K–12 ONLINE LEARNING: A SURVEY OF U.S. SCHOOL DISTRICT ADMINISTRATORS

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ABSTRACT

The research literature on online learning has grown significantly in the past decade. Many studies have been published that examine the extent, nature, policies, learning outcomes, and other issues associated with online instruction. While much of this literature focuses specifically on postsecondary education with approximately three million students presently enrolled in fully online courses [1], not as much has been published about students enrolled in fully online and blended courses in primary and secondary schools. This is one of the first studies to collect data on and to compare fully online and blended learning in K–12 schools. The purpose of this study was to explore the nature of online learning in K–12 schools and to establish base data for more extensive future studies. Issues related to planning, operational difficulties, and online learning providers were also examined. This study does not necessarily answer all of the issues raised but hopefully will promote further discussion and study of them.

KEYWORDS

Online Learning, Distance Learning, Blended Learning, Distance Education, Asynchronous Learning, Primary Education, Secondary Education, K–12

I. INTRODUCTION

On November 9, 2006, the Sloan Consortium issued its fourth annual report on the extent of online learning in American colleges and universities [1]. Based on a national survey, this report provided information on student enrollments, operational concerns, and planning issues as seen through the eyes of chief academic officers. The report confidently estimates that 3 million students are registered for fully online courses in colleges and universities. An online course was defined "as 80 percent of the course is delivered online." The chief academic officers to whom the survey was sent also reported that online learning was becoming a "critical" part of their long-term planning strategies. This was true especially for those in public colleges and universities where student access to an education is a critical part of their mission.

Earlier in 2006, on March 17th, Penn State University hosted the Sloan K–12 Higher Education Collaboration in Online Learning, a meeting that was held at the Corporation for Public Broadcasting in Washington, DC. Thirty-five individuals were invited to discuss issues related to collaboration in online learning between K–12 schools and colleges and universities. All of the individuals invited had experience or expertise in online learning and represented a wide spectrum of K–12 schools, colleges and

online learning providers. While the discussions during this meeting were rich in possibilities for collaboration, the need for more data on online learning in K–12 schools became increasingly apparent. While estimates were discussed, concerns were expressed that hard data were not readily available and that the last major national study done by the U.S. Department of Education that focused on generic distance education, was based on data that were four years old.

There are a number of underlying reasons why these data are not available. First, there are minimal, if any, requirements in many states to collect data on their online students. A number of states have not established any specific guidelines or data collection processes for online students, and those policies that do exist, are inconsistent. Watson, in a study of state policies on online learning in 2005, observed that many "state policymakers have moved … slowly" [2, p. 10].

Second, there is some confusion related to definitions of online learning and distance education. Distance education is not equivalent to online learning. Other instructional modalities not directly related to the Internet, such as videoconferencing and televised courses, are still quite popular in many areas of the country. Furthermore, within the online environment, definitions and terms such as "fully online", "blended courses", "virtual courses", "e-learning", "hybrid courses", "mixed-mode", "asynchronous learning", "distributed learning", "Web-facilitated", and "Web-enhanced learning" abound; contributing to confusion among many educators. Problems of definition are not new especially when dealing with rapidly evolving instructional technologies.

The Sloan-C study conducted by Allen & Seaman [1] distinguished and defined three types of online courses:

- Online — Course where most or all of the content is delivered online. Defined as at least 80% of seat time being replaced by online activity.
- Blended/Hybrid — Course that blends online and face-to-face delivery. Substantial proportion (30 to 79%) of the content is delivered online.
- Web-Facilitated — Course that uses web-based technology (1 to 29% of the content is delivered online) to facilitate what is essentially a face-to-face course [1].

These definitions meet the needs of the Sloan Consortium study well, where consistency of terminology is absolutely essential to ensure the data collected reflect the same activities from year to year.

For research and data collection in K–12 schools, similar definitions need to be discussed and established. Without clearly defined terms, activities that can be considered online learning can significantly overlap and might confuse serious study, rather than add to our knowledge. For example, a high school student enrolled in a fully online Advanced Placement English course at a nearby college and another student who does a Webquest as a research assignment in a history course that meets face-to-face might both be engaged in online learning, yet their learning activities are significantly different. Using the definitions established by Allen & Seaman, the former scenario qualifies as a fully online course with student and teacher physically separated and minimally, if ever, meeting face-to-face; the latter would be considered a Web-enhanced course with student and teacher meeting in a regular classroom, as would any other face-to-face course. Unfortunately, generally accepted definitions have not been established.

Third, some of the difficulty in data collection can also be attributed to the significant growth in the number of public, private and for-profit providers of online services, many of which operate outside of the traditional school district structure. These include:

- Other school districts that provide online learning courses
- Charter schools within a district
- Charter schools outside of a district
- State supported virtual schools within a state
- State supported virtual schools outside of a state
- State technology service agencies
- Colleges and universities
- Consortial agencies
- Private, for-profit entities that offer selected courses
- Private, for-profit virtual schools

While the growth in online learning providers is indicative of the popularity of online learning, it complicates the collection of accurate data by moving students partially or fully outside the school district for educational services. It also allows online learning providers to operate across state lines. In some cases, where the school district pays for the services, it is acutely aware of which students are enrolled. In other cases, school districts have little, if any, knowledge of the number of students taking advantage of online learning from an outside provider. During a follow-up telephone discussion to the present study with one high school principal, he indicated that his school district administration has no mechanism in place for collecting data on online students.

Fourth, the home schooling movement is alive, well and growing and operates almost as a "subculture" with minimum oversight other than meeting compulsory attendance regulations [4]. Many home schoolers use online service providers for a portion of their course work without any need to report same to any educational agency or authority. The data on this population of online students is perhaps the least known of any K–12 population.

The purpose of this study was to explore the nature of online learning in K–12 schools and to establish base data for more extensive future studies. Issues related to planning, operational difficulties, and online learning providers were examined. This study will not necessarily resolve all of the issues raised but will hopefully promote further discussion of them.

II. REVIEW OF THE LITERATURE

Berge and Clark provide an appropriate starting point for examining issues related to online learning in K–12 schools [5]. Their book, *Virtual Schools: Planning for Success*, contains a number of important chapters identifying case studies, best practices, and important planning issues related to K–12 online learning. However, on page one, the authors referred to a study done in 2001 by one of the authors [6] that estimated K–12 online learning at 40,000 to 50,000 students. In all likelihood, by 2005 when the Berge and Clark book was published, this enrollment estimate was too low but exemplified the paucity of research and the need for more accurate and timely data. The authors recommended that a national survey be conducted of K–12 schools. The authors also referred to a pending report by the U.S. Department of Education that might shed more light on K–12 online learning.

Watson, in a national study of state policies on K–12 online learning conducted in 2005 reported that a number of states had not formally established policies on online learning. Furthermore, while there had been explosive growth in online learning, "relatively little was known about the [K–12] programs that

conducted online learning." [2, p. 10].

In 2005, the U.S. Department of Education [7] issued the first comprehensive examination of distance education in the K–12 schools, entitled *Distance Education Courses for Public Elementary and Secondary School Students: 2002–03*. This report, referred to by Berge and Clark above, was based on data collected during the 2002–2003 academic year and reported that one-third (36%) of public school districts and nine percent of public schools had students enrolled in distance education courses in 2002–03. In this study, distance education referred to courses taken for credit and offered to elementary and secondary school students where the teacher and student are in different locations. It included any technology or modality for delivering distance education to K–12 schools and did not concentrate exclusively on online learning. Questionnaires for the survey on which the report was based were mailed to a representative sample of 2,305 public school districts in the 50 states and the District of Columbia. The findings in the report were organized under: distance education for public school students; technologies used for delivering distance education courses; entities delivering distance education courses; reasons for having distance education courses; and future expansion of distance education courses. Key findings from the survey included:

- A greater proportion of large districts than medium or small districts had students enrolled in distance education courses (50% vs. 32% and 37%, respectively). In addition, a greater proportion of districts located in rural areas than in suburban or urban areas indicated that they had students enrolled in distance education courses (46% compared with 28% and 23%, respectively).
- The percentage of schools with students enrolled in distance education courses varied substantially by the instructional level of the school. Overall, 38 percent of public high schools offered distance education courses, compared with 20 percent of combined or ungraded schools, 4 percent of middle or junior high schools, and fewer than 1 percent of elementary schools.
- In 2002–03, there were an estimated 328,000 enrollments in distance education courses among students regularly enrolled in public school districts. Students enrolled in multiple courses were counted for each course taken. Thus, enrollments may include duplicated counts of students.
- Of the total enrollments in distance education courses, 68 percent were in high schools, 29 percent were in combined or ungraded schools, 2 percent were in middle or junior high schools, and 1 percent were in elementary schools.
- There were an estimated 45,300 enrollments in Advanced Placement or college-level courses offered through distance education in 2002–03. This represents 14 percent of the total enrollments in distance education.
- The proportion of all distance education enrollments that are in Advanced Placement or college-level distance education courses is greater in small districts compared to medium or large districts (24% vs. 10% and 7%, respectively).
- When asked which technology was used to deliver the greatest number of distance education courses, 49 percent of districts reported two-way interactive video, more than any other technology.
- Of those districts with students enrolled in distance education courses in 2002–03, about half (48%) had students enrolled in distance education courses delivered by a postsecondary institution. Thirty-four percent of districts had students enrolled in distance education courses delivered by another local school district, or schools in other districts, within their state.
- Seventy-two percent of districts with students enrolled in distance education courses planned to expand their distance education courses in the future.
- Thirty-six percent of districts that were planning to expand their distance education courses

> selected course development and/or purchasing costs as a major factor preventing their expansion [7].

Approximately 50 percent of the total distance education course enrollments of 328,000 or 164,000 were Internet-based or online. However, because students might be taking courses in multiple or mixed modalities, the actual estimates cannot be considered exact. Also because the data collected were based on course enrollments and not on students enrolled, it is likely that the number of students enrolled in K–12 online courses was substantially lower. The rationale is that a student who takes a full academic program online might be enrolled in multiple and as many as six courses in a semester. While accurate as a course enrollment estimate, these data are not equivalent to the number of students enrolled in online learning.

Based in part on the U.S. Department of Education data reported above as well as several other studies, Smith, Clark, and Blomeyer projected that K–12 online enrollments would be as high as 600,000 students in 2005 [8]. They indicated that this number was an estimate based on other studies and not on primary data that they had collected. Compared to the 164,000 online course enrollments reported by the U.S. Department of Education for 2002–2003 [7], this estimate seems high but it is not necessarily inaccurate. Another report in *Education Week* in 2006 estimated the number of online enrollments at more than one million students based on reports from The Peak Group and WestEd [9]. This estimate also seems high as compared to the U.S. Department of Education data for 2002–2003. Smith, Clark, & Blomeyer aptly concluded that there were significant barriers to research on K–12 online learning, the first of which was limited access to accurate and timely data [8].

While student outcomes are not the specific foci of this study, one major study by Cavanaugh, Gillan, Kromey, Hess, & Blomeyer [10] is worth mentioning. They completed a meta-analysis of fourteen studies focusing specifically on student outcomes. Their conclusion was:

> Students can experience similar levels of academic success while learning using telecommunications and learning in classroom settings. While distance learning as it is practiced in today's virtual schools uses technology that is less than ten years old and advances rapidly, the literature has shown that a student's education online can be as effective as it is in a classroom…
>
> The result shows variation in the degree of success students have experienced, and a need for more information if firm conclusions are to be drawn. [10, p. 21–22].

The findings in Cavanaugh et al. were similar to other studies conducted on online learning in both K–12 and higher education in which "no significant difference" was found in student learning in online courses versus face-to-face courses. It would appear that a body of research is developing on student performance in individual, case study online courses while research on broader issues of the nature of online learning in the larger K–12 universe is less available.

As a conclusion to this review of the literature, the present researchers believe that a study that looks at issues across a broad spectrum of K–12 education will be useful in understanding how online learning is being deployed and more importantly perceived by chief school administrators as a viable option for delivering instruction.

III. METHODOLOGY

This study of K–12 instruction used descriptive analysis relying extensively on a survey instrument (see Appendix A) designed specifically for the project. The instrument was patterned after a similar instrument used by The Sloan Consortium to conduct national surveys of chief academic officers in American colleges and universities. Follow up telephone discussions were also conducted with selected respondents in an attempt to verify and gain further insights into what was reported on the survey. This survey was conducted for the 2005–2006 academic year.

The "universe of interest" for this study included all public school districts in the United States that operate schools (16,098). Information on these districts was taken from the Common Core of Data (CCD) from the U.S. Department of Education's National Center for Education Statistics (http://nces.ed.gov/ccd/ccddata.asp).

The study used three outreach efforts:

1. A postcard invitation to participate in the survey was sent to a random sample of 7,700 school districts using the postal mailing addresses in the federal data. Each post card contained a brief description of the survey, a URL where they the survey could be completed and a unique Survey ID number for the respondent to use to activate their survey form.
2. An email invitation was sent to randomly selected school districts using a commercial source for email addresses. The commercial source was able to provide email addresses for approximately one-half of all the school districts. A reminder email message was sent two weeks after the first message. Both the invitation and the reminder message contained a unique URL that, when clicked, would open up the survey form in a web browser and pass the unique survey ID.
3. Approximately 1,200 randomly-selected school districts were sent a paper copy of a letter of invitation along with a paper copy of the survey form and a business reply envelope. These respondents were also presented with a web-based option to respond. Both the paper and web-based version of the survey contained a unique survey identification number.

All potential respondents were informed of the funding source for the study (the Alfred P. Sloan Foundation), who was conducting it ("researchers at Hunter and Babson Colleges") and that "All responses will be held in strictest confidence and at no time will districts or respondents be identified by name." The survey form was composed of two portions, one that applied to all respondents and a second section to be completed only by those districts with online or blended course offerings. The invitation letter and the survey form itself were carefully worded to encourage responses from all school district representatives, regardless of whether they were involved with online learning or not.

All data collected were entered into an online database, either directly by the respondent or, in the case of paper-based responses, by the researchers. Each entry included the unique survey ID number that was used to link the response to the description data of that school district contained in the Education's National Center for Education Statistics Common Core of Data. The data linked from this source included location information (city, town, state, urban/rural), the grade range in the district, the number of students in the district, and the number of teachers in the district.

All data were investigated for missing or out of range values. All missing data were coded as either structural missing (the question did not apply to the respondent) or as non-response missing (the question did apply, but the respondent did not provide any data). After the survey data were merged with the CCD data, cleaned, and all missing value codes added, they were input into the SPSS statistical package for analysis.

The analysis data set contains 366 records (N=366), representing 2 percent of all school districts of interest. Responses were received from school districts in forty-four states.

The major research questions that guided this study were:

1. What is the nature and extent of online and blended learning in K–12 schools in the United States?
2. What is the perceived importance of online and blended learning for K–12 school programs?
3. What are the issues and barriers that impede the development of online and blended learning in K–12 schools?
4. Who are the major providers of online and blended learning courses to K–12 schools?

In conducting this survey, it was determined that there needed to be a separation of online from blended learning courses. In the absence of any standard definitions for online and blended learning, the definitions used by Allen & Seaman for the Sloan Consortium studies of American higher education were adopted, namely:

- Online — courses where most or all of the content is delivered online. Defined as at least 80% of seat time being replaced by online activity.
- Blended/Hybrid — courses that blends online and face-to-face delivery where a substantial proportion (30 to 79%) of the content is delivered online.

The separation of online and blended courses is important and distinguishes this study from the research previously cited that focused specifically on generic distance education or fully online learning.

IV. FINDINGS

A. Respondent Characteristics

The population that participated in this survey represents a cross section of American K–12 education. Three hundred and sixty-six (N=366) out of a total universe of 16,000 school districts in the United States responded to this survey. The school districts responding represent approximately 3,632 schools, 2 million students, and 67,000 FTE teachers from every region (New England, Middle Atlantic, Southeast, Midwest, North Central, Southwest, Mountain, and West Coast) of the country. The locale of these school districts is presented in Table 1. Definitions of these locales are based on the U.S. Department of Education National Center of Education Statistics (NCES) codes (see Appendix B for definitions).

	Frequency	Percent
Large City	5	1.4
Mid-Size City	18	4.9
Urban Fringe of a Large City	77	21.0
Urban Fringe of a Mid-Size City	56	15.3
Large Town	3	.8
Small Town	42	11.5
Rural, outside CBSA	104	28.4

Rural, inside CBSA	61	16.7
Total	366	100.0

Table 1. Locales of Respondents (NCES code used for locale; CBSA = Core-Based Statistical Area)

B. Nature and Extent of Online and Blended Learning

Table 2A shows that 57.9 percent of the school districts reporting had at least one student who had taken an online course in 2005–2006. It also shows that an additional 24.5 percent of those which did not have any students enrolled in an online class planned to have at least one student take an online course within the next three years. Table 2B indicates that 32.4 percent of the school districts reporting had at least one student take a blended course. It also indicates that an additional 27.1 percent of those which did not have any students enrolled in a blended course planned to have at least one student take a blended course within the next three years. Nearly two thirds of all districts (63.1%) currently have students taking either online or blended courses with another 20.7 percent planning to introduce them over the next three years. These data clearly reflect that the majority of American school districts are providing some form of online learning for their students and many more plan to do so within the next three years.

	Frequency	Valid Percent
No	64	17.6
Plan	89	24.5
Yes	210	57.9
Total	363	100.0
Missing	3	
Total	366	

Table 2A. Responses to: Are students at the [school district name] taking any fully online courses during the 2005–2006 (12 month) school year?

	Frequency	Valid Percent
No	145	40.5
Plan	97	27.1
Yes	116	32.4
Total	358	100.0
Missing	8	
Total	366	

Table 2B. Responses to: Are students at the [school district name] taking any blended/hybrid courses during the 2005–2006 (12 month) school year?

As a follow-up question to the above, respondents in school districts already enrolling students in online or blended courses were asked if they anticipated growth in enrollments over the next two years. A majority of the respondents anticipated growth (60.1% of districts expect growth in their fully online course enrollments and 66.0% expect growth in their blended enrollments). Districts predict that the

number of students taking online courses will grow by 18.6 percent and those taking blended courses will grow by 22.9 percent over the next two years.

Table 3 shows the grade levels of the students taking online courses as categorized by fully online and blended/hybrid courses. Not surprisingly, the data show that much higher percentages of students are enrolled in online courses in the upper levels with the majority at the high school level.

	Fully Online		Blended/Hybrid		Total	
	N	%	N	%	N	%
Grades K–5	2733	16%	538	5%	3271	12%
Grades 6–8	1793	10%	3980	36%	5773	20%
Grades 9–12	12625	73%	6519	59%	19144	67%
Other	198	1%	56	1%	254	1%
Total	17349	100%	11093	100%	28442	100%

Table 3. Online Enrollment by Grade Level

An important goal of this study was to estimate the number of K–12 students enrolled in online learning and to help establish baseline data through comparisons with other research. The respondents in this study reported that the total number of students enrolled in fully online courses was 17,349 and the total number of students enrolled in blended courses was 11,093 for a grand total of 28,442 students. An extrapolation of these figures estimates that approximately 700,000 students for the entire population of 48,000,000 public school students were enrolled in online and blended learning courses. This figure is close to the projected 600,000 students enrolled in online courses for 2005 made by Smith, Clark, and Blomeyer [8]. Based on the data collected in this study for 2005–2006 and the Smith, Clark, and Blomeyer study for 2005, an estimated 600,000 to 700,000 K–12 public school students were enrolled in online learning for 2005–2006. It is likely that the higher figure is more accurate given that the data in this study is more current and extends into 2006, a year longer than Smith, Clark, and Blomeyer. A caution needs to be mentioned regarding this estimate. This estimate is based on data collected from public schools only. Approximately six million private school students and one million home-schooled students were not included in the sample. This would indicate that the number may be higher but determining to what extant is beyond the scope of this study.

C. Perceived Importance of Online and Blended Learning

The answers to question number 3 provide insight into the main reasons why online and blended courses are perceived as important by the respondents. For purposes of presentation, the seven-point Likert scale used to provide options in the survey was recoded into a three point scale with 1 = Not Important, 2 = Neutral, and 3 = Important. The mean responses are provided in Table 4. These results indicate that the perceived importance of online learning related mostly to the following:

1. Offering courses not otherwise available at the school
2. Meeting the needs of specific groups of students
3. Offering Advanced Placement or college-level courses
4. Reducing scheduling conflicts for students
5. Permitting students who failed a course to take it again

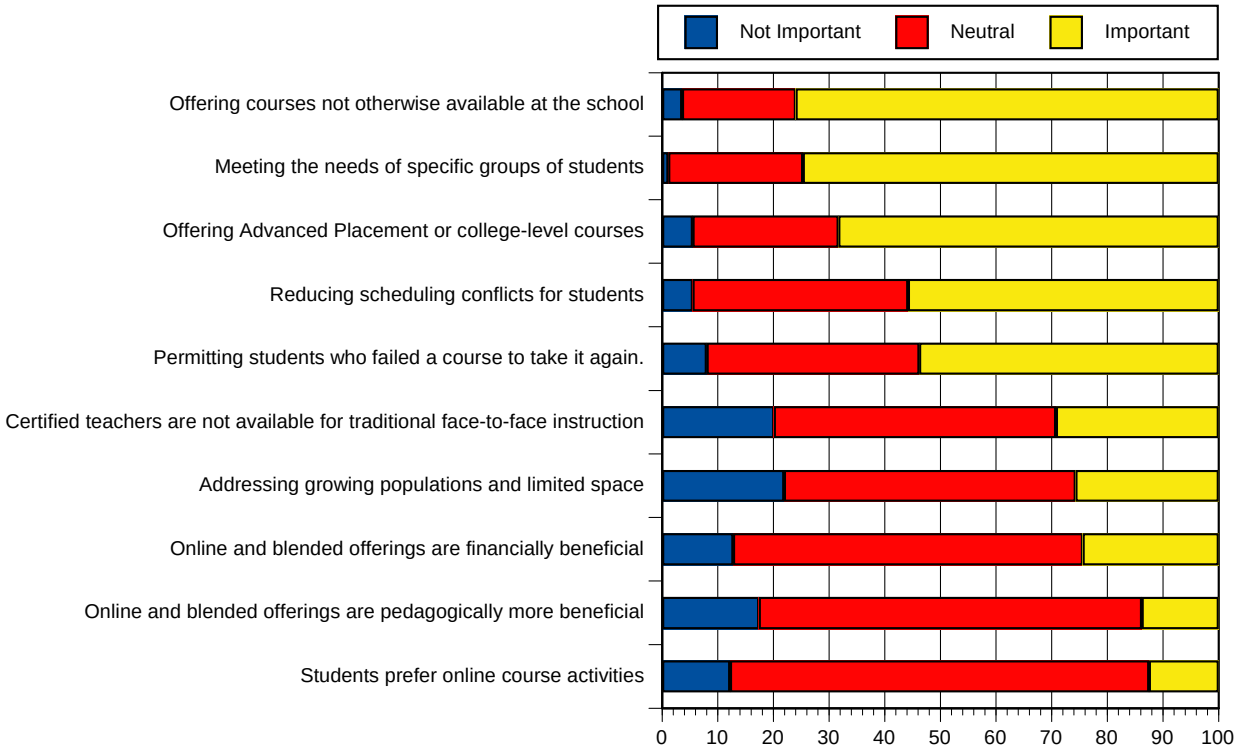

Table 4. Percentage Summary of Responses to: How important do you believe the following reasons are for a school district to offer fully online or blended learning courses?

The respondents were predominantly neutral with regard to the other reasons provided in the survey. In terms of the second reason "Meeting the needs of specific groups of students" a sample of descriptions of these "specific groups" provided by the respondents follows:

> "Student's reasons for taking an online class vary widely. Some were making up lost credits, some were taking AP classes not offered at their own school, and others were trying to get extra credits to graduate early. Still others would take a reduced schedule at their home school and leave early enough in the day to go to a job while making up the online time at their convenience."
>
> "We only use online courses to enable students to gain credits who otherwise would be unable to graduate with their classmates due to schedule constraints. "
>
> "We offer online courses for remedial purposes and the occasional homebound student. "
>
> "Our blended online program is increasing most significantly with our ELL population and our contract alternative schools."
>
> "The students … take summer courses, mainly in mathematics, from universities such as Stanford to allow them to fulfill a required course… It allows them to take more advanced courses during their 4 years of high school."
>
> "We're looking into serving kids who have (a) failed a requirement, rather than re-enrolling them

in an on-campus course, (b) selected electives, and (c) Advanced Placement offerings where the local enrollment is too low to warrant an on-campus teacher."

"We have been using online courses for the past few years… to meet the needs of foreign language courses. "

"We use online course work for students who miss school to the point of no longer being able to pass the regular class."

"Many students are enrolled in dual credit college credits through high school regional academies; this is the fastest growing area of course offerings for our students."

"Blended courses give [us] the opportunity to offer advanced and remedial classes we cannot provide."

"It meets the needs of a few students that have mastered our 8th grade curricula and are taking advanced high school courses, especially in mathematics and world languages."

"Online courses have helped especially with students who either want to go ahead in their learning or those who need to repeat courses."

These quotes support the perception that online learning is meeting the specific needs of a range of students from those who need extra help, to those who want to take more advanced courses and whose districts do not have enough teachers for certain subjects.

D. Barriers and Issues

Insight into some of the barriers and issues that school districts face in offering online learning was provided by answers to other questions in the survey. For purposes of presentation, the seven-point Likert scale used to provide options was recoded into a three point scale with 1 = Not Important, 2 = Neutral, and 3 = Important. The responses are provided in Table 5 and indicate that the major barriers and issues for online learning are:

1. Concerns about course quality
2. Course development and/or purchasing costs
3. Concerns about receiving funding based on student attendance for online and/or blended/hybrid education courses
4. The need for teacher training

Issues related to technology infrastructure or government policies were not deemed to be serious by most of the respondents.

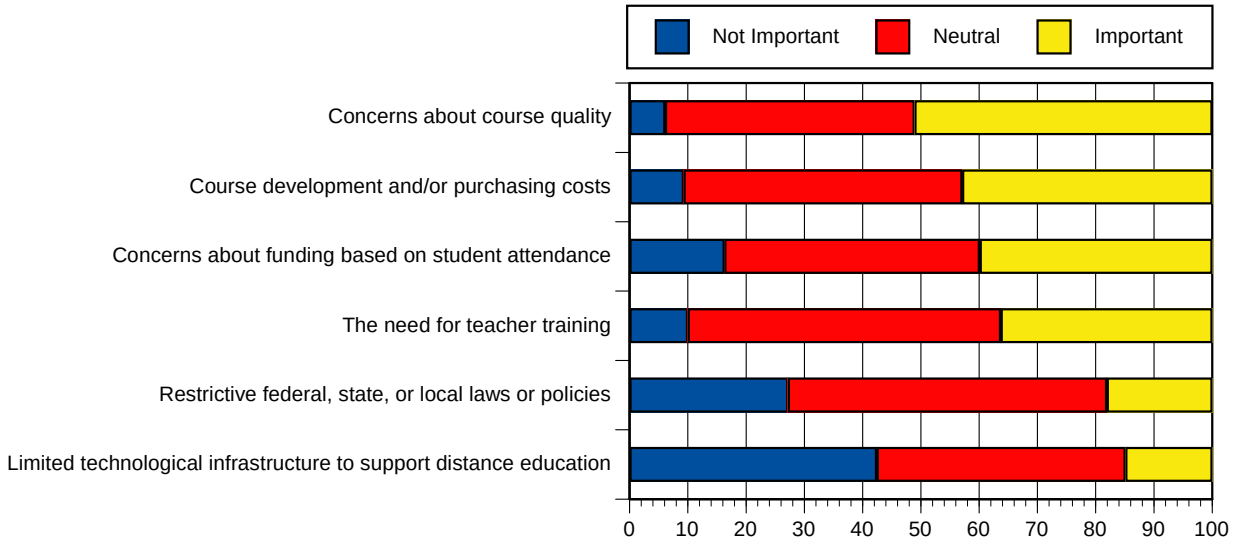

Table 5. Percentage Summary of Responses to: How much of a barrier the following areas would be (or are) in offering fully online or blended learning courses?

E. Lessons Learned

Insight into lessons learned with online instruction were provided by the respondents who already offer online courses to their students. For purposes of presentation, the seven-point Likert scale used to provide options was recoded into a three point scale with 1 = Disagree, 2 = Neutral, and 3 = Agree. The responses (see Table 6) indicate that there is strong agreement on the following:

1. Students need more discipline to succeed in an online course than in a face-to-face course.
2. Fully online and blended/hybrid courses fulfill an important educational need for my students.
3. School district knows and maintains records on students taking fully online or blended courses.

These respondents tended to be more neutral with regard to the other three issues namely:

1. Fully online and blended/hybrid course experiences are comparable in educational value to traditional face to face instruction.
2. Fully online courses and blended/hybrid courses have allowed [school district] to build important relationships with other organizations.
3. Faculty at [school district] accept the value and legitimacy of online education.

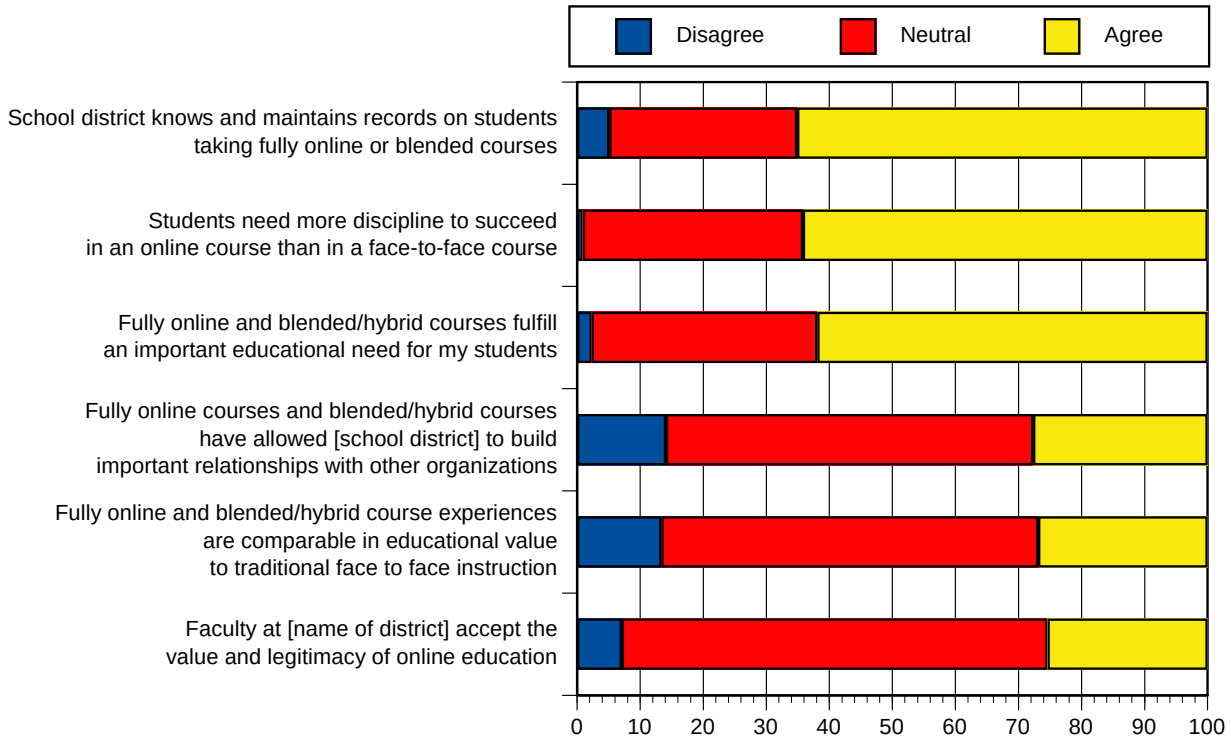

Table 6. Percentage Summary of Responses to: Please select the level at which you disagree/agree with the following statements. (Asked of only those school districts with online or blended that provide online or blended courses to their students.)

F. Major Providers of Online and Blended Learning

An important question for this study was: Who are the major providers of online and blended learning courses to K–12 schools? The assumption was that most school districts were not providing their own online learning services and had to contract or buy these services from other providers. Table 7 provides a frequency distribution of the online learning providers of respondents to this survey who reported that they had students enrolled in online or blended learning courses.

Online Instruction Provider	Fully Online (percentage of districts with fully online courses using this provider)	Blended (percentage of districts with blended courses using this provider)
Your District (i.e., Delivered Centrally from the District)	20.2%	37.1%
Cyber (i.e., online) Charter School in Your District	9.8%	6.7%
Other Schools in Your District	6.4%	15.7%
Another Local School District, or Schools in Another District, in Your State	22.0%	29.2%
Education Service Agencies Within Your State (e.g., BOCES, COE, IU), Not Including the State Education Agency or Local School Districts	24.9%	18.0%
State Virtual School in Your State (i.e., State-centralized K–12 Courses Available through Internet- or Web-based	34.1%	11.2%

Methods		
State Virtual School in Another State	13.3%	3.4%
Districts or Schools in Other States (Other than State Virtual Schools)	5.2%	3.4%
Postsecondary Institution	47.4%	38.2%
Independent Vendor	31.8%	25.8%
Other	2.3%	1.1%

Table 7. Online Learning and Blended Learning Providers

The data in Table 7 indicate that the major providers are:

1. Postsecondary Institutions
2. Independent Vendors
3. State Virtual Schools within the district's home state
4. The School Districts themselves

Also important is the fact that many school districts are using multiple providers and are not relying exclusively on one provider. The total number of online learning providers reported is 545 while the number of school districts responding that they had at least one student enrolled in an online learning or blended learning class was 190. Table 8 provides a frequency distribution of the number of online learning providers being used by the respondents.

Number of Providers	N	%
1	47	26%
2	56	30%
3	32	16%
4 or more	53	28%
Total	188	100%
Missing	2	
Total	190	

Table 8. Number of Online Learning Providers Being Used

The data in Table 8 indicate that school districts are selecting multiple online learning providers depending upon their needs rather than contracting exclusively with one provider. They may develop their own online courses, partner with another provider to offer a course (e.g., blended course), contract with a virtual school for a course that they are not able to offer, or might rely on a postsecondary institution for students to enroll in college-level work. The use of multiple vendors makes sense and allows the school districts to be most flexible in meeting the specific needs of their students.

G. A Look at Participant Comments

Most surveys provide an opportunity for respondents to make any additional comments that they deem important. It was surprising that in this survey the vast majority of respondents had an additional

comment. These comments provided further insights into perceptions and issues regarding online learning in their districts. Below are samples of these comments, selected because they represent themes that were repeated. In some cases, providers of these comments were contacted by telephone for further clarification. Also an attempt has been made to provide a balance of comments that reflect both positive statements about online learning as well the issues and concerns.

1. Positive Statements

Small and Rural School District Needs

"Being a small district with limited revenue sources we are looking at ways to increase our course offerings for students without the expense of hiring costly personnel. Affordable online classes would help us offer more opportunities for our students."

"_____ Community Schools is a small rural district. We would not be able to provide our students with a quality education without online learning. Students have a wide assortment of classes to choose from."

"Online or blended courses would provide the district with more options if we face teacher shortages as a rural district with lower teacher salaries as compared to large urban districts."

"This will become more of an option for students in rural areas as the secondary teacher shortage increases."

"We are a small district in rural _____ and want to be able to offer our students all the opportunities that larger communities can offer. Online courses may fill that need."

"Online schools serve a vital role in allowing students more flexibility in their schedule at a small school like _____. It also, allows them a large array of courses to choose from."

New Online Schools

"_____ School District has a Virtual High School which is a fully accredited high school. This year we had approximately 2000 full-time students who took 6 classes via the VHS."

"In the fall of 2007, we hope to open a blended charter school that focuses on individualized education plans for each student."

Postsecondary Education Partners

"…We only use online courses to enable students to gain credits who otherwise would be unable to graduate with their classmates due to schedule constraints. These classes are generally offered through our local community college, or a private vendor."

"The _____ University is located within two blocks of our school so the majority of our students wanting more do the Post Secondary Option with the University. We average about 50 students per year in this program."

"We've been offering Community College courses via Distance Learning for the past 4 years."

Diverse Student Needs

"This is a way to differentiate for students. It should allow for students to extend learning beyond the regular school day or provide alternate learning environment for students who do not do well in the school setting."

"We are very interested in any alternatives to the traditional classroom so that we can meet the needs of all of our very diverse (in many ways) student population. Online or blended courses are one of those alternatives."

Blended Courses

"The new Michigan Merit Curriculum/Graduation Requirements make the option of a blended course very desirable."

"Blended courses give the _____ Schools the opportunity to offer advanced and remedial classes we cannot provide."

"We have discovered that blended courses are more successful, because of the personal contact and group learning along with close and direct physically monitoring by an instructor."

"We want to eventually move to having blended courses and more electives and opportunities for students via on-line learning at most grade levels."

"Hybrid courses have allowed for greater engagement and encouragement."

To summarize, these statements indicate that online learning plays an important role in meeting diverse student needs especially in small, rural, and poorly funded school districts. School districts are partnering with a number of providers such as virtual and charter schools and especially with colleges and universities that are in close proximity to the district. Blended courses appear to be of significant interest to these districts for a variety of reasons mostly having to do with the desire for some personal contact and face-to-face engagement.

2. Statements Expressing Issues and Concerns

Quality Issues

"More information pertaining to the pros and cons of online courses is needed for myself and the school administration. At this time the online … program does not seem to be as effective as face-to-face course work."

"My board believes that interaction with teachers is necessary and important. There may be some students who can benefit from online courses. How can these classes be monitored or proctored? The cost is about the same as a traditional course….Human interaction is very important in any child's social growth."

"Our students have been high achieving students who feel very unengaged by computer courses."

"Students enrolled in the on-line academies in _____ have not fared well on the state tests."

"We feel it is important to offer some online classes to give our students a greater opportunity of classes to select from. We also believe that part of educating a child is to learn social and teamwork skills that need to be done face-to-face."

"Students should meet a set of district-established criteria before registering for an online course. Many times students are not self-motivated to complete online coursework."

Teacher Issues

"While teachers take on-line courses for their credit work, they are as a group very opposed to on-line classes for high school students."

"We have major potential resistance from our teacher union as the teachers tend to view such electronic coursework as a threat to their job security."

"There are barriers for a small school district that have prevented the expansion of online learning. First, the staff is traditional and many do not encourage students to take on line courses. "

"Our teachers union is very opposed to any move toward online delivery of instruction."

"Teacher contracts are an issue."

"We are attempting to start some online staff development as a way, not only to deliver staff development, but to get staff comfortable with online formats."

Funding and Policy

"The initial cost for online course software and training is extremely high for a small, suburban district."

"The system in place for paying for and accepting credit for on line course work needs to be addressed for the student's benefit. School funding prevents offering of online courses as the district currently pays for students to take these courses. This is difficult with decreased enrollment and school funding based on enrollment."

"_____County has franchised through _____Virtual School to offer classes to our home school and public school students. There are limitations to growth due to the FTE earning structure for virtual education."

"We are just getting started, but are challenged by attendance laws and the newness of the process to our families and faculty."

"We have a high level of technology in our district, and would like to position ourselves to be able to deliver online content. However, state regulations are extremely restrictive at this point."

"Quality and comparability based on state learning standards is a key policy issue."

Regardless of the number of studies that have been conducted supporting the quality of online learning, skepticism still exists in the minds of many educators and local policy makers, further fueled by the concerns of teachers related to job security, instructional change, and the need for extensive and ongoing professional development. A number of funding issues were expressed especially in districts where limited available resources would have to flow out of the district to pay for online courses.

V. DISCUSSION

A. Online Learning: Will the Growth Continue?

As mentioned at the beginning of this study, Berge and Clark cited an estimate of 40,000 to 50,000 students enrolled in online courses in 2001 [5]. Data collected in this study and supported by an estimate by Smith, Clark and Blomeyer [8] put the number of students at closer to 700,000 for 2005–2006. These data indicate that online learning in K–12 schools has increased more than tenfold in six years. Furthermore, data collected from the respondents in this study indicate that the growth will be sustained. The majority of school districts now offering online learning options to their students anticipate growth over the next three years, while those not currently offering online learning options to their students state that they will likely do so in the next three years. This growth pattern mimics the experiences in higher education which became more involved in online learning a good five to six years before K–12 schools. Approximately three million students or almost 20 percent of the total higher education population were enrolled in online courses in 2005–2006 [1], almost double the number reported in 2002. If this pattern were duplicated in K–12 over the next five or six years, the enrollment in online courses would easily approach several million students.

There are, however, issues reported in the findings of this study that will slow growth but not necessarily impede it completely. Concerns about the quality of online courses, costs, and teacher development are important but resolvable. These same issues exist in higher education where they have been and continue to be addressed. Online technology is permeating American society beyond commercial endeavors. Hospitals, governmental agencies, and higher education are rapidly retooling their services to take advantage of online technology in all aspects of their enterprises. Undergraduates in most colleges and universities will probably experience at least one online or blended course by the time they finish their programs. Graduate and professional development programs including those sponsored by labor unions and professional organizations such as the American Federation of Teachers and the National Education Association are increasingly making use of online learning. Every indication is that once committed to online instruction, these organizations will continue its expansion to meet the needs of students who are either geographically dispersed or constrained by time because of family or professional commitments.

Additionally, major policy changes in federal, state and local education governing bodies can influence and perhaps accelerate online learning in K–12 schools. The federal government and specifically the U.S. Department of Education has been enthusiastic in its support regarding online learning. The National Education Technology Plan (2004) congratulates best practices in online learning among the states and observes:

> About 25 percent of all K–12 public schools now offer some form of e-learning or virtual school instruction. Within the next decade every state and most schools will be doing so [11, p. 34].

This report trumpeted "we may well be on our way to a golden age" in American education because of the infusion of technology including online learning into primary and secondary schools.

As reported by one respondent in this study, the state of Michigan in 2006 passed the new Michigan Merit Curriculum that requires all high school graduates either to complete a fully online course or to have online learning substantially integrated into their basic high school coursework (e.g., blended learning). A number of states such as Florida, Kentucky, and Illinois have funded and established statewide virtual schools designed to meet the needs of large numbers of students. The Florida Virtual School founded in 1997 enrolled more than 31,000 students in 2005–2006 [12]. State governing bodies have also tried to develop equitable funding formulae usually through subsidies that allow school districts throughout the state to enroll their students in these virtual schools at reasonable tuition rates. These arrangements, however, have not been perfect and as respondents in this study have indicated, there needs to be further work in many states on the way school districts receive funding and pay tuition for online students.

Large school districts and school district consortia likewise are beginning new virtual school initiatives to serve students in their own districts or regionally. Clark County which includes Las Vegas, Nevada, for instance, established the Clark County School District (CCSD) Virtual High School (VHS) in 2004, which evolved from the Clark County Distance Education Program [13]. Other school districts and regional consortia with established distance education programs are likewise considering whether and how to reorganize themselves in light of the ubiquity of online communications in schools, homes, and places of business. Many of these will likely formally reorganize into virtual schools or at least substantively change their current distance education programs to online formats.

Before concluding this section on enrollment growth in K–12 online learning another brief mention regarding home-schooled students is in order. The U.S. Department of Education estimated that approximately 1.1 million students in the United States are home-schooled and that this number is growing [14]. Many states have little if any data on these students but it is likely that some of them are doing course work online. No attempt was made in this study to collect data on the home-schooled population and the estimates provided would likely increase if this population were considered.

B. The Needs of Small Rural School Districts — Lessons for Other Districts?

Perhaps the voices heard most clearly in this survey were those of respondents representing small rural school districts. For them, the availability of online learning is most important in order to provide students with course choices and in some cases, the basic courses that should be part of every curriculum. Shortages of teachers in high-demand secondary school subject areas such as science, mathematics, and foreign languages have historically been a serious problem for rural school districts. While the data analysis of questions in this study dealing with participation in and plans for developing online learning did not indicate any major differences on the part of rural school districts versus other districts (urban, suburban, large towns), a review of the respondents' comments provided a consistent voice expressing the needs of these districts.

Rural school districts, because of modest property tax bases, generally have the lowest per pupil expenditures compared to urban and suburban districts and need to use financial resources as wisely and effectively as possible. Online learning not only provides many more options for these districts in terms of being able to offer courses where teacher shortages might exist but also does so in a way they see as affordable. In addition, small rural districts have smaller student populations so if they are able to find teachers in high demand subjects, the small number of students that might enroll in their courses would result in very low student to teacher ratios and hence higher per course costs. Online learning provides these districts with a cost beneficial method of providing courses for students that otherwise would require the hiring of teachers who would not have enough students to justify their salaries. This would be particularly true for electives and enrichment subjects and perhaps for required courses as well in some situations.

The online approach to teacher shortages in small rural districts may be an example that other districts with similar teacher shortages might want to consider. Inner city urban districts, for instance, frequently have difficulty attracting and keeping secondary school teachers in science, mathematics, and foreign languages. One common approach to solving this problem has been to have teachers work out of license; teachers who are credentialed in other subject areas such as social studies or language arts teach science and mathematics. Might not an online course where some, if not all, of the content could be taught by credentialed science and mathematics educators be a viable option? A blended course might be particularly appealing where an online teacher credentialed in the subject area would work with a face-to-face teacher not credentialed in the subject area. The two teachers could then work with and support each other: one delivering specialized online content and the other face-to-face instruction, tutoring, and hands-on activities. Online learning provides options for all school districts to consider as they try to meet best the needs of their students.

C. Online or Blended: Which Way Do We Go?

The data in this study indicate that fully online courses are more popular in terms of enrollment than blended courses. The results also indicate that many school districts continue to have concerns about quality, student readiness, and staff development related to online education. It may be that blended instruction is a better option for districts with these concerns. In an interview, Julie Young, the founder and president of the Florida Virtual School, when asked about her vision for the future of her school and online learning, commented:

> "Within five years, there will be lots of blended models such as students going to school two days a week, and working at home three days a week. Another blended model … is where a student takes five [face-to-face] courses at school and two virtual courses…" [15].

The data in this study indicate that respondents perceive that students need to be ready and "more disciplined" to succeed in online courses. Even in higher education, the readiness of students to participate and succeed in an online course has been well-established as a concern. In K–12 schools, especially at the primary and middle school level, the social and emotional development of students is an important aspect of the overall school experiences, so student readiness is legitimately of equal if not of greater concern. A blended approach can ease this concern by providing some face-to-face time.

A focus on blended courses can also ease the process of converting courses to online for those districts that choose to create and deliver their own offerings. Converting a single high school or middle school course into a fully online format is a substantial task for a novice. However, moving portions of a course from face-to-face to online, by starting with a small module and then moving on to the next, is a standard course development approach that can ease the development process for the teacher. Professional development might also be easier and more palatable for teachers who can begin to use online learning in a blended approach that provides them an initial comfort zone of some face-to-face contact with students.

VI. CONCLUSION

The purpose of this study was to explore the nature of online learning in K–12 schools and to establish base data for more extensive future studies. Issues related to planning, operational concerns, and online learning providers were examined. In line with most research dealing with relatively new and ever changing technology, this study adds a little more to our collective knowledge about online learning in the K–12 environment while not necessarily providing definitive answers to key questions. However, much of the data collected and analyzed in this study supports existing research indicating that online learning has been growing in K–12 schools and that this growth will continue for the foreseeable future. A

comparison was made to higher education where data are more prevalent and trends have been followed for a number of years. If K–12 follows the pattern of enrollment growth in higher education, it is quite possible that online learning will emerge as a substantial component in K–12 schools, especially at the secondary level. In examining this potential, small rural schools may be providing important experiences for school districts in other localities, especially those that are facing severe teacher shortages. It is also possible that the blended model may prove to be attractive to K–12 schools, especially those that are struggling with issues of online learning quality, student readiness, and teacher professional development. Finally, online learning is not one thing but comes in various shapes and sizes. This study attempted throughout to differentiate fully online and blended learning in order to provide a more refined model for future research.

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VIII. APPENDIX A

K–12 Online Learning Survey

Thank you for participating in the Study of Online Learning in K–12 School Districts.

- Report only about online education enrollments of students regularly enrolled in your district.
- Take into account any online education courses in which students in your district were enrolled, regardless of where the courses originated (i.e., from your district or another entity).
- Include enrollments in online education Advanced Placement or college-level courses in which students in your district were enrolled.
- Respondents may skip any questions they wish.
- Consider only credit-granting courses; do not take into account supplemental course materials, virtual field trips, online homework, or staff professional development.
- Do not include enrollments in distance education courses that are not online, such as courses using recorded video or courses conducted mainly via written correspondence.

1. Are students at [*Name of district*] taking any **fully online courses** during the 2005–2006 (12 month) school year?

☐ At least one student took a fully online course

☐ No students took online courses, but the district plans to offer some within the next three years.

☐ No students took online courses, and there are no district plans to offer any in the next three years.

2. Are students at [*Name of district*] taking any **blended/hybrid courses** during the 2005–2006 (12 month) school year?

☐ At least one student took a blended/hybrid course.

☐ No students took blended/hybrid courses, but the district plans to offer some within the next three years.

☐ No students took blended/hybrid courses, and there are no district plans to offer any in the next three years.

Use the following to distinguish between Online and Blended/Hybrid instruction:

- **Online** (80+% of the content delivered online): A course where most or all of the content is delivered online. Typically have no face-to-face meetings.
- **Blended/Hybrid** (30 to 79% of the content delivered online): A course that blends online and face-to-face delivery. Substantial proportion of the content is delivered online, sometimes uses online discussions, typically has few face-to-face meetings.

3. Please identify **how important** you believe the following reasons are for a school district to offer fully online or blended learning courses.

	Not at all Important			*Neutral*			***Very Important***
	1	*2*	*3*	*4*	*5*	*6*	*7*
Online and blended offerings are pedagogically more beneficial.	☐	☐	☐	☐	☐	☐	☐
Addressing growing populations and limited space.	☐	☐	☐	☐	☐	☐	☐
Online and blended offerings are financially beneficial.	☐	☐	☐	☐	☐	☐	☐
Students prefer online course activities.	☐	☐	☐	☐	☐	☐	☐
Certified teachers are not available for traditional face-to-face instruction.	☐	☐	☐	☐	☐	☐	☐
Offering courses not otherwise available at the school.	☐	☐	☐	☐	☐	☐	☐
Offering Advanced Placement or college-level courses.	☐	☐	☐	☐	☐	☐	☐
Meeting the needs of specific groups of students.	☐	☐	☐	☐	☐	☐	☐
Reducing scheduling conflicts for students.	☐	☐	☐	☐	☐	☐	☐
Permitting students who failed a course to take it again.	☐	☐	☐	☐	☐	☐	☐

4. Please indicate **how much of a barrier** the following areas would be (or are) to [*Name of district*] in offering fully online or blended/hybrid learning courses.

	Not at all Important			*Neutral*			***Very Important***
	1	*2*	*3*	*4*	*5*	*6*	*7*
Course development and/or purchasing costs.	☐	☐	☐	☐	☐	☐	☐
Limited technological infrastructure to support distance education.	☐	☐	☐	☐	☐	☐	☐
Concerns about course quality.	☐	☐	☐	☐	☐	☐	☐
Restrictive federal, state, or local laws or policies.	☐	☐	☐	☐	☐	☐	☐
The need for teacher training.	☐	☐	☐	☐	☐	☐	☐
Concerns about receiving funding based on student attendance for online and/or blended/hybrid education courses.	☐	☐	☐	☐	☐	☐	☐

The following questions are for those schools districts that currently offer online or blended/hybrid courses. **If [*Name of district*] does not currently offer online or blended/hybrid courses**, click here to go to the final question (Number 11).

5. *(Districts with online and/or blended/hybrid offerings.)* Please **select the level** (1–7) at which you disagree/agree with the following statements with regard to online learning in [*Name of district*].

I believe that:	*Strongly* ***Disagree***			*Neutral*			*Strongly* ***Agree***
	1	*2*	*3*	*4*	*5*	*6*	*7*
Fully online and blended/hybrid courses fulfill an important educational need for my students.	☐	☐	☐	☐	☐	☐	☐
Fully online and blended/hybrid course experiences are comparable in educational value to traditional face-to-face instruction.	☐	☐	☐	☐	☐	☐	☐
[*Name of district*] knows and maintains records on students taking fully online or blended courses.	☐	☐	☐	☐	☐	☐	☐
Fully online courses and blended/hybrid courses have allowed [*Name of district*] to build important relationships with other organizations.	☐	☐	☐	☐	☐	☐	☐
Students need more discipline to succeed in an online course than in a face-to-face course.	☐	☐	☐	☐	☐	☐	☐
Faculty at [*Name of district*] accept the value and legitimacy of online education.	☐	☐	☐	☐	☐	☐	☐

6. *(Districts with online and/or blended/hybrid offerings.)* Your best estimate of the **number of student enrollments** for [*Name of district*] in each of the following categories (a student enrolled in more than one course would be counted only once) during the 2005-2006 (12 month) school year?

	Student enrollments	
	Students taking at least one Fully Online Course	Students taking at least one Blended/Hybrid Course
Grades K-5		
Grades 6-8		
Grades 9-12		
Other		

7. *(Districts with online and/or blended/hybrid offerings.)* The **nature of the courses** that students are taking fully online or blended/hybrid at[*Name of district*] during the 2005-2006 (12 month) school year can be described as (check all that apply):

- ☐ Required courses.
- ☐ Elective courses.
- ☐ Other.

8. *(Districts with online offerings.)* Over the next two years, we expect **fully online course enrollments** for [*Name of district*] to:

- ☐ Grow by about ____ percent.
- ☐ Stay about the same.
- ☐ Decrease.

9. *(Districts with blended/hybrid offerings.)* Over the next two years, we expect **blended/hybrid course enrollments** for [*Name of district*] to:

- ☐ Grow by about ____ percent.
- ☐ Stay about the same.
- ☐ Decrease.

10. *(Districts with online and/or blended/hybrid offerings.)* The **provider(s)** for fully online and blended courses for [*Name of district*] are (check all that apply):

Providers	*Check all that apply*	
	Online Courses (80%+ course content delivered online)	Blended/Hybrid Courses (30% and 80% course content delivered online)
Your district (i.e., delivered centrally from the district)	☐	☐
Cyber (i.e., online) charter school in your district	☐	☐
Other schools in your district	☐	☐
Another local school district, or schools in another district, in your state	☐	☐
Education service agencies within your state (e.g., BOCES, COE, IU), not including the state education agency or local school districts	☐	☐
State virtual school in your state (i.e., state-centralized K-12K–12 courses available through Internet- or web-based methods	☐	☐
State virtual school in another state	☐	☐
Districts or schools in other states (other than state virtual schools)	☐	☐
Postsecondary institution	☐	☐

Independent vendor	☐	☐
Other:	☐	☐

11. *(All districts.)* In the space provided, feel free to make any other comments regarding the nature of online or blended learning at [*Name of district*]:

Thank you for completing this survey. Please provide your email address and so we can provide you with a link to a free download of the final survey report.

Email:

If you would like to participate in a follow-up telephone conversation to this survey, please provide your name and telephone number below. (Note: We value your privacy. The phone number you provide will be used **ONLY** for survey-related purposes, **not** for marketing, and will **not** be shared with any other organization.)

Name:

Telephone number:

Thank you for your time. Press **Submit** to record your responses.

Submit | Clear Form

This study has been funded and supported by the Alfred P. Sloan Foundation and is conducted by researchers at Hunter and Babson Colleges. All responses will be held in strictest confidence and at no time will districts or respondents be identified by name. There are no known risks associated with participation, only the researchers will have access to the data, which will be stored at Babson College for a minimum of three years. Questions regarding the conduct of the survey can be directed to the Hunter College IRB at 212 650-3053.

IX. APPENDIX B

U.S. Dept of Education National Center for Education Statistics (NCES) Common Core of Data (CCD) Locale Code

Locale Code is a variable that NCES has created for general description, sampling, and other statistical purposes. It is based upon the location of school buildings, and in some cases may not reflect the entire attendance area or residences of enrolled students. The designation of each school's "locale" is based on its geographic location and population attributes such as density. School locale codes are coded by Census from school addresses in CCD files. The classifications are:

1. Large City: A central city of a Core Based Statistical Area (CBSA) or Consolidated Statistical Area (CSA), with the city having a population greater than or equal to 250,000.

2. Mid-size City: A central city of a CBSA or CSA, with the city having a population less than 250,000.

3. Urban Fringe of a Large City: Any incorporated place, Census designated place, or non-place territory within a CBSA or CSA of a Large City and defined as urban by the Census Bureau.

4. Urban Fringe of a Mid-size City: Any incorporated place, Census designated place, or non-place territory within a CBSA or CSA of a Mid-size City and defined as urban by the Census Bureau.

5. Large Town: An incorporated place or Census designated place with a population greater than or equal to 25,000 and located outside a CBSA or CSA.

6. Small Town: An incorporated place or Census designated place with population less than 25,000 and greater than or equal to 2,500 and located outside a CBSA or CSA.

7. Rural, outside CBSA: Any incorporated place, Census designated place, or non-place territory not within a CBSA or CSA of a Large or Mid-size City and defined as rural by the Census Bureau.

8. Rural, inside CBSA: Any incorporated place, Census designated place, or non-place territory within a CBSA or CSA of a Large or Mid-size City and defined as rural by the Census Bureau.

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