

REPORT

A REPORT OF THE NATIONAL STUDY OF ONLINE CHARTER SCHOOLS

Inside Online Charter Schools

October 2015

Brian Gill
Lucas Walsh
Claire Smither Wulsin
Holly Matulewicz
Veronica Severn
Eric Grau
Amanda Lee
Tess Kerwin

Submitted to:
Walton Family Foundation
P.O. Box 2030
Bentonville, AR 72712
Project Officer: Marc Holley
Contract Number: 2013-12-02

Submitted by:
Mathematica Policy Research
955 Massachusetts Avenue
Suite 801
Cambridge, MA 02139
Telephone: (617) 491-7900
Facsimile: (617) 491-8044
Project Director: Brian Gill

This page has been left blank for double-sided copying.

ACKNOWLEDGEMENTS

This report is one of three produced by the National Study of Online Charter Schools. We gratefully acknowledge the input of colleagues working on the other two reports—Robin Lake of the Center on Reinventing Public Education and Macke Raymond and Lynn Woodworth of the Center for Research on Educational Outcomes (CREDO)—who provided helpful suggestions on the content of our principal surveys and on the interpretation of survey findings. Phil Gleason of Mathematica also gave thoughtful feedback on an earlier draft of this report, helping us improve it substantially. John Kennedy expertly edited the report.

Early in the study, to inform the survey design, we solicited input from a group of stakeholders with knowledge of online charter schools. We are grateful for the input of Greg Richmond from the National Association of Charter School Authorizers; Bruce Friend from the International Association for K-12 Online Learning (iNACOL); Deanna Rowe from the Arizona State Board for Charter Schools; Christy Wolfe from the National Alliance for Public Charter Schools; Mary Gifford from K12 Inc.; and Pat Laystrom from Connections Education.

This study could not have been conducted without the willing participation of more than a hundred principals of online charter schools across the country; we thank them for their participation.

This page has been left blank for double-sided copying.

CONTENTS

EXECUTIVE SUMMARY	xi
I. INTRODUCTION.....	1
II. THE UNIVERSE OF ONLINE CHARTER SCHOOLS AND THEIR STUDENTS.....	3
A. Online charter schools and enrollments, by state	3
B. Grades served by online charter schools	4
C. Students of online charter schools	5
III. CURRICULUM, INSTRUCTION, ASSESSMENT, AND TECHNOLOGY	9
A. Delivery of instruction	9
B. Class size and student–teacher ratio	13
C. Instructional and other support services.....	15
D. Curriculum and specialized programs.....	17
E. Student assessment	17
F. Technology	18
IV. STUDENT AND PARENT ENGAGEMENT	21
A. Student engagement	21
B. Parent engagement	22
V. TEACHERS AND STAFFING AT ONLINE CHARTER SCHOOLS.....	25
A. Staffing levels and teaching loads	25
B. Teacher hiring and experience	26
C. Teachers’ responsibilities and expectations	27
D. Monitoring and evaluating teachers	29
E. Teachers’ compensation	31
F. Professional development	31
VI. SCHOOL LEADERS	33
A. Previous experience	33
B. Training and professional development	33
C. Roles and responsibilities.....	33
D. Challenges.....	34
E. Principal evaluation and compensation.....	35

VII.	GOVERNANCE, MANAGEMENT, AND FUNDING	37
VIII.	CONCLUSION	39
	REFERENCES.....	41
	APPENDIX A: SURVEY METHODS.....	43
	APPENDIX B: SUPPLEMENTAL TABLE	49

TABLES

III.1	Frequency of student assessments	18
III.2	Technology provided to students of online charter schools.....	18
V.1	Mean and median number of support staff per school	26
V.2	Teachers' responsibilities in online charter schools.....	29
V.3	Teacher evaluation methods and frequency.....	29
V.4	Factors that affect teachers' compensation in online charter schools	31
VI.1	Online charter principals' greatest challenges	35

This page has been left blank for double-sided copying.

FIGURES

II.1	Number of online charter schools operating by state, with statewide student enrollments.....	4
II.2	Percentage of online charter schools serving grades 4, 7, and high school	5
II.3	Race and ethnicity of online charter students and other students in their states	6
III.1	Percentage of online charter schools exclusively using self-paced instruction	9
III.2	Instructional methods used frequently in online charter schools	10
III.3	Median weekly time spent in synchronous instruction.....	11
III.4	Distribution of time spent in synchronous instruction in online charter high schools	12
III.5	Synchronous instruction support tools	12
III.6	Asynchronous instruction support tools	13
III.7	Median class sizes	13
III.8	Percentage of schools with typical class size of 50 or more.....	14
III.9	Students per full-time teacher	15
III.10	Percentage of online charter schools using instructional staff in addition to the teacher in a typical class	15
III.11	Staff responsible for one-on-one instructional support in online charter schools	16
IV.1	Monitoring students' participation	21
IV.2	Roles of parents in online charter schools	22
IV.3	Frequency of communication with parents	23
V.1	Percentage of online charter schools with different numbers of full-time equivalent teachers	25
V.2	Most important factors in teacher hiring in online charter schools.....	27
V.3	Percentage of online charter schools expecting teachers to be available at different hours of a weekday.....	28
V.4	Most important factors for teacher evaluation.....	30
V.5	Frequency of teachers' participation in professional development.....	32
VI.1	Percentage of online charter principals' time spent on various tasks.....	34
VI.2	Performance measures used for compensation of principals.....	36
VII.1	Support from affiliated online charter school management organizations.....	38

This page has been left blank for double-sided copying.

EXECUTIVE SUMMARY

Online charter schools—also known as virtual charters or cyber charters—are publicly funded schools of choice that eschew physical school buildings and use technology to deliver education to students in their own homes. These schools typically provide students with computers, software, and network-based resources, while also providing access to teachers via email, telephone, web, and/or teleconference.

From one perspective, online schools represent the kind of innovation that proponents of charter schools have envisioned since their inception: online charter schools deliver instruction using a radically different approach than conventional public schools. Nonetheless, critics of online charter schools worry that they might not be effective in promoting student learning.

This report and its companion volumes describe the findings of the most ambitious and comprehensive study of online charter schools to date, conducted jointly by Mathematica Policy Research, the Center for Research on Education Outcomes (CREDO) at Stanford University, and the Center on Reinventing Public Education (CRPE) at the University of Washington. In this volume, we provide the first nationwide data on the operations and instructional approaches of online charter schools from a survey completed by a majority of all online charter schools across the country. In the second volume (Pazhouh et al. 2015), CRPE describes the policy environments of online charter schools and provides recommendations to state policymakers. In the third volume (Woodworth et al. 2015), CREDO measures the achievement effects of online charter schools.

This volume begins with a snapshot of online charter schools operating across the country, describing their numbers, the states in which they operate, and the students they serve. We then describe the instructional programs of online charter schools; methods used to engage students and parents, along with expectations of parental involvement; the teachers and principals of online charter schools; and their management and governance.

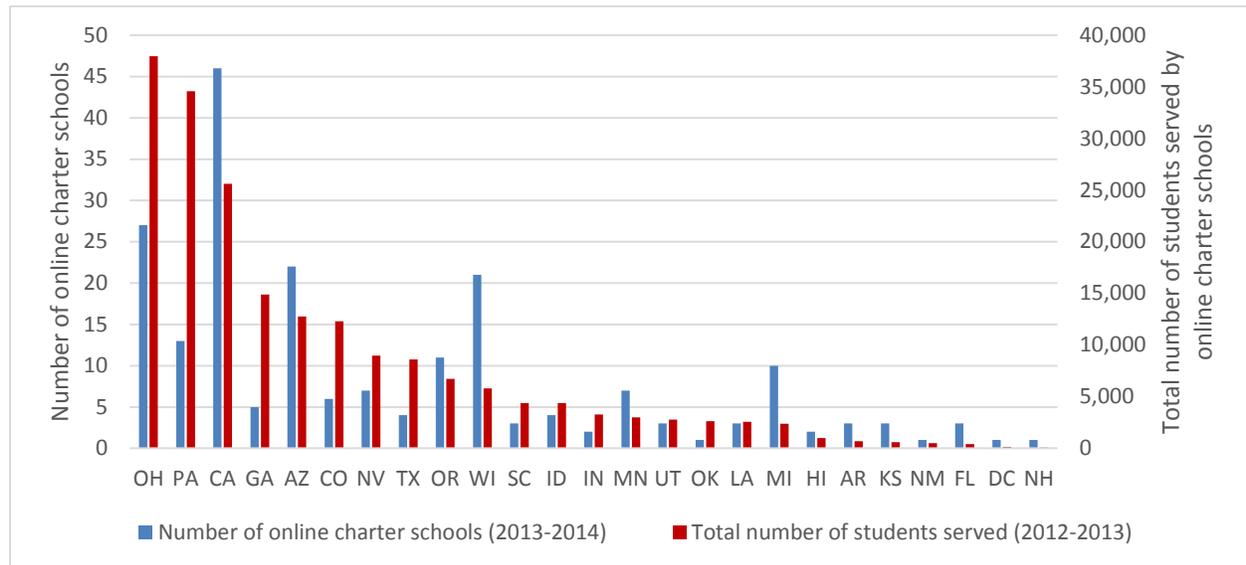
The universe of online charter schools

About 200 online charter schools are operating in the United States, serving about 200,000 students. Student enrollment in online charter schools is highest in Ohio, Pennsylvania, and California, each of which had more than 25,000 students enrolled in 2012–2013; together those three states account for half of the online charter enrollments nationwide. Figure ES.1 shows the number of online charter schools operating in 2013–2014 by state, alongside the total number of students they enrolled in the preceding year.

Nearly all online charter schools serve high school grades, but large numbers serve middle and elementary grades as well. More than half (56 percent) of online charter schools serve students in all three grade ranges—elementary, middle, and high.

Individual online charter schools vary widely in size. Many are small, but a handful of large schools dominate. Almost a quarter (24 percent) of online charter schools enrolled more than 1,000 students in 2012–2013, accounting for 79 percent of total enrollment in the sector.

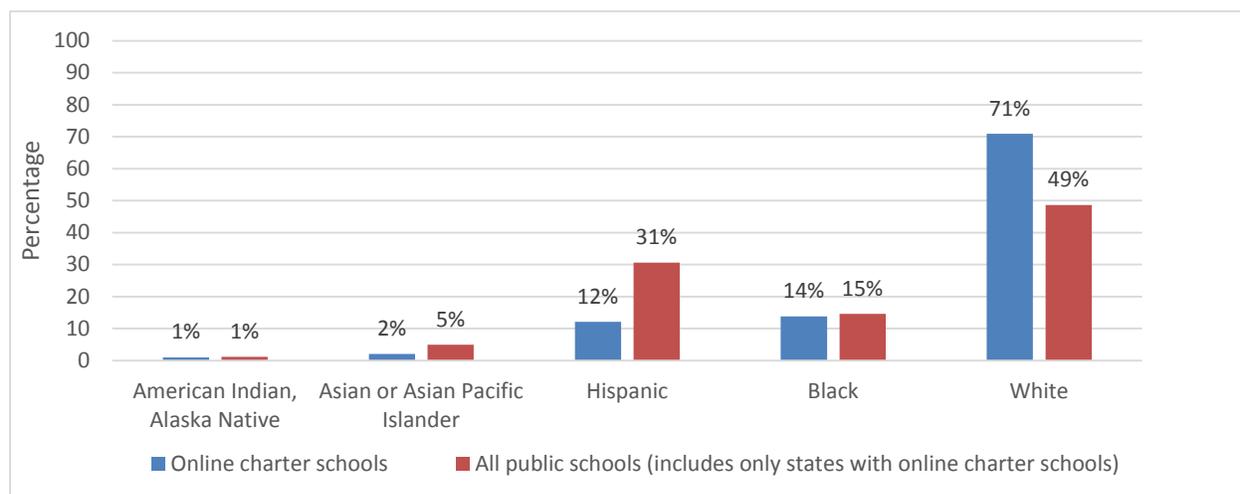
Figure ES.1. Number of online charter schools operating by state, with statewide student enrollments



Students of online charter schools

Online charter schools might be attractive to various kinds of students and families, including homeschoolers, rural students, students with disabilities, highly mobile students, and students who are not well suited to conventional schooling. A large majority (90 percent) of online charter schools reported that they serve a general population of students, whereas 10 percent focus primarily on serving a specific population of students with particular needs. The data available to this study do not identify the reasons that students enroll in online charter schools, but they provide a broad snapshot of the characteristics of online charter students. Nationally in 2012–2013, 71 percent of online charter students were white, 14 percent were black, and 12 percent were Hispanic, with very small percentages of other groups (Figure ES.2). *Online charter schools have an overrepresentation of white students and an underrepresentation of Hispanic students.*

Figure ES.2. Race and ethnicity of online charter students and other students in their states



Students with disabilities are represented in online charter schools at approximately the same rate as in public schools overall (14 percent); English learners are substantially underrepresented. In the 10 states with available data, 0.4 percent of online charter students were identified as English learners, compared with 4.3 percent of all public school students.

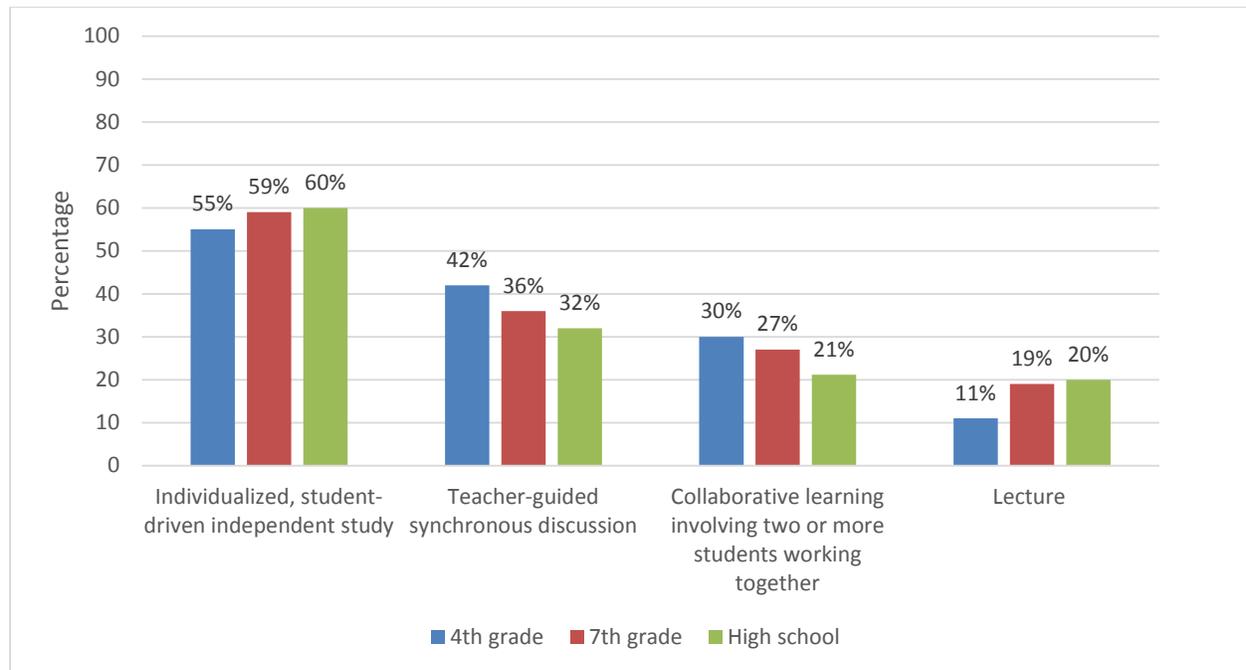
The average length of enrollment for a typical student in an online charter school is about two years.

Curriculum, instruction, assessment, and technology

Online schooling creates both constraints and opportunities for delivering instruction. Three-quarters (76 percent) of online charter schools include courses that are self-paced rather than tied to the calendar. *One-third of online charter schools rely exclusively on self-paced courses.*

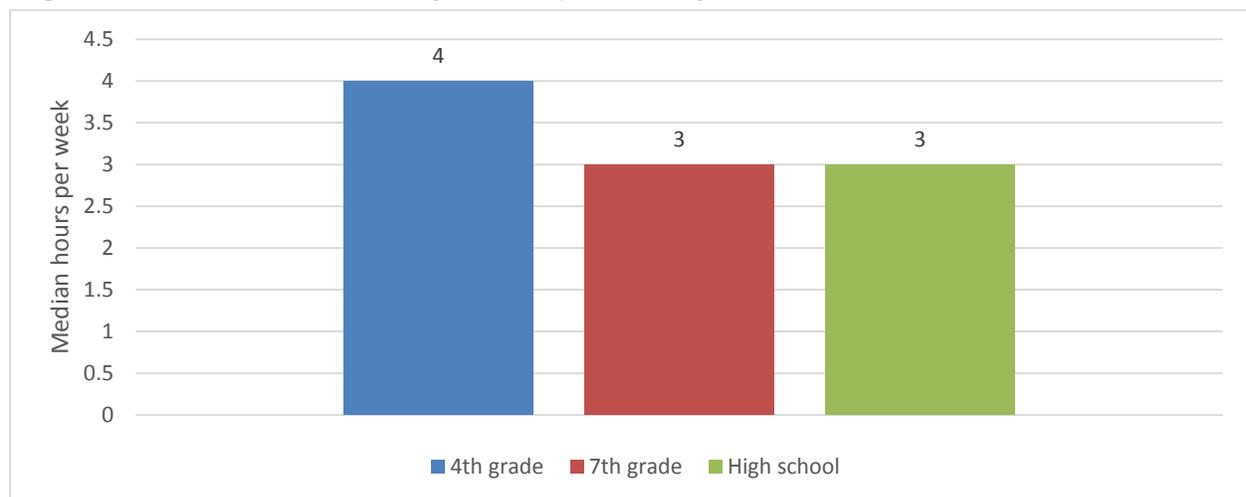
Consistent with the prevalence of self-paced courses, *the instructional method used most frequently in online charter schools is individualized, student-driven independent study* (Figure ES.3). Schools reported that teacher-guided synchronous discussion (that is, students and teachers participating in discussion at the same time) is the next most frequently used instructional method for all grades. Collaborative learning is used less frequently, and *lectures are not used frequently in more than one-fourth of online charter schools at any grade level.*

Figure ES.3. Instructional methods used frequently in online charter schools



As might be expected, in most online charter schools synchronous instruction occupies less time than it does in conventional schools. The difference is dramatic: *students in the typical online charter school have less synchronous instructional time in a week than students in a brick and mortar school have in a day.* Online charter schools reported a median of four hours per week spent in synchronous instruction in 4th grade, three hours in 7th grade, and three hours in high school (Figure ES.4). Larger online charter schools tend to have somewhat more synchronous instructional time: the median online charter student is in a school that provides five hours of synchronous instruction per week in 4th and 7th grades and six hours in high school.

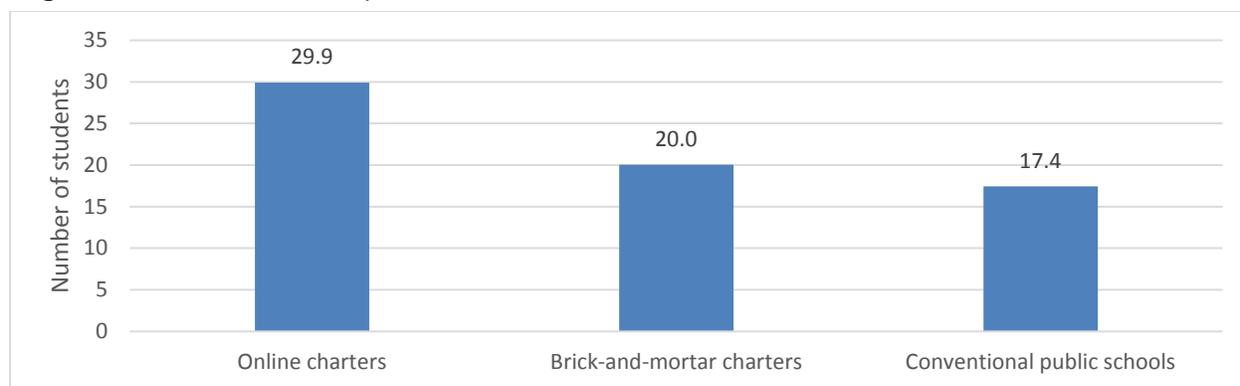
Figure ES.4. Median weekly time spent in synchronous instruction



Schools support synchronous instruction in several ways, the most common of which are telephone calls (88 percent), screen sharing or web conferencing (84 percent), videoconferencing (76 percent), and audioconferencing (75 percent). Schools also reported using online chat forums, instant messaging or other one-on-one chats, and text messages.

Online charter schools reported typical class sizes of 25 students at the elementary and middle school levels, rising to 30 students at the high school level. At the high school level, more than one-third of online charter schools reported typical class sizes of 50 or more. Data from the U.S. Department of Education show substantially larger student–teacher ratios in online charter schools relative to brick-and-mortar schools (Figure ES.5). On average, *online charter schools have 30 students per full-time teacher, compared with 20 in brick-and-mortar charter schools and 17 in conventional public schools in the same states.*

Figure ES.5. Students per full-time teacher



Most online charter schools—83 percent at the elementary level, 91 percent at the middle school level, and 89 percent in high school—offer one-on-one instructional support for students. *But schools that offer one-on-one instructional support reported medians of only 45 to 60 minutes of one-on-one instructional time per week.* In other words, the small amount of synchronous instructional time provided by most online charter schools is not coupled with a large amount of one-on-one interaction with teachers. This suggests that *most online charter schools expect that the bulk of learning will occur during a student’s individual engagement with the course material, perhaps with the help of a parent.*

Most online charter schools reported offering a variety of other support services, including behavioral health services (65 percent), speech and language therapy (87 percent), and dropout prevention or credit recovery programs (63 percent). But one-third (35 percent) of online charter schools do not offer special instruction for English learners, perhaps helping to explain why such students are underrepresented in the sector.

In more than three-quarters of online charter schools, curricula are purchased from a vendor or provided by the management organization with which the school is affiliated. Most schools reported that their curriculum offerings include programs in fine arts (80 percent) and music (61 percent), as well as core academic subjects. Most online charter high schools (83 percent) offer Advanced Placement (AP) courses, but AP enrollments are usually small, with a median of only

10 students participating. Nonetheless, 5 percent of online charter high schools reported AP enrollments that exceed 600 students.

Student assessment is an important aspect of the instructional program in online charter schools. Most schools conduct a diagnostic assessment of students' skills when they initially enroll, and the schools administer frequent assessments to track students' progress in the curriculum. *About two-thirds of online charter schools reported that they conduct student assessments with weekly or greater frequency at all grade levels.*

All students receive computers in only 56 percent of online schools, and another 33 percent supply a computer to some but not all students. Eleven percent of schools expect families to provide a computer, and 40 percent expect families to provide Internet access. Most schools provide technical support to students, usually by remote control of their computers, but 13 percent of schools do not provide live technical support to students.

Student and parent engagement

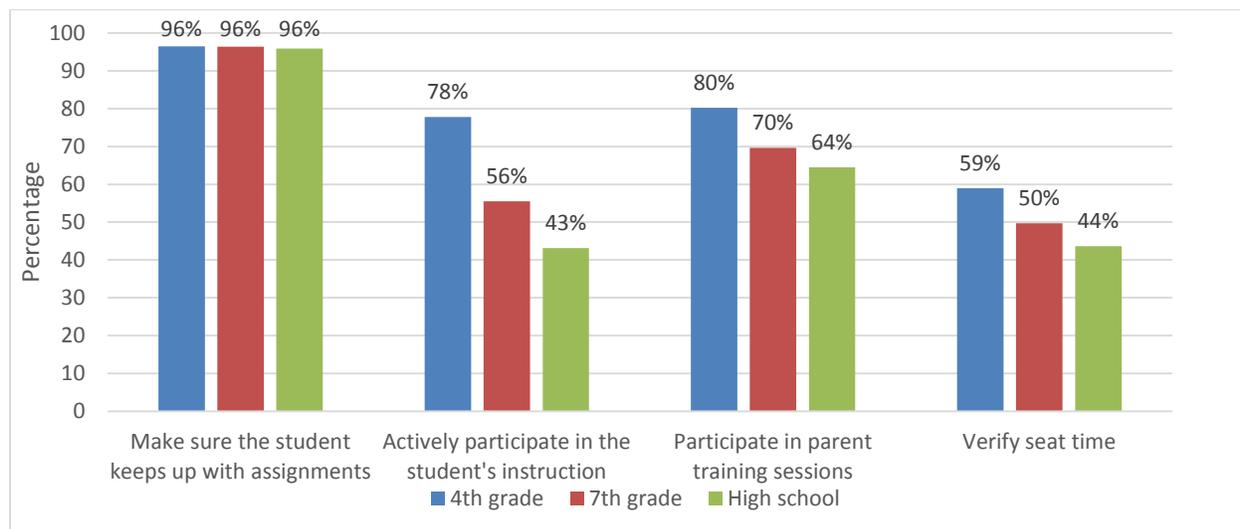
When asked an open-ended question about their greatest challenges in leading online charter schools, principals identified student engagement most often—nearly three times as often as any other issue. This challenge is inherent to online schooling, because the school has no way to ensure that students are “in their seats” and focused on their coursework. The challenge is likely to be particularly acute for the subset of students enrolled in online charter schools because they were not fully engaged in conventional, brick-and-mortar schools. Recognizing this, most online charter schools monitor student engagement and participation through completion of course assignments (93 percent), activity in the online system (94 percent), and (less often) participation in synchronous interaction with the teacher (58 percent).

Most online charter schools have substantial expectations of parents, surely necessitated in part by the limits of the schools' tools for keeping students engaged. Expectations vary for particular monitoring and support tasks (Figure ES.6).

Most notably, many online charter schools—ranging from 43 percent in high school to 78 percent in elementary school—expect parents to actively participate in the student's instruction (Figure ES.6). The schools are clearly aware that the success of their approach depends on substantial parental support—which is even more critical when the school provides only a few hours of synchronous instructional time each week. The expectation of active parental involvement in instruction might also explain why the great majority of online charter schools ask parents to participate in training sessions.

Figure ES.6. Role of parents in online charter schools

Percentage of online charter schools expecting parents to play particular roles



Teachers and principals

In decisions about teacher hiring, online charter schools share one top priority with a national sample of brick-and-mortar charter schools affiliated with a charter school management organization (CMO): willingness to work hard in support of the school's mission is one of the two most important considerations. The online schools reported that their second most important consideration in hiring is the teacher's certification status—which distinguishes the online schools from the brick-and-mortar CMO schools, for which performance teaching a sample lesson is more important.

Teachers in online charter schools tend to have more responsibility for individual attention to students than for developing curriculum, lesson planning, and lecturing—areas in which some schools minimize teacher responsibilities by purchasing curriculum and relying extensively on self-paced courses that involve no lectures. The most important factors that schools consider in evaluating teachers are observations of teachers' instruction, students' achievement growth, and teachers' accessibility to students. Nearly all schools (92 percent) said their teachers participated in professional development either online or in person (or both). Most but not all schools (89 percent) said they provided teachers with paid time for professional development.

Almost half (48 percent) of the principals of online charter schools had no prior experience teaching in an online environment. Principals are responsible for a wide variety of tasks. According to survey responses, principals spend the largest part of their time—an average of 30 percent of their work week—performing internal administrative tasks related to issues such as human resources, regulations, reports, and school budgets. Not surprisingly, principals of online charter schools spend a relatively small percentage of their time—11 percent—interacting with students, far less than the 39 percent reported by principals of public schools nationally in 2011–2012 according to federal data.

Governance and management

More than half (57 percent) of online charter schools are affiliated with school management organizations. Almost half of the schools affiliated with a management organization are affiliated with one of the two largest online school management organizations, K12 and Connections. Most of the schools affiliated with management organizations received several kinds of services from the organization. The most commonly received services were professional development for teachers (received by 91 percent of affiliated schools); curriculum and instructional materials (86 percent); and diagnostic assessments (75 percent).

Conclusion

The online charter school sector barely existed before 2000 and has grown rapidly since, now enrolling about 200,000 students nationally. Online charter schools serve a reasonably diverse population, but Hispanic students and English learners are underrepresented, perhaps in part because many of the schools do not offer instruction targeted to students whose first language is not English. In addition, the fact that most online charter schools expect families to provide Internet access (and many do not uniformly provide computers to all students) might prevent some prospective students from enrolling. On average, students in online charter schools remain enrolled for about two years.

Online schooling creates both constraints and opportunities for modes of delivering instruction. In most online charter schools, a substantial amount of coursework is self-paced. Online charter schools have substantially less synchronous interaction between teachers and students than conventional schools. This could be partly related to the higher ratio of students to teachers in online schools.

With a limited number of live contact hours and a lean staffing model, online charter schools place substantial expectations on parents, who are expected not only to ensure that students keep up with assignments but also to participate in training sessions and, in a large number of schools, to actively participate in the student's instruction.

The substantial burden placed on parents is presumably a response to the issue that online charter school principals regard as their greatest challenge: keeping students engaged. The challenge is partly inherent to online schooling, because the schools have no way to ensure that students are in their seats and ready to learn. It is probably partly due to online schools serving as schools of last resort for a subset of their students who previously disengaged from brick-and-mortar schools. And it is surely exacerbated by a high student–teacher ratio and a small number of live contact hours. All of these are reasons for concern about whether the sector is likely to be effective in promoting the achievement of its students—an issue addressed in depth in the third volume of this study (Woodworth et al. 2015).

I. INTRODUCTION

Online charter schools—also known as virtual charters or cyber charters—are publicly funded schools of choice that eschew physical school buildings and use technology to deliver education to students in their own homes. These schools typically provide students with computers, software, and network-based resources, while also providing access to teachers via email, telephone, web, and/or teleconference. From one perspective, online schools represent the kind of innovation that proponents of charter schools have envisioned since their inception: online charter schools deliver instruction using an approach that differs radically from instruction in conventional public schools. And the rapid growth of online schools over the past decade (including state- and district-operated online schools as well as online charter schools) demonstrates that there is considerable demand for online instruction. Indeed, Clayton Christensen, the originator of the concept of disruptive innovation, has predicted that half of all high school courses will be conducted online by 2018 (Christensen et al. 2008).

Nonetheless, critics of online charter schools worry that they might not be effective in promoting student learning. The small number of studies that have attempted to measure the effects of online schools on student achievement have provided some evidence supporting this concern: students in online charter schools in Ohio (Zimmer et al. 2009), Pennsylvania (Raymond 2011), and California (Zimmer et al. 2003) have fallen short of their peers in terms of student achievement growth. One study (Ritter and Lueken 2013) found more favorable results in Arkansas. Before the current study, no one has conducted a rigorous, systematic examination of the achievement effects of online charter schools across multiple states.

This report and its companion volumes describe the findings of the most ambitious and comprehensive study of online charter schools to date, conducted jointly by Mathematica Policy Research, the Center for Research on Education Outcomes (CREDO) at Stanford University, and the Center on Reinventing Public Education (CRPE) at the University of Washington. In this volume, we provide the first nationwide data on the operations and instructional approaches of online charter schools from a survey completed by a majority of all online charter schools across the country. In the second volume (Pazhouh et al. 2015), our colleagues at CRPE describe the policy environments of online charter schools and provide recommendations to state policymakers. In the third volume (Woodworth et al. 2015), CREDO measures the achievement effects of online charter schools and connects the student achievement data with our survey data and state policy data to assess whether specific practices of online charter schools or specific state policies are associated with better achievement impacts.

In this volume, we describe the universe of online charter schools, relying primarily on our survey of charter school principals, supplemented by publicly available school-level data from the U.S. Department of Education. We begin with a general snapshot of online charter schools operating across the country, describing their numbers, the states in which they operate, and the students they serve (in terms of characteristics such as race and ethnicity, special needs, and English learner status). We then describe characteristics of the instructional programs of online charter schools, including methods of delivery of instruction, class sizes, methods of assessing student learning, curriculum and support services, and technology. The following section addresses methods used to engage students and parents, along with expectations of parental

involvement. The report then turns to the teaching staff in online charter schools, describing hiring expectations, teaching loads, professional development opportunities, methods of evaluating performance, and compensation. We continue with a section on the principals of online charter schools, describing their prior experience, training, and responsibilities, and the issues they perceive as the greatest challenges for online charter schools. The volume then includes a section on management and governance, before a summary of conclusions.

II. THE UNIVERSE OF ONLINE CHARTER SCHOOLS AND THEIR STUDENTS

A. Online charter schools and enrollments, by state

Obtaining a precise count of the number of online charter schools in operation across the country is difficult, because some schools are hybrids—and there are two types of hybrids. Some schools offer blended instructional programs in which instruction is partly online and partly in person. Other schools offer different types of instructional programs, with some students enrolled online and other students enrolled in person. We define an online charter school as a school that offers an instructional program in which some or all students are enrolled entirely online. If a school offers an online program alongside a program that offers conventional, in-person instruction, we attempted to include it in our study for the subset of students participating in the fully online program.

About 200 online charter schools operated in the United States in the 2013–2014 school year. We received survey responses from 126 of these schools. Survey weights were used to adjust for nonresponse. Details on the survey methodology are available in Appendix A.

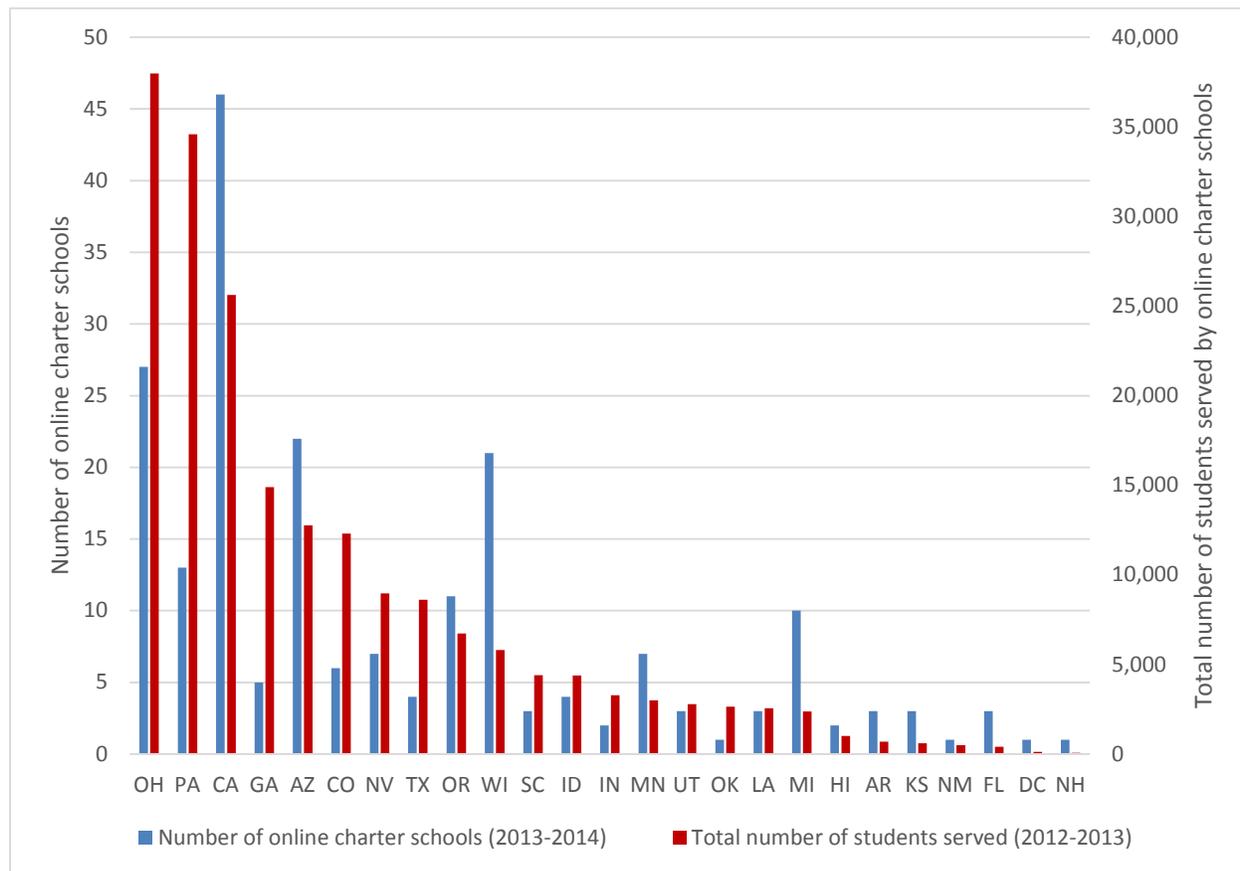
The U.S. Department of Education’s Common Core of Data (CCD) indicates that the sector served about 200,000 students in the 2012–2013 school year (the most recent year for which nationwide data are available) (U.S. Department of Education 2013-14).¹ This represented an increase of an order of magnitude since the turn of the millennium, when fewer than 20,000 students were enrolled; most of the growth has occurred since 2005 (Molnar et al. 2015).² Consistent with this rapid growth, most currently operating online charter schools are relatively new: the median online charter school operating in 2014 had opened only six years earlier. About 5 percent of the schools had initially opened before 2001, and more than one-third had opened since 2010.

Student enrollment in online charter schools is highest in Ohio, Pennsylvania, and California, each of which had more than 25,000 students enrolled in the 2012–2013 school year; together, those three states account for half of the online charter enrollments nationwide. Figure II.1 shows the number of online charter schools operating in the 2013–2014 school year by state, alongside the total number of students they enrolled in the preceding year. States are sequenced from those with the largest enrollments in online charter schools to those with the smallest enrollments.

¹ The figure is an estimate because enrollment data were missing for 12 schools and dates were missing from earlier years for 6 additional schools.

² Molnar et al.’s (2015) count includes noncharter and charter schools, but 84 percent of those counted as 2013 enrollees were enrolled in charter schools.

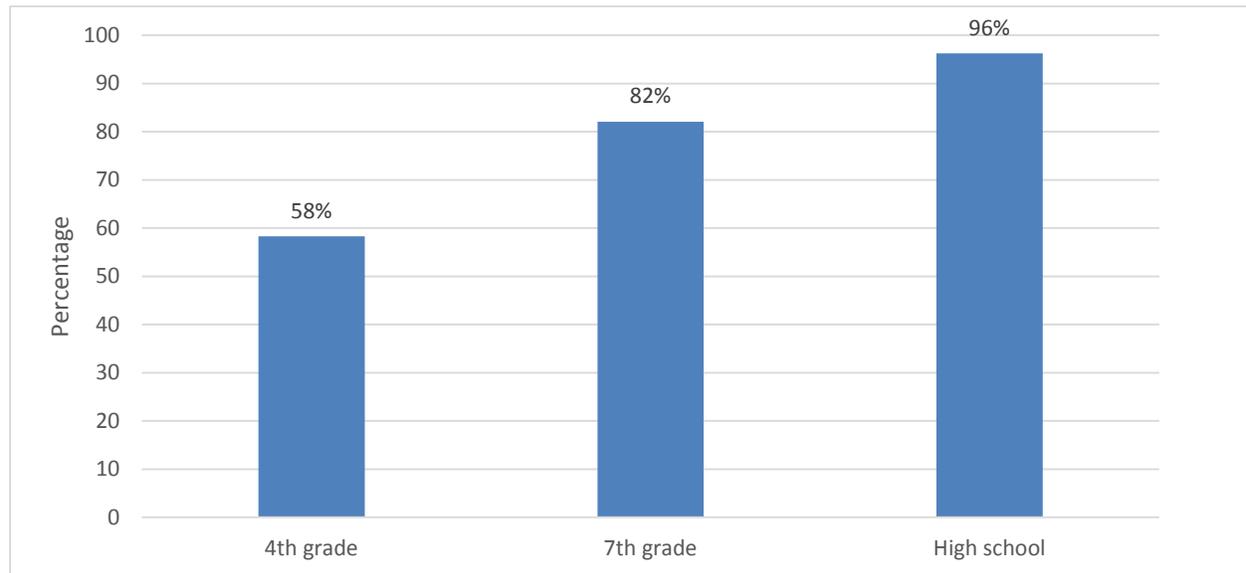
Figure II.1. Number of online charter schools operating by state, with statewide student enrollments



B. Grades served by online charter schools

Nearly all online charter schools serve high school grades, but large numbers serve middle and elementary grades as well. The survey asked respondents about one grade at the elementary level (4th) and one grade at the middle school level (7th) to avoid potential ambiguities about the definitions of elementary and middle grades, and to ensure that respondents could answer questions specifically when there might be differences across grade levels. There was no need to specify the grade level for questions about high school classes. Figure II.2 shows the percentage of online charter schools serving students at each of the three grade ranges in the 2013–2014 school year, according to survey responses. More than half (56 percent) of online charter schools serve students in all three grade ranges—elementary, middle, and high.

Figure II.2. Percentage of online charter schools serving grades 4, 7, and high school



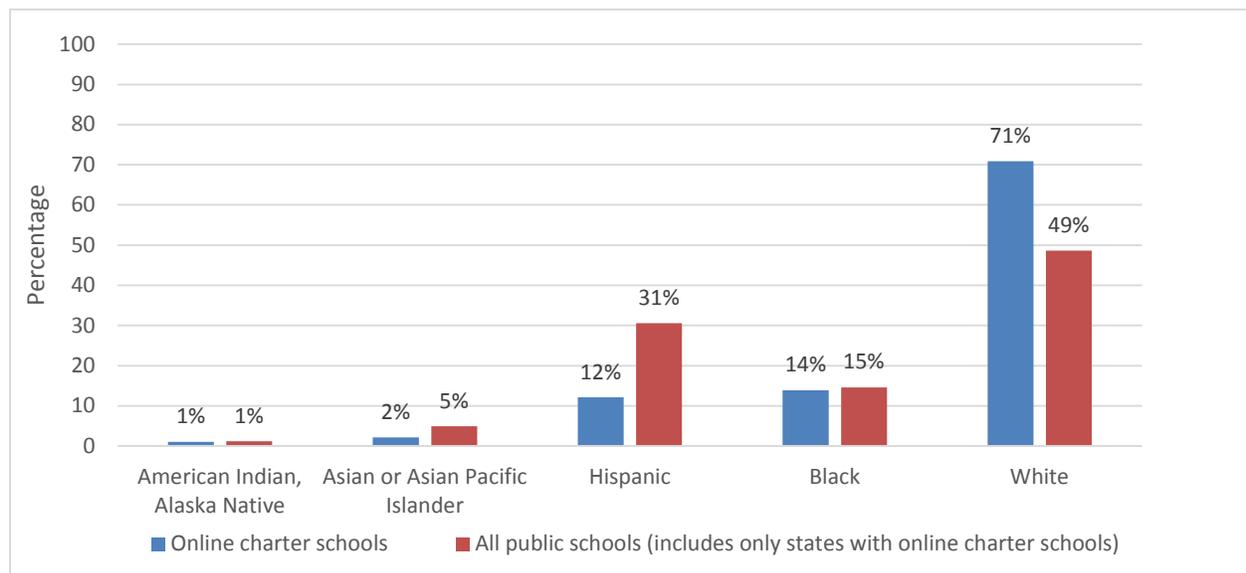
Individual online charter schools vary widely in size. Many are quite small: 42 percent had fewer than 100 students enrolled in the 2012–2013 year, according to national data. But a handful of large schools dominate the sector. Almost a quarter (24 percent) of online charter schools enrolled more than 1,000 students, and these accounted for 79 percent of total enrollment in the sector in the 2012–2013 school year. Indeed, in the absence of physical constraints, a few online charter schools have grown to sizes that would dwarf almost every conventional, brick-and-mortar school: we identified seven charter schools that enrolled more than 5,000 students in the 2012–13 school year (located in Georgia, Ohio, Pennsylvania, and Texas). Despite this, almost 60 percent of schools reported that state or local laws or policies imposed constraints on their growth, consistent with CRPE’s finding that 14 states restrict charter enrollments (Pazhouh et al. 2015).

C. Students of online charter schools

In principle, online charter schools might be attractive to various kinds of students and families. Families who wish to school their children at home might be attracted by the staff, curriculum, and technology resources that online charter schools can provide. Rural students who live far from the nearest brick-and-mortar school could find online schooling appealing. Some students with disabilities might find online education more accessible than conventional schools. Online education could provide stability in programming for highly mobile students. Students with social or behavioral difficulties, or with learning styles not well suited to conventional schooling, might find refuge in online educational environments. And online charter schools might be schools of last resort for students who have been unsuccessful in conventional schools, whether for academic, social, or behavioral reasons. The data available to this study do not enable us to identify the reasons that students enroll in online charter schools, unfortunately, but they can provide a broad snapshot of the characteristics of online charter students.

Across the sector, the racial and ethnic distribution of students in online charter schools in the 2012–2013 school year differed somewhat from that of the public schools of their states. Nationally in the 2012–2013 school year, 71 percent of online charter students were white, 14 percent were black, and 12 percent were Hispanic, with very small percentages of other groups (Figure II.3). States where online charter schools operate tend to have an overrepresentation of white students and an underrepresentation of Hispanic students. The data do not provide reasons for this, but it is possible that the overrepresentation of white students could be due in part to the desirability of online schools to rural students (who are likely to have fewer conventional school options near home). The underrepresentation of Hispanic students might be due to lower knowledge of options among students and parents who might be immigrants and not speak English as a first language. The underrepresentation of Hispanic students is not true for brick-and-mortar charter schools, which have a slightly higher percentage of Hispanic students relative to the national average (Condition of Education 2015).

Figure II.3. Race and ethnicity of online charter students and other students in their states



Ninety percent of online charter schools reported that they serve a general population of students, whereas 10 percent focus primarily on serving a specific population of students with particular needs. Most of the 10 percent of schools serving special populations target dropouts or over-age/undercredited students.

More than a third (35 percent) of online charter school students are reported to be low-income students eligible for free or reduced-price lunch (FRL). This number is lower than the average percentage for all public schools in their states (53 percent), but it might underestimate the true percentage of those who live in poverty: lacking facilities in which to deliver lunch, online charter schools are presumably unlikely to participate in the federal FRL program, in which case they might not collect the relevant data.

Data on English learners and students with disabilities are available in federal databases at the district level, but not the school level. Because charter schools constitute their own school districts in many states, it is possible to calculate the percentage of English learners and students with disabilities in the online charter schools operating in those states. In the 10 states³ where it was possible to calculate these percentages (for the 2012–2013 school year), students with disabilities were represented in online charter schools at approximately the same rate as in public schools overall: 14.4 percent of online charter students had disabilities (that is, they had individualized education plans); 13.9 percent of public school students overall in the same states had disabilities. This result contrasts with findings from various studies of brick-and-mortar charter schools, which usually found an underrepresentation of students with disabilities (for example, Government Accountability Office 2012). Online charter schools might provide unique opportunities for some students with disabilities who are not well served in conventional schools.

In contrast to students with disabilities, English learners appear to be substantially underrepresented in online charter schools relative to their percentages in the larger public school population. In the 10 states with available data, 0.4 percent of online charter students were identified as English learners, compared with 4.3 percent of all public school students. Again, this differs from their representation in brick-and-mortar charter schools, where the percentage of English learners nationally is approximately equivalent to their representation in conventional public schools (U.S. Department of Education 2013-14).

Online charter schools reported that the average length of stay for a typical student is a little more than two years, which is consistent with what CREDO found in student records data (Woodworth et al. 2015). Nonetheless, the average school reported that nearly 40 percent of its students who took the state assessments at the school in the spring of 2014 had not been enrolled in the school for the entire school year.

³ The 10 states include Arizona, Georgia, Idaho, Indiana, Louisiana, Michigan, Minnesota, Ohio, Pennsylvania, and Utah. This variable was calculated at the district level, whereas other CCD data were calculated at the school level. Because most online charters are their own school districts, this comparison is valid.

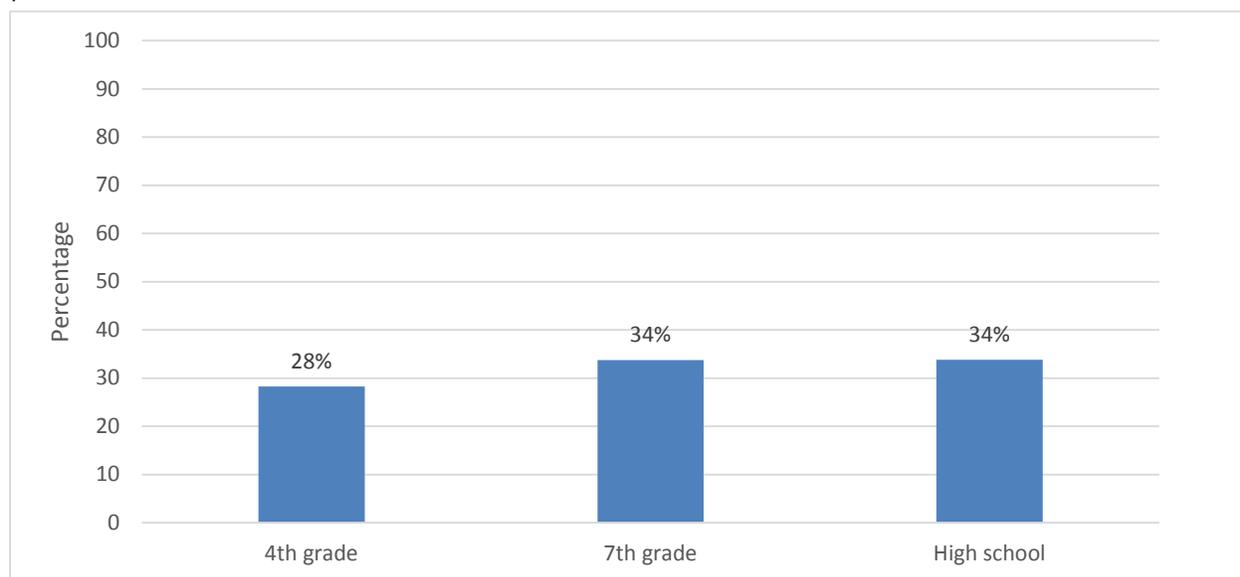
This page has been left blank for double-sided copying.

III. CURRICULUM, INSTRUCTION, ASSESSMENT, AND TECHNOLOGY

A. Delivery of instruction

Online schooling creates both constraints and opportunities for modes of delivering an instructional program. One potential advantage of online schooling is the opportunity to tailor the pace of instruction to the needs and desires of an individual student. In most online charter schools, a substantial amount of coursework is self-paced. Three-quarters (76 percent) of online charter schools include courses that are self-paced rather than tied to the calendar. Three-fifths (60 percent) reported that half or more of their courses are self-paced—including one-third (33 percent) of online charter schools that offer *only* self-paced instruction (though these enroll only 17 percent of the students in online schools). Schools relying exclusively on self-paced instruction are not limited to those serving middle or high school students: they include more than one-quarter of schools serving 4th grade as well as about one-third (34 percent) of schools serving 7th grade and high school grades (Figure III.1). In addition, the large majority of schools allow students to earn course credits by demonstrating mastery regardless of seat time, either in all courses (40 percent of schools) or in selected courses, subjects, or grades (45 percent of schools).

Figure III.1. Percentage of online charter schools exclusively using self-paced instruction

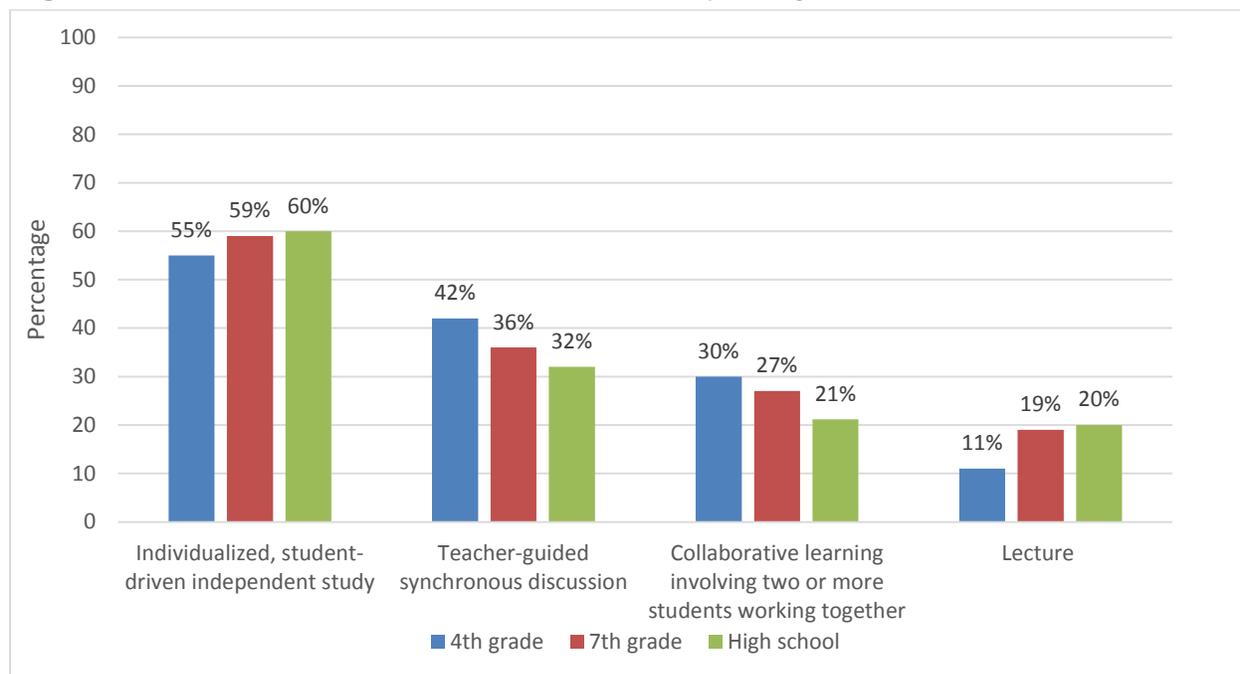


Consistent with the prevalence of self-paced courses, the instructional method used most frequently in online charter schools is individualized, student-driven independent study (Figure III.2). Independent study is nearly as common in 4th grade (in which 55 percent of schools use it frequently) as in 7th grade (59 percent) and high school (60 percent). For younger students in particular, this suggests that online charter schools must rely on considerable parental oversight. Later, we discuss parental responsibilities in online charter schools.

Schools reported that teacher-guided synchronous discussion (that is, students and teachers participating in a discussion at the same time) is the next most frequently used instructional method for all grades, used frequently in 32 to 42 percent of schools, depending on grade level (Figure III.2). Collaborative learning involving two or more students working together is used frequently in 30 percent of schools for 4th graders, 27 percent for 7th graders, and 21 percent for high school students, according to survey responses.

One way in which online charter schools can differ substantially from conventional, brick-and-mortar schools is that they rely very little on traditional lectures. Survey respondents indicated that lectures are not used frequently in more than one-fourth of online charter schools at any grade level (Figure III.2). A higher proportion of schools reported using lectures more frequently at the high school (20 percent) and 7th-grade (19 percent) levels than in 4th grade (11 percent). More than half (59 percent) of online charter schools reported using lectures rarely or never. The full list of responses on the use of different instructional approaches is noted in Appendix B, Table B.1.

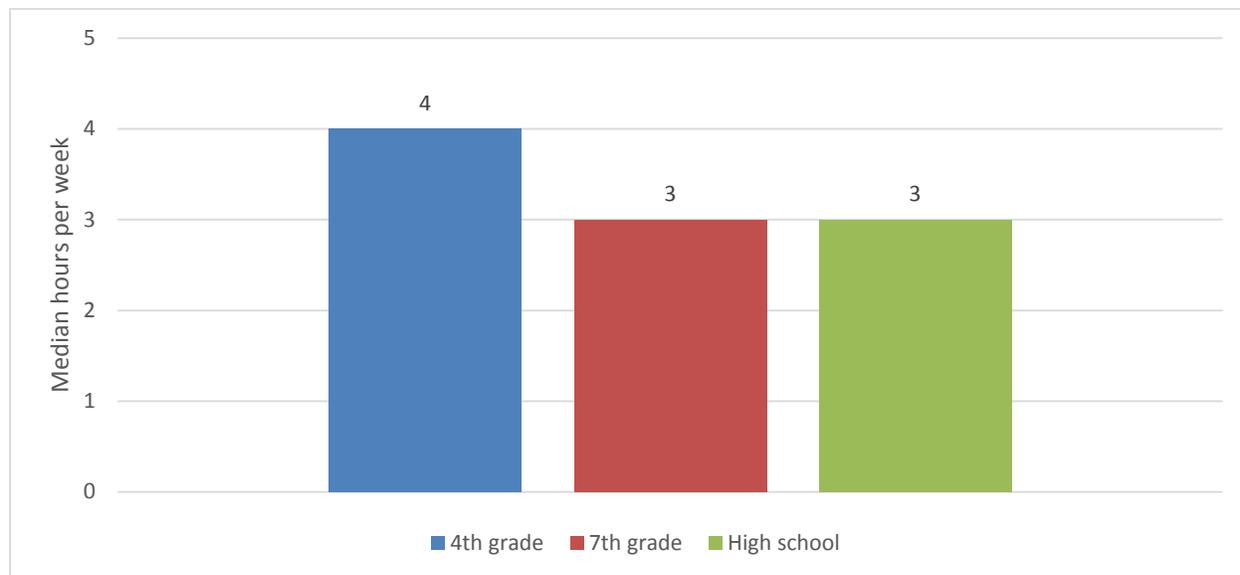
Figure III.2. Instructional methods used frequently in online charter schools



As might be expected, in most online charter schools, synchronous instruction (with teacher and students working at the same time) occupies less time than it does in conventional schools. In fact the difference is dramatic: *students in the typical online charter school have less synchronous instructional time in a week than students in a brick and mortar school have in a day*. Online charter schools reported a median of four hours per week spent in synchronous instruction in 4th grade, three hours in 7th grade, and three hours in high school (Figure III.3). Larger online charter schools tend to have somewhat more synchronous instructional time: the median online charter student is in a school that provides five hours of synchronous instruction per week in 4th and 7th grades, and six hours in high school. These numbers do not include

contact that occurs asynchronously (such as through email), which is not readily measurable in hours and minutes.

Figure III.3. Median weekly time spent in synchronous instruction



Most online charter schools have 6 hours or fewer of synchronous instruction weekly. Figure III.4 shows the distribution of weekly synchronous instructional time reported by online charter high schools. Three-quarters have 6 hours or fewer. In sum, the total amount of contact hours for students in most online charter schools is quite small. As the figure indicates, however, a small number of online charter schools provided substantially more synchronous instructional time: about 5 percent reported more than 20 hours weekly for high school students. Distributions of weekly time in synchronous instruction for 4th and 7th grades (not shown) are similar to the high school distribution.

As shown in Figure III.5, schools support synchronous instruction in several ways, the most common of which are telephone calls (88 percent), screen-sharing or web conferencing (84 percent), videoconferencing (76 percent), and audioconferencing (75 percent). Schools also reported using online chat forums (68 percent), instant messaging or other one-on-one chats (63 percent), and text messages (59 percent). A few online schools (6 percent) reported they used none of these supports.

Similarly, online charter schools reported using many different tools to support asynchronous instruction (with students and teachers working at different times). The most common tools reported were email (96 percent of schools), websites with instructional focus or content (95 percent), and interactive online exercises (94 percent) (Figure III.6). Many schools also reported using online textbooks (83 percent), recordings of lectures (79 percent), discussion forums or groups (72 percent), physical textbooks (64 percent), and social media (60 percent). Almost all schools (99 percent) reported using at least one support method.

Figure III.4. Distribution of time spent in synchronous instruction in online charter high schools

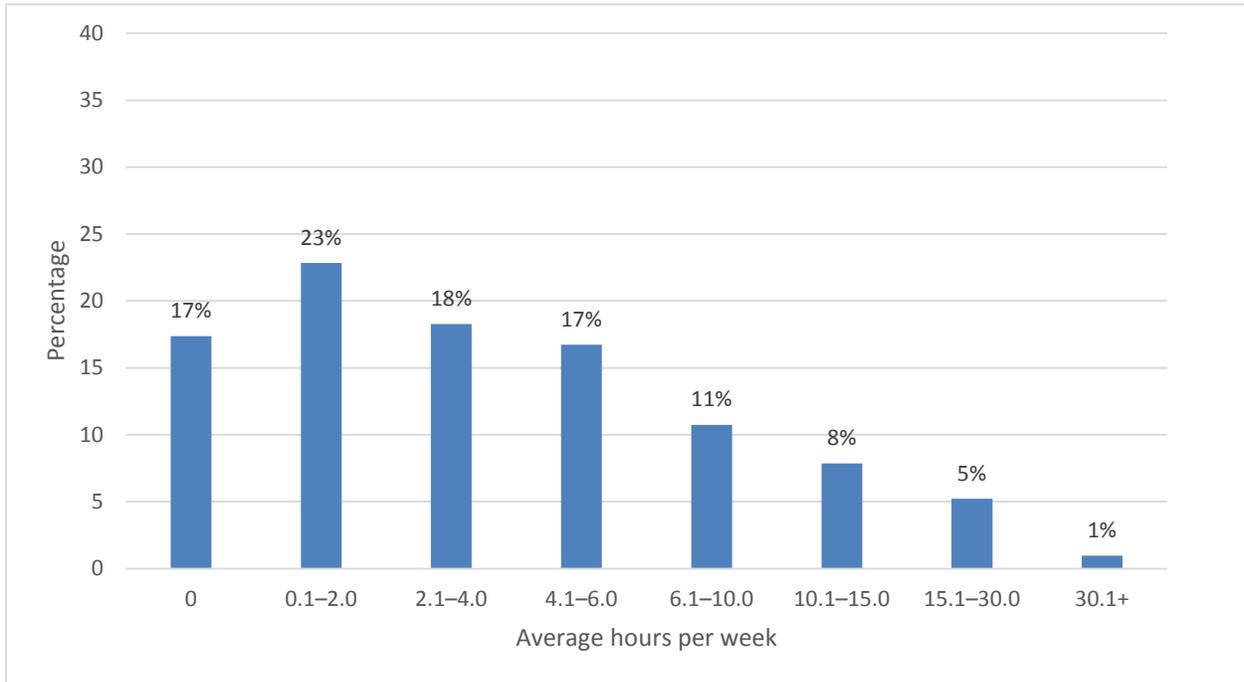


Figure III.5. Synchronous instruction support tools

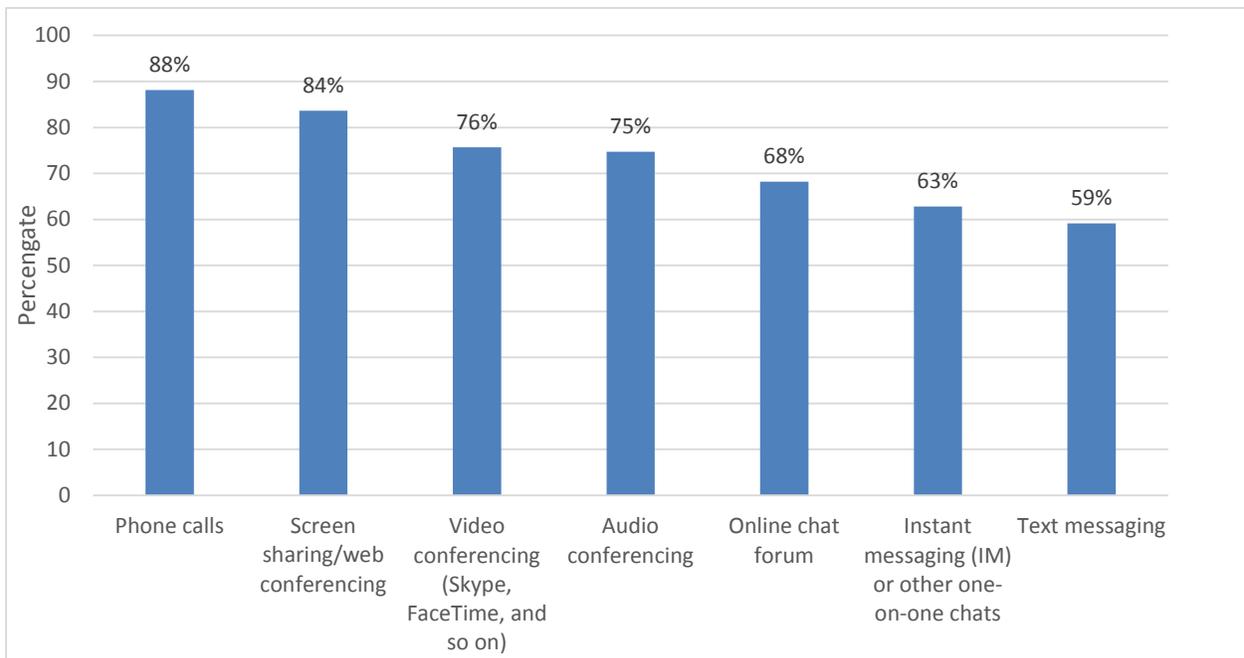
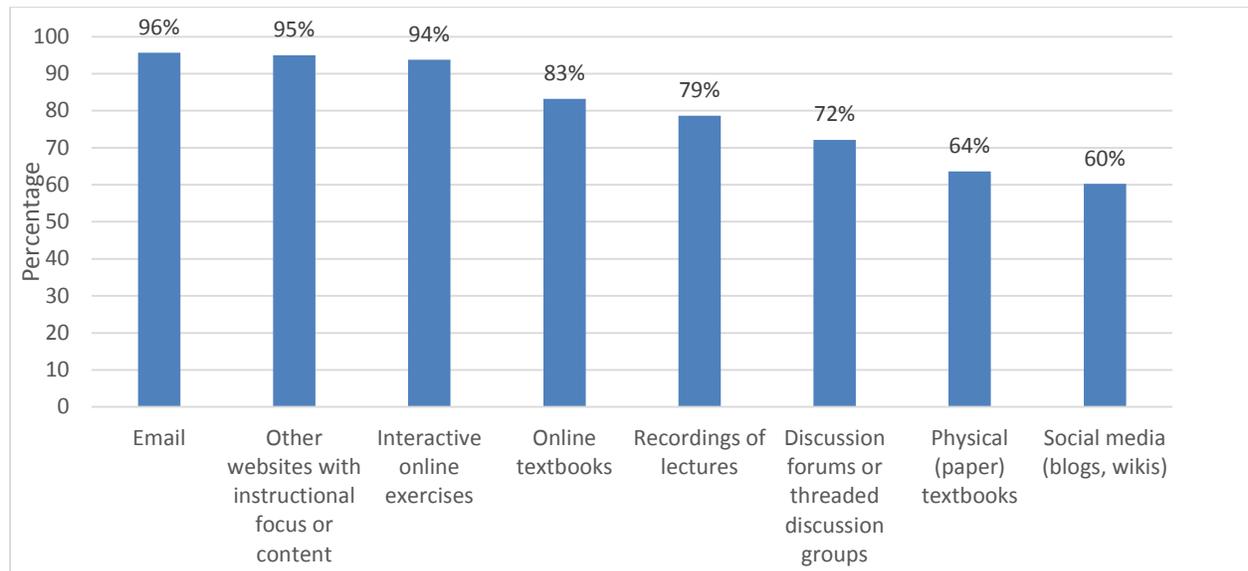


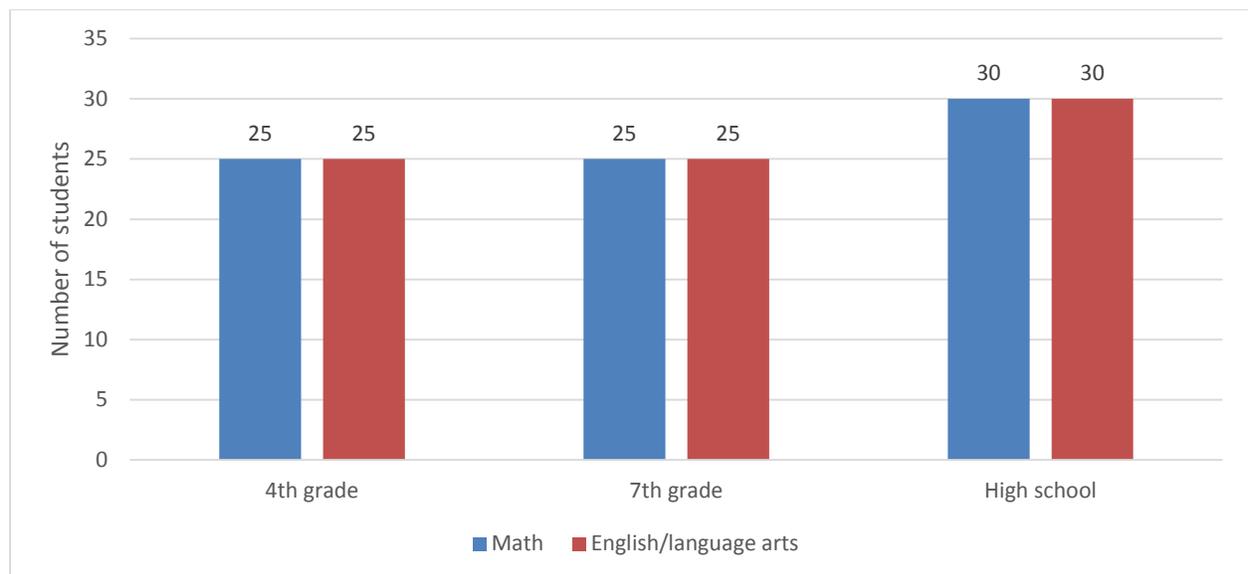
Figure III.6. Asynchronous instruction support tools



B. Class size and student-teacher ratio

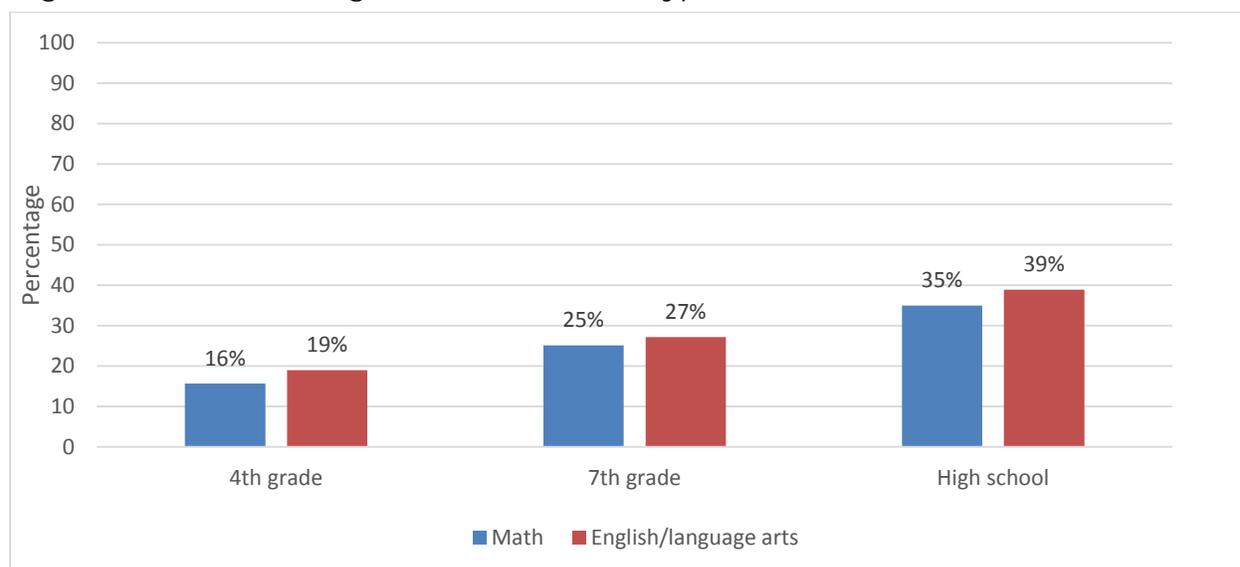
Online charter schools reported median class sizes of 25 students in 4th grade in both math and English/Language Arts (ELA) (Figure III.7) (these data exclude schools that rely entirely on individualized, self-paced courses for which class size has no clear meaning). Similarly, in 7th grade, median class sizes were also reported to be 25 students in both math and ELA. Median reported class sizes rise to 30 students in both subjects in high school.

Figure III.7. Median class sizes



Median class sizes obscure wide variation among different online charter schools. Classes of more than 50 students are relatively common in middle and high school grades (Figure III.8).

Figure III.8. Percentage of schools with typical class size of 50 or more



Larger class sizes are more common in larger online schools, so the percentage of students enrolled in schools with typical class sizes of 50 or more students is greater than the numbers shown in Figure III.8. One-quarter of 4th-grade students and half of 7th-grade and high school students are enrolled in schools with typical class sizes of 50 or more.

Shifting our attention from reported class size to the ratio of students to full-time teachers facilitates a comparison of online charter schools to brick-and-mortar charter schools and to conventional public schools. Using the CCD, it is possible to compare student-teacher ratios across sectors. Figure III.9 shows the average student-teacher ratio in online charter schools compared with brick-and-mortar charter schools and conventional public schools in the states where the online charter schools operate. Online charter schools have nearly 30 students per full-time teacher, substantially more than the 20 students per teacher found in brick-and-mortar charter schools and 17 students per teacher in conventional public schools in the same states.

About one-quarter of online charter schools reported that their typical class includes instructional staff in addition to the teacher. As seen in Figure III.10, there is not much difference across grades and subjects in the proportion of schools using additional instructional staff. Moreover, schools with larger classes are no more likely to use additional instructional staff to support the teacher of record. Among the schools reporting typical class sizes of more than 50 students, no more than 36 percent (and fewer in most grades and subjects) reported using supplemental instructional staff in addition to the teacher of record (not reported in the figure).

Figure III.9. Students per full-time teacher

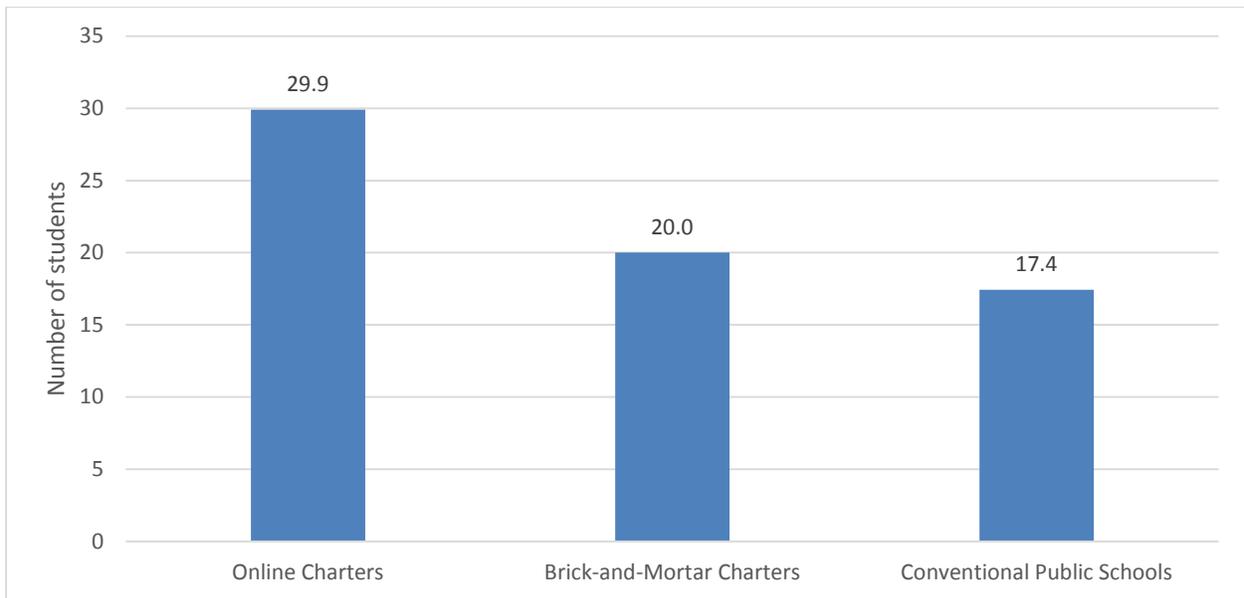
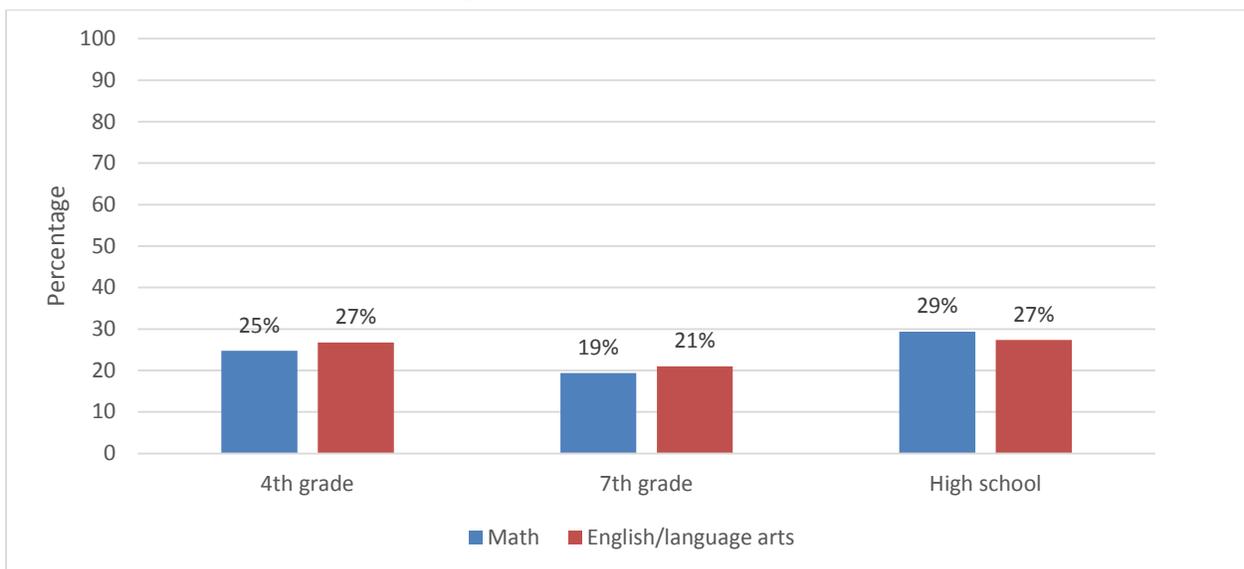


Figure III.10. Percentage of online charter schools using instructional staff in addition to the teacher in a typical class



C. Instructional and other support services

Nearly all online charter schools (97 percent) indicated they provide support services to students: almost three-quarters (73 percent) offer study-skills classes; two-thirds (65 percent) offer mental or behavioral health services; 87 percent offer speech and language therapy; and 63 percent have a dropout prevention or credit recovery program for students who previously dropped out of school or are at risk of doing so. Among the schools that have a drop-out prevention or credit recovery program, the median number of participating students is 20. Only two-thirds (65 percent) of online charter schools offer special instruction for English learners,

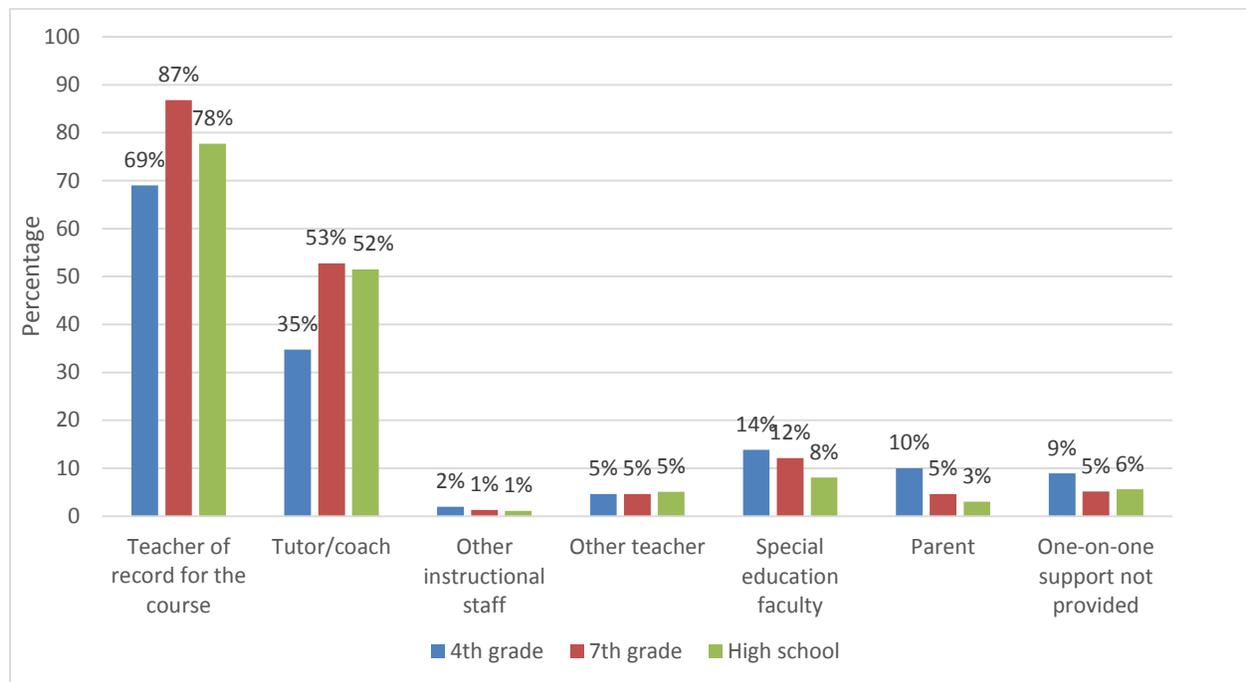
perhaps helping to explain why such students are underrepresented in the sector. Extra help for struggling students is available in the form of supplemental group instruction in 84 percent of schools and one-on-one tutoring in 90 percent of schools, according to their reports.

More generally, the majority of schools reported that they provide one-on-one instructional support to students. Eighty-three percent of online charter elementary schools, 91 percent of middle schools, and 89 percent of high schools reported a typical student spends time in one-on-one interaction with a teacher or tutor in an average week. Schools that offer one-on-one instructional support reported medians of 45 to 60 minutes of one-on-one instructional time per week, with only small differences by grade level. In other words, the small amount of synchronous instructional time provided by most online charter schools is not coupled with a large amount of one-on-one interaction with teachers. This suggests that most online charter schools expect that the bulk of learning will occur during a student’s individual engagement with the course material, perhaps with the help of a parent.

Among the schools providing one-on-one instructional support, most expect the teacher of record for the course to provide support (Figure III.11). Many schools also use tutors or coaches to provide one-on-one instructional support, with the fraction rising from one-third in 4th grade to half in 7th grade and high school.

Figure III.11. Staff responsible for one-on-one instructional support in online charter schools

Percentage of online charter schools using each type of staff for one-on-one instructional support



D. Curriculum and specialized programs

Most online charter schools do not develop their own curriculum. For more than three-quarters of online charter schools, curricula are purchased from outside providers (51 percent) or provided by the school's affiliated management organization (27 percent). Some schools (19 percent) create their curricula in-house, which is either developed by individual course instructors (12 percent) or developed for the school as a whole and shared across related courses (7 percent). A small number of schools reported their curricula are a blend of purchased curricula and in-house development.

Most schools reported that they offer students opportunities for instruction in fine arts (80 percent) and music (61 percent). Sixty percent of schools have a talented or gifted program. Almost three-quarters (73 percent) of schools offer clubs or activities for students.

Many schools offer additional specialized programs for high school students, mainly in the form of Advanced Placement (AP) courses, offered by 83 percent of online charter high schools. But in most of these schools, only a few students are enrolled in AP courses: median AP enrollment among schools with AP courses is 10. At the high end, 5 percent of schools reported more than 600 students in AP courses. A few online charter schools (3 percent) offer an International Baccalaureate (IB) program to high-school students.

E. Student assessment

Most online charter schools conduct a diagnostic entry assessment for students who have just enrolled (not an assessment to determine eligibility for admission). An overwhelming majority of schools (95 percent) reported that they pull the student's record from the previous school, 81 percent call the household, and 28 percent say that they visit the student's home. In the entry assessments, 79 percent of schools reported they measure academic skills, 66 percent measure English language skills, and 60 percent measure potential barriers for online learning. Almost half of schools (49 percent) reported they assess the level of parental or other home supports for online learning. Fifty-nine percent of schools assess students for learning disabilities, and 46 percent assess for other disabilities.

Most online charter schools assess their students frequently. About two-thirds of schools reported that they conduct student assessments with weekly or greater frequency at all grade levels (Table III.1); assessments are especially frequent in larger schools. The percentage of schools conducting assessments at least weekly varies only slightly by grade and subject, from 63 to 71 percent. These numbers include 11 to 15 percent of schools that conduct assessments in ELA and math classes *daily*. In middle and high school math and ELA classes, about a quarter of schools reported that the frequency of student assessments varied based on student pace, whereas only 13 percent of 4th-grade math and ELA classes had assessments that varied in frequency depending on the student's pace.

Eighty-seven percent of online charter schools reported that preparation for state assessments is embedded in regular courses. Three-fifths of online charter schools (enrolling 73 percent of online charter students) reported requiring students to take a separate test preparation course. Intensive, targeted support for students who have difficulty achieving proficiency

standards on state assessments occurred in 77 percent of schools (enrolling 96 percent of online charter students), according to respondents.

Table III.1. Frequency of student assessments

	Percentage of online charter schools assessing students with each frequency				
	Daily	Weekly	Monthly	Less often than monthly	Varies based on student pace
4th grade, Math	13	58	17	0	13
4th grade, ELA	13	56	18	0	13
7th grade, Math	12	53	9	0	25
7th grade, ELA	11	53	9	0	27
High school, Math	15	52	6	1	26
High school, ELA	12	51	7	1	28

F. Technology

Most online charter schools provide a variety of technology to at least some of their students; however, in many schools computers are not uniformly provided to all students. All students receive computers in only 56 percent of online schools (serving 35 percent of students in the sector), and another 33 percent supply a computer to some but not all students (Table III.2). Internet service is provided (directly or by subsidizing purchase from an outside provider) to all students in 29 percent of schools and to some students in an additional 31 percent of schools; the remaining 40 percent of schools expect families to secure Internet access. Computer accessories such as webcams, microphones, headsets, printers, or scanners are provided to all students by 45 percent of schools and to some students by 34 percent of schools. Table III.2 shows the full list of school responses on technology provision.

Table III.2. Technology provided to students of online charter schools

	Percentage of online charter schools		
	School provides to all students	School provides to some but not all students	Provided by students' families
Internet connection (for example, Internet service or subsidy for Internet service, modem, router, and/or hot spot)	29	31	40
Computer (for example, laptop or desktop computer, or tablet computer such as iPad)	56	33	11
Computer accessories (for example, webcam, microphone, head set, CD/DVD drive, printer, or scanner)	45	34	22

Online charter schools provide technology-related technical support to students in a variety of ways. The most common technical support that schools provide is troubleshooting via remote control of the student's computer (61 percent). Forty-two percent of schools use an online ticketing system to handle students' technical problems. Fewer than half of schools (42 percent) reported that they provide in-person set up of student computers. Eighty-seven percent of schools

offer live technical support to students. Of these schools that provide live technical support, the live support is available to students outside of standard business hours on weekday evenings in 46 percent of schools and on weekends in 31 percent of schools.

Most but not all schools also provide technical support to teachers. Seventy-five percent of schools reported live support via telephone or chat is available to teachers, and 49 percent provide manuals, technical guides, or frequently-asked-question documents to teachers. In addition to standard business hours, 28 percent of schools report that live technical support is available to teachers during weekday evenings and 18 percent of schools make it available to teachers on weekends.

This page has been left blank for double-sided copying.

IV. STUDENT AND PARENT ENGAGEMENT

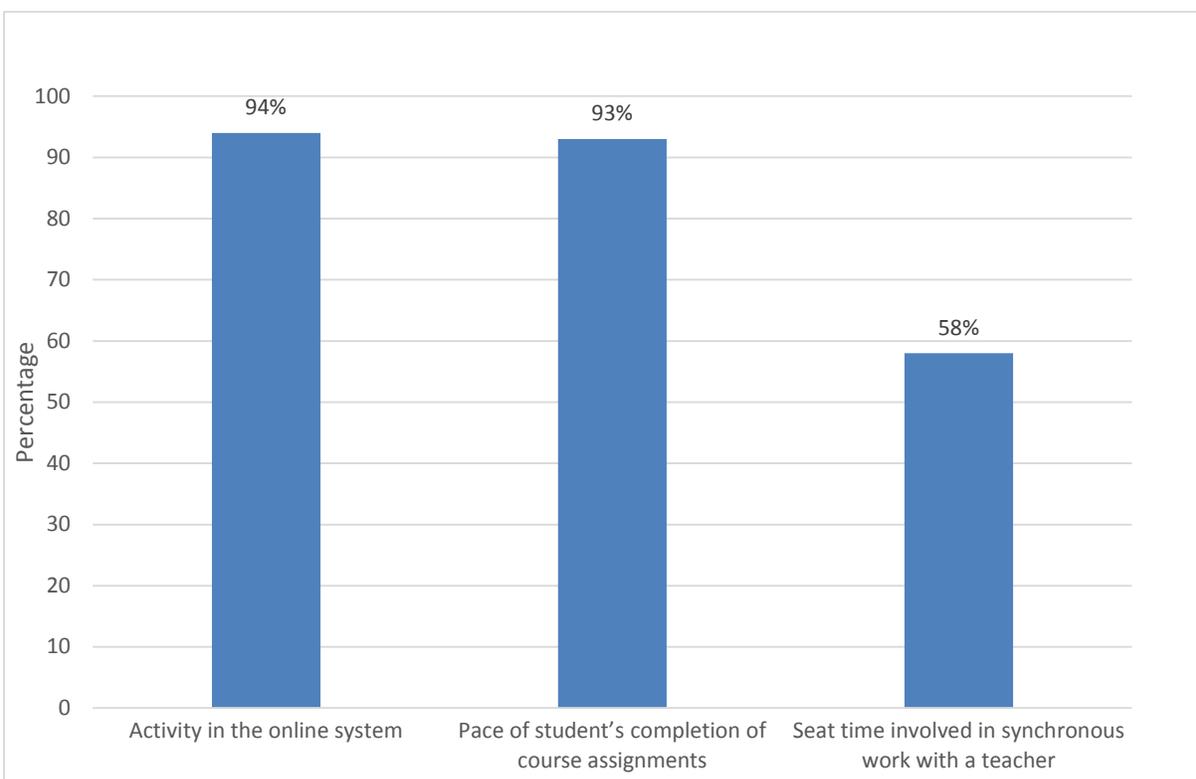
A. Student engagement

When asked an open-ended question about their greatest challenges in leading online charter schools, principals identified student engagement most often—nearly three times as often as any other issue. This challenge is inherent to online schooling, because the school has no way to ensure that the students are in their seats and focused on their coursework. The challenge is likely to be particularly acute for the subset of students enrolled in online charter schools because they were not fully engaged in conventional, brick-and-mortar schools.

Most online charter schools reported schoolwide policies spelling out expectations for students. Almost all schools (99 percent) reported schoolwide policies for the completion of assignments, and 91 percent of schools have policies for class participation. Nearly three-quarters of schools (74 percent) have schoolwide policies on attendance in synchronous instruction.

In addition to setting expectations for students, schools also use online tools to monitor students' attendance and participation. Almost all schools monitor students' completion of course assignments (93 percent) and activity in the online system (94 percent), and the majority (58 percent) monitor students' seat time in synchronous work with a teacher (Figure IV.1).

Figure IV.1. Monitoring students' participation
Percentage of online charter schools using each approach to monitor students' participation



When a school identifies a student as disengaged, most schools first respond by contacting a parent. The vast majority of schools (97 percent) reported that they place personal telephone calls to a parent when a student is disengaged, and 95 percent email the parent. Forty percent of schools reported that they actually visit the home, and 47 percent reported contacting social services organizations on behalf of disengaged students. Half of schools reported offering participation incentives to students identified as disengaged.

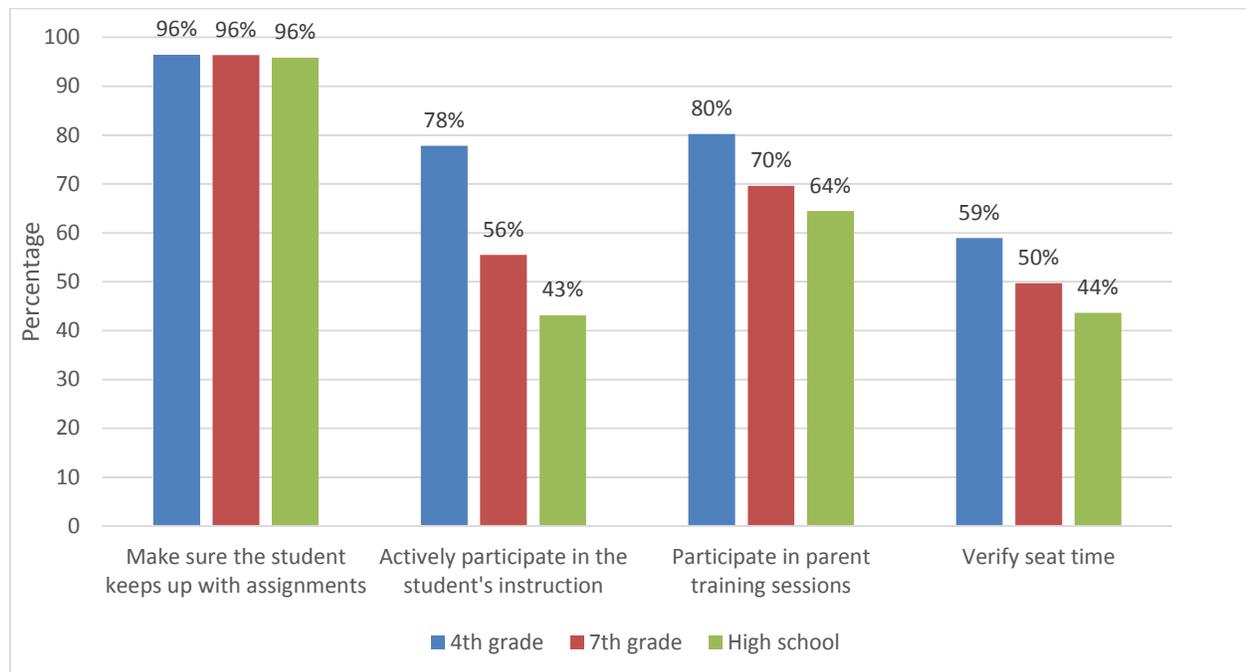
B. Parent engagement

Most online charter schools have substantial expectations of parents—surely necessitated in part by the limits of the schools’ tools for keeping students engaged, but perhaps also a side effect of the small number of contact hours they provide for students.

Not surprisingly, parental responsibilities are greatest at the elementary level, but online charter schools expect parents to play a role even for high school students. Nearly all online charter schools, at all grade levels, expect that parents will make sure the student keeps up with school assignments (Figure IV.2). Expectations vary for other monitoring and support tasks. About half of online charter schools expect parents to verify students’ seat time. More than half of schools at all grade levels (including 80 percent of schools at the elementary level) expect parents to participate in training programs.

Figure IV.2. Roles of parents in online charter schools

Percentage of online charter schools expecting parents to play particular roles

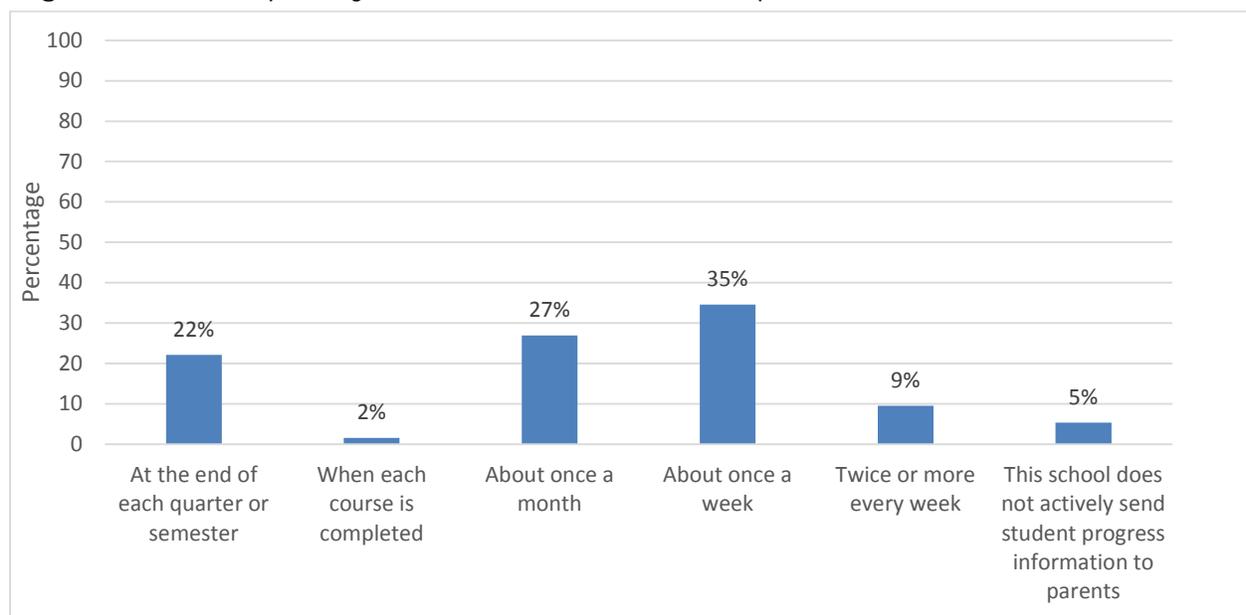


Perhaps most notably, many online charter schools expect parents to actively participate in the student’s instruction. At the upper elementary (4th-grade) level, nearly four of five online charter schools (78 percent) expect parents to participate actively in the student’s instruction

(Figure IV.2). This percentage declines for older students, but even at the high school level, 43 percent of online charter schools expect parents to participate actively. The schools are clearly aware that the success of their approach depends on substantial parental support—which is surely even more critical when the school provides only a few hours of synchronous instructional time each week. The expectation of active parental involvement in instruction might also explain why the great majority of online charter schools ask parents to participate in training sessions.

Schools reported that they regularly communicate students' progress to parents via email, telephone, or postal mail. One-third of schools (35 percent, serving 25 percent of online charter students) send information to parents once a week, with the next most reported frequencies being about once a month (27 percent) and at the end of each quarter or semester (22 percent), as seen in Figure IV.3. Only 9 percent of schools (serving 5 percent of students) reported contacting parents more frequently, twice or more every week. More than three-quarters (77 percent) of schools provide parents with a measure of student engagement or participation.

Figure IV.3. Frequency of communication with parents



Most online charter schools—94 percent—reported monitoring teachers' contact with students and parents. Almost two-thirds (64 percent) of online charter schools indicated that monitoring teachers' contact with students and parents is a responsibility of the principal. Smaller numbers of schools gave other staff the responsibility for monitoring contact. Six percent of schools do not formally monitor teachers' contact with students and parents.

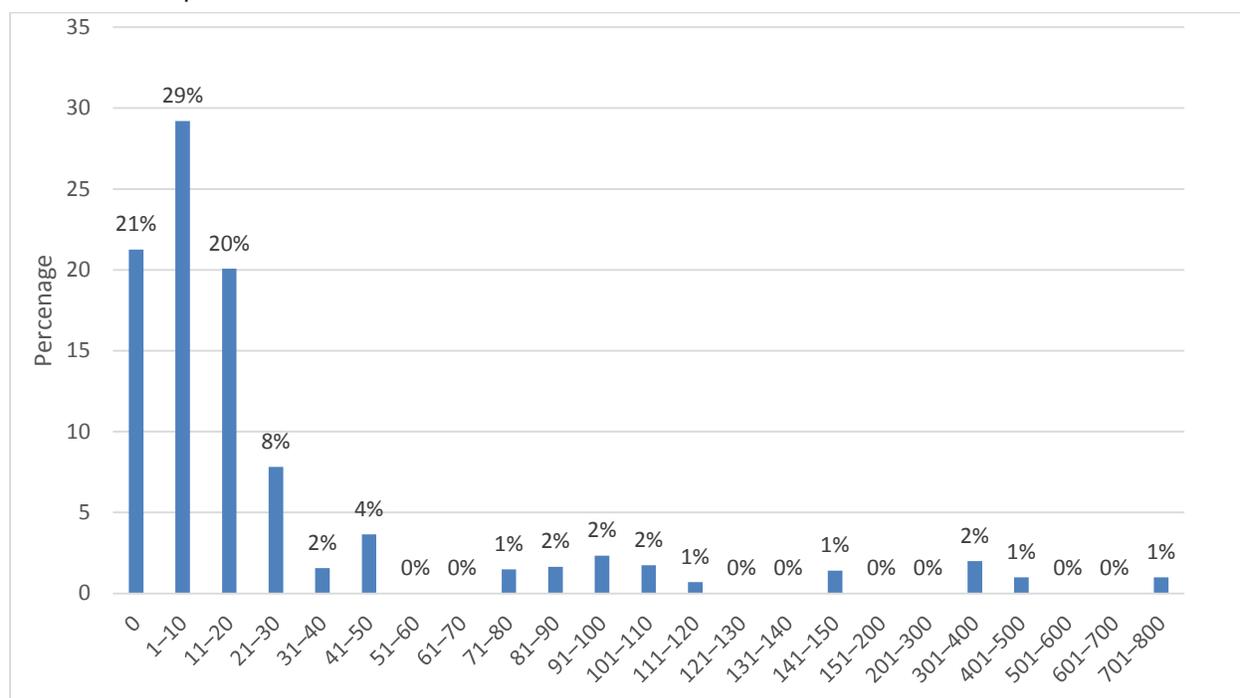
This page has been left blank for double-sided copying.

V. TEACHERS AND STAFFING AT ONLINE CHARTER SCHOOLS

A. Staffing levels and teaching loads

A few online charter schools employ a large number of teachers, but the great majority of these schools are small. Online charter schools report an average of 34 full-time equivalent (FTE) teachers, but the distribution is skewed, as can be seen in Figure V.1. Four percent of schools employ more than 300 FTE teachers. The number of FTE teachers at the median online charter school is only 10. Seventy-eight percent of online charter schools employ 30 or fewer FTE teachers, but these serve only 27 percent of online charter students.

Figure V.1. Percentage of online charter schools with different numbers of full-time equivalent teachers



Most online charter schools (65 percent) rely on both full- and part-time teachers, but across the sector, schools reported that four of every five teachers (81 percent) are full-time. Only 8 percent of schools (serving 1 percent of online charter students) rely exclusively on part-time teachers. These schools are small, having on average 21 part-time teachers.

Most schools do not have many additional instructional or support staff, relative to the number of teachers on staff. The median online charter school does not use any tutors or teacher aides/instructional assistants, and has only one guidance counselor and one other instructional support person (Table V.1). Mean numbers of instructional support staff are only slightly higher.

Table V.1. Mean and median number of support staff per school

	Mean	Median
Teacher aides/instructional assistants	1.7	0
Tutors	1.6	0
Guidance counselors	2.1	1
Other instructional support staff	3.3	1

In conventional schools, teachers in higher grades tend to be responsible for larger numbers of students due to subject specialization and the teaching of multiple class sections each day. The online environment could, in principle, make it possible for teachers to specialize in younger grades as well as higher grades. In practice, online charter schools show a similar pattern of specialized teachers serving more students at higher grades. Among the schools serving the elementary level, 89 percent reported that most 4th-grade core academic teachers are generalists who are responsible for multiple subjects. In the median online charter high school, full-time teachers are expected to teach 125 students, more than the medians for 7th-grade teachers (50 students) and 4th-grade teachers (40 students). Loads are slightly heavier in larger online charter schools. In addition, the maximum student load reported for a typical high school teacher is greater (500 students), compared with 7th-grade teachers (270 students) and 4th-grade teachers (100 students).

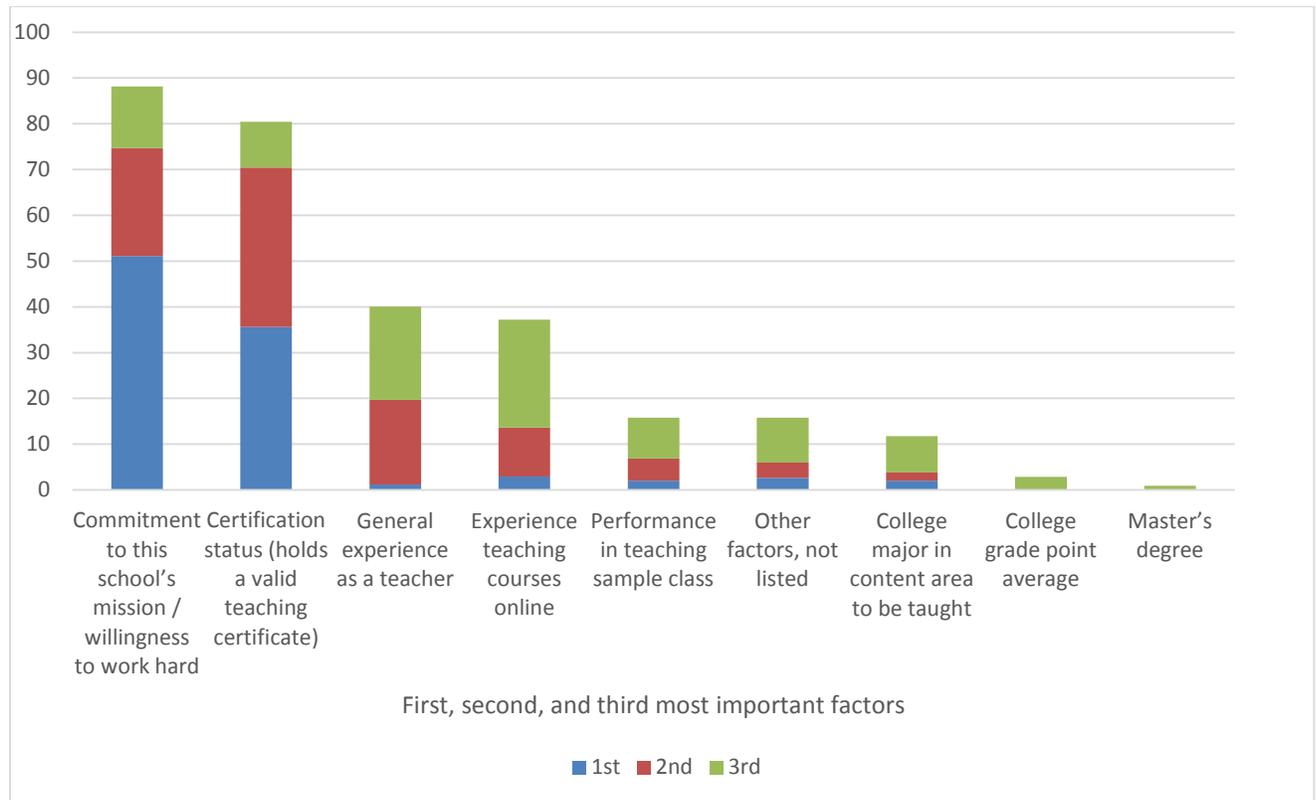
B. Teacher hiring and experience

Online charter schools reported the most important factor when hiring a teacher is the teacher's commitment to the school's mission and willingness to work hard (ranked most important by 51 percent of schools and as one of the top three factors by 88 percent of schools) (Figure V.2). Commitment to the school's mission was similarly found to be the most important factor in hiring decisions in a national study of charter school management organizations (CMOs) that operate brick-and-mortar charter schools (Furgeson et al. 2012). A teacher's certification status was the second most important factor in hiring in online charter schools (ranked as most important by 36 percent and in the top three factors by 81 percent). In this respect, online charter schools differed from brick-and-mortar CMO-affiliated schools, for which performance in teaching a sample class was the second most important factor in hiring determinations.

Online charter schools reported that all other factors ranked well behind the first two in importance in hiring decisions. A teacher's general experience teaching was deemed a top-three factor in 40 percent of schools, and experience teaching courses online a top-three factor in 37 percent of schools. Three other candidate factors—performance in teaching a sample lesson, other factors, and college major in content area to be taught—were in the top three factors for 16, 16, and 12 percent of schools, respectively. Two factors listed—college grade point average and holding a master's degree—were each chosen among the three most important factors for fewer than 3 percent of schools. Two factors—core on a test (such as Praxis) and the quality of candidate's preservice teacher training program—were never chosen among the three most important factors for teacher hiring and are not shown in the figure.

Schools reported that the median teacher has taught in the school for four years. The median tenure is similar across schools serving different grades and among schools of different sizes. Given that these schools are quite new, it is not surprising that this is a shorter duration than public school teachers nationally, for whom the average tenure in their current schools was eight years according to the Department of Education’s 2011–2012 Schools and Staffing Survey (SASS).

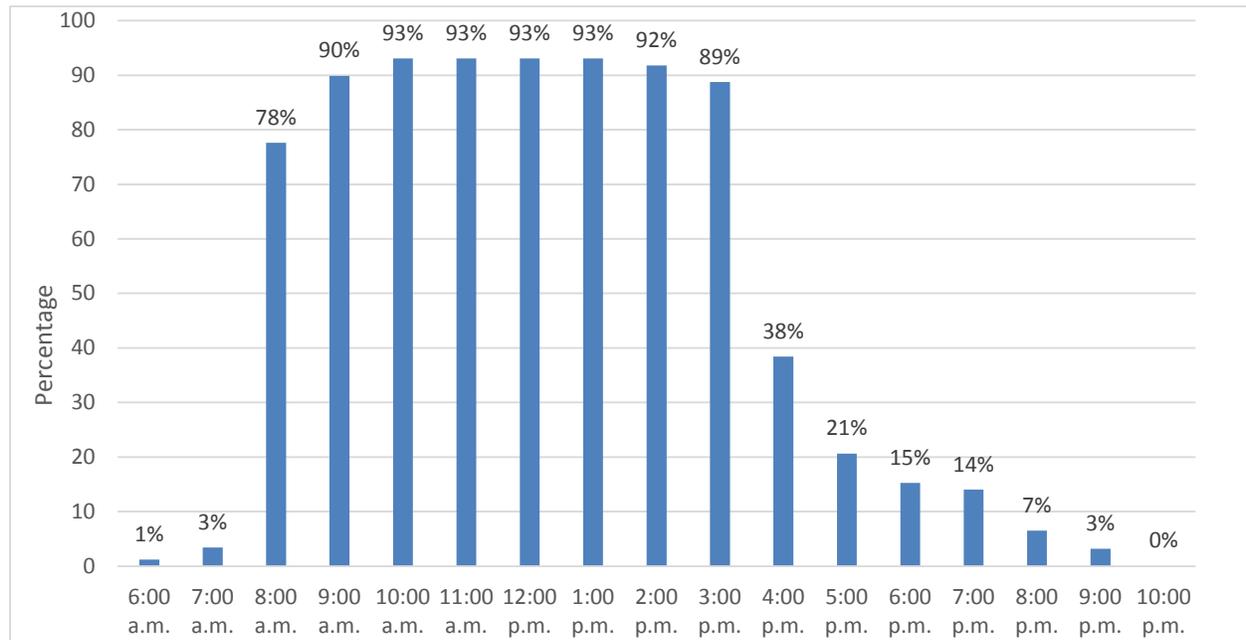
Figure V.2. Most important factors in teacher hiring in online charter schools



C. Teachers’ responsibilities and expectations

Even though students’ time in synchronous instruction is limited in most online charter schools, the schools expect teachers to be available to students during the hours when conventional schools are typically operating, from 8:00 a.m. until 3:00 p.m. (Figure V.3). Twenty-two percent of schools expect teachers to be available after 5:00 p.m. Forty-one percent of schools reported that their teachers come to a central location to do most of their teaching.

Figure V.3. Percentage of online charter schools expecting teachers to be available at different hours of a weekday



For the classes they teach, teachers in online charter schools tend to have more responsibility for individual attention to students than for developing curriculum, lesson planning, and lecturing. Teachers are responsible for identifying struggling learners, grading student work, communicating with parents, and tutoring, according to 86 to 96 percent of schools (Table V.2). Meanwhile, two-thirds (68 percent) of schools reported the teacher of record for a particular class is responsible for its lesson planning; 63 percent made teachers responsible for lecturing (which, as previously noted, is not used at all in some schools); and only 38 percent of schools (serving 26 percent of students) reported the teacher is responsible for developing the curriculum. The relatively large number of teachers who are not even expected to plan their own lessons might be due partly to the fact that curricula are typically purchased or provided, and perhaps is also related to the fact that so many courses are self-paced.

In most schools (86 percent) teachers are also responsible for managing online learning environments. In 38 percent of schools, teachers are also responsible for troubleshooting technical issues (Table V.2).

Table V.2. Teachers' responsibilities in online charter schools

	Percentage of schools in which teachers are responsible for activity
Identifying struggling learners	96
Grading students' work	92
Communicating with parents	91
One-on-one tutoring	86
Managing online learning environments (for example, online forums or discussion boards)	86
Lesson planning	68
Lecturing	63
Developing curriculum	38
Troubleshooting technical issues	38

D. Monitoring and evaluating teachers

In almost all online schools (93 percent), a principal or other administrator is expected to observe and provide feedback to teachers (Table V.3). Observation necessarily means something different for online instruction than it does in conventional classrooms, but the same technology that enables teachers to provide instruction online can enable administrators, instructional coaches, or teaching colleagues to observe the online interactions between teachers and students. A majority of online charter schools indicated that other educators, in addition to the principal, conducted observations and feedback. Fifty-eight percent of schools reported that their teachers are observed by peers, and 59 percent (serving 74 percent of students) said their teachers are observed by a master teacher or coach.

Table V.3. Teacher evaluation methods and frequency

	Percentage of schools reporting number of times per year each event occurs				
	Not at all	Once	2 or 3 times	4–7 times	8 or more times
Observed by and received feedback from a peer	42	17	27	8	6
Observed by and received feedback from a master teacher or someone else who coaches teachers	41	13	26	16	5
Observed by and received feedback from a principal, administrator, or someone else who monitors performance	7	22	43	13	15
Asked to submit lesson plans to a master teacher, department chair, principal, or other administrator for review	55	7	19	6	13

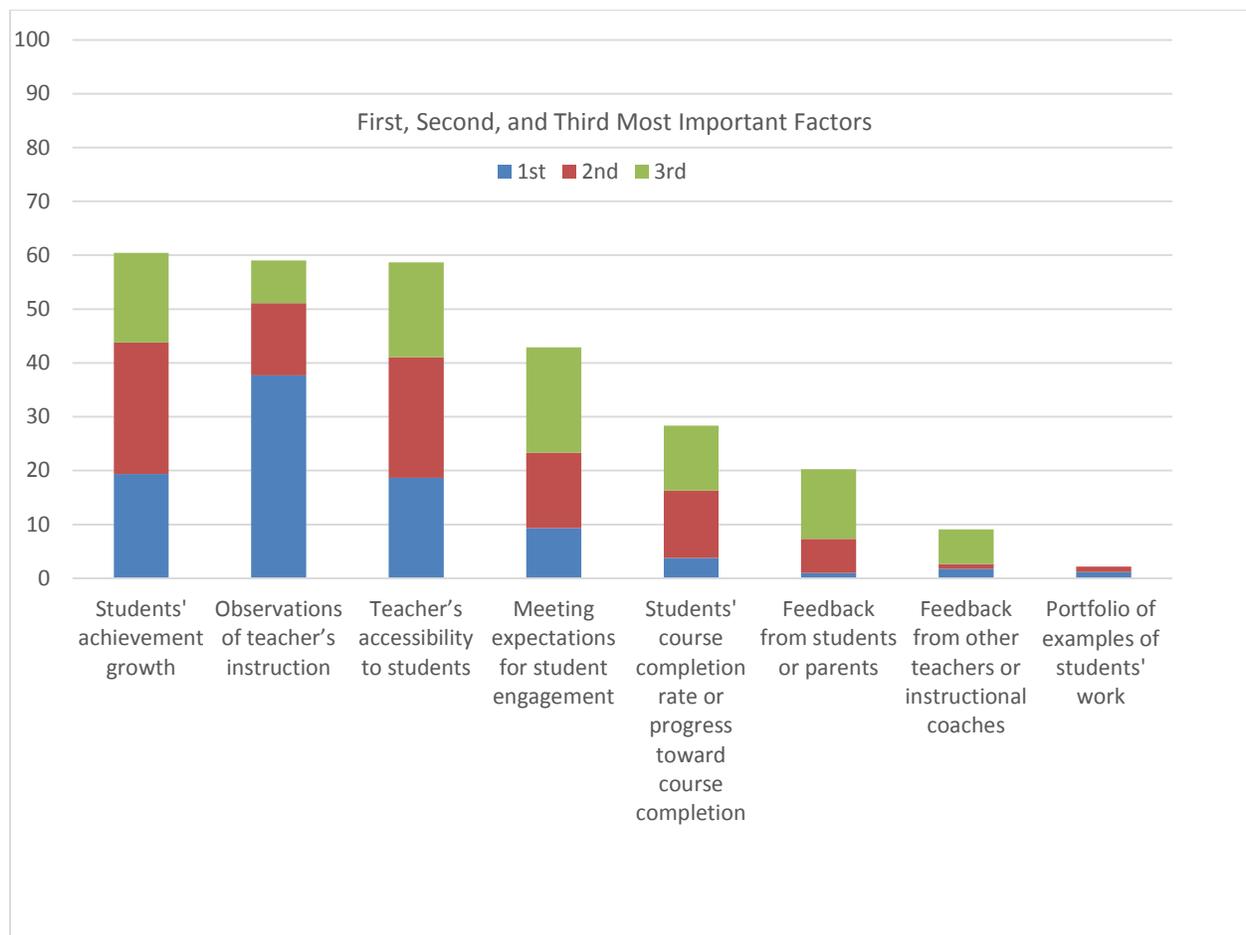
In the median school, teachers are observed by principals or administrators two to three times annually (Table V.3). This is less frequent than reported by principals of brick-and-mortar charter schools in CMOs, most of whom reported that their teachers were observed by

administrators nearly eight times annually (Furgeson et al. 2012). That study also included a comparison group of nearby (mostly urban) conventional public schools in which principals conducted observations four to seven times annually—less frequently than their colleagues in CMOs, but still more frequently than online charter principals.

Two to three times annually was also the median number of observations by master teachers or coaches and by peers, in the subset of online charter schools in which those staff conducted observations. Only 45 percent of schools (serving 57 percent of students) expected teachers to submit lesson plans for review, perhaps in part because curricula were often centralized and teachers did not have responsibility for planning lessons. More detail on observations and review of lesson plans is included in Table V.3.

Online charter schools reported the most important factors they consider when evaluating their teachers. By far, the most important factors considered are observations of teacher’s instruction, students’ achievement growth, and the teacher’s accessibility to students (Figure V.4). Feedback from colleagues or coaches was rarely used in teacher evaluation, despite the fact that most schools said that colleagues and coaches observed teachers’ instruction.

Figure V.4. Most important factors for teacher evaluation
 Percentage of schools ranking each factor first, second, or third in importance



E. Teachers' compensation

The most common factors that schools consider when determining teachers' compensation are teaching experience (55 percent) and whether the teacher coaches or mentors other teachers (53 percent), as seen in Table V.4. Almost half of schools (46 percent) indicated that teachers are paid more for advanced degrees. About one-quarter of schools indicated that either filling a hard-to-staff position, additional certifications, number of students taught, students' achievement growth, or teacher evaluation reports are also considered. Students' proficiency levels and course completion rates were not common factors given by schools that responded to the question (16 and 9 percent of schools, respectively).

Table V.4. Factors that affect teachers' compensation in online charter schools

Factors that affect teachers' compensation	Percentage of online charter schools using as a factor in compensation
Teaching experience	55
Serving as a mentor or coach to other teachers	53
Advanced degrees, such as master's or doctoral degrees	46
Filling a hard-to-staff position	28
Additional certifications	27
Number of students taught	26
Students' achievement growth	25
Teacher evaluation results	24
Students' proficiency levels	16
Course completion rates of students	9

These findings suggest that the same characteristics that are most important in determining compensation of teachers in conventional public schools are most often used in online charter schools. Nonetheless, it is notable that nearly half of online charter schools do *not* consider teaching experience in determining compensation, and more than half of online charter schools do not consider advanced degrees in determining compensation.

In a few online charter schools, teachers' compensation is also determined in part by collective bargaining agreements and the ability of teachers to earn tenure. Teachers are covered by a collective bargaining agreement in 9 percent of online charter schools (serving only 5 percent of students), and teachers can earn tenure in 11 percent of the schools.

F. Professional development

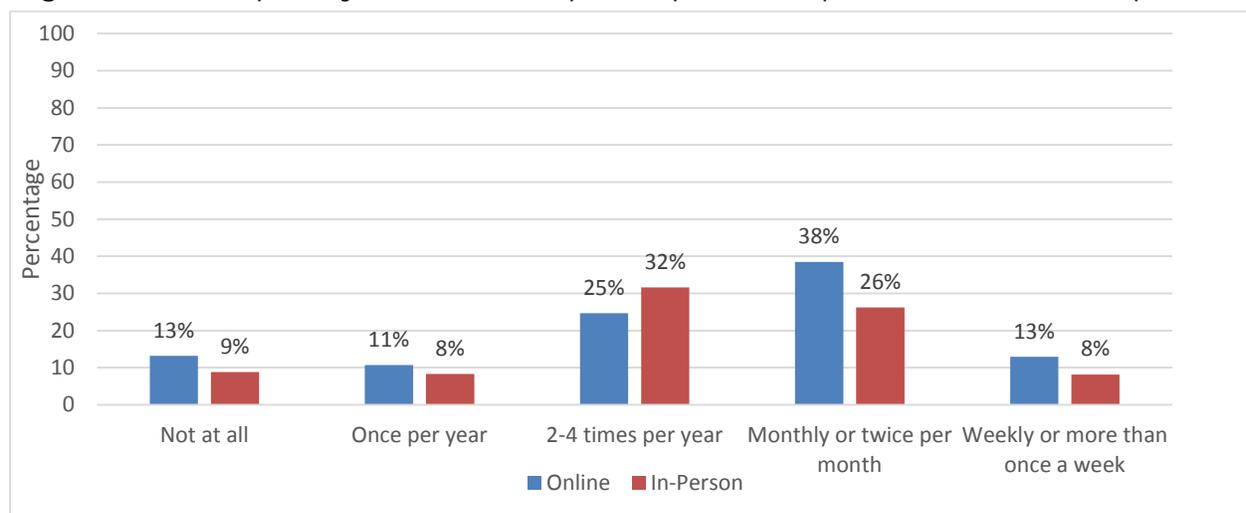
In the 2013–2014 school year, online charter schools reported that teachers participated in a range of online and in-person professional development and faculty meetings. Nearly all schools (92 percent) said their teachers participated in professional development either online or in person (or both). Most but not all schools (89 percent) said they provided teachers with paid time off for professional development.

More than half of the schools (51 percent) serving three-quarters (74 percent) of students reported that synchronous, online professional development involving groups of teachers took

place at least monthly (Figure V.5). About 13 percent of schools reported teachers participated in online sessions at least weekly, and 38 percent reported monthly or twice-monthly participation. The remaining schools—which tended to be smaller schools—reported online professional development activities occurring less often. One-quarter (25 percent) of schools reported their teachers participated two to four times per year and 11 percent reported once a year. Thirteen percent reported their teachers did not attend online professional development sessions with other teachers from the same school.

As might be expected, most online charter schools reported in-person professional development activities occurring less frequently than online professional development. Still, 34 percent of schools reported in-person professional development sessions at a central location at least once a month, and most (66 percent, serving 89 percent of students) schools reported conducting in-person professional development more than once a year (Figure V.5). Only 9 percent of schools reported no in-person professional development activities for teachers.

Figure V.5. Frequency of teachers' participation in professional development



Most online charter schools (85 percent) indicated their staff have opportunities to take on additional responsibilities to advance their careers. More than half (55 percent) of schools give staff the opportunity to supervise junior teachers (as a department chair or lead teacher) and 64 percent allow teachers to become instructional coaches or master teachers. Thirty-nine percent of schools allow staff to take on additional teaching load, teaching more or larger classes. Almost three-quarters (72 percent) offer opportunities for teachers to lead professional development groups for other staff.

Most online charter schools reported holding regular faculty meetings, either online or in-person. Almost a third (31 percent) of schools (serving 46 percent of students) reported their teachers attend faculty meetings at least once per week, 11 percent reported teachers attend meetings twice a month, and 40 percent reported monthly meetings. Faculty meetings occurred two to four times per year at 11 percent of schools, and in 7 percent of schools these meetings happen only once per year or not at all; schools with less frequent faculty meetings tend to be smaller schools.

VI. SCHOOL LEADERS

A. Previous experience

On average, the principals in the survey sample had led their schools for three years before the 2013–2014 school year. Nonetheless, more than one-fourth (28 percent) of principals had newly taken over as leader of their schools for the current school year—a substantially higher number than typical in public schools nationally, where only 9 percent of principals were newly hired in the current school year in 2011–2012 (U.S. Department of Education 2012). About half of online charter principals (49 percent) had prior experience as a principal at another school. Nearly all of those with prior experience (92 percent of those with prior experience and 46 percent of all current online principals) had been principals at conventional, brick-and-mortar schools. Fewer than one-fifth (18 percent) of current online charter principals had previously served as principals of other online schools.

In addition to prior experience as a principal, the survey asked about teaching experience in general and specifically in online schools. The vast majority of principals reported prior teaching experience, with an average of 9.3 years of elementary or secondary teaching experience in any school setting. But almost half of principals (48 percent) reported no prior online teaching experience. The principals with experience averaged 5.5 years of online teaching experience.

B. Training and professional development

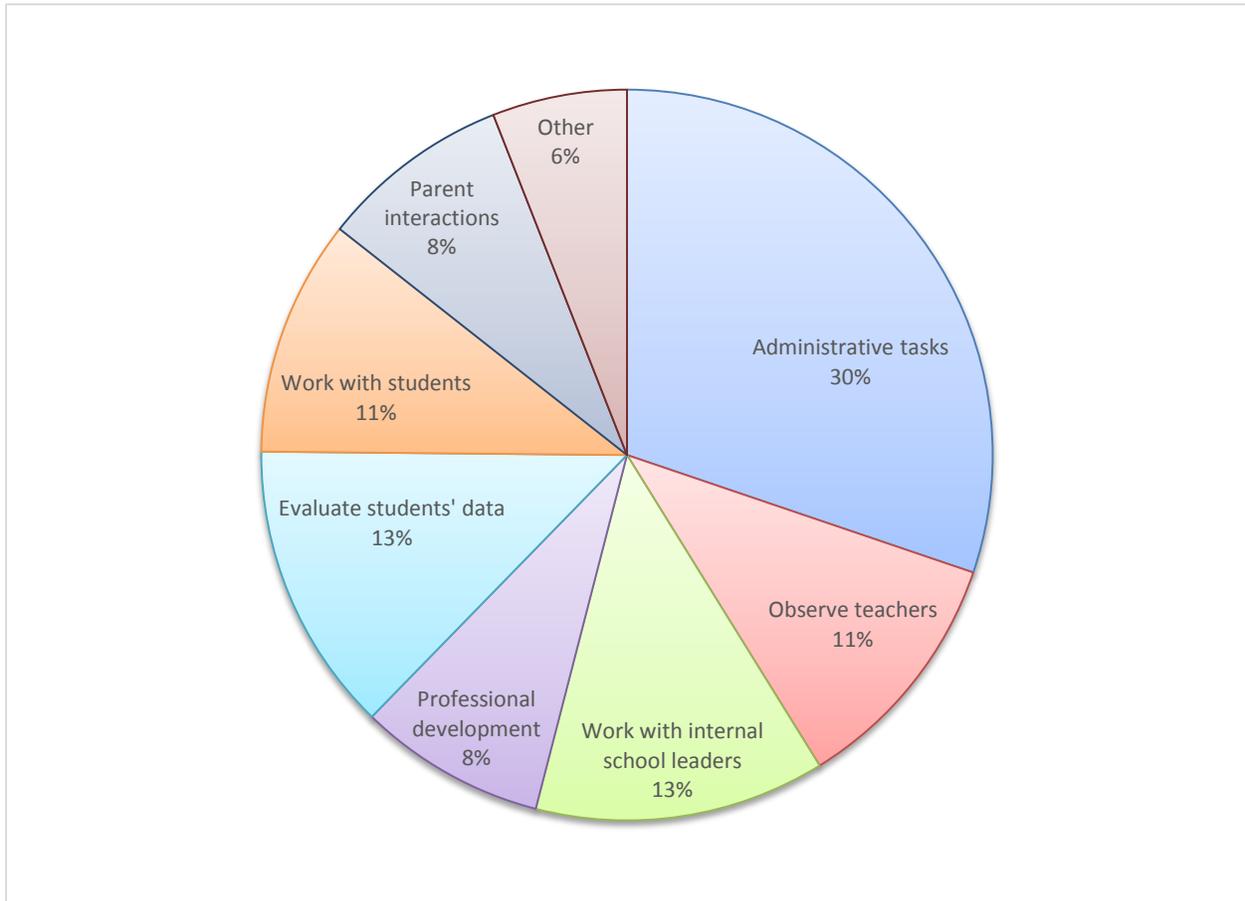
Nearly all responding principals reported participating in some form of training and professional development in the previous year. A large majority (89 percent) of principals participated in workshops or conferences. More than three-quarters (78 percent) of principals participated in a school leader network event (for example, a group of school leaders organized by an outside agency or through the Internet). Nearly two-thirds of principals (63 percent) visited other schools, with the aim of improving their leadership skills. Similarly, 56 percent of principals received mentoring, peer observation, or coaching by the leader of another school, or they performed these services for another principal. Almost half of principals said they presented at workshops, conferences, or trainings. More than a third of principals (39 percent) undertook a university course related to their role as a school leader. Principals of schools affiliated with management organizations participated in these activities at rates that were similar to those of principals of unaffiliated schools.

The survey also asked about specific principal training programs. Three-quarters of principals had participated in a specialized principal training program.

C. Roles and responsibilities

Principals in online charter schools are responsible for a wide variety of tasks. According to survey responses, principals spend the largest part of their time—an average of 30 percent of their work week—performing internal administrative tasks related to issues such as human resources, regulations, reports, and school budgets (Figure VI.1). One-fifth (20 percent) of principals spend half or more of their time on administrative tasks.

Figure VI.1. Percentage of online charter principals' time spent on various tasks



The rest of principals' time is divided among many different kinds of tasks. Tied for second place are two tasks that each take about 13 percent of principals' time, on average: working with internal school leaders, including instructional coaches, grade leaders, departmental leaders, and other instructional leaders, and reviewing students' achievement data. Principals reported that observing teachers took about 11 percent of their time, although 25 percent of principals reported that they do not observe teachers at all. Working directly with students on issues such as discipline and academic guidance fills about 11 percent of their time. Figure VI.1 shows the average distribution of principals' time for a normal week. In comparison, principals of public schools nationally spent an average of 39 percent of their time interacting with students in 2011–2012 (U.S. Department of Education 2012).

D. Challenges

We asked principals of online charter schools an open-ended question about the greatest challenge they face as the leaders of online schools. We received a wide variety of responses, but one issue far outpaced all others: student engagement, identified as the greatest challenge by one-third (33 percent) of principals (Table VI.1). The next most frequent responses, cited by 11 to 13 percent of principals, were administrative challenges, public perception, and parent engagement. Principals mentioned various other challenges less frequently; several, like the top challenge, are

related to the difficulty of engaging students or parents. Only 4 percent of principals identified recruiting effective teachers as the greatest challenge. (Note that the percentages in the table sum to more than 100 percent because some principals identified multiple challenges or a challenge that fits in multiple categories).

Table VI.1. Online charter principals' greatest challenges

	Percentage of principals identifying issue as one of the greatest challenges
Student engagement	33
School/CMO/district/state administration	13
Public perception	11
Parent engagement	11
Finding and analyzing meaningful data	10
School structure	8
Being located remotely from students	7
Accountability systems	7
Funding	7
Challenging student population	6
Want more teacher–student interaction	6
Getting my job done in the available time	6
Finding quality teachers	4
Student recruitment and retention	3
School culture	2

E. Principal evaluation and compensation

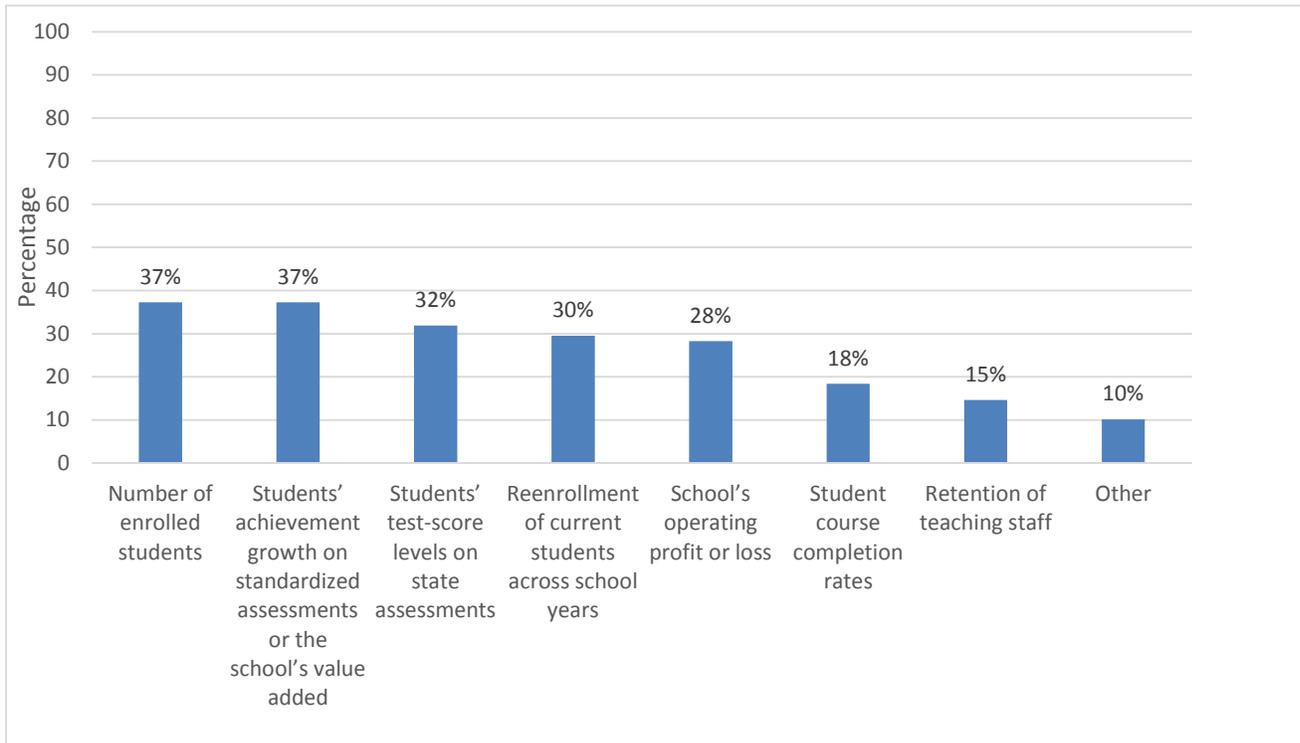
Most online charter schools (61 percent) use a measure of students' achievement in evaluating principals. Forty percent of schools use student achievement *levels* in principals' evaluations and 60 percent use students' achievement *growth* (39 percent use both achievement levels and achievement growth).

Students' achievement also plays a role in determining principals' compensation in some, but not all, online charter schools. One-third (32 percent) of schools (serving 48 percent of students) tie principals' compensation to students' achievement levels on state assessments; 37 percent (serving 51 percent of students) tie compensation to students' achievement growth (or value added) (Figure VI.2). Almost a third (32 percent) of schools include one or both of these student achievement factors in determining principals' compensation.

Some schools use other performance measures to inform principals' compensation (Figure VI.2). The number of enrolled students is used to determine compensation in 37 percent of online charter schools, matching the percentage of schools using students' achievement growth. About 30 percent of schools use the reenrollment of current students across school years and about the same number use the school's operating profit when determining the principal's compensation. From 10 to 20 percent of schools use students' course completion rates, retention of teaching staff, or other measures for principals' compensation. Forty-two percent of online

charter schools do not use any of these performance measures for purposes of determining principals' compensation.

Figure VI.2. Performance measures used for compensation of principals
Percentage of online charter schools using each measure to inform principals' compensation



VII. GOVERNANCE, MANAGEMENT, AND FUNDING

Schools reported a range of governance structures. Sixty-two percent of responding schools are their own local education agencies. Ninety-three percent of schools reported that charter authorizers monitor their state test scores and 85 percent reported that their authorizers monitor their attendance rates. About half of schools reported that authorizers monitor their reenrollment or course completion rates (52 and 50 percent, respectively). Only 5 percent of schools reported that their school authorizer does not monitor any of these student outcomes.

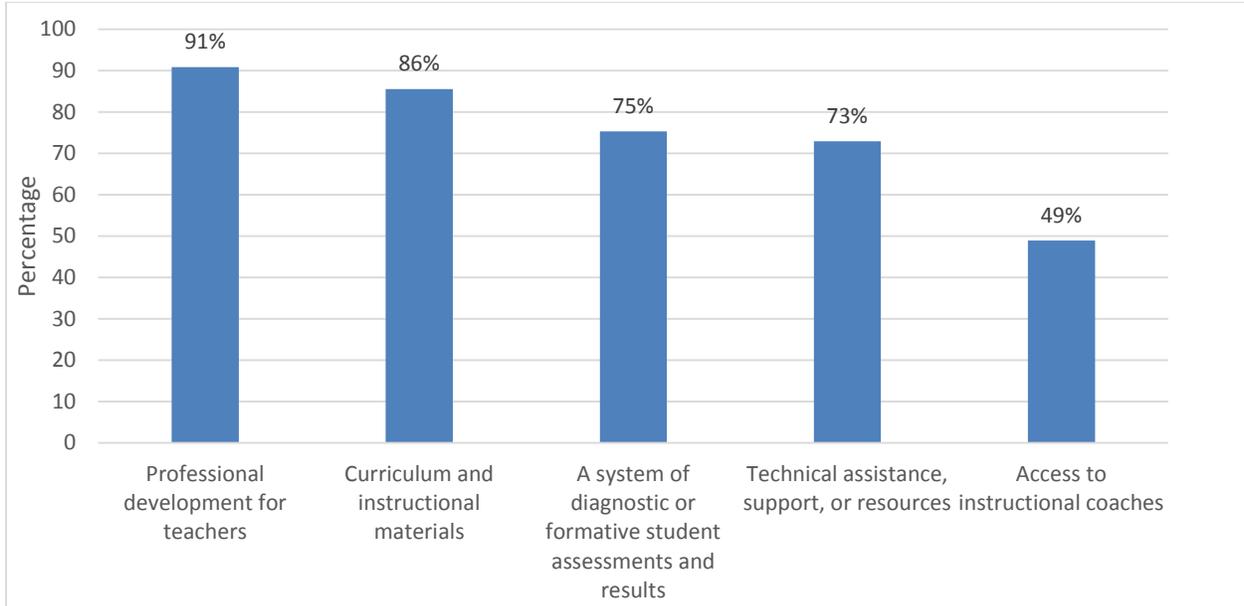
More than half (57 percent) of online charter schools are affiliated with school management organizations that provide curriculum or instructional support services. Almost half of the schools affiliated with a management organization are affiliated with one of the two largest online school management organizations, K12 and Connections.

Among schools affiliated with a management organization, nearly all reported receiving some form of support from the management organization's central office; most reported receiving three or more services (Figure VII.1). A large majority (91 percent) of schools affiliated with management organizations reported receiving professional development for teachers, such as workshops and in-service training programs, from the management organizations. The second most provided support reported was curriculum and instructional materials, which 86 percent of schools reported receiving from their affiliated management organization. Seventy-five percent of affiliated schools reported receiving a system of diagnostic or formative student assessments and results. Slightly fewer (73 percent) received technical assistance, support, or resources in areas in which students' test scores were weak. Only half of the affiliated schools reported access to instructional coaches through their management organizations.

The survey included a limited number of questions on the funding of online charter schools. More than half of online charter schools (55 percent, serving 71 percent of students) participate in the federal Title 1 program. Eighty-three percent of schools receive designated funding for special education services. Only 12 percent of schools reported that the total number of courses completed by students could affect their funding.

Figure VII.1. Support from affiliated online charter school management organizations

Among schools affiliated with management organizations, percentages receiving each of the following services from the management organization



VIII. CONCLUSION

About 200 online charter schools operate in the United States, serving about 200,000 students. They serve students at elementary, middle, and high school grades, and they vary enormously in size, with 24 percent of schools serving more than 1,000 students each and collectively accounting for 79 percent of total enrollment in online charter schools. More than half are affiliated with school management organizations. The sector barely existed before the turn of the millennium, and it has grown rapidly since.

Online charter schools might appeal in principle to a wide variety of different kinds of students, and they in fact serve a reasonably diverse population, with African American students and students with disabilities represented at levels similar to those in other public schools. Hispanic students and English learners are underrepresented in online charter schools, however, perhaps in part because many of the schools do not offer instruction targeted to students whose first language is not English. In addition, the fact that most online charter schools expect families to provide Internet access (and many do not uniformly provide computers to all students) might prevent some prospective students from enrolling. On average, students in online charter schools remain enrolled for about two years.

Online schooling creates both constraints and opportunities for modes of delivering instruction. In most online charter schools, a substantial amount of coursework is self-paced. Consistent with this, the instructional method used most frequently in online charter schools is individualized, student-driven independent study. Given the ubiquity of independent study, it is not surprising that online charter schools have substantially less synchronous interaction between teachers and students than conventional schools, and the difference is dramatic: students in the typical online charter school have less synchronous instructional time in a week than students in a brick and mortar school have in a day. This could be partly related to the higher ratio of students to teachers in online schools, which average 30 students per teacher, compared with 20 in brick-and-mortar charters and 17 in conventional public schools. (This could be the result of the ratio limiting the time available to teachers or because limited time provided in the model makes the higher ratio possible).

With a limited number of live contact hours and a lean staffing model, online charter schools place substantial expectations on parents, who are expected not only to ensure that students keep up with assignments but also to participate in training sessions and, in a large number of schools, to actively participate in the student's instruction.

The substantial burden placed on parents is presumably a response to the issue that online charter school principals regard as their greatest challenge: keeping students engaged. The challenge is partly inherent to online schooling, because the schools have no way to ensure that students are in their seats and ready to learn. It is probably partly due to online schools serving as schools of last resort for a subset of their students who previously disengaged from brick-and-mortar schools. And it is surely exacerbated by a high student-teacher ratio and a small number of live contact hours. All of these are reasons for concern about whether the sector is likely to be effective in promoting the achievement of its students—an issue addressed in depth in the third volume of this study (Woodworth et al. 2015).

This page has been left blank for double-sided copying.

REFERENCES

- Christensen, Clayton M., Michael B. Horn, and Curtis W. Johnson. *Disrupting Class: How Disruptive Innovation Will Change the Way the World Learns*. New York: McGraw-Hill, 2008.
- Furgeson, J., B. Gill, J. Haimson, A. Killewald, M. McCullough, I. Nichols-Barrer, B. Teh, N. Verbitsky-Savitz, M. Bowen, A. Demeritt, P. Hill, and R. Lake. "Charter-School Management Organizations: Diverse Strategies and Diverse Student Impacts." Cambridge, MA: Mathematica Policy Research, 2012.
- Government Accountability Office. "Charter Schools: Additional Federal Attention Needed to Help Protect Access for Students with Disabilities." Washington, DC: U.S. Government Accountability Office, June 2012.
- Molnar, A., Huerta, L., Rice, J. K., Barbour, M.K., Miron, G., Shafer, S. R., Gulosino, C., Horvitz, B. "Virtual Schools in the U.S. 2014: Politics, Performance, Policy, and Research Evidence." Boulder, CO: National Education Policy Center, March 2014.
- Molnar, A., Huerta, L., Barbour, M. K., Miron, G., Shafer, S. R., Gulosino, C. "Virtual Schools in the U.S. 2015: Politics, Performance, Policy, and Research Evidence." Boulder, CO: National Education Policy Center, March 2015.
- Pazhouh, Rosa, Robin Lake, and Larry Miller. "The Policy Framework for Online Charter Schools." Seattle, WA: Center on Reinventing Public Education, University of Washington Bothell, 2015.
- Raymond, M. *Charter School Performance in Pennsylvania*. Stanford, CA: Center for Research on Education Outcomes, Stanford University, 2011.
- Ritter, G., and M.F. Lueken. "Value-Added in a Virtual Learning Environment: An Evaluation of the Arkansas Virtual Academy." Presentation at the annual meeting of the Association for Education Finance and Policy, New Orleans, March 2013.
- U.S. Department of Education, National Center for Education Statistics. *Schools and Staffing Survey*. NCES 2014-356. Washington, DC: U.S. Government Printing Office, 2012.
- U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "Public Elementary/Secondary School Universe Survey", 2013-14 v.1a. Available at [<https://nces.ed.gov/ccd/elsi/>]. Accessed February 1, 2015.
- Woodworth, J.L., M.E. Raymond, K. Chirbas, M. Gonzalez, Y. Negassi, W. Snow, and C. Van Donge. *Online Charter School Study 2015*. Stanford, CA: Center for Research on Education Outcomes, Stanford University, 2015.
- Zimmer, R., R. Buddin, D. Chau, G. Daley, B. Gill, C. Guarino, L. Hamilton, C. Krop, D. McCaffrey, M. Sandler, and D. Brewer. "Charter School Operations and Performance: Evidence from California." Santa Monica, CA: RAND Corp., 2003.
- Zimmer, R., B. Gill, T.K. Booker, S. Lavertu, T.R. Sass, and J. Witte. "Charter Schools in Eight States: Effects on Achievement, Attainment, Integration, and Competition." Santa Monica, CA: RAND Corp., 2009.

This page has been left blank for double-sided copying.

APPENDIX A

SURVEY METHODS

This page has been left blank for double-sided copying.

Screening efforts to identify universe of online charter schools. Working with our colleagues at the Center for Research on Education Outcomes (CREDO) to identify the universe of online charter schools operating in the United States, we began with lists compiled by the International Association for K-12 Online Learning (iNACOL) and the National Education Policy Center (Molnar et al. 2014), supplemented with data from state education departments, the National Center for Education Statistics, and web searches. We compiled an initial nationwide list of 897 schools that could potentially be identified as online charter schools. The aim was to include not merely a sample, but the entire population of online charter schools operating in the United States.

Survey eligibility criteria. We identified several eligibility criteria for inclusion in the study. First, a school must have been a public charter school that delivered instruction during the 2013–2014 school year. Next, it must have served at least 20 full-time students. Third, the school should have delivered a fully online program of study for its full time students.⁴ Because the initial list did not indicate whether the schools met these criteria, we contacted schools by telephone with a brief screening questionnaire to confirm eligibility. When eligibility was confirmed, we sought to collect or confirm contact information for the lead administrator of the school.

Screening methodology. We conducted a careful review to identify and confirm potential duplicates, which we subsequently removed from the list. Online searches were then conducted, using the Common Core of Data to (1) identify schools that were not public charters and (2) to obtain contact information for school administrators. From there, professional interviewers conducted telephone outreach with the remaining 597 schools to complete a brief eligibility screening questionnaire. Screening efforts substantially reduced the number of schools from the initial list, as the majority were either confirmed not to be charter schools or did not serve full-time students. When it was not possible to determine the number of students served, the school was included in the study universe. Further refinement of the sample came from combining cases in which one head of school oversaw a group of schools that were initially listed as separate entities. As a result of the screening, we confirmed that 63 percent were ineligible (567 of the 897 schools), and 147 schools were confirmed as eligible. The remaining schools (183) could not be confirmed as eligible or ineligible during the screening process, so we included them in the survey sample and assessed eligibility during the survey process. Eligibility was confirmed for all respondents to the survey through the use of screening questions at the beginning of the questionnaire. These items confirmed that the school was (1) a public school, (2) a charter school, and (3) enrolled any students whose program of study was delivered entirely online.

Survey pre-test. In preparation for data collection, Mathematica conducted a pre-test with a convenience sample of four online school leaders in April 2014. This provided an opportunity to ensure the wording was clear, the items were easy to follow, the sequence of items flowed well, and to estimate the time needed to complete the survey. Based on feedback provided, we refined item wording and reduced the number of questions to reduce respondent burden.

⁴ Schools that required students to come on site for testing, lab work, noncore classes, or for classes as part of an individualized education program were considered eligible for the study.

Conducting the survey. We secured endorsements for the survey from the iNACOL, the Arizona State Board for Charter Schools, the California Charter Schools Association, and the Ohio Alliance of Public Charter Schools. In addition, senior leadership from the two largest online school management organizations, K12 and Connections Education, reviewed the study and provided their endorsement, encouraging all of their school leaders to take part.⁵ The survey field period ran for 19 weeks, from June 6 to October 14, 2014. The target respondent was the leader of the school or a designated proxy who was most knowledgeable about school operations, instructional practices, and policies. Respondents were offered two incentives to complete the 45-minute questionnaire: a payment of \$50 and an invitation to our presentation of the study findings.

The survey was initially deployed on the web, with an invitation sent by mail, followed by six email reminders to all nonresponders. Telephone follow-up continued across the field period. In week 14, Mathematica sent a paper version of the questionnaire to all nonresponders via Priority Mail. After careful consideration of the trade-offs between unit and item nonresponse, we deployed an abbreviated, 10-minute version of the questionnaire by telephone and fax in week 18. The abbreviated version was offered to all 92 of the presumed-eligible nonresponders and was completed by 14 of them.

Across the field period, staff continued efforts to confirm eligibility for schools that had not completed screeners. In addition to seeking this information directly from the schools (by telephone), Mathematica used administrative data from state boards of education to (1) confirm charter school status, (2) verify that the school operated an instructional program entirely online, and (3) identify schools that were no longer in operation. Through this process, contact information for school leaders was updated, as needed.

Response rates and nonresponse weight adjustment. At the end of the field period there were 114 completed cases, 13 partial completes, 60 nonresponses, and 143 schools determined to be ineligible: 17 were not public schools, 95 were not charters, and 31 did not operate a full-time program fully online. The final response rate for the survey was 67.9 percent of the population of schools ultimately deemed to be eligible (187 schools).⁶

The 127 schools with survey responses included at least one school from every state where online charter schools operated. On average, both responding and nonresponding schools had been operating for seven years at the time the survey was conducted. The average percentage of students certified for free and reduced-price lunch was nearly identical in responding and nonresponding schools (35 and 37 percent, respectively). The average number of students enrolled in responding schools (800) was smaller than the average number in nonresponding schools (1,266), but the median was larger in responding schools (313) than in nonresponding

⁵ Although both of these organizations provided more than one message to their school leaders across the field period, we did not give the organizations a list of nonresponding schools, so as to respect the schools' right to voluntary participation in the study.

⁶ The survey response rate is calculated as follows: (completed cases + partials) / total eligible sample (total sample – ineligibles).

schools (213). This occurred because a handful of very large schools (each with at least 9,000 students) were among the nonrespondents.

All results reported are adjusted to account for observed differences between responding and nonresponding schools. Nonresponse weights were created by taking the inverse of response rates within weighting cells defined by variables that were associated both with outcomes of interest and with the response indicator. To ensure stable adjustments, each cell had to have at least 25 sample members. Because of the small number of cases, we were limited to a maximum of seven weighting cells; we ended up with five. After removing variables that we were certain would be unrelated to the outcomes of interest, we reviewed cross-tabulations of the remaining variables against the response indicator. We selected a small subset of variables in which there was substantial variation in the response rate across levels of the variables, indicating that response was associated with this variable. Variation in response rates for the student teacher ratio variable ranged from 58 percent (with low student–teacher ratios) to 75 percent (with high student–teacher ratios). There was also considerable variation in response rates across states and regionally. California was the only state with enough sample members to include in the adjustments. For schools with student–teacher ratios that were neither high nor low, response rates in California schools were 68 percent; those not in California had a response rate of 61 percent.

This page has been left blank for double-sided copying.

APPENDIX B
SUPPLEMENTAL TABLE

This page has been left blank for double-sided copying.

Table B.1. Frequency of curriculum delivery method, by grade (percentages)

	Used frequently	Used occasionally	Used rarely	Not used at all
4th grade				
Lecture	11	28	27	34
Teacher-guided synchronous discussion	42	35	15	8
Collaborative learning involving two or more students working together	30	39	23	9
Individualized, student-driven independent study	55	29	7	8
7th grade				
Lecture	19	38	19	24
Teacher-guided synchronous discussion	36	37	15	12
Collaborative learning involving two or more students working together	27	40	20	12
Individualized, student-driven independent study	59	30	5	7
High School				
Lecture	20	28	24	28
Teacher-guided synchronous discussion	32	31	16	21
Collaborative learning involving two or more students working together	21	38	21	19
Individualized, student-driven independent study	60	22	3	15

This page has been left blank for double-sided copying.

www.mathematica-mpr.com

Improving public well-being by conducting high quality,
objective research and data collection

PRINCETON, NJ ■ ANN ARBOR, MI ■ CAMBRIDGE, MA ■ CHICAGO, IL ■ OAKLAND, CA ■ WASHINGTON, DC

MATHEMATICA
Policy Research
