “Empowering Digital Learning for All Act”; a portion is worth reporting in full:

The overwhelming influence of the rapidly evolving use of technology and the Internet will render high-quality remote digital educational content almost cost-free after a period of declining costs. ... While some school districts have been able to keep pace with the changing context of public education, most have not. The scope of the coming change in the delivery of public education services is massive and more far-reaching than the currently available construct of online learning or blended learning. The scope of the change is such that the advances that the technology revolution brings must be equally available to students throughout Colorado who choose a blended learning environment. The public education system must take advantage of this opportunity to significantly improve statewide educational equity by delivering educational services through the digital learning environment. It is likely that failure to embrace this change

in the delivery of public education services will lead to a decline in the equity and quality of the system of public education in Colorado.

The legislation increases the investment in supplemental online courses and blended learning support, and it designates an organization to develop and administer a statewide plan for implementation.

Other legislation regarding blended learning in 2015-2016 included the following:

- Failed legislation in Utah (UT S285) would have established a Student-Centered Learning Pilot Program that incorporated blended learning along with competency-based education to make individualized instruction the core of the model.
- Florida failed to pass legislation (FL H4013) that would have ended a requirement that students in a blended learning course be full-time students in the school and (FL S470) would have required the same accountability for blended learning and traditional courses.

Dual Credit: The proliferation of virtual courses has created greater opportunities for students to earn dual credit for both high school graduation and college credit. Enacted legislation in Mississippi (MI S2064) defines provisions for high school students concurrently enrolled in post-secondary courses. However, the legislative scan found little focus on dual credit.

Credit Recovery and Remedial Coursework: For students who have failed courses or fallen behind for other reasons, including illness, lack of family stability, teen pregnancy or previous substance abuse, the opportunity to make up high school credits in a non-traditional setting is critical to earning a diploma. Further, some colleges offer remedial coursework through online options for students who need to master high school concepts before tackling college-level work. Providing avenues for credit recovery and remedial coursework has driven a small portion of the legislative agenda. Failed legislation in Missouri (MO H902) would have required each district to identify high school students requiring remedial coursework to prepare for further high school courses, college, or entry-level positions.

Tracking and Assessing Student Achievement

As assessment of student achievement moves from a time-based to a demonstrated mastery-based system, documenting student proficiency becomes a primary concern. Issues requiring policy attention stem from the flexibility inherent in online education and the need for consistent performance evaluations.

State and federal policies that increase demands for demonstrated student achievement make the flexibility of online options an especially important consideration. State legislation allowing students to choose single courses from multiple providers, or to remain enrolled at a traditional school while supplementing coursework through online providers, generates a significant challenge for monitoring student achievement. State accountability systems must evolve accordingly. Ways must be found, for example, to track the combined accomplishments of students who take advantage of multiple learning options in a variety of venues. Research questions that arise include how to track outcomes from such varied providers and how to assess the contribution of a specific course to student proficiency.⁵⁵

Advocates and for-profit companies have claimed that students in virtual schools perform equal to or better than peers in traditional schools.⁵⁶ However, the limited studies on the topic indicate otherwise. For example, a 2011 Stanford University-based Center for Research on Education Outcomes (CREDO) study used a matched pair sampling methodology and found that students in virtual charters in Pennsylvania made smaller learning gains over time as compared to both their brick-and-mortar charter and traditional school counterparts.^{57,58} The 2015 CREDO study, a comprehensive analysis of achievement for students in online charter schools, is even more dire. The report finds that “the majority of online charter students had far weaker academic growth in both math and reading compared to their traditional public school peers. To conceptualize this shortfall, it would equate to a student losing 72 days of learning in reading and 180 days in math, based on a 180-day school year.”⁵⁹

However, even though the low performance of online school students suggests the need for stronger accountability, the trend in virtual schooling may be toward less state-level policy oversight. Even as more online course options are being incorporated, fewer states are changing policy to support the shift; schools and districts can easily contract with online providers outside of a policy framework.⁶⁰ Other factors further complicate efforts to measure student achievement. Consistent data have become more fragmented as states withdraw from common assessments, and parents are increasingly opting their children out of state testing.⁶¹

States are also promoting the individualization trend discussed above through accountability systems. Some states are changing “accountability mechanisms to base them on the educational trajectory of each individual student.”⁶² For example, enacted legislation in Iowa (IA S510) establishes performance metrics including student proficiency, growth, and progress toward graduation. Additionally, 2015 legislation in Utah (UT S222) directs the state board to identify achievement outcome metrics and minimum benchmarks in digital programs. In 2016, Utah (UT H277) developed a grant program to implement the proposal outlined in UT S222. Further, the Arizona Department of Education modified accountability expectations for online schools by focusing on student growth in proficiency and progress toward graduation.⁶³

The legislative scan indicated a moderate focus on enforcing quality standards for student achievement.

Recommendations

While state legislators have increased their focus on digital learning—including but not limited to virtual schools—in 2015 and 2016, they have still not kept pace with the dynamic online education marketplace. Our overall legislative analysis indicates little continued progress over the past year in proactively addressing issues related to instructional program quality. Based on the preceding analysis, we reiterate our recommendations from the previous three reports. Specifically, we recommend that policymakers and educational leaders:

- Require high-quality curricula, aligned with applicable state and district standards, and monitor changes to digital content.
- Develop a comprehensive system of formative and summative assessments of student achievement, shifting assessment from a focus on time- and place-related re-

quirements to a focus on student mastery of curricular objectives.

- Assess the contributions of various providers to student achievement, and close virtual schools and programs that do not contribute to student growth.
- Implement a nationwide longitudinal study across multiple providers and with interim data checkpoints to assess the quality of the learning experience from the student perspective.

High-Quality Teachers

As technology increasingly becomes part of the fabric of everyday life, teachers and students in all contexts need to become more skilled at integrating online resources.⁶⁴ One would be hard pressed to find a school in which technology plays no role in student learning or instructional delivery. As a result, technology use has been generally accepted as a key competency for educators, and the preparation and ongoing professional development of teachers reflects a greater emphasis on integrating technology into instruction.⁶⁵ That said, the context of virtual schooling in which students and teachers are typically separated in time and place introduces unique issues and challenges related to teachers. We still know little about how to identify quality teachers in virtual contexts, how to recruit and retain them, how to evaluate their effectiveness, and how to provide ongoing support to promote best practices. In all of these areas, practice continues to outpace the available empirical evidence.

Our previous reports have identified several policy issues, assumptions, and empirical questions that need to be answered (see Table 1.3). In this section, we revisit those topics in light of new empirical evidence and recent policy developments. We conclude with a set of recommendations.

Table 1.3. Teacher Quality Questions for Virtual Schools

Policy Problem	Assumptions	Empirical Questions
Recruiting and training qualified teachers	<p>Instructional training and professional support tailored to online instruction will help recruit and retain teachers.</p> <p>Effective teaching in a traditional environment easily translates to an online environment.</p> <p>Teacher preparation programs and district professional development programs will re-tool to support online instruction demands.</p>	<p>Can sufficient numbers of qualified online teachers be recruited and trained to ensure the ability of virtual education to offer new opportunities to rural or underserved populations?</p> <p>Which professional skills and certifications for online teachers are the same as for traditional teachers? Which are different?</p> <p>What professional development is relevant for online teachers?</p>
Evaluating and retaining effective teachers	<p>Evaluation of online teachers can mirror that of teachers in traditional settings.</p> <p>Online teachers can support a large roster of students.</p>	<p>How well do evaluation rubrics for traditional settings translate to an online environment?</p> <p>How much direct attention and time is necessary for a student to receive adequate instructional support? What are the implications for teaching load?</p>

Recruiting and Training Qualified Teachers

Despite the heavy reliance on technology and individual pacing in virtual schools, teachers continue to play an important role.⁶⁶ As a recent Evergreen report notes, “Online schools have innovated in a variety of ways, but in most cases they remain based on teacher-student interaction, and in some cases student-student interaction.”⁶⁷ The National Education Association’s *Guide to Teaching Online Courses* identifies an ongoing teacher presence and communication between and among students, teachers, and parents as key components of an effective online education environment.⁶⁸

Recent evidence on virtual schooling identifies some of the factors that influence teachers’ decisions to work in virtual schools as well as factors that virtual schools prioritize when hiring teachers. Based on survey responses from 325 online teachers, a 2015 study found that teachers working in virtual schools “tend to be self-motivated, place a high value on learning and education, and enjoy the challenge and the process of using technology for teaching.”⁶⁹ Another 2015 study comparing online charter schools and brick-and-mortar charter schools affiliated with a charter school management organization found that in both types of schools, the top hiring priority is teachers’ “willingness to work hard in support of the school’s mission.” The second most important factor in virtual schools is applicants’ certification status, while in brick-and-mortar charters it is performance on a sample lesson.⁷⁰ Given that all states require that most online teachers-of-record be certified,⁷¹ this finding suggests that there may be an undersupply of certified teachers in virtual charter schools that forces them to focus more on basic qualifications rather than other criteria emphasizing quality and effectiveness (for example, experience teaching online courses, performance teaching a sample class, or college grade point average).

Recent research on the nature of teachers' work in online schools underscores longstanding concerns about how well the requisite knowledge, skills, and dispositions needed for teaching in traditional brick-and-mortar classrooms transfer to virtual settings. A recent study reported that online charter school teachers' responsibilities are more heavily weighted toward providing individual attention to students (identifying struggling students and grading student work, for example) rather than other tasks like developing curricula, planning lessons, and providing direct instruction. Purchased curriculum packages reduce many conventional teaching responsibilities because courses tend to be pre-designed, self-paced, and involve few if any lectures.⁷² According to the study, teachers in online charter schools spend an average of six hours or fewer each week on synchronous instruction, and even this is highly variable, making it difficult to pin down the nature of teacher work in an online environment and the training and professional development needed to support that work.⁷³ Further, the study found that few teacher preparation programs offer instruction and training in the methods for online teaching, and even fewer offer student teaching placements in online instructional environments. As a result, most of the virtual school teacher respondents reported that any training that they received occurred after graduation, and most of the learning occurred on the job.⁷⁴ Ninety-two percent of online charters reported that their teachers participated in professional development, with more than half reporting online synchronous professional development sessions at least monthly. However, online professional development has been found to have a statistically significant negative correlation with student achievement growth in math.⁷⁵

Virtual school principals have surfaced as a group needing some attention by researchers and policymakers for the first time in our reports. Principals are key to school effectiveness, in their roles both as managers and as academic leaders who evaluate and provide professional development for teachers and staff. A recent study found that almost half of online charter school principals reported that they had no prior experience teaching in an online setting, which raises questions about their ability to evaluate and provide instructional support to teachers.⁷⁶

In our review of 2015-2016 legislation, we identified a number of bills intended to enhance the technological skills of teachers through preparation programs and ongoing professional development. However, virtually all of the proposed legislation applied generally to teachers in all settings, not specifically to teachers in virtual schools. Several bills involved appropriations to establish grant programs supporting the development of more technologically oriented teacher education programs. For example, a 2016 California bill (CA A 2706) that did not pass during the session, proposed appropriating \$2 million from the state's general fund to support pilot programs designed to educate teachers in more effectively integrating technology and digital resources into daily instructional activities in order to promote the "critical 21st century skills pupils need to succeed on California's next-generation online assessments." Similarly, legislation enacted in South Dakota (SD S133) established a grant program to fund the development of "teacher training and classroom access to virtual education and customized learning tools."

Other recent legislative activity indicates that lawmakers are increasingly emphasizing technology and virtual instruction in state certification and licensure programs. Again, few of these bills focused on programs specific to teachers in online schools (e.g., MN S2744 and NC H0130); rather, most of the legislation related more generally to including technology expertise in all teacher preparation programs. For example, a failed Minnesota bill (MN S2744) would have required all colleges and universities with approved teacher licensure programs to include in their preparation programs "the knowledge and skills teacher candi-

dates need to deliver digital and blended learning and curriculum and engage students with technology.” A failed Florida bill (FL H7021) focusing on reading and literacy education included requirements that teacher preparation include practice with classroom technology and online instruction. A failed bill in Virginia (VA H459) sought to require that “every person seeking initial licensure or renewal of a license demonstrate proficiency in the use of educational technology for instruction.” Several of these bills charged the State Department or Board of Education with responsibility for establishing standards and overseeing the quality of these new components of teacher preparation programs. For example, a pending New Jersey bill (NJ S437) requires all teacher certification candidates to complete a technology training program meeting State Board of Education requirements for increasing “proficiency in the understanding, use and application of educational technologies within the classroom.” A failed bill in Nebraska (NE L1026) charged the newly created Educational Technology Center in the State Department of Education with developing a “statewide instructional improvement system that supports personal learning”; the system was to include, among other things, virtual education standards and a certification process for teacher candidates who would teach in a virtual environment. While most of these teacher preparation and licensure bills failed, this legislative activity evidences a growing recognition that all teachers need to learn to use online instructional technologies effectively, which may be why legislation has typically neglected requirements specifically for teachers in virtual schools.

Virtually all of the proposed legislation applied generally to teachers in all settings, not specifically to teachers in virtual schools

Unlike legislation focused on teacher preparation and licensure, recent bills promoting ongoing professional development to improve teachers’ technological skills met greater success, although only six states (DC, ID, KS, LA, NC, and TX) require specialized professional development for online teachers.⁷⁷

While a few bills considered in the 2015 and 2016 legislative sessions did focus exclusively on those teachers (for example, MS S2064), again the majority applied to the general teacher population. Several examples illustrate the range and reach of these efforts. The Utah legislature enacted a bill (UT H277) that established a grant program to promote digital teaching and learning technologies as a mechanism to improve educational outcomes for the state’s students. The program emphasizes “high-quality professional learning” in digital teaching and learning methods. Colorado enacted a bill (CO H1222) increasing the state’s investment in supplemental online courses and blended learning as well as in professional development, mentoring, and technical assistance. The Michigan legislature enacted a bill (MI S216) that requires increasing numbers of teachers and administrators to engage in professional development focused on integrating digital technology into curricula and instruction. And finally, Pennsylvania’s legislature enacted a bill (PA H1606) establishing a grant program to support the expansion of “hybrid” learning through a variety of investments, including professional development.

As in our earlier reports, this analysis of legislative activity found little progress toward establishing and implementing requirements for the preparation, certification and ongoing professional development of teachers working in full-time virtual schools. While policy reports have made recommendations for online teacher education and licensure requirements,⁷⁸ most of the 2015 and 2016 state legislation aimed at enhancing teachers’ abilities to effectively use instructional technology applied to all teachers—a reflection of the proliferation of education technology in all types of schools. While recent research demonstrates that the responsibilities of online teachers are different than those of traditional classroom teachers, more work is needed to understand the specific roles of teachers in virtual schools and the preparation they need to be effective there. The same holds true for virtual school

principals. We also need better information on the demand for, and supply of, state certified teachers working in online environments. In the current context where demand appears to exceed supply, virtual schools are likely to prioritize credentials over quality in teacher hiring decisions.

Evaluating and Retaining Effective Teachers

The issues of teacher evaluation and retention continue to receive much attention in policy and research related to traditional brick-and-mortar schools. Our last report recognized the challenges of using conventional, albeit imperfect tools, for teacher evaluation in virtual settings. Due to factors like asynchronous instruction, limited (if any) face-to-face time, and student self-pacing,⁷⁹ neither standards-based evaluation tools with established rubrics to guide observation and evaluation of teachers' classroom performance⁸⁰ nor value-added measures based on students' growth in standardized test scores translate well to full-time virtual schools. Some recent evidence does, however, provide some indication of how virtual teachers are monitored and evaluated. Most virtual schools report that their teachers are observed by peers (58%), master teachers (59%), or administrators (93%) at least once each year, though it is not clear how these observations are conducted in an online setting. Further, administrator observation of teachers in online charter schools occurs less frequently than in brick-and-mortar charter schools.⁸¹ Existing research still offers little guidance on how best to evaluate the performance of virtual teachers, and the 2015 and 2016 legislation sessions saw no new legislative activity related to teacher evaluation in virtual schools.

Likewise, our analysis of teacher retention reveals a dearth of empirical evidence and little legislative activity. The literature on traditional classroom teachers has found that teachers who are more satisfied with their working conditions are more likely to remain in them. As a result, in past reports much of our attention to retention issues focused on factors identified in the literature as related to teacher satisfaction in virtual schools. That said, researchers have identified "a critical need to determine the job satisfaction of K-12 online teachers and identify the factors that influence satisfaction or dissatisfaction as they related to the teachers' intent to remain in the field of online teaching."⁸² One notable factor in online settings is class size, but recent evidence also identifies other elements of workload and conditions for success as relevant.⁸³ For example, teachers in the California K12 Virtual Academies have raised serious concerns about student attendance. One teacher, for example, indicated that "only a fraction of her 75 or so students regularly attend class, and she has no way of knowing if the others watch her recorded lessons."⁸⁴ This anecdotal evidence is indicative of a broader finding based on national data that virtual school instruction tends to involve a "limited number of live contact hours and a lean staffing model."⁸⁵

Generally speaking, class size and working conditions for teachers in virtual schools are not receiving policymakers' attention. On average, online charter schools continue to have substantially higher student-teacher ratios than their brick-and-mortar counterparts. The average pupil-teacher ratio in online charter schools is 30:1 compared to 20:1 in brick-and-mortar charter schools and 17:1 in traditional public schools.⁸⁶ Class sizes in online schools are highly variable with averages of 39 students per class in online elementary schools, 60 per class in middle schools, and 71 per class in high schools. Only five states (AR, CA, MN, NC, and OH) have imposed class size restrictions on online charter schools, and only one state requires individualized learning plans for all students in those schools.⁸⁷

The only 2015-2016 legislative attention to issues surrounding attendance and regular

contact between students and instructional staff was a bill enacted in North Carolina (NC H1030). It requires virtual charter schools to ensure that each student is assigned to a learning coach, who is responsible for providing “daily support and supervision of students,” ensuring “student participation in online lessons,” and coordinating “teacher-led instructional sessions and State assessments.”

Taken together, our analysis reveals new descriptive evidence on how virtual school teachers are evaluated and a broader notion of the factors that may contribute to their satisfaction (and perhaps retention). However, more empirical evidence is needed to understand how these activities are actually carried out in virtual settings (for example, how a teaching observation is conducted) and to identify how various practices might promote improved student outcomes. Largely absent from recent legislative agendas were issues of teacher evaluation, working conditions, and retention.

Recommendations

Quality teachers are a critical factor in realizing the promise of virtual education to improve both the efficiency and the equity of public education by harnessing technology’s potential to provide cost-effective, broad access to high-quality instruction. But based on our legislative analysis, we conclude that little progress has been made over the past two years on issues related to teacher quality in virtual contexts. Given the increasing recognition of instructional technology’s potential benefits, state legislatures have considered a number of bills related to the importance of educating all teachers in the effective use of technology and online resources. A number of states have enacted bills related to initial certification and, to a greater extent, ongoing professional development in these areas. That said, little attention has been given to the unique challenges related to ensuring an adequate supply of high-quality teachers in virtual schools.

Given the information above, we reiterate our recommendations from last year’s report and added to them two new topics directly related to promoting teacher quality in virtual schools: one deals with the need for data collection on staffing⁸⁸ and the other recognizes the importance of virtual school principals.⁸⁹ Specifically, we recommend that policymakers, educational leaders, and researchers work together to:

- Define certification training and relevant teacher licensure requirements specific to teaching responsibilities in virtual schools, and require research-based professional development to promote effective online teaching models.
- Address retention issues by developing guidelines for appropriate student-teacher ratios and attending to other working conditions (for example, student attendance) that may affect teachers’ decisions about where to work.
- Work with emerging research to develop valid and comprehensive teacher evaluation rubrics that are specific to online teaching.
- Identify and maintain data on teachers and instructional staff that will allow education leaders and policymakers to monitor staffing patterns and assess the quality and professional development needs of teachers in virtual schools.
- Examine the work and responsibilities of virtual school principals and ensure that those hired for these roles are prepared with the knowledge and skills to be effective, particularly with respect to evaluating teachers and promoting best practices.

Notes and References - Section III

- 1 LexisNexis® State Net® & National Conference of State Legislatures (2015/2016). Data was derived from LexisNexis® State Net® Bill Tracking Database using the keywords: *cyber, virtual, online, technology, nonclassroom-based, distance learning, digital learning and blended learning*. The keyword *blended learning* was added to the 2015 and 2016 legislative bill analysis, and was not used in previous searches of the StateNet® Bill Tracking Database.
- 2 In 2014, 131 bills were considered in 36 states; 38 were enacted, 62 failed (31 were pending at end of legislative session). In 2013, 127 bills were considered in 25 states; 29 were enacted, 7 failed (92 were pending at end of legislative session). In 2012, 128 bills were considered in 31 states; 41 were enacted and 87 failed.
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