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Virtual Schools in the U.S. 2014: Politics, Performance, Policy, and Research Evidence

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National Education Policy Center

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Virtual Schools in the U.S. 2014

Politics, Performance, Policy, and Research Evidence

Alex Molnar, Editor, University of Colorado Boulder

Executive Summary

Section I: Key Policy Issues in Virtual Schools

Luis Huerta, Teachers College, Columbia University
Jennifer King Rice, University of Maryland
Sheryl Rankin Shafer

A comprehensive analysis of all proposed and enacted virtual school legislation in 50 states during the 2012 and 2013 legislative sessions enables tracking whether legislative trends reflect a legislative focus on strengthening accountability and oversight of virtual schools.

Recommendations arising from Section I

- 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.
- Define new certification training and relevant teacher licensure requirements and continually improve online teaching models through comprehensive professional development.
- Address retention issues by developing guidelines for appropriate student-teacher ratios.

- Work with emerging research to create effective and comprehensive teacher evaluation rubrics.
- Define new certification training and relevant teacher licensure requirements and continually improve online teaching models through comprehensive professional development.
- Address retention issues by developing guidelines for appropriate student-teacher ratios.
- Work with emerging research to create effective and comprehensive teacher evaluation rubrics.

Section II: The Disconnect Between Policy and Research

Michael K. Barbour, Sacred Heart University

Despite considerable enthusiasm for full-time virtual education in some quarters, there is little high-quality research to support the practice or call for expanding virtual schools.

Recommendations arising from Section II

Based on the existing research base, it is recommended that:

- State and federal policymakers create long-term programs to support independent research and evaluation of *full-time* K-12 online learning.
- Researchers focus on collaborating with individual K-12 online learning programs to identify specific challenges that can be answered using a design-based research methodology.
- Policymakers limit the growth and geographic reach of full-time, taxpayer-funded online learning programs.
- State and federal policymakers examine the role of the parent/guardian in the instructional model of full-time online learning to determine the level of teaching support that is necessary for students to be successful.

Section III: Full Time Virtual Schools

Gary Miron, Western Michigan University
Charisse Gulosino, University of Memphis
Brian Horvitz, Western Michigan University

Strong growth in enrollment continued in this sector in 2012-2013. This report provides a census of full-time virtual school and describes the students enrolled in them. It provides

state-specific school performance ratings and a comparison of virtual schools ratings as compared with national norms.

Thirty percent of the virtual schools in 2012-13 did not receive any state accountability/performance ratings. Of the 231 schools with ratings, only 33.76% had academically acceptable ratings. On average, virtual schools' Adequate Yearly Progress (AYP) results were 22 percentage points lower than those of brick-and-mortar schools (2011-12). AYP ratings were substantially weaker for virtual schools managed by EMOs than for brick-and-mortar schools managed by EMOs: 29.6% compared with 51.1%. Based on the available data, the on-time graduation rates for full-time virtual schools was close to half the national average: 43.8% and 78.6%, respectively.

Recommendations arising from Section III

- Given the rapid growth of virtual schools, the populations they serve, and their relatively poor performance on widely used accountability measures, it is recommended that:
- Policymakers should slow or stop growth in the number of virtual schools and the size of their enrollment until the reasons for their relatively poor performance have been identified and addressed.
- Given that all measures of school performance indicate insufficient or ineffective instruction, these virtual schools should be required to devote resources toward instruction, particularly by reducing the ratio of students to teachers.
- State education agencies and the federal National Center for Education Statistics should clearly identify full-time virtual-schools in their datasets, distinguishing them other instructional models. This will facilitate further research on this subgroup of schools.
- State agencies should ensure that virtual schools fully report data related to the population of students they serve and the teachers they employ.
- State and federal policymakers should promote efforts to design new outcomes measures appropriate to the unique characteristics of full-time virtual schools

Virtual Schools in the U.S. 2014:

Politics, Performance, Policy, and Research Evidence

Introduction

Jennifer King Rice, University of Maryland
Luis Huerta, Teachers College, Columbia University

Virtual education has become a focal point for policymakers interested in expanding education choices and improving the efficiency of public education. In particular, full-time virtual schools, also known as online schools or cyber schools, have attracted a great deal of attention. Proponents argue that online curriculum can be tailored to individual students and that it has the potential to promote greater student achievement than can be realized in traditional brick-and-mortar schools. Further, lower costs—primarily for instructional personnel and facilities—make virtual schools financially appealing. Assumptions about the cost-effectiveness of virtual schools, coupled with policies that expand school choice and provide market incentives attractive to for-profit companies, have fueled a fast-growing virtual school expansion in the U.S.

This report is the second of a series of annual reports by the National Education Policy Center (NEPC) on virtual education in the U.S. The NEPC reports contribute to the existing evidence and discourse on virtual education by providing an objective analysis of the evolution and performance of full-time, publicly funded K-12 virtual schools. Specifically, the NEPC reports: describe the policy issues raised by available evidence; assess the research evidence that bears on K-12 virtual teaching and learning; and analyze the growth and performance of such virtual schools. The 2013 report presented several important findings:

- A total of 311 full-time virtual schools enrolling an estimated 200,000 students were identified; 67% of the identified students were enrolled in charters operated by Education Management Organizations (EMOs). In 2011-12, the largest for-profit operator of virtual schools, K12 Inc., alone enrolled 77,000 students.
- Compared with conventional public schools, full-time virtual schools served relatively few Black and Hispanic students, impoverished students, and special education students. In addition, on the common metrics of Adequate Yearly

Progress (AYP), state performance rankings, and graduation rates, full-time virtual schools lagged significantly behind traditional brick-and-mortar schools.

- Policymakers were facing difficult challenges in the areas of funding and governance; instructional program quality; and recruitment and retention of high-quality teachers.
    - Significant policy issues associated with funding and governance included linking funding to actual costs, identifying accountability structures, delineating enrollment boundaries and funding responsibilities, and limiting profiteering by EMOs.
    - Significant policy issues associated with instructional program quality included ensuring the quality and quantity of curricula and instruction, as well as monitoring student achievement.
    - Significant policy issues associated with the recruitment and retention of high-quality teachers included identification of appropriate skills for online teaching, designing and providing appropriate professional development, and designing appropriate teacher evaluation.
- Claims made in support of expanding virtual education were largely unsupported by high-quality research evidence. The role of political considerations in driving the expansion of virtual technologies in public education, despite a manifest lack of research support, was examined, and suggestions for the kind of research that policymakers needed were offered.

The 2013 report provided an initial set of research-based recommendations to guide policymaking on virtual education. The subsequent reports will revisit those recommendations to document the degree to which progress is being made toward more sound policies for virtual education in the U.S.

The 2014 report is organized in three major sections. Section I examines the policy and political landscape associated with virtual schooling and describes the current state of affairs related to finance and governance, instructional program quality, and teacher quality. The authors analyze to what extent, if any, policy in the past year has moved toward or away from the 2013 recommendations. Based on an analysis of legislative development across the states, they find that troubling issues continue to outpace informed policy.

Section II reviews the research relevant to virtual schools. It finds that despite considerable enthusiasm for virtual education in some quarters, there is little credible research to support virtual schools' practices or to justify ongoing calls for ever-greater expansion. The author finds: "While there has been some improvement in what is known about supplemental K-12 online learning, there continues to be a lack of reliable and valid evidence to guide the practice of full-time K-12 online learning."

Section III provides a descriptive overview of full-time virtual schools and their expansion based on data gathered from state, corporate, and organizational sources. Details on enrollment include the student characteristics of race/ethnicity, sex, free and reduced-price lunch eligibility, special education designation, ELL status, and grade level. Other information includes student-teacher ratios. In addition, details on student achievement include Adequate Yearly Progress (AYP) ratings, state ratings, and graduation rates.

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

Luis Huerta, Teachers College, Columbia University
Jennifer King Rice, University of Maryland
Sheryl Rankin Shafer

Executive Summary

This section draws from a comprehensive analysis of all proposed and enacted virtual school legislation in 50 states during the 2012 and 2013 legislative sessions. The legislative analysis provides a baseline representation of how legislators are promoting, revising and curbing evolving virtual school models. This baseline data enables us to begin tracking whether legislative trends reflect a legislative focus on the important challenges of strengthening accountability and oversight of virtual schools, specifically with respect to finance and governance, instructional quality, and teacher quality. Our analysis looks at whether legislatures are moving closer to or further from core recommendations advanced in this NECP report series.

Recommendations arising from Section I:

- 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.
- Define new certification training and relevant teacher licensure requirements[1] and continually improve online teaching models through comprehensive professional development.

- Address retention issues by developing guidelines for appropriate student-teacher ratios.
- Work with emerging research to create effective and comprehensive teacher evaluation rubrics.
- Define new certification training and relevant teacher licensure requirements[2] and continually improve online teaching models through comprehensive professional development.
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Section I
Key Policy Issues in Virtual Schools: Finance and Governance, Instructional Quality, and Teacher Quality

In the last two years, significant attention has focused on evolving virtual school models. This attention has taken the form of empirical research and analysis, legislative action across states, important legal challenges, and popular press stories. Amid this attention, policymakers have been struggling to reconcile traditional funding structures, governance and accountability systems, instructional quality, and staffing demands with the unique organizational models and instructional methods of virtual schooling.

This section of the report will revisit the critical policy issues that we introduced in the 2013 report, specifically:

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

While last year's report focused on defining these critical policy areas and presenting the emerging research evidence, this year's report focuses primarily on the legislative actions that illustrate how states are addressing evolving virtual school models. This section draws from a comprehensive analysis of all legislation on virtual schools introduced during the last two years, 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 related unanswered key empirical questions. Lastly, we revisit our policy recommendations and examine multiple data sources to gauge legislative progress toward them.

This year, we expand our analysis of policy with a new, comprehensive analysis of all proposed and enacted virtual school legislation in 50 states, during the 2012 and 2013 legislative sessions. Employing 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,* and *digital learning*. An initial search yielded more than 1,400 bills, with nearly every state considering legislation in the past two years. 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 2012, 128 bills were considered in 31 states; 41 were enacted and 87 failed. In 2013, 127 bills were considered in 25 states; 29 were enacted, 7 failed and 92 are pending.

This legislative analysis provides a baseline representation of how legislators are promoting, revising and curbing evolving virtual school models. This baseline data enables us to begin tracking whether legislative trends reflect a legislative focus on the important challenges of strengthening accountability and oversight of virtual schools, specifically

with respect to finance and governance, instructional quality, and teacher quality. Our analysis looks at whether legislatures are moving closer to or further from core recommendations that this NECP report series advance.

The myriad bills touch on a wide range of proposals. Some are relatively narrow, as in a proposal to test the feasibility of a virtual preschool curriculum (MS H 1101, 2012). Others are more general. For example, one bill allocated resources for the exploration or creation of new virtual school programs (MA H4274, 2012); others moved to link funding to actual costs and to promote increased accountability of instructional time and program quality (PA H 2341, 2012; AZ H 2781). Seven states (AZ, FL, PA, TN, UT, NC, WA) showed the most legislative activity, with eight or more bills proposed in each. Our analysis, however, focuses on the substance of bills across all states rather than relative activity within individual states.

Two charts in Appendix A highlight the main themes covered by select bills that address 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. We conclude each section with an assessment of how legislative developments during the past two years have moved policy closer to or further from addressing the critical policy issues outlined in our recommendations.

Finance and Governance

Identifying funding, governance and accountability mechanisms associated with operating virtual schools continues to be a challenge for policymakers and practitioners. This section revisits policy issues, assumptions and empirical questions related to virtual school finance and governance (see Table 1.1). We update earlier information based on new research and introduce policy issues that have surfaced since our last 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. As yet, no state has implemented a comprehensive formula that directly ties actual costs and expenditures of operating virtual schools to funding allocations.

Developing such 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. Costs may vary widely from 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

virtual instruction; they also need to acquire and maintain necessary technological infrastructure.

The challenge of identifying the actual costs of virtual schools is investigated in a new report by Baker and Bathon.[3] The study provides a comprehensive review of reports from virtual school advocates, analyzes their shortcomings, and presents two empirical case studies illustrating how costs for virtual school models might be reasonably calculated. The Top-Down model for determining virtual school costs parses out the portions of

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

infrastructure, services, instructional materials and programs, and personnel costs in traditional brick and mortar schools that may not be fully applicable in virtual school operations. The result conservatively estimates the "cost for general education services in the online environment is some 70% of the cost for comparable services in brick-and-mortar setting."[4] The Bottom-Up model engages a "by unit production costs" approach. This approach, which focuses primarily on teachers, instruction, and administrative costs, first estimates unit costs for the individual components required to deliver virtual high school programming. It then totals the costs for each component to estimate the "cost of partial or complete educational programs." The authors explain how the rates for providing these services vary in alternative delivery models. Notably, the authors caution that simply comparing costs between virtual and traditional schooling does not provide an adequate picture of the benefits and drawbacks of alternatives. Quality of outcomes must be considered as well: if lower costs lead to lesser student achievement, no cost efficiency has been gained.

This research provides important guidance for policymakers on the empirical challenges of determining appropriate funding levels for virtual schools. However, recent legislative activity provides scant evidence that policymakers are approaching the funding of virtual school models with the level of sophistication that Baker and Bathon suggest. Even so, in 2012 and 2013 several states enacted legislation that revised virtual school funding, suggesting at least a growing awareness that funding is an area requiring serious consideration. For example, Florida (FL SB 1514, 2012) created a single funding system for all online providers in which the portion of full-time-equivalent (FTE) funding for online coursework is split between the home district and the virtual provider. The prior mechanism allowed a student to take a full course load in a brick-and-mortar school along with additional courses at the Florida Virtual School (FVS). The home district kept the full state funding allotment, and the FVS received additional funding from a different budget for each course it delivered. As a result, total costs for students who added online FVS courses exceeded allocated FTE funding. Under the new system, all online providers must split the pro-rated portion of funding allotted for online course work with the home district. FVS directors claim the new funding system has led to a precipitous drop in enrollment that, coupled with a decrease in funding allotment per course, may result in losses of nearly $40 million and more than 800 staff members.[5] Other providers of virtual schools, such as the for-profit organizations K12 Inc. and Kaplan, lobbied for the legislation and now stand to benefit as all virtual school providers compete for the same level of funding for their course offerings.[6]

Other state-run virtual school programs have experienced similar decreases in funding. Virginia recently decreased state funding appropriations for the state-run virtual school by one-third, from about $3 million to $2 million, while the Kentucky Virtual Schools program experienced nearly a 10% drop in funding.[7] Yet other states have slightly increased funding. In Georgia, HB 797 (2012) established funding parity between virtual and brick-and-mortar schools by increasing the portion of state funding linked to student enrollment and student characteristics (the Quality Basic Education formula). While it also provided new supplemental funding for all charters, for the 2013-14 academic year the

average virtual school funding was less than two-thirds of the average brick-and-mortar charter school funding ($4,224 compared with $7,103). Lastly, in Pennsylvania, state legislators have proposed myriad bills in the last two years (9 bills in 2012 and 24 bills in 2013) that have attempted to increase accountability and decrease funding. For example, PA H 2341, which failed in 2012, proposed decreasing cyber school student funding by more than half, from the current average of $10,145 to a flat rate of $5,000 per pupil. All 33 virtual school bills in Pennsylvania have either failed or are pending.

Our legislative analysis reveals that no states have calculated funding by methodically determining costs for necessary components of effective and efficient virtual school models. Nor have any states adjusted funding based on a comprehensive analysis of actual cost differences between virtual and traditional models. While some states (Virginia, Kentucky and Florida, for example) have moved to reduce funding, the changes have not been grounded in evidence that could support the legislative objectives. 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

In the past two years, several state legislatures moved to improve virtual schools' accountability and governance 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 in such areas as 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.

There is growing evidence that some states are approaching virtual school accountability challenges methodically. Eleven states have proposed legislation that calls for task forces and commissions charged with wider assessment and evaluation of virtual learning models, including studies that focus on costing out virtual schools, assessing the impact of Common Core Standards on virtual schools, and analyzing virtual school governance (see AZ H 2781, 2012; AZ S 1435, 2012; CO H 1124, 2012; IA H 2380, 2011; ME S 206, 2011; MI H 5372 , 2012; MI S 222, 2013; NC H 718 , 2013; NE LR 199 , 2013; PA H 1330, 2011; OK S 267, 2013; OR D 246, 2012; VA H 1215, 2013). Only 3 of 11 states enacted legislation in 2012 and 2013 (CO, ME & MI), while eight bills in other states either failed or are pending.

In Arizona, for example, the failed bill AZ H 2781 (2012) called for a task force of state-appointed members to be charged with: identifying best practices for full time and blended learning virtual models; constructing financial reporting and accountability measures unique to virtual instruction; and developing standards for virtual instruction and curriculum. In addition, the bill detailed requirements for student instructional time and for learning logs as a tool to track average daily attendance. It also linked per-pupil

funding to successful completion of coursework and a final examination. While this bill provides a strong example of efforts to increase accountability, it did not move beyond the Arizona House Education Committee. In contrast, Michigan's MI H 5372 was enacted in 2012. It allocated $4.3 million to the Michigan Virtual University to create a center for online research and innovation. The center is charged with many tasks, including researching and designing online assessments; developing evaluation criteria for online providers; designing professional development programs for teachers, administrators and school board members; identifying best practices for online instruction; and conducting a pilot study of the Michigan Virtual School performance-based funding model, which promotes funding dependent on student performance rather than attendance.

Enrollment limits and boundaries

To monitor which virtual schools are providing substantive education services to which students, it is important to delineate enrollment zones and to address 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 serving the districts' students.

In order to allow time to consider such accountability issues, some states have called for moratoriums or limits on virtual school expansion and for limits on enrollment capacity. For example, Illinois enacted IL H 494 (2013), establishing a one-year moratorium on new virtual charter schools (including blended learning as well as full-time virtual models) in districts other than Chicago. Bill sponsor Representative Linda Chape LaVie explained that the intent of the bill was to "slow down the process to give the Legislature more time to understand virtual charter schools and lay down some ground rules" and also to protect the interest of constituents from potential abuse by large corporations.[8] The bill was a response to a 17-district consortium in Fox Valley that blocked the proposed Illinois Virtual Charter School, which would have been operated by K12 Inc.[9]

In Tennessee, efforts to curb virtual school operations were led by legislators who directly responded to a public controversy linked to the Tennessee Virtual Academy (TVA). In 2012, the Tennessee Virtual Academy operated by K12 Inc. recorded dismal student performance: TVA students ranked lower than "all 1,300 other elementary and middle schools who took the same tests."[10] In addition, news reports printed email messages from TVA administrators to teachers that ordered the deletion of failing student grades.[11] One bill (TN HB728, 2013), which would have closed all virtual schools, failed in its attempt to repeal the virtual charter school legislation passed in 2011.[12] But an enacted follow-up bill (TN S 157, 2013) caps virtual charter school enrollment to 1,500 students, limits out-of-district student enrollment to no more than 25%, and permits virtual schools to exceed the enrollment cap only when a school "demonstrates student achievement growth at a minimum level of 'at expectations' as represented by the Tennessee Value-Added Assessment System (TVASS)."[13] Similarly, in Iowa, IA S2284 (2012) installed state-wide caps for students' online course enrollment to "not more than eighteen one-hundredths of one percent of the statewide enrollment of all pupils."[14] The bill also limited open-enrollment virtual education "to no more than one percent of a sending district's

enrollment."[15] And in Massachusetts, a new law that authorizes the operation of virtual schools provides statutes that will ensure a slow scaling-up of virtual schools. Specifically, the State Board may approve no more than three virtual schools for 2013-2016 and must maintain a maximum of 10 operating virtual schools thereafter; enrollment in all virtual schools may not exceed 2% of students enrolled statewide; and, at least 5% of students enrolled in a virtual school must be residents of the sponsoring district (MA H4274, 2012).[16]

Overall, our analysis indicates that efforts to study virtual school governance issues in order to inform policy changes are moving forward in at least 3 of 11 states that have proposed related legislation. In addition to identifying best practices for online instruction, the publicly funded task forces and research centers that have been created are charged with closely examining governance and accountability to identify effective strategies for improvement. The new information that grows out of these measures, and how policymakers ultimately use it, will be highlighted in our future reports.

Our analysis also reveals that states like Illinois, Tennessee and Massachusetts are taking steps to limit enrollment across district boundaries, while also limiting school size and overall statewide enrollment. They offer examples of methodical 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.

Eliminating Profiteering by Education Management Organizations

In 2012 and 2013, legislators in several states responded to the complicated accountability issues and public controversies linked to for-profit education management organizations (EMO) that provide virtual school products and services—including software and curriculum, instructional delivery, school management, and governance. As we noted in last year's report, virtual schools that have contracts with for-profit EMOs serve more than 68% of full-time virtual school students.[17]

K12 Inc. continues to be the largest of the for-profit virtual school providers, operating 82 schools and serving approximately 87,808 students in 2013—more than one-third of the estimated 243,000 full-time virtual school students in the U.S. K12 Inc. Profits in 2013 exceeded $45 million and total revenues were $848.2 million, [18] compared with 2008 net profit of $13 million and total revenues of over $226 million,[19] amounting to nearly a 250% increase in profits and 275% increase in revenues.

In March 2012, K12 Inc. reached a settlement with its shareholders in a class action lawsuit that alleged the company had violated securities law by making false statements and omissions regarding the performance of students in K12 Inc. schools. While the settlement amounted to $6.75 million returned to investors, it also allowed K12 Inc. executives and school administrators to evade a public court trial. In the midst of the ongoing litigation, K12 Inc. was at the center of scrutiny in several states, including: Tennessee, where despite the fact that the Tennessee Virtual Academy was the lowest scoring elementary school in the state and administrators ordered teachers to delete

students' failing scores from records (as noted above), the school was allowed to continue operating[20]; Florida[21] and Georgia,[22] where schools operated by K12 Inc. were investigated for professional staff not meeting state teacher certification requirements; Idaho, where in 2013 it was revealed that in 2007, the state's largest virtual school operated by K12 Inc. had outsourced to a company in India approximately 3,500 student essays for grading.[23] K12 Inc. has also been under scrutiny for its vast lobbying efforts, hiring 153 lobbyists in 28 states in 2012-13[24] and also for using public dollars to advertise its school operations, amounting to $21.5 million in the first eight months of 2012.[25]

Efforts to curb profiteering is reflected in many bills across several states, already described above, aimed at reducing per pupil tuition allocations, capping state and school enrollments, and increasing oversight of teaching and learning mechanisms. Such efforts may increase oversight of virtual schools while also decreasing slack in margins that have proved fertile ground for profiteering. More explicit efforts to decrease exploitation are reflected in several recent bills in Pennsylvania, whose state legislature continues to be the most active in proposing virtual school legislation. In 2012, Pennsylvania proposed four bills that would limit cyber charters from using public funds for any paid media advertisement, lobbying, legislative action or consulting, as well as for bonuses or additional compensation for cyber school employees (see PA H 2220; PA H 2661; PA H 2727; PA H 2364).[26] All four bills failed. In 2013, additional pending bills in Pennsylvania attempt to further limit profiteering through the following mechanisms: PA H 984, which attempts to reduce over reporting of student enrollment by cyber charters, imposes stricter guidelines for reporting attendance between the district of residence and the cyber charter, and imposes for stiff penalties for failure to report students who drop out or are delinquent; PA H 1412, dubbed the CharterWATCH Act, which would create a searchable public database that includes all charter school expenditures, including employee salaries and payments to contractors; and five bills (PA H971, PA H980, PA H934, PA S993, PA H 1730), which attempt to regulate unreserved or unassigned fund balances and limit their carryover to a following year's budget.

Our legislative analysis reveals that Pennsylvania is active in explicitly attempting to curb efforts of educational management organizations and other providers who attempt to profit on the operation of virtual schools. However, efforts to increase expenditure transparency, monitor enrollment over reporting and limit the use of fund balances have all failed despite repeated attempts by legislators to address these issues. The failed legislative efforts might be explained by the intensive lobbying by for-profit providers like K12Inc., which operates Agora Cyber School, the state's largest virtual school serving over 8,000 students—one-fourth of all Pennsylvania virtual charter school students. According to reports by the National Institute on Money in State Politics and the Center for Responsive Politics, in 2012 K12Inc. contracted with 45 lobbyists in state capitals across the country and donated $625,000 to politicians of both parties, ballot initiatives and political associations."[27] Although they failed, Pennsylvania's attempts are consistent with our recommendation calling for policy 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 for governance, and eliminate profiteering. Given the information and experiences detailed above, we reiterate our recommendations from last year's report

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 report 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.[28] Here, we again review and update our earlier assertions. Table 1.2 outlines issues, assumptions and questions relevant to instructional quality.

Evaluating the Quality of Curricula

Virtual instruction holds the promise of efficient, highly individualized instruction. 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. Across the country, states are attempting to address this issue in a variety of ways. Colorado, for example, enacted legislation in April 2013 to expand online options for small districts and rural communities by subsidizing the centralized development and provision of online courses, professional development and technical support.[29] The goal of the legislation is to control for affordable and high-quality curricula.

Like curricula in traditional schools, online curricula should be aligned with a designated set of standards to ensure that students' individualized online learning experiences

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?

provide them with all the information and skills policymakers deem essential. One equalizer that may improve authorizers' ability to evaluate curricula could be the centralized Common Core State Standards (CCSS). While the Common Core identifies standards students must meet for states that have signed onto the initiative, it does not dictate the specific curricula that schools must use. For large multi-state online providers, developing courses that meet the Common Core standards rather than the myriad individual state standards may simplify development and evaluation. In fact, K12 Inc. states it anticipates increased efficiencies with the implementation of the Common Core as "limited resources will no longer have to be spent on revising curriculum standards for every state."[30] Susan Patrick, president and CEO of International Association for K12 Online Learning (iNACOL), expanded: "Now we can start to focus resources on high-quality curricula that are similar across 45 or 46 states. The outcome of that is to start to be able to look at online courses and modules of online courses and value-judge them on effectiveness."[31] However, no objective organizations have extensively studied the Common Core to develop a body of empirical data on the standards' use with online instructional

design and, thus, the impact on student performance. Until these data are available, the true value of the Common Core in an online environment is yet to be determined.

According to iNACOL, states are starting to review online courses to determine alignment with standards and other elements of course quality. Texas has completed this process using the iNACOL National Standards for Quality Online Courses,[32] which provides a starting point for assessing internally developed and externally acquired course content. However, iNACOL's chief operating officer, Matthew Wicks, said, "Even states that have taken those steps are mostly measuring inputs, or dimensions inherent in the course's composition, rather than outcomes, or measures of a course's effectiveness."[33] Further, states such as Washington, Ohio, Georgia, and Idaho have initiated distance-learning clearinghouses of reviewed and approved online courses.[34] Some states are considering legislation that requires review of online courses for quality standards. Maryland enacted legislation in 2012 that establishes a State Advisory Council for Virtual Learning (H 745) and "enables the State Department of Education to develop or review and approve online courses and services" (S674). In Maine, pending legislation (H 331) requires virtual charter school authorizers to review and approve courses and curricula at the beginning of each school year.

The legislative scan reveals only slight progress toward legislative requirements for monitoring quality curriculum in online environments.

Ensuring Quality and Quantity of Instruction

The national focus on higher standards, particularly a greater emphasis on critical thinking with skills driving 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.[35]

For example, 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. The Colorado Department of Education continues to promote its Next Generation Learning initiative to "ignite the unique potential of every student through the creation and delivery of dramatically personalized teaching and learning experiences" through such approaches as shifting the use of time and varying delivery methods, including blended learning.[36] Iowa proposed but ultimately failed to enact legislation (HSB 517, 2012) that allows the waiver of standards, such as a 180-day calendar and minimum daily instructional hours. Tennessee, however, enacted legislation for virtual schools (H 3062) that requires the same length of learning time as for other schools while allowing students to move at their own pace.

Affecting both traditional and virtual schools, Maine has adopted a proficiency-based learning approach in which "time is the variable and learning driven by rigorous standards is the constant."[37] 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."[38] In fact, legislation in Maine dictates that by 2018 schools will no longer award a traditional high school diploma; instead, graduation will be grounded in a proficiency-based diploma. In Iowa, legislation (SF 2284) in 2012 authorized districts to award high school credit based on demonstrated competencies. The legislation also established a competency-based task force to "redefine the Carnegie Unit into competencies, … develop student-centered accountability and assessment models, and empower learning through technology."[39]

The California legislature has continued to struggle in 2013 to find the right approach to quality and quantity in online instruction. Although the legislation ultimately failed, Governor Jerry Brown advanced virtual learning into California's educational mainstream by pushing to modify funding for asynchronous online courses (in which students and

> *Advocates and for-profit companies have claimed that students in virtual schools perform equal to or better than peers in traditional schools. However, recent studies indicate otherwise.*

teachers visit online courses at their own convenience). Under this proposal, funding would have been based on student proficiency, not average daily attendance (ADA). At the end of the learning period, the teacher would have determined if the student met the predefined learning objectives. If the objectives had been met, the school could claim ADA; if not, the state would not have approved funding.[40]

With less focus on seat time as an indicator of learning and a greater focus on proficiency, this shift may benefit online schools with their greater focus on individualized learning and pace. Increasingly, the shift of evidence of mastery from a simple counting of hours spent in a learning environment to comprehensive evaluation systems have included summative assessments supported by formative assessments in the classroom, involving alternative demonstrations of mastery such as projects, papers and portfolios.

Overall, the legislative scan indicates little attention to the overall issue of quality and quantity of instruction in an online environment. States are struggling with time apportionment, but this topic is not limited to virtual schools.

Tracking and Assessing Student Achievement

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

The flexibility that online options provide students is an especially important consideration in light of state and federal policies that increase demands for demonstrated student achievement. State legislation allowing students greater freedom 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. Ways must be found to complement traditional assessments of large groups of students at the same time with an assessment system that allows students instead to be assessed one-by-one, on individualized schedules.[41] For example, Florida legislation (CS/HB 7029) enacted in June 2013 further increases student flexibility by allowing students in one district to enroll in online courses offered by another district and by allowing them to earn credit from massive open online courses (MOOCs).[42] 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.[43]

To help resolve such issues, the industry must agree on appropriate measures of student achievement and progress. With its focus on longitudinal student growth, the Common Core assessment, scheduled for implementation in 2015 and administered online, may provide a shared measure to allow valuable comparisons of program effectiveness. For online schools and their students, the Common Core assessment likely will present simplifications as well as challenges in myriad areas. First, students participating in virtual courses will already be familiar with the process of online test-taking. One concern is that students in traditional brick-and-mortar schools may have some difficulty in the transition from paper and pencil to an online assessment environment. Will the test actually assess student mastery of content, or will results be confounded by the student's ability to manipulate the computer? Of course, students comfortable with a virtual environment will not face this challenge. However, a challenge that online schools will likely experience is the requirement for centralized proctored environments. Online schools will need to secure testing locations with enough capacity for students in each geographic region, ensure students arrive on the specified days, and provide personnel to proctor the assessments. For many schools, this will create a significant logistical and budgeting issue. For some students, to the need to appear at a centralized testing location may create a substantial transportation and financial difficulty. Despite these challenges, online advocates believe this transition will benefit virtual schools. In fact, an Education Week article eagerly claims, "Perhaps no segment of educators is more enthusiastic about the transition to the Common Core State Standards than those who work in virtual schools or in blended learning environments that mix face-to-face and online instruction."[44]

Advocates and for-profit companies have claimed that students in virtual schools perform equal to or better than peers in traditional schools.[45] However, recent studies indicate otherwise. For example, Stanford University researchers used a matched pair sampling methodology and found that students in virtual charters in Pennsylvania made smaller learning gains over time as compared with both their brick-and-mortar charter and

traditional school counterparts.[46] In response to data indicating lower student achievement, virtual school advocates have claimed that students often enter these schools further behind academically and that growth models are better indicators of actual student learning than previous standardized state tests. K12 Inc., for example, consistently points to student scores on Scantron tests: "K12 has chosen to evaluate the progress of its students using the Scantron Performance Series Assessments, which we administer to each student at the beginning and end of the academic year."[47] As clear evidence of the program's success, the company states, "For the 2011-2012 school year, students enrolled in K12-managed public schools, on aggregate, made 97% of the Scantron Norm Group gain in math and 196% of the Scantron Norm Group gain in reading."[48] However, several issues exist with the use of these tests. First, the Scantron tests are not proctored and students can start and stop the test multiple times before completion, raising serious questions regarding their legitimacy.[49] More importantly, the tests are optional. With approximately 30% of the K12 student population not participating in the test pool, the results are simply not valid. K12 Executive Chairman Nathaniel Davis admitted the data are "not as accurate as they could be" since the company compares a self-selected pool of students to the national norm.[50] The performance issues rampant in the online schooling industry have become so evident even Susan Patrick, president of iNACOL, stated: "Unless we address these quality issues that have emerged quite profoundly," the poor performance of cyber schools will "put the entire industry of education innovation at risk." [51]

The legislative scan indicates a moderate focus on enforcing quality standards for student achievement. Although the measures did not pass, Pennsylvania legislators have pursued mechanisms to require annual assessments and evaluations of virtual charter schools (H 2661). In Tennessee, failed legislation (H 3812) would have required closure of a virtual public school if administration failed to meet accountability and fiscal requirements. The enacted statewide virtual education act in Rhode Island (H 7126) offers promise of accountability measures for student achievement. So, while the results are mixed regarding enactment versus failure of passage for legislation focusing student achievement, there has been an increase in attention on this critical topic.

Recommendations

While some states have achieved small steps, our overall legislative analysis indicates little progress over the past year in proactively addressing issues related to instructional program quality. Based on the preceding analysis, we reiterate our recommendations from last year's report. 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 summative and formative 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.

High-Quality Teachers

Quality teachers are at the core of any high-quality educational program, and this is no different for online education. While virtual schools capitalize on technology in ways that often reduce the reliance on traditional classroom teachers, virtual education does not diminish the important role of teachers and, consequently, effective teachers remain a critical component of high-quality instructional opportunities for students enrolled in virtual schools. That said, the research base on virtual school teachers is thin. While a great deal of research has focused on defining teacher quality in traditional settings,[52] little is known about what constitutes teacher quality in virtual schools. In addition, researchers have recognized the importance of teacher education and ongoing professional development as critical investments in teacher effectiveness, but little empirical information exists to guide the preparation and professional development of teachers in virtual settings. Finally, recent research has provided evidence on the distribution of effective teachers across different types of schools and districts, yielding findings that inform policies related to teacher supply, recruitment, and retention in traditional schools; no parallel evidence is available for staffing virtual schools with effective teachers. In

Table 1.3. Teacher Quality Questions for Virtual Schools

Policy Problem	Assumptions	Empirical Questions
Recruiting and training qualified teachers	**Instructional training and professional support tailored to online instruction will help recruit and retain teachers.** **Effective teaching in a traditional environment easily translates to an online environment.** **Teacher preparation programs and district professional development programs will re-tool to support online instruction demands.**	**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?** **Which professional skills and certifications for online teachers are the same as for traditional teachers? Which are different?** **What professional development is relevant for online teachers?**
Evaluating and retaining effective teachers	**Evaluation of online teachers can mirror that of teachers in traditional settings.** **Online teachers can support a large roster of students.**	**How well do evaluation rubrics for traditional settings translate to an online environment?** **How much direct attention and time is necessary for a student to receive adequate instructional support? What are the implications for teaching load?**

short, while a growing body of research exists to guide teacher policy decisions in traditional schools, little evidence exists on the knowledge and skills of effective virtual school teachers, or the policies and practices that may prepare, recruit, and retain quality teachers in those settings.

Last year's report identified several policy issues, assumptions, and empirical questions that need to be answered (see Table 1.3). Our report this year revisits those topics and discusses new developments, with special attention to progress that has been made in state legislation over the last year and the areas that still need attention.

Recruiting and Training Qualified Teachers

In our 2013 report, we recognized that "the shift from a traditional classroom to a virtual setting requires sufficient numbers of new and experienced teachers who are motivated and prepared to engage in online instruction" (p. 48). One promise of virtual education is that it expands educational opportunities for students beyond what can be offered in traditional brick-and-mortar schools. However, realizing equal opportunity through online instruction requires preparing, recruiting and supporting an adequate supply of qualified teachers who are interested in teaching in an online environment.

Many unanswered questions continue to surround the issue of online teachers. Who chooses to teach in virtual schools and why? Are virtual schools attracting the teachers they want and need? What qualifications, skills and attributes are associated with effective teaching in a virtual school? How can teacher education programs prepare teachers for virtual education? How are states promoting and supporting these teacher education programs? Research is needed to identify characteristics of effective online teachers and to determine mechanisms to recruit and support teachers who will thrive in an online environment.

While we have little empirical evidence on who chooses to teach in a virtual setting and why, most researchers and educators recognize that the knowledge, skills, and abilities needed to be an online teacher are likely to be different than those needed to be a traditional classroom teacher.[53] Conversations about teacher preparation tailored to online teaching assignments are relatively new. For example, the National Association of State Directors of Teacher Education and Certification began discussing certification for online instructors only in Fall 2012.[54] However, policymakers have begun to mandate separate requirements for teachers working in digital environments. In 2006, Georgia became the first state to offer optional certification for online teaching,[55] and, as described below, other states have followed its lead.

However, recent legislative developments are limited to a handful of states. Recognizing that digital instruction requires a new and different set of skills for teachers, Minnesota enacted a 2012 bill (MN S 1528) requiring teacher preparation programs to "include the knowledge and skills teacher candidates need to deliver digital and blended learning and curriculum and engage students with technology."[56] This attention to teacher preparation in digital instruction is intended to support the state's requirement that, in order to

graduate, students must successfully complete at least one course credit that includes online learning. In addition, Virginia enacted legislation in 2012 (VA H 578) that requires the Board of Education to develop licensure criteria for teachers who teach only online courses.[57] North Carolina enacted legislation in 2013 (NC S 168, NC H 92) that "revises licensure standards and teacher education programs to require teachers seeking licensure renewal and student teachers to demonstrate competency in using digital and other instructional technologies to provide high-quality, integrated digital teaching and learning to all students."[58]

Traditional teacher preparation programs have responded to state legislation that requires special attention to online teaching. For instance, when Georgia's online teaching endorsement became effective in 2006, a number of colleges and universities in Georgia developed and now offer online teaching endorsement programs that recognize the unique challenges and opportunities associated with teaching in these settings. As noted in one program description: "The Online Teaching Endorsement program prepares candidates to plan, design, and deliver instruction in online environments for learners in P-12 settings."[59] The endorsement requires three courses, a field-based practicum, and demonstrated accomplishment of an online teacher competency checklist. Similarly, as recently as 2013, the Georgia State University College of Education offered graduate courses providing additional training to students who planned to teach online classes. As noted in an online catalogue, "being an effective online teacher presents a different set of challenges and opportunities than traditional face-to-face instruction. This program will provide students with the knowledge, skills, and abilities they need to succeed in an online learning environment."[60] However, the website for this program indicated in November 2013: "The Online Teaching Endorsement will be deactivated December 2013."[61] No clear explanation was offered for the discontinuation of the program, and its URL was later deleted.

So, over the past several years, state legislation requiring special preparation for online teachers has led to the recognition of online teaching through special endorsements and higher education programs that offer the preparation to earn those endorsements. However, while there have been some programmatic efforts to specify essential competencies, it is still not clear what specific knowledge and skills competent online teachers must have.

Beyond initial preparation, ongoing professional development is essential to keep all teachers current on curriculum and instructional practice and to retool teachers for new assignments. Professional development may be even more essential for teachers who have chosen to move into online environments because technological devices and software change so rapidly. While many virtual schools have recognized the importance of professional development for their teachers and do provide ongoing training, some states require that online schools offer professional development specifically designed for online instructors.[62]

In recent legislative developments, Maryland enacted a bill (MD H 745) in 2012 establishing a State Advisory Council for Virtual Learning in the state's Department of

Education. Assigned the responsibility to encourage and support the education of students in accordance with national standards of online learning and state law, this Advisory Council was charged to make recommendations on a number of issues, including teacher and principal professional development.[63]

North Carolina has also recognized the importance of ongoing professional development focused on using "digital and other instructional technologies to provide high-quality, integrated teaching and learning to all students." North Carolina legislation enacted in 2013 (NC S 402) appropriates almost $12 million for local grants to LEAs to support such professional development and to acquire high-quality digital content.

In sum, our legislative scan provides some evidence of positive trends: (1) a recognition that online teachers need preparation that may differ from that provided to traditional classroom teachers; (2) progress in a handful of states toward requirements for the preparation, certification, and licensure of online teachers; and (3) attention to the need for ongoing professional development for teachers teaching in virtual environments. That said, the research base on the knowledge, skills, and abilities that make online teachers effective is thin. More evidence is needed to guide these efforts. In addition, too little attention has been given to estimating the demand for online teachers. More research is needed to determine how many online instructors will need to be recruited and prepared in the near future to meet the projected demand.

Evaluating and Retaining Effective Teachers

As described in our 2013 report,

> Teacher evaluation and retention are both critical to the development and success of the nascent virtual schooling industry. Ensuring that online teachers are effective requires appropriate assessment; retaining teachers identified as effective requires that they be provided with a desirable teaching environment.[64]

Of course, the issue of teacher evaluation is not unique to virtual schools; it has become a major focal point of research and policy in brick-and-mortar schools. Currently, the two dominant approaches for gauging teacher effectiveness are (1) standards based evaluations that use established rubrics to observe and evaluate teachers' performance in the classroom,[65] and (2) value-added measures that are based on growth in the standardized test scores of a teacher's students. In some cases, the two approaches are used in tandem. This is often the case in a high-stakes policy environment in which teacher pay, placement, or continued employment is based on a teacher's performance.[66]

While the evidence base on teacher evaluation in traditional classrooms is growing, little is known about how to evaluate teachers in a virtual setting. School leaders and policymakers must consider how well teacher evaluation systems designed for traditional settings translate to a virtual environment, and it is likely to be the case that neither of the tools described above are easily transferred to virtual education. Our legislative scan suggests that state policymakers have not directly confronted the challenges of holding online

teachers accountable for their performance. While Arizona enacted legislation in 2012 (AZ H 2823) that describes a comprehensive teacher and principal evaluation system for all traditional and charter schools, the unique challenges of holding online teachers accountability were not addressed. Further, while the Louisiana state legislature considered legislation (LA H 115) in 2012 that would have established quality parameters and evaluations for virtual school teachers, that bill ultimately failed. Generally speaking, legislation on the evaluation of teachers in virtual settings has been limited at best.

Once teachers have been prepared for and identified as effective in virtual schools, a major challenge is how to retain them in those positions. While we have little information on teacher retention rates in virtual schools, some information has begun to emerge about teachers' satisfaction with teaching in virtual schools, and existing research has identified teacher satisfaction as a key predictor of teacher retention.[67] The evidence on virtual teacher satisfaction is mixed. Some research suggests that teachers in virtual environments are satisfied with their work. For instance, Archambault and Crippen's national survey of K-12 online teachers found that 63% of teachers were "positive toward their online teaching experience." While the survey item did not ask directly about satisfaction, teachers' responses categorized by the researchers as positive included "rewarding, good, enjoyable, wonderful, fulfilling, great, excellent, and exciting."[68] In the words on one teacher:

> My experience with online teaching can be described as fulfilling. I really feel that I can help each student individually. This is extremely challenging in a traditional classroom. I also enjoy the pioneering atmosphere in which we are helping create a new vision of education, a wonderful opportunity to explore the new and growing area of online education. My experience began as just a job, but has grown into a career which I have become passionate about. I feel that I am making a positive difference in the lives of the students that I come in contact with as I am able to help them achieve their educational goals. [69]

In contrast, evidence from a survey of parents and teachers in the Colorado Virtual Academy suggests "extremely low job satisfaction ratings and morale for COVA teachers."[70] Only 33% of COVA teachers reported that they were satisfied with teaching at the schools and only 61% indicated that they would likely continue as a teacher in the school next year. Only 22% reported high teacher morale at the school. Almost three-quarters of the teacher respondents noted that they are doing more administrative work than they would like, and only half indicated that they viewed teaching in the school as worthwhile and fulfilling. The report summarizes: "Teachers continue to cite high student ratios, too much emphasis on the 'business side' and testing/passing rates, lack of support from school, mismatch between family situations and the model, low pay, and long hours as reasons for low support and low job satisfaction." While some teachers expressed satisfaction in terms of flexible schedule and good colleagues, the words of one teacher respondent captures the commonly expressed concerns:

There are too many students per teacher. At the beginning of the year, I received 300+ students. This does not drop off very much by the second semester either. The school wants to "individualize" for students, but this cannot, even in theory, occur due to the untenable

student-to- teacher ratio. The school encourages "catch-up" plans for failing students that treat teachers like personal secretaries and lowers the bar for student responsibility. The school does not screen for students who would fit an online model based on past academic records and interviews. The actual instruction aspect of the school is minimum, with only an hour each week of a "real" class time. This is not even required for students. Tutor times are not taken seriously either. Most of my day is taken up by tediously grading papers rather than meaningfully engaging the students in content and skills.

While more work needs to be done to understand and reconcile findings on virtual teacher satisfaction, teaching load is a clear and consistent policy-relevant factor related to teacher satisfaction in virtual settings.

This issue surfaced in both of the studies identified above as a key concern for teachers in virtual environments. This finding is not surprising given that most online schools require that their teachers support a large roster of students. For example, in 2011, an online school in Nevada reported a pupil-teacher ratio of 60:1 compared with the school's district average of 22:1.[71] Likewise, some of the largest virtual charter schools in Pennsylvania have pupil-teacher ratios upwards of 50:1.[72] At this ratio, education leaders must examine the extent to which a teacher can truly provide the attention and time necessary for a student to receive adequate instructional support, and thus, the extent to which that teacher can impact students' lives. To address similar ratio issues, California legislation (AB 644) mandates that, for courses in which teachers and students participate at the same time, the ratio of teachers to students cannot exceed that of other programs in the surrounding district unless negotiated in a collective bargaining agreement.[73] Our legislative scan identified little activity in the area of pupil-teacher ratios during the past two years. One noteworthy exception is a law enacted in Tennessee in 2012 (TN H 3062) that "requires virtual schools and virtual education programs to maintain teacher-pupil ratios set by the state board of education."[74] Given the cost savings associated with reduced personnel in virtual settings,[75] the limited evidence of new state efforts to address the issue of teaching load in virtual schools is not surprising.

Overall, then, our legislative analysis reveals little activity around the thorny but important issues of evaluating teachers and limiting pupil-teacher ratios in K-12 virtual schools.

Recommendations

Based on our legislative analysis, we conclude that little progress has been made over the past year in attending to issues related to teacher quality in virtual schools. Given the information and experiences detailed above, we reiterate our recommendations from last year's report. Specifically, we recommend that policymakers and educational leaders:

- Define new certification training and relevant teacher licensure requirements[76] and continually improve online teaching models through comprehensive professional development.

- Address retention issues by developing guidelines for appropriate student-teacher ratios.
- Work with emerging research to create effective and comprehensive teacher evaluation rubrics.

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> The following may not be considered reasonable costs associated with the operation of the educational program offered by a charter school and a cyber charter school:
>
> (i) Any paid media advertisement, including television, radio, movie theater, billboard, bus poster, newspaper, magazine, the Internet or any other commercial method that may promote enrollment of a charter school and a cyber charter school.
>
> (ii) Any lobbying, legislative advocacy, consulting or any effort to influence Federal or State legislation or policy affecting either that charter school or cyber charter school specifically or charter schools in general.
>
> (iii) Any bonuses or additional compensation beyond the annual or termed contractual compensation for all faculty, administration and staff, including salary, benefits and any additional compensation not specifically enumerated in the contract.

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(statewide)
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Section II
The Disconnect Between Policy and Research: Examining the Research into Virtual Schooling

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Executive Summary

This section reviews the research relevant to virtual schools. While there has been some improvement in what is known about supplemental K-12 online learning, there continues to be a lack of evidence to guide the practice of full-time K-12 online learning. This section concludes that despite considerable enthusiasm for full-time virtual education in some quarters, there is little high-quality research to support the practice or call for expanding this form of virtual schools.

Recommendations

Based on the existing research base, it is recommended that:

- State and federal policymakers create long-term programs to support independent research and evaluation of *full-time* K-12 online learning. More than twenty years after the first K-12 online learning programs began, there continues to be a deficit of empirical, longitudinal research to guide the practice of K-12 online learning, particularly full-time learning. Especially critical is research on factors linked to student success and on how the profit motive of commercial providers may affect the quality of programs.
- Researchers focus on collaborating with individual K-12 online learning programs to identify specific challenges that can be answered using a design-based research methodology. This approach will provide data-driven solutions that address real problems experienced by those individual K-12 online learning programs. These solutions can also serve as a starting point when other programs experience similar challenges.
- Policymakers limit the growth and geographic reach of full-time, taxpayer-funded online learning programs. While there is little research to guide policymakers in how they regulate full-time online learning, those programs that have a managed growth and geographic focus have tended to outperform those with unlimited growth and no geographic restrictions.

- State and federal policymakers examine the role of the parent/guardian in the instructional model of full-time online learning to determine the level of teaching support that is necessary for students to be successful. If the instructional model used by full-time online learning resembles traditional homeschooling more than traditional brick-and-mortar instruction, consideration should be given to adjustments in the funding provided to full-time online learning to reflect their decreased teaching responsibilities.

Section II
The Disconnect Between Policy and Research: Examining the Research into Virtual Schooling

Introduction

> *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.*
>
> ***—K. Rice***[77]

A number of scholars have documented the absence of rigorous reviews of virtual schools.[78] Cavanaugh, Barbour, and Clark (2009) defended this state of affairs, writing that:

> in many ways, this [was] indicative of the foundational descriptive work that often precedes experimentation in any scientific field. In other words, it is important to know how students in virtual school engage in their learning in this environment prior to conducting any rigorous examination of virtual schooling.[79]

We can ask, however, "How long must we wait?" K-12 online learning began around 1991.[80] The first cyber charter school began around 1994.[81] The first supplemental online learning programs also began in the mid-1990s,[82] and proliferated considerably throughout the early 2000s.[83]

Eight years after Rice's initial assessment, the state of research into K-12 online learning has not changed.[84] While there has been some improvement in what is known about supplemental K-12 online learning, there continues to be a lack of reliable and valid evidence to guide the practice of full-time K-12 online learning. Yet it is the full-time K-12 online learning that has seen the greatest growth in recent years.[85] It's past time to insist that K-12 online learning policy, particularly when it comes to full-time programs, be driven by what is actually known based on the available research.

Research to Support K-12 Online Learning Policy—Student Performance

In its 2009 report summarizing the research into the effectiveness of K-12 online learning, the International Association for K-12 Online Learning (iNACOL) concluded, "the preliminary research shows promise for online learning as an effective alternative for improving student performance across diverse groups of students."[86] However, as Larry

Cuban outlined in NEPC's 2013 report, this claim that online learning is as effective as face-to-face instruction is comprised of "weak studies that offer little compelling evidence of enhanced student achievement."[87] Cuban's assessment is further strengthened when the nature of these studies is carefully examined.

To date, the vast majority of research comparing student performance in K-12 online learning with student performance in traditional schools has examined supplemental programs.[88] This is problematic for a number of reasons. The biggest problem—beyond the methodological issues that Cuban raised in the 2013 report—is the fact that when the majority of these studies were conducted, the population of students enrolled in supplemental K-12 online learning opportunities was a highly selective group of students.[89] One of the best descriptions of these online learners was written by Haughey and Muirhead:

> Students who do well in online programs are motivated to learn. They are self-directed and self-disciplined. They are not disenchanted with school . . . Successful online students are at their grade level. They read and write wel. . . . Online students need to be independent learners. They should be curious and able to ask for help . . . [They have or should have an] interest in technology and good computer skills.[90]

This description is certainly not representative of the average K-12 student, nor of many K-12 online learners. Yet it is representative of the nature of students included in the majority of research that has found K-12 online learning to be as effective as face-to-face instruction.

While there is little peer-reviewed research into the effectiveness of full-time K-12 online learning, there is a growing body of literature from state governments, policy think tanks, and investigative journalists. For example, the Colorado Department of Education found in 2006 that full-time "online student scores in math, reading, and writing have been lower than scores for students statewide over the last three years."[91] Five years later, an iNews Network investigation found that full-time "online student scores on statewide achievement tests are consistently 14 to 26 percentage points below state averages for reading, writing and math over the past four years."[92] These are not isolated examples.

In Wisconsin, a state audit found mixed performance in comparisons of full-time online students and students in brick-and-mortar schools. Online charter school students had higher median scores in reading, but lower median scores in math.[93] A similar audit in Minnesota found similar mixed results. Online charter school students performed at approximately the same level in reading as compared with brick-and-mortar students, but a much smaller percentage of full-time online students scored proficient in math.[94] Further, the audit found that 25% of online charter school seniors dropped out of school, compared with a statewide average of only 3%. Investigative journalists reported similar findings in Arizona, where the largest online charter schools—which together enroll 90% of all full-time online students in the state—all had lower levels of performance in mathematics and only two had performance levels in reading above the statewide

average.[95] Further, all of the state's online charter schools had lower graduation rates than the state average. Issues related to poor student performance even prompted a class action lawsuit by shareholders against one for-profit, online charter provider for inflating student results.[96]

A RAND Corporation study of charter school performance in eight states included an analysis of virtual charter schools in Ohio. The authors found that online charter school students showed significantly lower achievement gains than students in the state's brick-and-mortar charter schools.[97] Ohio also represents an interesting example of the potential bias that may be present in "research" produced by policy think tanks. While the RAND Corporation study concluded that the performance of students attending traditional charter schools was similar to the performance of students in non-charter traditional public schools, the authors' findings relative to online charter schools were quite negative. In contrast, another report the same year by the Ohio Alliance for Public Charter Schools—an "organization dedicated to the enhancement and sustainability of quality charter schools"[98]—found that online charter schools "rank higher when looking at their 'value-added' progress over one year rather than simply measuring their one-time testing performance."[99] Interestingly, two years later Innovation Ohio—a self-described progressive think tank—compared the performance of Ohio's online charter schools to their brick-and-mortar counterparts.[100] The authors found that only three of the state's 23 online charters were rated effective or better on the state report card, compared with more than 75% of the brick-and-mortar schools. Further, the authors reported that "nearly 97 percent of Ohio's traditional school districts have a higher score than the average score of the seven statewide" online charter schools (p. 4) and that the traditional charter schools had better graduation rates as well.

While this is an example of the potential skewing of data that often occurs when policy think tanks report the results of their "research," it is also a good illustration of how proponents of online charter schooling often attempt to confound measures of student performance used to highlight their gains. The use of value-added performance data by the Ohio Alliance for Public Charter Schools is an example of this selective use of possible measures. Another example of issues in measurement comes from Miron and Urschel's study of achievement in K12, Inc. online charter schools, in which the authors found that "all of the diverse measures we reviewed indicated a consistent pattern of weak performance."[101] The authors made this conclusion based largely on annual yearly progress data, which they described as the only consistent measure available to use in comparing performance of online and traditional schools. In response, Jeff Kwitowski, K12, Inc. Vice President of Public Affairs, wrote:

> AYP is not a reliable measure of school performance.... There is an emerging consensus to scrap AYP and replace it with a better system that measures academic progress and growth. K12 has been measuring student academic growth on behalf of its partner schools, and the results are strong with academic gains above the national average.[102]

The strong academic gains Kwitowski references are available in *K12® Virtual Academies Academic Performance Trends* and *2013 K12® Academic Report*.[103] However, data from Colorado—one of the minority of states that factor performance growth into the state reporting system—indicate that K12's Colorado Virtual Academy showed adequate academic growth in only one of four areas within the middle school and high school levels, and none of the four areas at the elementary school level.[104]

In Pennsylvania, the Hoover Institution-based Center for Research on Education Outcomes compared gains on the state's standardized math and reading test scores for students in the state's charter schools and for comparable students in "feeder schools" (the brick-and-mortar schools that the charter school students left).[105] The authors found that 100% of students in the full-time online schools performed significantly worse in both reading and math than students in the feeder schools. In response to the poor performance reported for their Pennsylvania school, a K12, Inc. representative stated, "the type of child now coming to an online school, 75 percent of those kids coming in are behind more than one grade level."[106] Interestingly, a study of special education students enrolled in cyber charter schools in Pennsylvania found that it mirrored the special education population in brick-and-mortar schools in that state.[107] Further, Miron and Urschel found that K12, Inc. online schools enrolled more white, more affluent, fewer English-language learner, and few special education students (i.e., all characteristics that often indicate more academically able students) than their brick-and-mortar counterparts,[108] although this national trend may not be reflective of Pennsylvania or for other cyber charter providers.

It is evident that this body of research is rife with issues. Results vary with such methodological choices as how to measure student achievement; much of the literature applies to supplemental rather than full-time offerings; findings are often over-generalized from specific to general contexts, and vice versa. Based on this decidedly mixed research, one would expect that policymakers would approach online learning cautiously. Even the authors of the U.S. Department of Education's 2009 *Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies* (one of the most often cited studies to support the growth of both supplemental and full-time K-12 online learning), advised that "caution is required in generalizing to the K–12 population because the results are derived for the most part from studies in other settings."[109] However, a cautious approach has not been the case in many jurisdictions.

For example, in 2009 the Michigan legislature passed *Public Act 205*. This legislation allowed for two online charter schools to be created in the state, limiting each to 400 students in the first year of operation and to an additional 1,000 students in the second year of operation. However, in the second year, to access these additional 1,000 students the cyber charter schools were required to enroll one student from the state's dropped-out roll for each regular student (e.g., in order to enroll a student who had attended a brick-and-mortar school during the previous school year, the cyber charter school had to re-capture a student who had officially dropped out). At the end of two years, each of the two online charter schools was required to submit a report to the State Superintendent providing data in a number of areas, including student participation and performance. The reports, or the Michigan Educational Assessment Program (MEAP), were to serve as a base

to determine future growth rates.[110] Results for the Michigan Virtual Academy indicated that in 2010, the percentage of students meeting or exceeding proficiency fell below the state average in 9 of 17 categories reported; in 2011, that percentage fell below the state average in 13 of 15 categories.[111] Similarly, results for the Michigan Connections Academy indicated that in 2010, the percentage of students meeting or exceeding proficiency fell below the statewide average in 9 of the 18 categories; in 2011, that percentage fell below the state average in 9 of 15 categories. However, before these reports had even been submitted, the legislature passed *Public Act 219*, which incrementally increased the number of online charter schools to 15 by the end of 2014 and removed any meaningful limits to the number of students to be enrolled.[112] This potential massive expansion of full-time K-12 online learning in Michigan was not justified either by the performance of the state's existing online charter schools or by the existing research into full-time online learning.

Research to Support K-12 Online Learning Policy—Funding

Another area where existing, if limited, research can provide some guidance to policymakers is how to approach funding for online learning—an area where there is more attention to full-time online alternatives. In To date, proponents of K-12 online learning have often argued that it should be funded at equal levels to brick-and-mortar education. In one case, proponents even argued that costs not only equal those of traditional schools but actually exceed them at some points. In a 2004 presentation to the Colorado State Legislature, the Colorado Cyberschool Association argued that the "cost per student [of cyber schooling] is not enormously higher than for in-class students. Over time, cybereducation will become substantially more cost-efficient."[113] The iNACOL position that "online schools should be funded within the range of brick-and-mortar school operating costs" is typical of arguments for comparable funding.[114] The organization's stance is based, in large part, on a BellSouth Foundation funded report that concluded "the operating costs of online programs are about the same as the operating costs of a regular brick-and-mortar program."[115] This conclusion, however, rests on the opinions of individuals largely representing both supplemental and full-time K-12 online learning programs. In addition, the report authors excluded from their estimates traditional schools' capital expenses and transportation costs; had those costs been included, the authors noted, "the costs of operating virtual schools would have been less per pupil than brick-and-mortar schools."[116]

Almost all other sources have found that K-12 online learning, particularly full-time K-12 online learning, costs less than traditional brick-and-mortar instruction. For example, Barbour recently detailed costs in one full-time, district-based K-12 online learning program in Michigan, the Virtual Learning Academy managed by the St. Clair County Regional Education Service.[117] After analyzing budgets posted on the academy's website, Barbour concluded that it cost 16% less in 2009-10 and was projected to cost 7% less in 2010-11 to provide full-time online learning than to provide traditional schooling. Similarly, Dodd reported that the Georgia Cyber Academy, a full-time online charter school, was able to meet Annual Yearly Progress in 2009-10 with 65% of the funding

provided to traditional schools, or $3500/student.[118] During an online presentation to the Classroom 2.0/Future of Education organization, Lisa Gillis, Director of Government Affairs and School Development for the full-time online charter provider Insight Schools, stated that during the 2008-09 school year the average per student funding in the states where Insight Schools operated was $9,760.[119] However, Insight Schools was able to operate its full-time online charter schools at 65% of traditional funding, or $6,480/student. Similar findings emerged in a study of costs in Ohio's full-time online charter schools. The Ohio Legislative Committee on Education Oversight reported that the actual cost of the five existing full-time online charter schools was $5382/student, compared with $8,437/student for traditional public brick-and-mortar schools.[120] Overall, findings suggest that full-time online learning costs approximately 65% of funding for traditional schools.

Similar results have emerged in research on supplemental programs. When considering the costs of supplemental K-12 online learning, the Florida TaxWatch Center for Educational Performance and Accountability examined student performance in and costs of the Florida Virtual School (FLVS). After examining the funding provided to the FLVS from 2002-07, authors of the Center's report concluded that the FLVS was "a credible alternative to traditional schooling as regards both student achievement outcomes and cost-effectiveness."[121] Specifically, the report found FLVS to be $284 more cost effective than brick-and-mortar education in 2003-04, and $1,048 more cost effective by 2006-07. The authors' overall conclusion was that "FLVS gets solid student achievement results at a reduced cost to the State."[122]

Moreover, evidence of lower costs comes not only from disinterested researchers and watchdog groups, but even from strong proponents of full-time, online K-12 programs. For example, a study from the Thomas B. Fordham Institute— a strong proponent of full-time online K-12 learning[123]—has reported that online learning is less expensive to provide than traditional brick-and-mortar schooling. In *The Costs of Online Learning*, the authors found that traditional brick-and-mortar education costs on average $10,000/student[124]; they found that, in contrast, full-time K-12 online learning costs between $5,100/student and $7,700/student—or between 51% and 77% of the cost of traditional brick-and-mortar schooling.

As noted in the first segment of this report, some states have begun rethinking funding for online providers. And yet, even in the face of the growing body of consistent findings, full-time online charter school providers (and the trade organizations that represent them) continue to argue in favor of equal funding. Recent legislative action in Pennsylvania is an excellent example.[125] After reports about the student achievement limitations of full-time online charter schools,[126] *Senate Bill 1085* proposes to cut the funding to the state's full-time online charter schools to approximately 60% of the funding provided to traditional brick-and-mortar schools.[127] Yet proponents of full-time K-12 online learning in Pennsylvania continue to argue against this proposed legislation, insisting that funding for their programs should be kept level with traditional brick-and-mortar schooling.[128]

Research to Support K-12 Online Learning Policy—Practice

Unfortunately, there is little in existing research to guide policy relevant to K-12 instructional practice in full-time, online programs. This is not to say that research doesn't exist, only that it is context specific or methodologically limited in other ways—and generally both (Barbour, 2013). Much of the existing research is based on studies of supplemental rather than full-time instruction, for example.

One illustration of other typical limitations comes from DiPetro, Ferdig, Black, and Preston, who authored a report on "37 best practices in teaching online."[129] Reliably identifying best practices for the online context would require such factors as a large and varied sample of K-12 online teachers, an examination of teaching practices within varied online contexts, and verification that the practices had a positive impact on student engagement or achievement. However, this study examined the perceptions of 16 online teachers with the Michigan Virtual School (MVS), identified as "effective" by the administrators of the online program themselves. There was no verification of whether the teachers actually implemented the practices that they believed to be effective, or how faithfully they might have done so. There was also no evidence as to whether the practices affected student outcomes. These issues do not make the study of no value, but it does limit the usefulness of the findings. The 37 practices outlined by DiPietro and her colleagues are likely useful pedagogical strategies for new and struggling teachers at the MVS. They are also likely useful for teachers who are in contexts similar to the MVS environment, or who are teaching students similar to those in MVS student population. And finally, these 37 practices may provide a useful starting point for researchers interested in identifying and validated best K-12 online practices. The study does not, however, provide useful guidance to policy.

Similarly, Barbour reported ten, and then seven, principles of effective online content for K-12 learners.[130] Like the research conducted by DiPietro and her colleagues, this study examined the perceptions of six online course developers with the Centre for Distance Learning and Innovation (CDLI) in Newfoundland and Labrador, Canada. As was true for the study described above, the author did not examine course content in context to determine whether the developers actually used the principles they perceived to be effective, nor did he attempt to determine whether online courses reflecting these principles were more engaging or led to better student achievement. Finally, in a separate study, Barbour and Hill found that because CDLI relied on a heavily synchronous model of instruction, its online teachers made little use of asynchronous online course content.[131] As for the research conducted by DiPietro and her colleagues, the findings on the ten/seven principles and on asynchronous course content are limited, useful primarily in a limited context, or as starting points for future research. Such studies are typical. Unfortunately, there are few large scale, longitudinal research studies presently available. In fact, there are so few, the following discussion includes nearly every one.

One effort toward larger scale analysis has been made by researchers at the University of Florida, who established the *Virtual School Clearinghouse*. This project was funded by the AT&T Foundation from 2006-2009. The project was designed to provide K-12 online

learning programs, particularly statewide supplemental programs throughout the United States, with data analysis tools, metrics and human resources for school improvement..[132] The school improvement lessons generated for 13 of those K-12 online programs were outlined in a publication entitled *Lessons Learned for Virtual Schools: Experiences and Recommendations from the Field*.[133] Similarly, the National Research Center for Rural Education Support (NRCRES) created a *Facilitator Preparation Program* designed to prepare school-based facilitators to support K-12 students enrolled in online courses.[134] Supported by an Institute of Education Sciences grant, NRCRES researchers conducted a two year, randomized controlled trial with more than 600 students in 93 rural high schools to examine the effectiveness of their *Facilitator Preparation Program*—eventually finding that facilitators who participated in the training had an increased level of student retention and student performance.[135] Finally, Barbour outlined a design-based research approach that was employed by SRI International (i.e., the external evaluators), in partnership with the Virtual High School Global Consortium (VHS).[136] Essentially, SRI International and VHS identified seven goals and focused all of their research and evaluation, as well as all of the instructional activities and professional development, on achieving these seven goals. SRI International would report, through annual evaluations[137] how VHS was doing in meeting the seven goals. Goals that the VHS did not met in one evaluation would become a specific focus of activities throughout the subsequent year (and the next annual evaluation would have a specific focus on that goal(s). In two instances, SRI International conducted goal-specific evaluations to provide an event greater focus on areas where progress was not being made.[138]

Several of the studies just described are limited in that much of the data informing them comes from supplemental rather than full-time programs. For example, the NRCRES studies, the SRI International research on the VHS global consortium, and the majority of programs included in the *Virtual School Clearinghouse* focused on supplemental K-12 online learning programs. Whether or to what extent insights might apply to full-time programs is unknown.

While research on practice in full-time K-12 online learning environments is scarce, some exists. For example, Liu and Cavanaugh examined factors affecting student academic success in a Midwestern K-12 online learning program that offered supplemental and full-time K-12 online learning opportunities.[139] The authors found that full-time online learning was particularly effective for students who spent a lot of time in the learning management system and who were not participating in a free or reduced lunch program. The authors acknowledged that this did not mean that students not described in the study should not enroll in full-time online learning, only that they would need additional levels of support in order to succeed. As the NRCRES research suggested, the presence of a local facilitator can have a significant impact with online student success.[140]

In the full-time K-12 online learning environment, such local support often comes from the parent or a learning coach, a role that was found to be critical when full-time online programs faced legal challenges in Wisconsin.[141] The importance of the learning coach is also evident in the fact that programs such as Connections Academy and Insight Schools have created substantial guides aimed at assisting parents/guardians on performing the

learning coach role to support their children.[142] In fact, the reliance of these online charter schools on the parent as a primary provider of instruction and instructional support have led some to question whether these programs are publicly-funded instances of homeschooling.[143]

Some isolated studies have probed the role of the learning coach. For example, Carol Klein's dissertation study examined the relationship between the California Virtual Academy (CAVA) program and its "home schooling constituents." Klein's study found that CAVA parents/guardians were generally satisfied with their child's online learning experience. Klein also found that CAVA parents/guardians were "well educated and… wanted a solid educational foundation for their own children."[144] Such parents are well-equipped to support the full-time K-12 online learner in the home in multiple ways. More detail on services learning coaches provide comes from a dissertation study by Lisa Hasler Waters. Examining the performance of parents of full-time online students, Hasler Waters found that they: encouraged their children, modeled potential responses, reinforced content covered earlier, provided direct instruction, adapted instructional strategies and learning content, and leveraged resources.

Interestingly, Hasler Waters also reported that these parental "learning coaches believed they and not their children's teachers were ultimately responsible for instructing their children."[145] Again, however, a limited context makes it unclear to what extent these parents may be similar to other parents of online students. For example, Borup, Graham, and Davies indicated that 40% of parents whose children were enrolled in the Open High School of Utah had no instructional interaction with their children. Further, the authors found an inverse relationship between the level of parental interaction and student achievement. This led them to speculate that the correlation "reflected parents' tendency to increase interaction levels following academic problems." [146] Liu, Black, Algina, Cavanaugh, and Dawson actually developed an instrument to measure parental involvement in K-12 online learning environments that was found to be valid and reliable in their initial study.[147] However, to date this one study with a single statewide, supplemental K-12 online learning program in the Southeast has been the only research to examine the use of this instrument.

It is important to remember, and so it bears repeating, that much of the research into full-time K-12 online learning has the same weaknesses as K-12 online learning literature in general. Most of the literature consists of unpublished dissertations,[148] which by their nature tend to be limited in a variety of ways. As a body, research on practice frequently focuses on specific contexts and often has other methodological limits, making it difficult—and unwise—to generalize based on their findings.[149]

Research to Support K-12 Online Learning Policy—For Profit Corporations

A common theme in popular media, if not in academic literature, is the role of for-profit corporations and educational management organizations (EMOs) within the cyber charter school sector. For example, Andrew Knittle noted in *The Oklahoman* that online charter

schools were receiving generous state funding—and that two of the three pending applications for new cyber charter schools were from for-profit corporations.[150] Similarly, Kalyn Belsha wrote in the Illinois *The Courier-News* about a non-profit group attempting to block the ability of a for-profit corporation to create an online charter school in the state.[151] More recently, the Pennsylvania Department of Education rejected all of the applications for new full-time cyber charter schools.[152] In the written rationale for the decision, the department questioned the independence of the "independent boards" from the for-profit corporations that would be contracted to operate the online schools.

Of primary concerns in such reports is the tension between providing a quality online school experience and the need of corporations and EMOs to maximize profit. A notable example is the crucial issue of student to teacher ratio, which is a major factor in determining overall quality of online schooling. EMOs commonly have much higher student to teacher ratios in order to reduce labor costs, which is not surprising given that their business model depends on maximizing the difference between funding and delivery cost.[153] This tension is likely reflected in EMOs' extensive public relations and lobbying efforts.

Utah is one jurisdiction where the performance for-profit and non-profit online charter schools can be compared. Mountain Heights Academy, formerly the Open High School of Utah, is a non-profit online charter school that was created based on a philosophy of "open access software and open educational resources for course delivery and content."[154] Conversely, two for-profit corporations—K12, Inc. and Connections Education, a division of Pearson Education—operate the Utah Virtual Academy and Utah Connections Academy, respectively. An examination of the Utah State Office of Education *Public School Data Gateway* indicated that for the 2012-13 school year the Mountain Heights Academy received a grade of C, while the Utah Virtual Academy received a grade of F (the Utah Connections Academy did not have enough students enrolled and/or tested to receive a grade).[155]

While this example is itself limited to a single state and only three educational entities, and *Gateway* is an imperfect measurement tool, it nevertheless raises the larger question of whether there are pervasive and significant differences in the quality of education and the level of services being provided by non-profit and for-profit online charter schools.

Researchers and policymakers need to look closely at this area to determine if public funding for schools run by for-profit corporations constitutes an investment in quality education.

Recommendations

In last year's report, Larry Cuban wrote that "the current climate of K-12 school reform promotes uncritical acceptance of any and all virtual education innovations, despite lack of a sound research base supporting claims that technology in and of itself will improve teaching and learning."[156] While Cuban did not make the distinction between supplemental

and full-time online learning, his general sentiment is still applicable to the field as a whole.

Given this reality, only slight revisions are needed to Cuban's original recommendations. Therefore, it is recommended that:

- State and federal policymakers create long-term programs to support independent research and evaluation of *full-time* K-12 online learning. More than twenty years after the first K-12 online learning programs began, there continues to be a deficit of empirical, longitudinal research to guide the practice of K-12 online learning, particularly full-time learning. Especially critical is research on factors linked to student success and on how the profit motive of commercial providers may affect the quality of programs.

- Researchers focus on collaborating with individual K-12 online learning programs to identify specific challenges that can be answered using a design-based research methodology. This approach will provide data-driven solutions that address real problems experienced by those individual K-12 online learning programs. These solutions can also serve as a starting point when other programs experience similar challenges.

- Policymakers limit the growth and geographic reach of full-time, taxpayer-funded online learning programs. While there is little research to guide policymakers in how they regulate full-time online learning, those programs that have a managed growth and geographic focus have tended to outperform those with unlimited growth and no geographic restrictions.

State and federal policymakers examine the role of the parent/guardian in the instructional model of full-time online learning to determine the level of teaching support that is necessary for students to be successful. If the instructional model used by full-time online learning resembles traditional homeschooling more than traditional brick-and-mortar instruction, consideration should be given to adjustments in the funding provided to full-time online learning to reflect their decreased teaching responsibilities.

As three of the four recommendations focus on some aspect of research, it is worth identifying several key categories where research is needed.

1. The overall performance of full-time K-12 online learning programs has been suspect, yet growth continues. However, limited research has suggested some parameters that might lead to increased success (for example, geographically focused, managed growth, and so on). Researchers should work to identify factors reliably linked to student success in full-time online learning programs.

2. It is likely that, as is true in brick-and-mortar schools, instructional design needs to be tailored to the needs of specific kinds of learners. It is important to know the characterstics of various groups of students who enroll in full-time online programs and the types of instruction and support they need to be successful. For example,

the Educational Success Prediction Instrument, which considers several independent learning variables, has been found to be a reliable predictor of K-12 online student success.[157] Researchers might investigate how student responses to this instrument might help shape individual instruction plans and support for students who do not possess the self-directed, self-regulated, self-motivated learning skills they need to succeed in an online environment.

3. The vast majority of the research into the design, delivery, and support of K-12 online learning has focused on the supplemental K-12 online learning environment. More research on strategies for the effective design, delivery and support of *full-time* K-12 online learning is crucial.

4. Finally, additional research is required to determine whether the business model of for-profit, corporate online charter schooling affects the factors that lead to a high-quality online learning experience. It is unclear, but essential to know, whether alternative management arrangements for online charter schools affect the quality of education provided.

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

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Executive Summary

This section provides a detailed overview and inventory of full-time virtual 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. Although increasing numbers of parents and students are choosing this option, we know little about virtual schooling in general, and very little about full-time virtual schools in particular. The evidence suggests that strong growth in enrollment continued in this sector in 2012-2013. K12 Inc. remains dominant in the sector and although more districts are opening their own virtual schools, these tend to have limited enrollments while the virtual schools operated by for-profit education management organizations (EMOs)

This report provides a census of full-time virtual schools. The report also describes the students enrolled in these schools, state-specific school performance ratings, and a comparison of virtual schools ratings as compared with national norms.

Current scope of full-time virtual schools:

- There were 338 full-time virtual schools identified and included in our 2012-2013 inventory. These schools enrolling nearly 243,000 students.
- Among the schools in the inventory, 64% are charter schools and 36% are operated by districts or—in a few instances—by state agencies.
- Although only 44% of the full-time virtual schools are operated by private education management organizations (EMOs), they account for 80% of all enrollments.
- Virtual schools operated by the for-profit EMOs have an average enrollment of 1,230 students while full-time virtual schools operate by nonprofit EMOs and those that operate with no EMO enroll on average 470 and 362 students, respectively.

- Among the schools in the inventory, 61% are charter schools and they account for 85% of the enrollment. School districts are increasingly creating their own virtual schools but these tend to have far fewer students enrolled.
- Relative to national public school enrollment, virtual schools substantially fewer minority students, fewer low-income students, fewer students with disabilities, and fewer students classified as English language learners. Girls are also more prevalent in virtual schools relative to other public schools.
- While the average student-teacher ratio is approximately 15 students per teacher in the nation's public schools, virtual schools report more than twice as many students per teacher. Virtual schools operated by for-profit EMOs report the highest student-teacher ratio (37 students per teacher), and the virtual schools operated by nonprofit EMOs have the lowest student teacher ratio (17.3 students per teacher).

School Performance Data:

- Most states have implemented school performance ratings or scores. These usually are based on a variety of measures that are then combined to arrive at an overall evaluation of school performance.
- Thirty percent of the virtual schools in 2012-13 did not receive any state accountability/performance ratings. Of the 231 schools with ratings, only 33.76% had academically acceptable ratings.
- Independent virtual schools that do not have EMOs were more likely to receive an acceptable rating than virtual schools operated by private EMOs: 36% compared with 31.18%.
- On average, virtual schools' Adequate Yearly Progress (AYP) results were 22 percentage points lower than those of brick-and-mortar schools (2011-12). AYP ratings were substantially weaker for virtual schools managed by EMOs than for brick-and-mortar schools managed by EMOs: 29.6% compared with 51.1%.
- Only 157 virtual schools reported a score related to on-time graduation in 2012-13. Based on the available data, the on-time graduation rates for full-time virtual schools was close to half the national average: 43.8% and 78.6%, respectively.

Recommendations

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

- Policymakers should slow or stop growth in the number of virtual schools and the size of their enrollment until the reasons for their relatively poor performance have been identified and addressed.
- Given that all measures of school performance indicate insufficient or ineffective instruction, these virtual schools should be required to devote resources toward instruction, particularly by reducing the ratio of students to teachers.
- State education agencies and the federal National Center for Education Statistics should clearly identify full-time virtual-schools in their datasets, distinguishing them other instructional models. This will facilitate further research on this subgroup of schools.
- State agencies should ensure that virtual schools fully report data related to the population of students they serve and the teachers they employ.
- State and federal policymakers should promote efforts to design new outcomes measures appropriate to the unique characteristics of full-time virtual schools.

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

Although there is a notable lack of credible research evidence related to online education—especially evidence on full-time programs, as noted in earlier sections of this report—an increasing number of parents and students are opting for full-time online options. In addition, many states have adopted legislation permitting full-time virtual schools or removing the caps that once limited their growth. Despite such apparent enthusiasm for full-time online schools, information on how they are functioning has been sorely lacking, with much of what is known coming from investigative reporters rather than academic researchers. No information has been available, for example, on such basic questions as the number of full-time virtual elementary and secondary schools operating, the number of students enrolled in them, or the rate at which they are expanding.

To fill this information gap, this section offers a unique inventory of full-time virtual schools. The inventory, initiated in this NEPC report series as a first research-based effort to track developments nation-wide, helps identify which students full-time online schools are serving, how well the schools are performing, and how quickly their numbers are expanding or contracting. Questions we seek to answer include:

- How many full-time virtual schools operate in the U.S.? How many students do they enroll?
- What are the demographic characteristics of students enrolled in full-time virtual schools? Within individual states, how do demographic data differ for students enrolled in virtual schools and those enrolled in brick-and-mortar schools?
- How do full-time virtual schools perform in terms of student achievement relative to other public schools?

Student demographics reported here include grade level, ethnicity, gender, socioeconomic status, special education status, and English language learning status. Data on school performance includes a comparison of aggregate performance ratings and national norms.

Building on last year's report, we have updated the inventory with available data for the 2012-13 academic year. In addition, we have provided details on specific schools in Appendices B and C, which can be downloaded from the NEPC website: http://nepc.colorado.edu/publication/virtual-schools-annual-2014.

Data Sources, Selection Criteria and Aggregation Calculations

The findings presented below are based on publicly available data, collected, audited, and warehoused by public authorities.

The scope of this inventory is limited to full-time, public elementary and secondary virtual schools serving U.S. students. These include virtual schools operated by for-profit and nonprofit Education Management Organizations (EMOs) as well as virtual schools operated by states or districts. Private virtual schools (supported by a private organization or individual) are excluded. Also excluded are schools offering a combination of full-time virtual programs and blended programs, unless it was possible to separate data for the full-time virtual school component.

Schools were typically identified by the unique school ID code assigned by the National Center for Education Statistics (NCES). This criterion helped identify and exclude smaller programs operated by districts, or schools not intended to be full-time virtual schools. That is, we worked to eliminate programs that simply offer an extensive menu of individual course options but do not function as schools.[158] We also exclude hybrid schools, which employ both face-to-face and online instruction. Relatively new schools (those opening in 2011 or more recently) were identified by the unique building or school ID codes assigned by the relevant state education agencies. We selected online schools with enrollment of more than 10 students.[159] Careful restriction of schools to be included allows for more confidence in attributing various outcomes to specific types of schools.

In applying selection criteria, we identified scores of virtual schools or programs that did not meet our criteria. In preparing our first report, we initially identified close to 100 schools that we eventually excluded because no enrollment data was available, or because we determined that they were based in traditional schools and data could not be disaggregated. This year, the same was true for additional 62 schools.

The primary sources for total enrollment and school performance data were state-level datasets and school report cards for the 2012-13 school year. Data for grade level enrollment, race-ethnicity and sex were obtained from NCES and represent the 2010-11 school year, which is 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.

Incomplete demographic 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 are rather complete, the special education data are not. This was particularly problematic in states where charter schools are not considered Local Education Authorities or districts, and thus did not have a legal responsibility to provide special education services. Also, some states combine charter

school data with local district data, which makes it impossible to parse the numbers for only full-time virtual schools.

Comparison groups. National aggregate results for all public schools provide the base for several comparisons in this report, which profiles virtual schools in 30 states. 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 30 states represented are among the nation's 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 schools, although it constitutes a relatively small subset.

Instability in virtual schools. Full-time virtual schools are rapidly evolving; currently, the number of such schools, their demographic composition, and their performance data could vary from the 2010-11 demographic data and the 2012-13 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 Schools

While many types of online learning are expanding, full-time virtual schools are experiencing notable growth. They are not simply a means to supplement and expand the courses available in traditional brick-and-mortar schools. Instead, they are being used to expand school choice, concurrently advancing privatization, entrepreneurism and private financial investment. With key providers lobbying legislatures vigorously and national organizations promoting school choice, virtual schooling now has a firm foothold: 30 states and the District of Columbia allow full-time virtual schools to operate, and even more states allow, or in some cases require, one or more courses to be delivered online to public school students. Appendix B details student enrollment by state.

For the 2012-13 academic year, we identified 338 full-time virtual schools,[160] enrolling over 243,000 students (see Appendix C for a list of identified schools). This number represents 21.7% increase in enrollment from 2011-12, when 311 schools were included and these enrolled just under 200,000 students. Some 27 schools included in our 2011-12 figures were excluded in 2012-13 because they no longer met inclusion criteria; for example, some closed, others reported no enrollment. In 2012-13, we identified an additional 54 new full-time virtual schools that met our inclusion criteria, and this brought the total number of full-time virtual schools up to 338.

Frequently, full-time online schools are organized as charter schools and operated by private EMOs. In total 44% of all full-time virtual schools were operated by private EMOs and they account for 72% of all enrolled students. This is an increase in market share

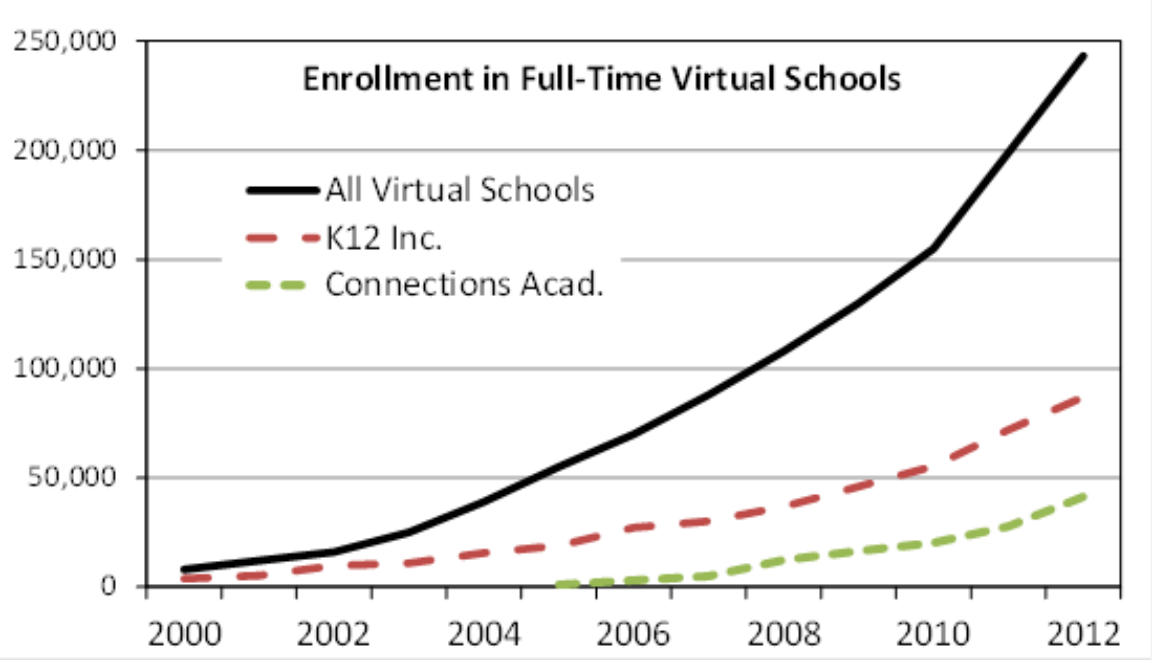

Figure 3.1. Estimated Enrollment Trends in Full-Time Virtual Schools

controlled by private EMOs since 2011-12, when they operated 41% of all virtual schools and enrolled 67% of students. In addition to the schools that are directly operated by private EMOs, it is worth noting that many district-operated virtual schools hire the large private EMOs to provide curriculum, a web-based learning platform, and other select services. Among the schools in this inventory, 64% are charter schools and 36% are operated by districts or—in a few instances—by state agencies. This distribution of schools between charters and districts is unchanged.

Figure 3.1 illustrates the estimated enrollment growth in full-time virtual schools over the last 12 years. 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. The International Association for K-12 Online Learning (iNACOL) typically reports much higher estimates, but those estimates seem to include other types of virtual instruction—blended or hybrid schools, for example.

Figure 3.1 also illustrates the proportion of students in full-time virtual schools enrolled in schools operated by K12 Inc. and Connections Academies, the two largest for-profit EMOs. K12 Inc. schools account for 36% of all enrollments in full-time virtual schools, and Connections Academies account for 17% of all enrollments. Together, these two companies account for 53% of all enrollments in 2012-13. Their overall percentage of full-time virtual school enrollments has been increasing gradually each year.

Although virtual schools still account for a relatively small portion of the overall school choice options in the U.S., they now constitute one of the fastest-growing forms of school

choice. It is important to note that virtual schools, as a category of school choice, overlap with both homeschooling and charter schools. Most virtual schools are organized as charter schools, although an increasing number of district and state education agencies are now starting full-time virtual schools.

Table 3.1. Numbers of Virtual Schools and Students in 2012-13

	Schools	Students	Percent of all Enrollment	Average Enrollment Per School
For-profit EMO	138	169,694	69.74%	1,230
Nonprofit EMO	11	5,167	2.12%	470
Independent	189	68,466	28.14%	362
Total	338	243,327	100%	720

Private for-profit EMOs have played an important role in expanding the number of virtual schools, operating 95 on behalf of charter school and district school boards in 2011-12, and 138 in 2012-13 (see Table 3.1), an addition of 43 schools in a single year. K12 Inc. is by far the largest EMO in this sector. In 2011-12, K12 Inc. alone operated 81 full-time virtual schools enrolling just under 86,000 students. Connections Academies is the second largest for-profit operator, with 25 schools and more than 41,000 students in 2011-12. Note that we include here only those schools where the provider has full control and responsibility for the virtual school and its educational program. The role of some large for-profit EMOs in public virtual schools is actually larger than illustrated here, because many of the district-operated virtual schools subcontract to K12, Inc. and Connections Academies to provide online curriculum, the learning platform, and other support services. In contrast, nonprofit EMOs showed only a small increase: only two full-time virtual schools, from 9 in 2011-12 to 11 in 2012-13. Most of the growth in full-time online offerings, then, is due to expansion in the for-profit sector.

Individual online schools operated by the for-profit EMOs are very large, with an average enrollment of 1,230 students (Table 3.1). In contrast, the average enrollment in the schools operated by nonprofits was considerably smaller, 470 students per school. Independent virtual schools (those public virtual schools with no private EMO involvement) have the smallest average school size, 362 students per school.

A number of other EMOs have emerged to operate full-time virtual schools, such as Insight Schools and Kaplan Virtual Education—but K12 Inc. has now acquired these two for-profit companies. The largest nonprofit EMO, Roads Education Organization, operates only four full-time virtual schools. More expansion is coming from some EMOs that formerly operated only brick and mortar schools but are now expanding to include full-time virtual schools. These include Edison Schools Inc., Leona Group LLC., Mosaica Inc., and White Hat Management. Given the relatively lucrative circumstances[161] under which full-time

virtual schools can operate, it is likely that more for-profit EMOs will be expanding their business models to include full-time virtual schools.

Student Characteristics

To provide context for school performance data comparisons discussed later in this report, following is an analysis of student demographics.

Race-Ethnicity

Aggregate data from full-time virtual schools look rather different from national averages in terms of student ethnicity. Three-quarters of the students in virtual schools are white-non-Hispanic, compared with the national mean of 54% (see Figure 3.2). The proportion of Black and Hispanic students served by virtual schools is noticeably lower than the national average. Only 10.3% of the virtual school enrollment is Black while 16.5% of all public school students are Black. An even greater discrepancy is found among Hispanic students, who comprise only 11% of the virtual school students but 23.7% of all public school students. Because virtual schools have a large presence in states with large Hispanic populations, such as Arizona, California, and Florida, this finding is surprising. It appears that virtual schools are less attractive to Hispanics, or perhaps that virtual schools are doing less outreach or marketing to this population. This may also be due to evidence that suggests lower success rates for minority populations in online schooling.[162] The data we collected from state sources for 2011-12 and 2012-13 was more incomplete than the 2010-11 data collected from the National Center for Education Statistics (NCES). [163] Nevertheless, the distribution of students by race/ethnicity was largely unchanged except for a slight (2-3 percentage points) increase in minority students.

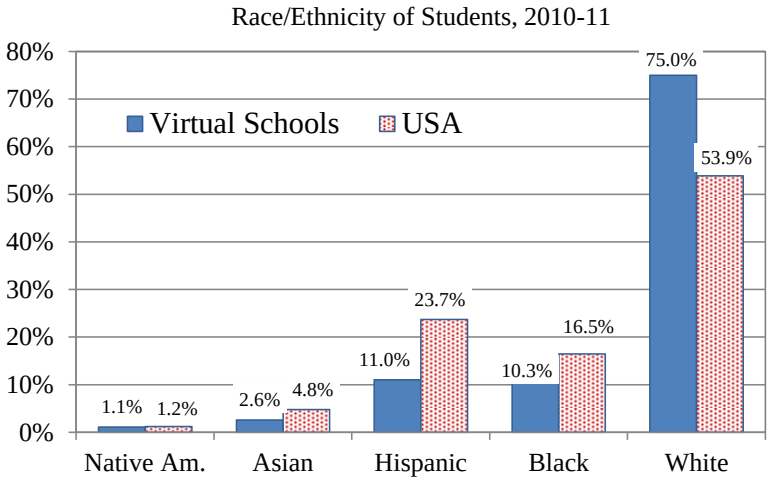

Figure 3.2. Race/Ethnicity of Students in Virtual Schools Compared with National Averages, 2010-11

Sex

While the population in the nation's public schools is nearly evenly split between girls and boys, the population of students in virtual charter schools overall skews slightly in favor of girls (52.5% girls and 47.5% boys) (see Figure 3.3). Virtual schools catering to students in elementary and middle school tend to be more evenly split between boys and girls, but high schools are likely to have a larger proportion of boys. Charter schools and for-profit EMO-operated schools tend to have slightly more girls than boys enrolled, while the district-run virtual schools tend to be have more even distribution.

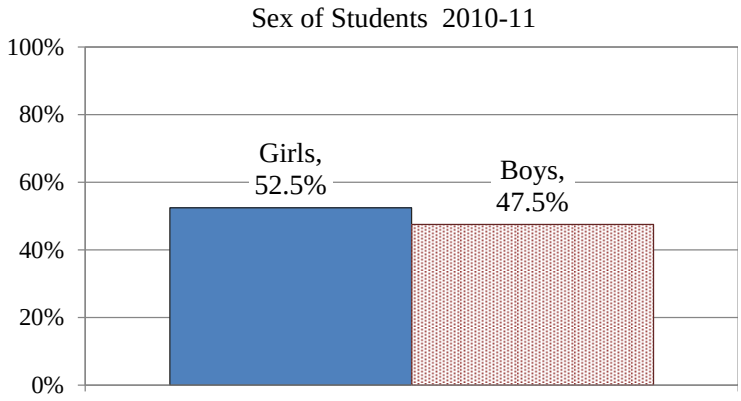

Figure 3.3. Sex of Students in Virtual Schools, 2010-11

Free and Reduced-Price Lunch, Special Education, and English Language Learner Status

As illustrated in Figure 3.4, the proportion of students in full-time virtual schools who qualified for free or reduced-price lunch (FRL) was 10 percentage points lower than the average in all public schools in 2010-11: 35.1% compared with 45.4%. Of those virtual schools reporting data, 13% enrolled a higher percentage of FRL students than the national average, while 87% of reporting schools indicated a lower percentage. The data available after 2010-11 is more incomplete, although it suggests that the proportion of FRL students in virtual schools has increased a few percentage points. In general, virtual schools continue to serve a noticeably lower percentage of economically disadvantaged students than other public schools.

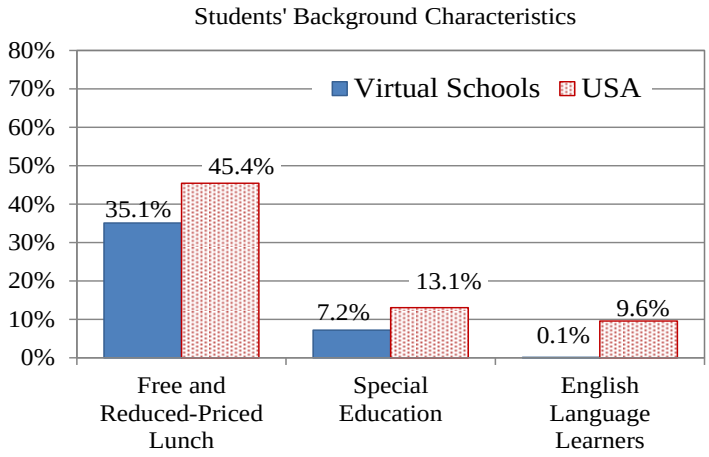

Figure 3.4. Students Qualifying for Free and Reduced-Priced Lunch, Classified as Special Education, or Classified as English Language Learners

Figure 3.4 also illustrates the representation of students classified as special education, indicating they

have a disability as well as a recorded Individualized Education Plan (IEP). Overall, the proportion of students with disabilities in virtual schools is around half of the national average, or 7.2% compared with 13.1 %. Only 92 schools reported special education data in 2010-11 and the available data in subsequent years is even more incomplete. Just over 11% of the virtual schools reported having a higher proportion of students with disabilities than the national average, while 88.5% had a lower than average proportion of students with disabilities.

Given that charter schools overall usually have a substantially lower proportion of students with disabilities compared with district schools or state averages, one might expect an even greater difference in virtual school enrollments because it seems more difficult to deliver special education support via the Internet. However, it may be that the populations of students with disabilities in virtual and traditional public schools differ substantively in terms of the nature and severity of students' disabilities. Past research has established that traditional public schools typically have a higher proportion of students with moderate or severe disabilities, while charter schools have more students with mild disabilities that are less costly to accommodate.[164]

English language learners represent a growing proportion of students in the nation's schools, especially in the states served by virtual schools. However, only 0.1% of full-time virtual school students are classified as English language learners (ELLs). This is a strikingly large difference from the 9.6% national average (Figure 3.4). None of the virtual schools had higher proportions of ELLs than the national average, and the ELL student enrollment of most virtual schools with data available was less than 1%. There are no clear explanations for the absence of students classified as English language learners in virtual schools. One possible explanation could be that the packaged curriculum is only available in English; another possible explanation might be that instructors have insufficient time to support these students.

Enrollment by Grade Level

The National Center for Education Statistics has four school level classifications, as indicated in Figure 3.5. More than half of virtual schools are designed or intended to enroll students from kindergarten to grade 12 (and so are in the Other Grade Configurations category). Ten percent are

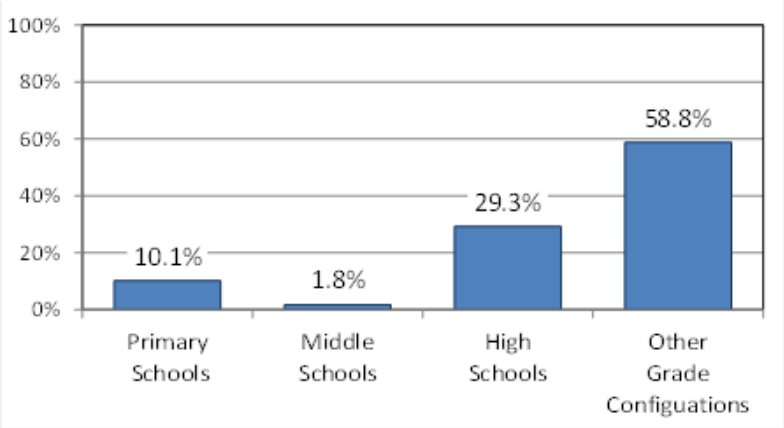

Figure 3.5. Distribution of Virtual Schools by School Level

designated as primary schools, less than 2% as middle schools, and 29% as high schools. While this classification system is generally useful for describing traditional public schools, it is less useful for categorizing charter schools that often have grade configurations that span primary, middle, and high school levels. This classification also

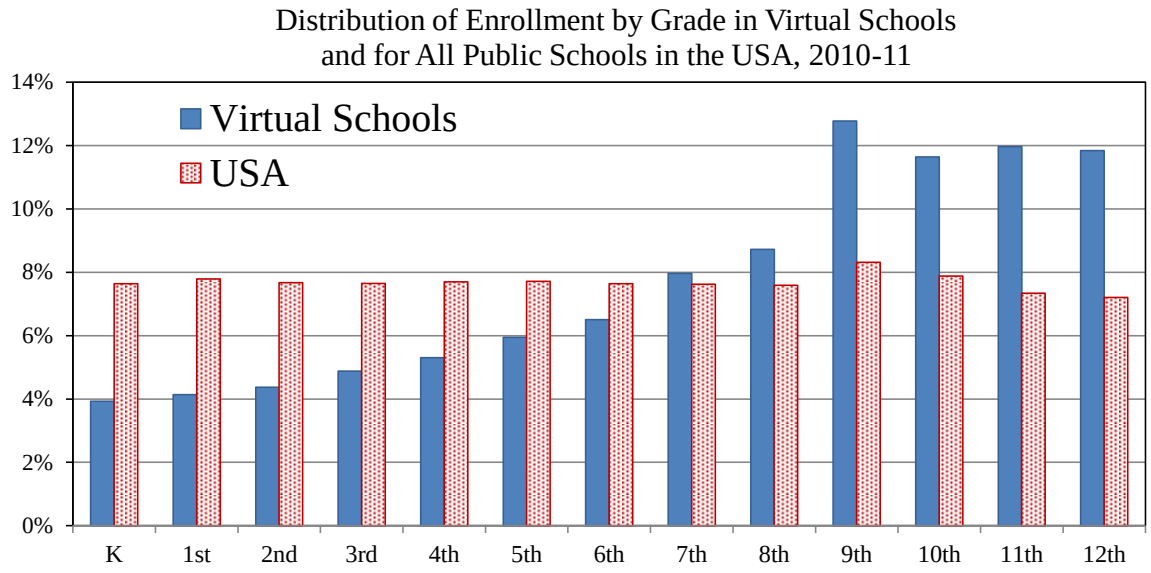

Figure 3.6. Enrollment by Grade Level for Virtual Schools and U.S., 2010-11

has limitations in representing the distribution of students in charter schools since many of these schools have permission to serve all grades but actually only enroll students in a more limited array of grades.

To more accurately display the distribution of students in virtual schools, we used actual student enrollment data by grade, obtained from the National Center for Education Statistics. Figure 3.6 depicts the enrollment distribution of students in virtual schools by grade level, compared with national averages. A disproportionate number of students are in high school, where the enrollment drops off sharply after ninth grade. This picture differs from the national picture, where a comparatively equal age cohort is distributed evenly across grades, with a gradual drop from grades 9 to 12. In addition, the national population shows a slight increase at grade 9, due to some students not obtaining enough credits to be classified as 10th graders. Starting in grade 10, however, the enrollment per grade decreases slightly, reflecting the nation's dropout problem.

Student-Teacher Ratios

The data available on student to teacher ratios is incomplete and—given the extreme variations reported from year to year—erratic. We were able to obtain student to teacher

ratio data from 55% of the virtual schools in 2012-13. This data was obtained from state education agencies and from school report cards.

While the average student-teacher ratio is approximately 15 students per teacher in the nation's public schools, virtual schools report more than twice as many students per teacher. Virtual schools operated by for-profit EMOs report the highest student-teacher ratio (37 students per teacher), and the virtual schools operated by nonprofit EMOs have the lowest student teacher ratio (17.3 students per teacher). The raw data shows considerable outliers, with some virtual schools reporting only 1 student per teacher and 17 schools reporting 10 or fewer students per teacher. On the other extreme, 3 schools reported having 200 or more students per teacher and 17 schools reporting having more than 55 students per teacher

School Performance Data

This section reviews key school performance indicators, including Adequate Yearly Progress (AYP) status, state ratings, and on-time graduation rates. Comparisons across these measures suggest that virtual schools are not performing as well as brick-and-mortar schools. The findings also reveal that virtual schools operated by private EMOs are not performing as well as public virtual schools with no private EMO involvement.

Adequate Yearly Progress and State Ratings Assigned to Virtual Schools

Adequate Yearly Progress (AYP) and state school performance ratings were obtained from state sources or directly from school report cards. Although these are weak measures of school performance, they provide descriptive indicators that can be aggregated across states.

AYP is essentially intended to demonstrate whether or not a public school meets its state standards. However, it is a relatively crude indicator that covers academic as well as non-

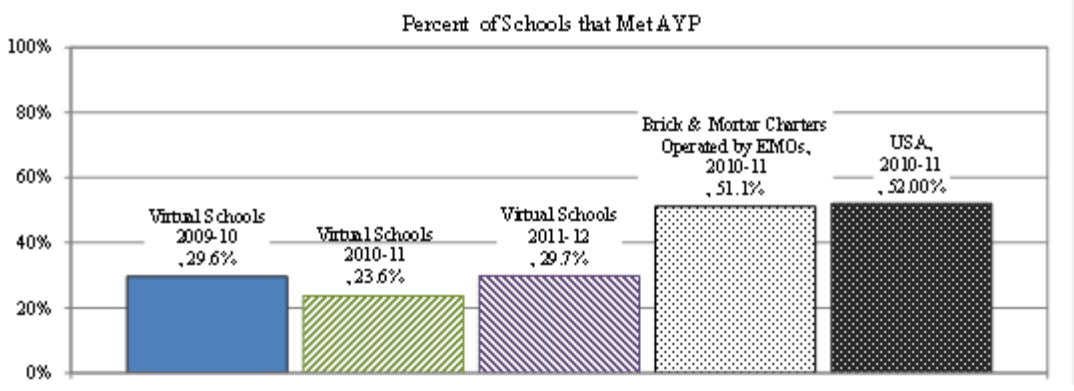

Figure 3.7. Percentage of Schools Meeting Adequate Yearly Progress, by School Type and Year

academic measures, such as school attendance and the percentage of students taking a state exam. To date, 42 states including Washington D.C. have received ESEA waivers on the federal goal of 100 percent proficiency by 2014. Such waivers have allowed 28 states with virtual schools to discontinue the use of state-determined AYP standards in 2012-13. California and Iowa are the only two states with full-time virtual schools that reported results based on AYP.

In the 2010-2011 school year, when most states were still reporting AYP status, there was a 28-percentage point difference between full-time virtual schools meeting AYP and traditional brick-and-mortar district and charter schools that did: 23.6% compared with 52%, respectively. Although the virtual school average was higher in the other two years, as illustrated in Figure 3.7, the gap in AYP between virtual and traditional schools has recently hovered around 22 percentage points, offering no evidence of an improvement trend. This suggests that the need for more time to meet goals may not be a sufficient explanation for the large difference.

In addition, AYP ratings were substantially lower for virtual schools managed by EMOs than for brick-and-mortar schools managed by EMOs: 29.6% compared with 51.1%.

One should be cautious in drawing conclusions from such an imperfect measure, and one should be cautious in interpreting differences among groups of schools. At the same time, it appears evident that extremely large differences, such as the 22 percentage point difference between full-time virtual schools and brick-and-mortar schools meeting AYP, warrants further attention.

In the 2012-13 school year, we had AYP status for only California and Iowa. In California, only 5 of 36 (14%) full-time virtual schools met their AYP targets. The percent of traditional public schools that made AYP in California in that year was 10% for elementary schools, 6% for middle schools, and 27% for high schools. On the other hand, Iowa's first two full-time virtual schools, Iowa Connections Academy and Iowa Virtual Academy (K12 Inc.), which opened in 2012-13, both met state AYP targets.

Of course, there are variations among individual schools and companies represented in the virtual school cohorts discussed here. A few operators of full-time virtual schools have particularly dismal results. For example, only 5% of the virtual schools operated by White Hat Management met AYP in 2011-12.

With new waivers from NCLB/ESEA requirements, 28 states with full-time virtual schools have developed new annual measurable objectives (AMOs) that are used to measure and report school performance. Such measures vary considerably from state to state. Ten states use a total weighted index score (which determines the school's letter grade or star rating) from lowest to highest. Letter grades, in particular, are used in the following states: Alaska, Arizona, Idaho, Indiana, Ohio, Pennsylvania, Oklahoma, South Carolina, Nevada, and Minnesota. Other states use a variety of measures that are then combined to arrive at an overall evaluation of school performance. Categories of performance are based on postsecondary and workforce readiness, academic growth gaps, academic growth, and academic achievement. Only 78 of the 338 full-time virtual schools received ~~assigned~~ an

acceptable annual accountability rating by state education authorities. Independent virtual schools that do not have EMOs were more likely to receive an acceptable rating than virtual schools operated by private EMOs: 36% compared with 31.18%.

In total, only 78 out of 231 virtual schools with ratings in 2012-13 were academically acceptable (33.77%). A total of 100 full-time virtual schools (or 30% of all virtual schools in 2012-13) did not receive any state accountability/performance ratings. Florida accounted for the largest share of virtual schools with no measures of school performance, followed by Ohio and Wisconsin.

Next, we compared the academic performance of full-time virtual schools for 2011-12 and 2012-13 school years using three possible ratings: academically acceptable, academically unacceptable, and not rated. One should be cautious in drawing conclusions from such an imperfect measure based on only two consecutive years of school-level performance. The 2011-12 state ratings compared a school's performance level in one year to a single proficiency target; thus, such ratings promoted limited outcomes. However, new annual accountability ratings go beyond AYP requirements for NCLB and include a wider variety of measures, such as college-readiness, academic growth, and academic performance in additional tested subjects. Such ratings are being used to hold public schools accountable, and they serve as the base for determining whether a school merits corrective or punitive action. Given the rapid growth of full-time virtual schools in states such as Florida, Ohio and Wisconsin, it will be critical to determine why so comparatively few virtual schools received a state rating—especially since they appear to enroll fewer students making greater demands on schools, such as English language learners.

Table 3.2. Percentage of Virtual Schools with Acceptable School Performance Ratings, 2011-12 and 2012-13

	2011-12: All Virtual Schools that received ratings N=228	2012-13: All Virtual Schools that received ratings N=238	2011-12: Results for Subgroup of Virtual Schools that had Ratings in both Years N=176	2012-13: Results for Subgroup of Virtual Schools that had Ratings in both Years N=176
For-profit EMO	18.5%	31.9%	17.6%	31.1%
Nonprofit EMO	50.0%	22.2%	57.1%	28.6%
Independent	32.6%	36.7%	30.5%	31.9%
Total	28.1%	34.2%	26.1%	31.4%

At the same time, it appears evident that large differences in school accountability ratings between EMO-managed full-time virtual schools and independent virtual schools (i.e., no EMO involvement) for two consecutive years warrants further attention. Table 3.2 details state School Performance Ratings for the two most recent school years.

While AYP is not designed to reward growth, a concern of advocates of value-added testing, the fact that it was used to hold public schools accountable and to justify imposing sanctions makes it viable as a comparative measure. To supplement admittedly imperfect AYP data, Table 3.2 details aggregated data from State School Performance Ratings from the two most recent years. (State ratings for individual virtual schools appear in Appendix C). State rating categories vary considerably: some assign letter grades, for example, while others report whether or not a school is in corrective status, and if so, what point in the corrective process it has reached. Often, state ratings are based on a variety of measures, with some states including gains for students in the school for a year or more. In order to aggregate the ratings across states, we classified the ratings that virtual schools received as either "acceptable" or "unacceptable" based on guidance provided by state education agencies. We were then able to aggregate findings within and across states. Ratings were available for 228 out of 306 virtual schools included in the inventory in 2011-2012. For 2012-2013, there were state performance ratings for 231 out of the 338 school included in the inventory.

There were modest improvements in the overall percentage of virtual schools that received acceptable ratings in each of the two years; 28.1% had acceptable state ratings in 2011-12, and 34.2% had acceptable ratings in 2012-13. Even though there was an improvement, the vast majority of full-time virtual schools (65.8%) were still not rated academically acceptable in 2012-13. Because some schools closed and some new schools opened, and also because some schools did not receive a state performance rating in both years, we analyzed the subgroup of 176 virtual schools that had a state performance rating in both years (see the last two columns in Table 3.2). Here we can see a similar pattern with modest improvements in the proportion of schools that received an acceptable state performance rating. The virtual schools operated by for-profit EMOs fared worst in 2011-12, but by 2012-13 their performance improved and was similar to the other two comparison groups (nonprofit EMOs, and independent virtual schools).

The ratings for the virtual schools operated by nonprofit EMOs showed considerable change between the two years. However, such extreme change in percentages may be explained by the fact that there are so few schools in that category that had ratings (6 nonprofit EMO virtual schools in 2011-12, and 7 in 2011-12). It is also important to remember that a large number of virtual schools overall do not have state ratings: 81 virtual schools (26.5%) lacked ratings in 20011-12, and 100 (29.6%) lacked ratings in 2012-13. With one out of every three or four full-time virtual schools not represented in this analysis, caution in interpreting findings is in order.

Given the rapid growth of full-time virtual schools, it is critical to determine why so comparatively few meet AYP or achieve acceptable State Performance Ratings—especially since they appear to enroll fewer students who make greater demands on schools, like English language learners. Similarly, it is critical to determine why so many are not receiving state performance ratings at all.

Graduation Rates

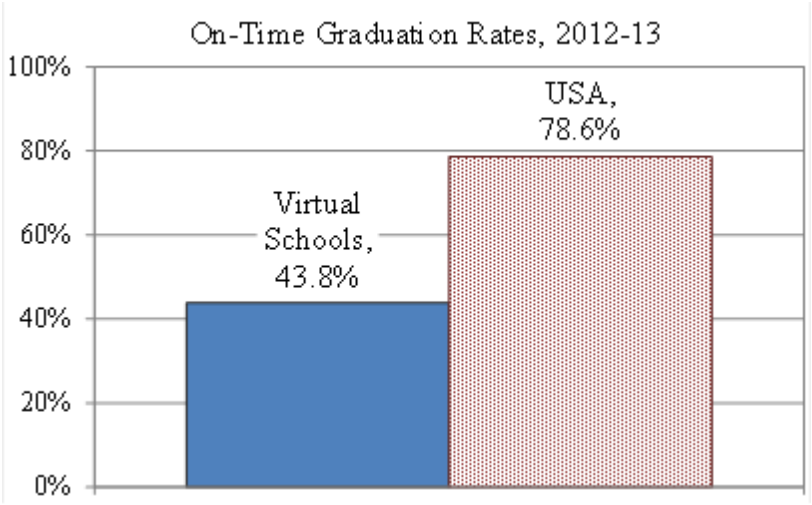

Figure 3.8. Mean Graduation Rates for Virtual Schools

In recent years, schools and states have been standardizing how they record and report graduation. 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. This analysis, reported in Figure 3.8, spans the four years from 2009-10 to 2012-13. Only 157 virtual schools reported a score related to on-time graduation in 2012-13. This is a slight improvement from last year, but it is still surprisingly low. The large number of virtual schools not reporting a graduation rate is partially due to the fact that some of these schools do not serve high school grades; others are relatively new and have not had a cohort of students complete grades 9-12. Even so, the number seems low in light of the large enrollment reported for grades 9-12.

As Figure 3.8 illustrates, the on-time graduation rate for the full-time virtual schools was a little more than half the national average: 43.8% and 78.6%, respectively—an improvement of 6 percentage points compared with results for 2011-12. The evidence on graduation rates remains inconclusive because so many schools have not reported rates, but it is in line with the findings on AYP and state school performance ratings. Despite the limited data, this is an important outcome measure that contributes to the overall picture of school performance.

Discussion

Our analyses indicate that full-time virtual schooling is growing rapidly, with growth largely dominated by for-profit EMOs, particularly K12 Inc. and Connections Academies. While these schools have potential for facilitating long-distance learning and cutting costs, the consistently negative performance of full-time virtual schools across all school performance measures makes it imperative to know more about these schools. The advocates of full-time virtual schools are several years ahead of policymakers and researchers, and new opportunities are being defined and developed largely by for-profit entities accountable to stockholders rather than to any public constituency.

Advocates of virtual schools may argue that the limitations in our data mean that findings such as those we share in this report are not definitive. We agree with this position.

Nevertheless, even though the outcome measures available are not as rigorous as desired and even though the data reported by virtual schools is not as complete as they should be, the findings still reveal that across all school performance measures, most virtual schools are lacking. There is not a single positive sign from the empirical evidence presented here. Given this picture, continued rapid expansion seems unwise. More research is needed; and to enable such research, state oversight agencies need to require more, and better refined, data.

Recommendations

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

- Policymakers should slow or stop growth in the number of virtual schools and the size of their enrollment until the reasons for their relatively poor performance have been identified and addressed.
- Given that all measures of school performance indicate insufficient or ineffective instruction, these virtual schools should be required to devote resources toward instruction, particularly by reducing the ratio of students to teachers.
- State education agencies and the federal National Center for Education Statistics should clearly identify full-time virtual-schools in their datasets, distinguishing them other instructional models. This will facilitate further research on this subgroup of schools.
- State agencies should ensure that virtual schools fully report data related to the population of students they serve and the teachers they employ.
- State and federal policymakers should promote efforts to design new outcomes measures appropriate to the unique characteristics of full-time virtual schools.

Notes and References: Section III

158 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.

159 See notes in the appendices for more details regarding inclusion criteria.

160 To be included in this inventory and considered in our analyses, a virtual 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 1, 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 hybrid 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 10 students enrolled. 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.

161 Marsh, R.M., Carr-Chellman, A.A., & Stockman, B.R. (2009). Why parents choose cybercharter schools. *TechTrends 53*(4).

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.

162 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.”

163 Data on ethnicity is from 2010-11, 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 obtained more incomplete data on race/ethnicity, sex, free- and reduced-price lunch status, English Language Learner status, and special education status for 2011-12 and 2012-13 from state sources and from school report cards. The figures we present are based on the most complete data source, the NCES 2010-11 data. We comment in the narrative when we see noticeable differences from the data we have collected in subsequent years.

164 Bordelon, S. J. (2010). Making the grade? A report card on special education, New Orleans charter schools, and the Louisiana charter schools law. *Loyola Journal of Public Interest*.

Appendices

Appendix A: Summaries of Legislation Pertaining to Virtual Schools, 2012 and 2012

Appendix B: Numbers of Full-time Virtual Schools and the Students They Serve by State

Appendix C:. Measures of School Performance: State Performance Ratings, Adequate Yearly Progress Status, and Graduation Rates.

The Appendices are available for download as PDF files at

http://nepc.colorado.edu/publication/virtual-schools-annual-2014.