Class Connections:

High School Reform and the Role of Online Learning

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BABSON Survey Research Group
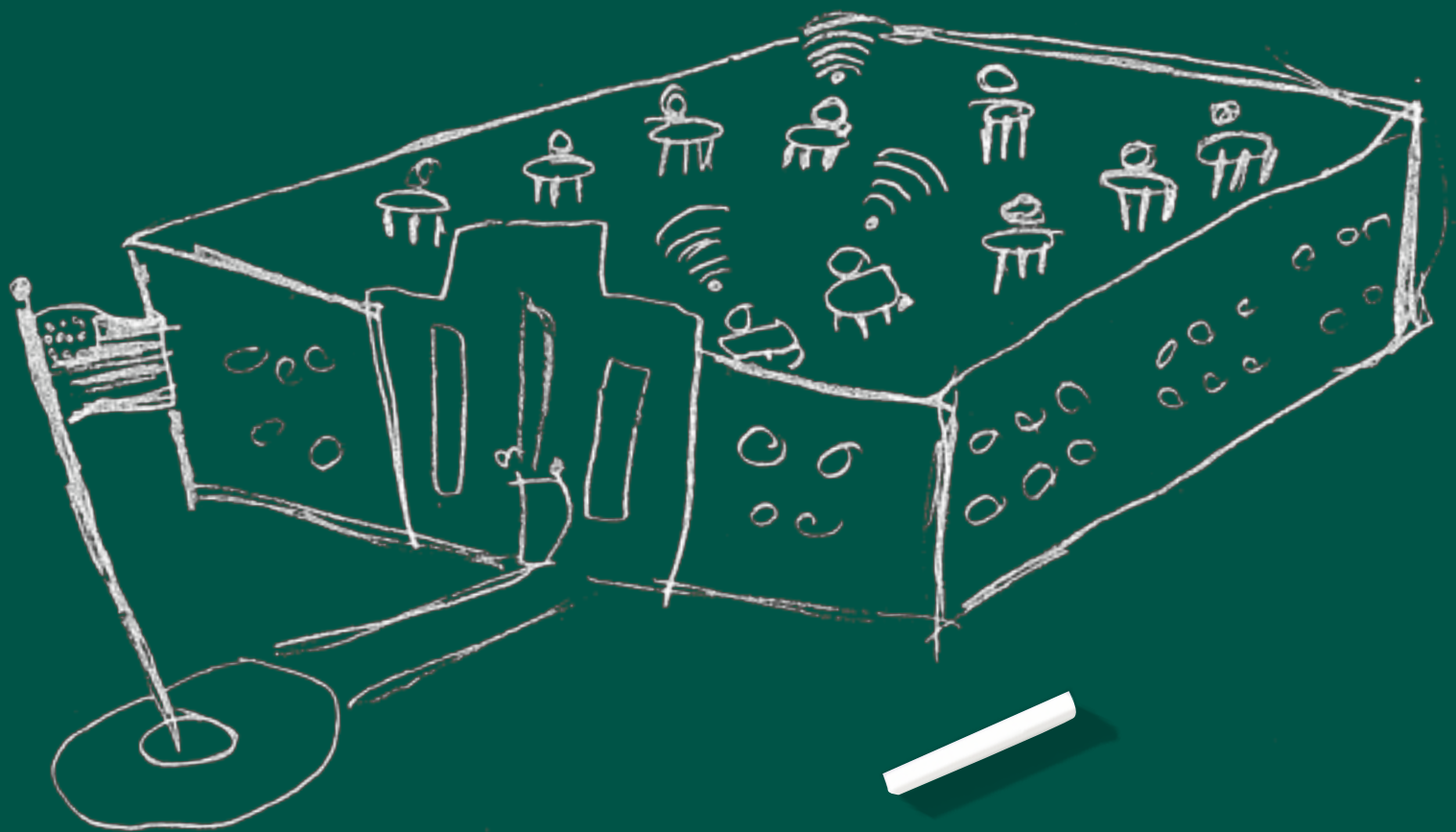
Class Connections

High School Reform and the Role of Online Learning

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CONTENTS

EXECUTIVE SUMMARY

Using data collected from a national sample of principals this study examines the role of online and blended instruction in addressing concerns and issues facing the American high school. From its findings, it is obvious that there are certain initiatives involving online learning that directly address school reform issues such as improving graduation rates, credit recovery, building connections for students to their future college careers, differentiating instruction, and operating costs.

Improving Graduation Rates and Credit Recovery

Credit recovery has evolved into the most popular type of online course being offered at the secondary level. Students needing such courses make up a significant portion of the high school student population that subsequently drops out or is late in graduating.

Urban high schools, which historically have the lowest graduation rates of any schools in the country, appear to be embracing online credit recovery as a basic part of their academic offerings.

While employing online courses for credit recovery, high school administrators still have concerns about their quality and indicate that students need maturity, self-discipline, and a certain command of basic skills (reading and mathematics) in order to succeed.

Building Bridges to College Careers

Online and blended learning courses are increasingly being used to overcome logistical issues in programs to bridge the high school and college experiences. These courses have allowed high schools to expand the opportunities for their students to start their college careers while still in high school high.

High school administrators consider online elective college-level courses as an effective means for some of the more able students to begin their college careers.

Differentiating Instruction

High school administrators see online learning as meeting the diverse needs of their students whether through advanced placement, elective college courses, or credit recovery.

The major reason high school administrators cite for online and blended offerings is to provide courses that otherwise would not be available. This strongly supports the concept that online technology can provide differentiating instruction and more choices for high school administrators in developing their academic programs.

Financial and Policy Issues

Survey respondents report that offering online and blended courses makes financial sense when trying to meet specific needs for small groups of students. This allows schools to maximize their full-time faculty resources in required and other popular courses and to minimize offering courses in face-to-face mode for small numbers of students.

Respondents also see costs and funding formulae as barriers to expanding and implementing online and blended courses. State and local education policies that follow strict attendance-based funding formulae do not easily accommodate students taking online or blended courses.

The Pedagogy of Online Learning

Educators express concerns that online learning is not as effective as face-to-face instruction. Specific concerns include the need for motivation and maturity levels, study habits and organizational skills, and adequate academic preparedness for online students to succeed.

High school administrators see benefits to online learning programs that overshadow concerns about pedagogical value — the vast majority of their schools are moving forward with their programs and looking to expand them in the future.

Online learning is seen as a means to broaden and expand student experiences. It allows students looking for more advanced work to test and challenge their skills by taking more demanding instructional material. It also allows students who might be at risk to make up coursework that they have missed in order to graduate.

Rural Schools in the Vanguard

Rural schools are in the vanguard in offering online and blended learning programs to their students— using online courses to overcome significant problems in funding, teacher certification, and small enrollments.

High schools in all locales are facing serious challenges, but rural schools probably have the most difficult. Online and blended learning are a critical part of the strategy they are employing to deal with limited tax bases, low enrollments, and difficulty in attracting and keeping certified teachers.

SAMPLE

Four hundred and forty one (N=441) high school administrators participated in this study. Their high schools represent all regions and locales in the country. Of all schools in this sample, 82 percent had at least one student enrolled in a fully online course and 38 percent had at least one student enrolled in a blended or hybrid course.

FOREWORD

When we first began our work examining the extent and nature of online learning in K-12 schools in 2006 there was little other research being done in this area. No more than a handful of other studies existed that attempted to establish basic information such as how many students were enrolled in online courses. There were a number of underlying reasons why these data were so scarce. First, there were minimal if any requirements in many states to collect data on their online students. Second, there was confusion related to definitions of online learning and distance education. Distance education is not equivalent to online learning. Other distance learning modalities not directly related to the Internet such as videoconferencing and televised courses were 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. 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 operated outside of the traditional school district structure.

While these issues have not been fully resolved, there is now more clarity for researchers to begin the process of studying what we call "online learning". This is desirable and we are proud of the role our studies have played in trying to bring some understanding to the phenomenon. More research is now being done in this area by the federal government as well as independent researchers, much of it quite good. However, in the past several years we have also seen several questionable studies that have been poorly designed without adequate sampling controls. Website surveys that permit multiple responses can result in highly biased samples or grossly exaggerated enrollment figures.

We welcome any feedback on our work and hope we have helped to serve the needs of educators considering online and blended learning environments for the benefit of their programs and in turn, for their students.

Anthony G. Picciano

Jeff Seaman

INTRODUCTION

Increasingly, the American high school is becoming the major concern for policymakers across the spectrum of education in the United States. Issues related to the college preparedness of high school students, performance on international tests, the lack of qualified teachers in subject areas such as mathematics and science, and attrition rates paint a picture of an institution in crisis. While there is debate on the validity of some of these issues, research is conclusive that the most serious problem is the persistent low graduation rates from American high schools. [1,2] In a report published by the Center for Labor Market Studies at Northeastern University in Boston and the Alternate Schools Network in Chicago, the high school dropout problem is deemed a "crisis" that is having a detrimental life-long economic impact on individuals as well as on the American society at large. Barak Obama, in his first major address on American education after assuming the presidency, pleaded with American youth that:

> *"dropping out of high school is no longer an option. It's not just quitting on yourself, it's quitting on your country; and this country needs and values the talents of every American." [3]*

Furthermore, the decrease in graduation rates is not a temporary aberration that will soon or easily correct itself but part of a pattern that started in the 1970s. [7] In a bill introduced into the United States Congress in March 2009, the extent of the high school graduation problem was described as:

> ...About 1,230,000 secondary school students, which is approximately one-third of all secondary school students, fail to graduate with their peers every year. According to the Department of Education, the United States secondary school graduation rate is the lowest the rate has been since 2002...

> ...The graduation rates for historically disadvantaged minority groups are far lower than that of their White peers. Little more than half of all African-American and Hispanic students will finish secondary school on time with a regular secondary school diploma compared to over three-quarters of White students. [8, p. 1]

A number of major education policy initiatives are in various stages of consideration at federal, state and local levels that would address the high school crisis. For example, programs to re-enroll former dropouts are being piloted in major cities such as Chicago, Milwaukee, and Los Angeles. [1] After school and summer youth employment programs are being established that provide incentives for high school students to remain in school or to re-enroll if they have already dropped out. In addition, school districts are trying corrective strategies including linking high school and college curricula and experiences, personalizing instruction, extending school days, and providing interventions to assist students at-risk of dropping out. Part of these strategies is the utilization of online learning as a means of providing greater access to courses and course materials as well as aiding in differentiating instruction to meet the needs of diverse student populations.

In 2008, Clayton Christensen, a professor at the Harvard Business School and the author of *The Innovator's Dilemma*, published a book with Michael Horn, and Curtis Johnson entitled *Disrupting Class: How Innovation Will Change the Way the World Learns*. [9] Christensen, Horn, and Johnson see online learning as an integral part of high school reform and present a compelling rationale for changing education in a way that makes far greater use of online technology to provide more student-centered and individualized instruction. The book's call for change is being cited by many educators as an important consideration for policymakers when examining the future of American secondary education. Among the most provocative aspects of this book are the predictions that about one-quarter of all high school courses will be online by the year 2016 and that about one-half of all high school courses will be online by the year 2019.

In March 2007, the Sloan Consortium issued its first report on the extent and nature of online learning in K-12 schools. [5] Entitled, *K-12 Online Learning: A Survey of U.S. School District Administrators*, this report was welcomed by professional organizations and the popular media interested in the use of online technology for instruction in the public schools. The report conducted for the 2005-2006 academic year was based on a national survey of American public school district chief administrators. It was one of the first studies to collect data on and compare fully online and blended learning (part online and part traditional face-to-face instruction) in K-12 schools. Since its publication in 2007, several hundred articles, news reports, and other media have cited the report's findings. In this study, the number of students enrolled in at least one online or blended course in American K-12 schools was estimated at 700,000. In a 2009 follow-up to this same study, the number of students enrolled in at least one online or blended course was estimated at 1,030,000, which represents 2 percent of the total K-12 population. [6] Of these estimates, 70 percent of the students were enrolled at the secondary level.

A critical question regarding the expansion of online learning relates to its relationship to reform efforts that seek to improve the quality and experiences of students in American high schools. There is a growing need to examine online instruction in K-12 schools, especially at the secondary level in order, to inform policymakers at federal, state, and local governing agencies who are considering how to expand the use of this technology to improve instruction. The purpose of this study was to examine the role that online learning is playing in addressing some of the concerns and issues facing the American high school. Data have been collected from a national sample of high schools with respect to the extent, nature, and reasons for participating in online learning programs.

REVIEW OF THE LITERATURE

American High School Reform

The literature on American high school reform is quite extensive and this review is not meant to be a comprehensive examination. There are a number of fine comprehensive treatments on this topic. Specifically recommended are Orfield [2] and Golden & Katz [7]. Also recommended is Attewell & Lavin [10] which, although dealing with attrition in higher education, is one of the few studies on how students no longer approach a college education as a four-year experience but one that can easily last ten or more years. This mentality has similar ramifications for high school students.

The relationship of a secondary education to a postsecondary education is important as one sets the stage for the other. Students who drop out of high school have difficulty in ever attending and completing a college degree, thereby stagnating their livelihoods and life-long earning capabilities. Golden & Katz [7] in a study entitled, *The Race between Technology and Education*, reviewed the state of education at the secondary and postsecondary levels in the United States. The study examined trend data and established that the growth of the American economic system in the 20th century was due in part to the growth, quality, and overall education attainment of its citizens. In the first half of the century, enrollments and graduations from high school and college soared as people developed and expanded their skills to participate in the American dream. However, starting in 1970, this expansion slowed down. Secondary graduation rates reached a plateau and college graduation rates slid backwards. While there was some movement upward in the 1980s, the overall progress has been "sluggish". Why this is so is complicated but can be traced to a number of issues related to the quality of instruction particularly at the high school level, the preparedness of high school students to take on college-level work, a shortage of qualified teachers in certain areas especially science and mathematics, and the increase of immigrant populations especially those for whom English is not their first language. However, part of the issue can be traced to how Americans are attaining and approaching their education.

While it is accepted that high school and college graduation rates have stagnated, this notion is based essentially on a four-year graduation model. This model, while useful in the past, no longer holds for many segments of the population. Some students see the need to work to support themselves and their families. At the high school level, many drop-outs who enter the labor force return, years later in some cases, to complete their secondary education — frequently via the General Equivalency Diploma or GED. Fully sixteen percent of all high school diplomas were earned via the GED in 1996, a third of which by individuals 24 years of age or older. A number of large urban school districts are also establishing re-enrollment programs specifically designed for and customized to meet the needs of dropouts. At the college level, America has shifted away from a traditional, four-year full-time study model to a part-time six, seven, eight or more year model. Attewell & Lavin in a study of women college students from 1970 to 2000, who were considered disadvantaged because they dropped-out one or more times, concluded that fully 71 percent went on to complete a degree, although in some cases it took as much as twenty years to do so. [10]

The length of time it is taking to complete either a high school diploma or a college degree has had a severe impact on defining what it means to be a "drop-out". Many of the data collection mechanisms that tracked secondary or post secondary school graduation were geared for the traditional four-year student with some allowance for a one or two year extension. It is only recently that more data have become available that tracks students for a much longer time. This issue has been the subject of intense debate among policy makers as they try to grapple with the change in student behavior. Reference was made earlier in this study to a bill that was introduced in the U.S. Senate, the title and purpose of which was "to improve the calculation of, the reporting of, and the accountability for secondary school graduation rates". [8] The bill specifically states that there is a dire need because:

> *"The graduation rate calculations used by most States for reporting and accountability are inconsistent and misleading. Not only does this obscure the graduation rate crisis, particularly for poor and minority students, but it also makes it impossible to compare graduation rates across schools, school districts, and States".* [8]

The American education system has tried to develop strategies to address the "drop-out" problem. A number of initiatives aimed at building closer relationships between a high school and college education, small schools initiatives, differentiating instruction, extending the school day, extending the school year, and credit-recovery programs are being tried throughout secondary education with various degrees of success. Many of these programs show promise and may be the solution in the years to come but others are still evolving in their model or experimental stages and have not been broadly implemented for funding or other logistical reasons. Examples of successful models include:

> **Early College Programs** – Many schools in the United States allow their students to take college classes while they are still enrolled in high school. These dual enrollment or concurrent enrollment programs have traditionally served advanced students. Early college programs, in contrast, provide dual enrollment opportunities and comprehensive student support to broader populations of students who are underrepresented in postsecondary education. College Now is an example of such a program that operates between the City University of New York and the New York City Department of Education. [11]

> **Differentiating Instruction** – Instructional programs designed to meet the needs of a variety of learners are growing in popularity. Such programs are developed for both traditional face-to-face instruction as well as for online learning environments. Florida's Virtual School has an "any time, any place, any path, any pace" program that emphasizes the multiple levels of personalization possible in virtual schools. Students don't have to proceed at the same pace as an entire classroom. To the contrary, they can take extra time to review and receive additional guidance, or move through a course at an accelerated pace. [12]

> **Extending the School Day** – A number of states such as Massachusetts have initiated programs to extend the school day – allowing educators to design more extensive academic programs as well as to provide additional services to students in need. Extended programs are also common among charter schools. A

significant issue with extending the school day is the cost of staffing and keeping facilities functional in the early morning or late afternoon hours. [13]

Credit Recovery – These are programs designed to assist students to make up courses that they did not complete or for which they received a failing grade. The Jackson (Michigan) School District, for instance, operates a SAFE (Student Alternative for Expulsion) that meets after school hours. Students spend half the time face-to-face with certified regular classroom teachers who drill them on the basics of the courses they must pass, sometimes using textbooks and other printed materials. After a half-hour break for exercise in the school gym, the students go into the school's computer lab to continue their class work on curricula from the Michigan Virtual School with regular classroom teachers in the lab answering questions from the students.

While all of these programs show promise and can demonstrate levels of success, scaling them up to meet the needs of millions of high school students is not easy. However, it is possible that online learning technology can help to support these types of programs if not, in fact, be an integral part of their function. A critical question for this study is to help identify the role that online learning has in high school reform initiatives.

Online Learning in K-12 Environments

Earlier in this report, it was mentioned that in a 2007 national study of school district administrators, the number of students enrolled in at least one online or blended course in American K-12 schools was estimated at 700,000. [5] In a 2009 follow-up study, the estimate was 1,030,000. [6] These enrollments are the result of students taking either online or blended courses in three quarters of all the school districts (74.8 %) in the United States. Approximately another 15 percent of the districts are planning to introduce them over the next three years. Respondents in this study anticipated that the number of students taking online courses will grow by 22.8 percent and that those taking blended courses will grow even more over the next two years. It also appears that the number of

Figure 1. School Districts Reporting Year in which the First Student took a Fully Online Course
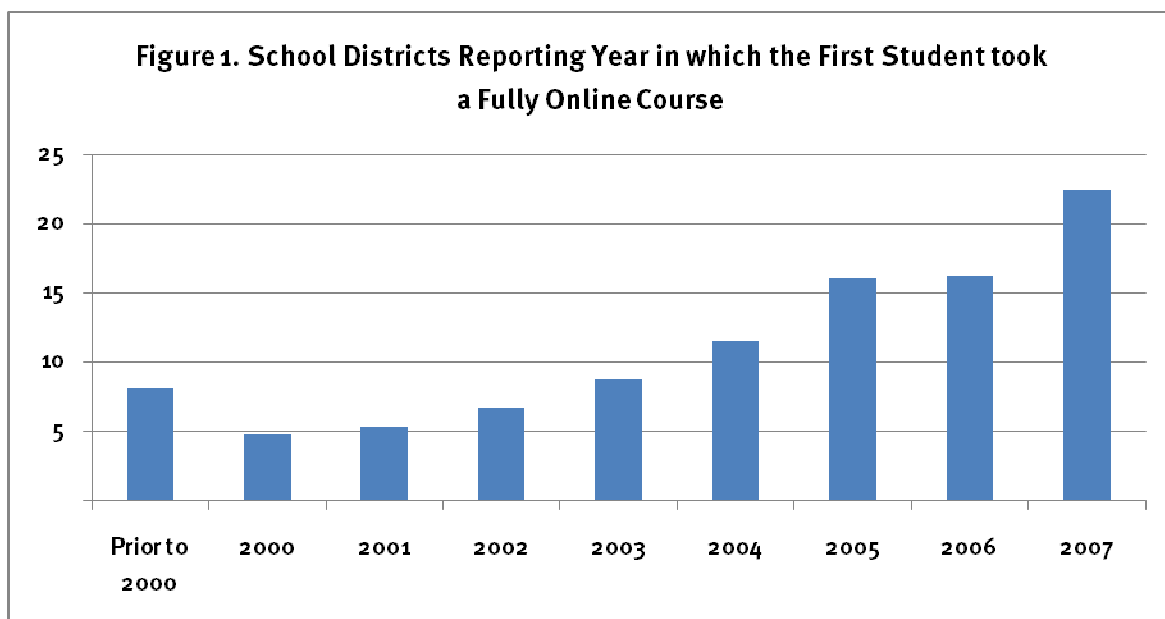
school districts offering online courses is accelerating. One of the questions asked in the follow-up study of respondents who were offering online or blended learning courses, was: In what year did any student in your district first take a fully online or blended/hybrid course? Figures 1 and 2 illustrate the responses to this question. They show that online and blended learning have been on an upward trend for the past eight years with greater numbers of districts adopting these approaches in recent years. The data in these charts support the upward growth estimates discussed above. In 2007, the authors' original study predicted that over the subsequent five or six years, the K-12 enrollment in online courses would easily approach several million students. The data

Figure 2. School Districts Reporting Year in which the First Student took a Blended Course

Prior to 2000	2000	2001	2002	2003	2004	2005	2006	2007
9.5	2.5	5.5	9	5.5	12.5	11	16.5	28
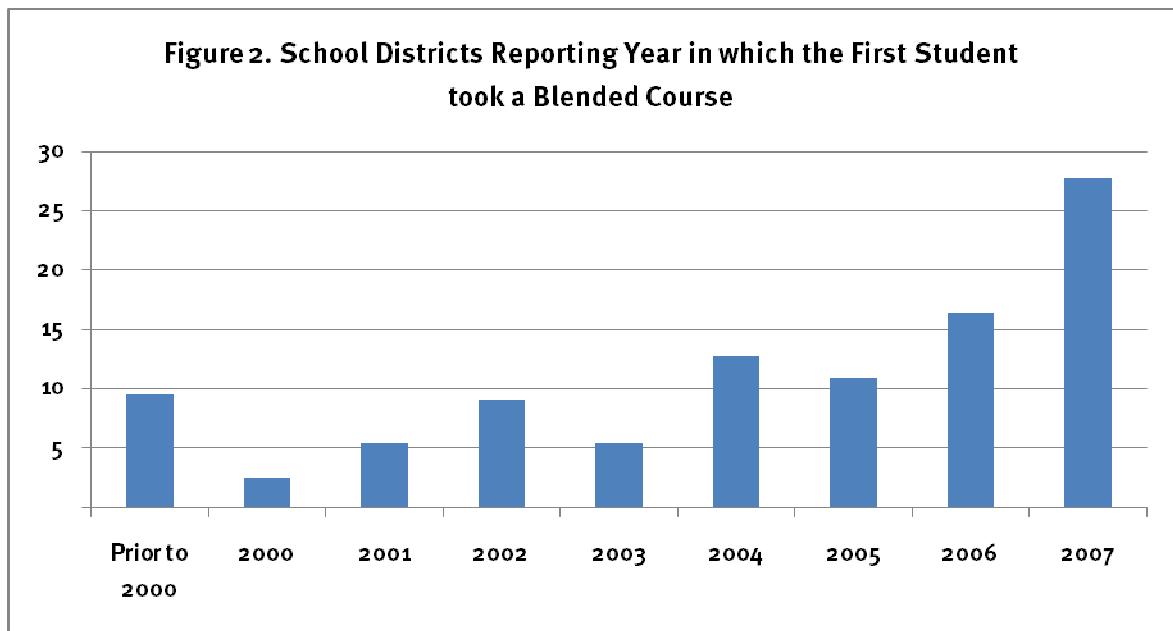
collected in the later study support that prediction and it is conceivable that by 2016 online enrollments could reach approximately 5 million (mostly high school) students.

Figure 3 illustrates that school district administrators see a real value in online and blended learning in their schools. The basic reason K-12 schools are offering online and blended learning is to meet the special needs of a variety of students. Consistently for both studies (2005-20086 and 2007-2008) large percentages of respondents, in excess of 60 to 70 percent, perceive the importance of online learning as related to:

- Meeting the needs of specific groups of students
- Offering courses not otherwise available at the school
- Offering Advanced Placement or college-level courses
- Permitting students who failed a course to take it again (e.g., Credit Recovery)
- Reducing scheduling conflicts for students

The data presented in Figure 3 were collected from school district administrators reporting on their K-12 systems. Since approximately 70 percent of the enrollments were in high schools, the data provide appropriate background information for the purposes of this study. However, what distinguishes this study from our previous research is that the focus is entirely on high schools and data collected were from high school administrators.

Figure 3. Reasons for a school district to offer fully online or blended learning

Reason	2007-2008	2005-2006
Offering courses not otherwise available	76%	76%
Meeting needs of specific students	75%	74%
Offering Advanced Placement	67%	68%
Permitting students to retake courses	60%	53%
Reducing scheduling conflicts	53%	55%
Certified teachers are not available	40%	29%
Addressing limited space	32%	26%
Financially beneficial	30%	24%
Pedagogically more beneficial	18%	13%
Students prefer online	17%	12%

FINDINGS

Perceived Importance of Online and Blended Courses

Perhaps one of the most important questions posed in this study was "why are high schools offering online and blended courses to their students"? Figure 4A shows the percentage of positive responses given by those respondents offering online or blended

Figure 4A: Importance for Offering Online or Blended/Hybrid Courses
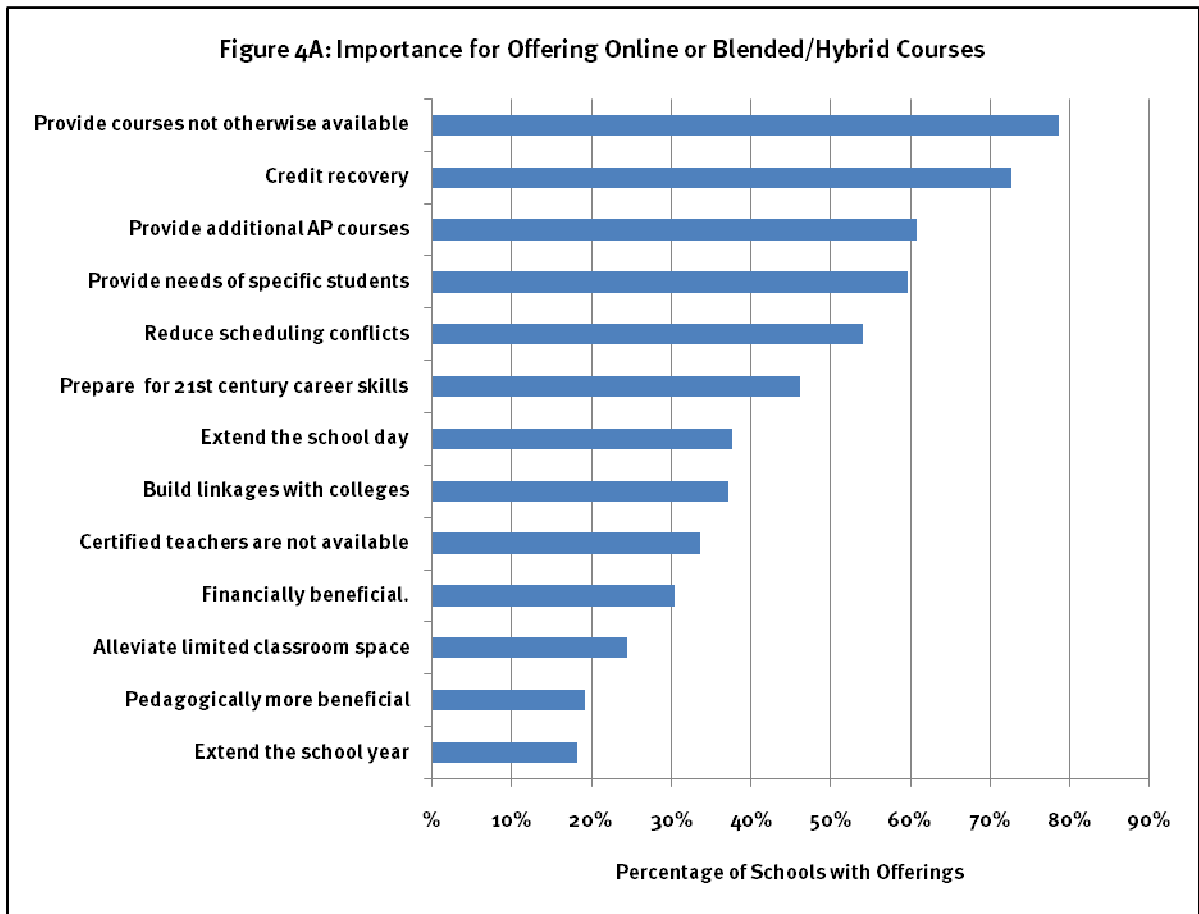
learning courses for each of the thirteen options provided in the survey for the question: *Regardless of whether your school is currently offering online or blended/hybrid courses, how important do you believe each of the following items would be in offering or potentially offering online and blended/hybrid courses?* The options receiving the greatest responses were:

- Provide courses that otherwise were not available (79%)
- Permit students who failed a course to take it again - Credit Recovery (73%)
- Provide additional Advanced Placement Courses (61%)
- Provide for the needs of specific students (60%)

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These responses represent the significance of online learning in meeting a variety of student needs whether taking advanced placement or making up courses that they had previously failed. For the latter, the term "credit recovery" has become very popular in recent years and is a fairly new phenomenon in online learning that will be discussed later in this study. Meeting needs related to basic school issues such as finances, classroom space, and extending the school year were perceived as being of less importance.

Figures 4B and 4C present the perceived importance data shown in Figure 4A cross tabulated by size of school and locale. In Figure 4B, a clear pattern presents itself showing that the smaller the school, the greater the importance of "providing courses not otherwise available". Figure 4C shows that rural schools perceive online and blended courses as more important in the five leading categories than do schools in other locations and especially those in urban settings.
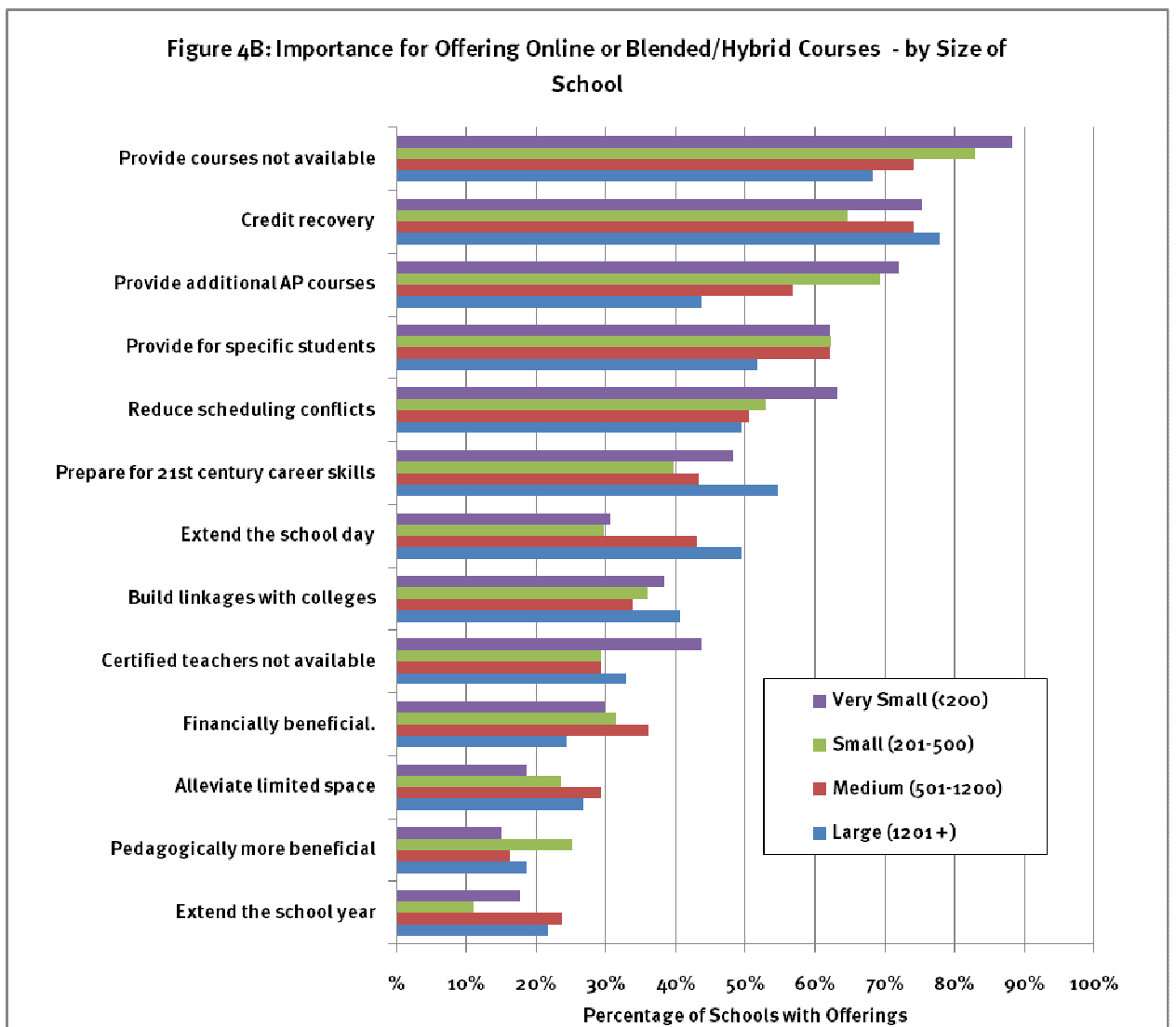

Figure 4B: Importance for Offering Online or Blended/Hybrid Courses - by Size of School
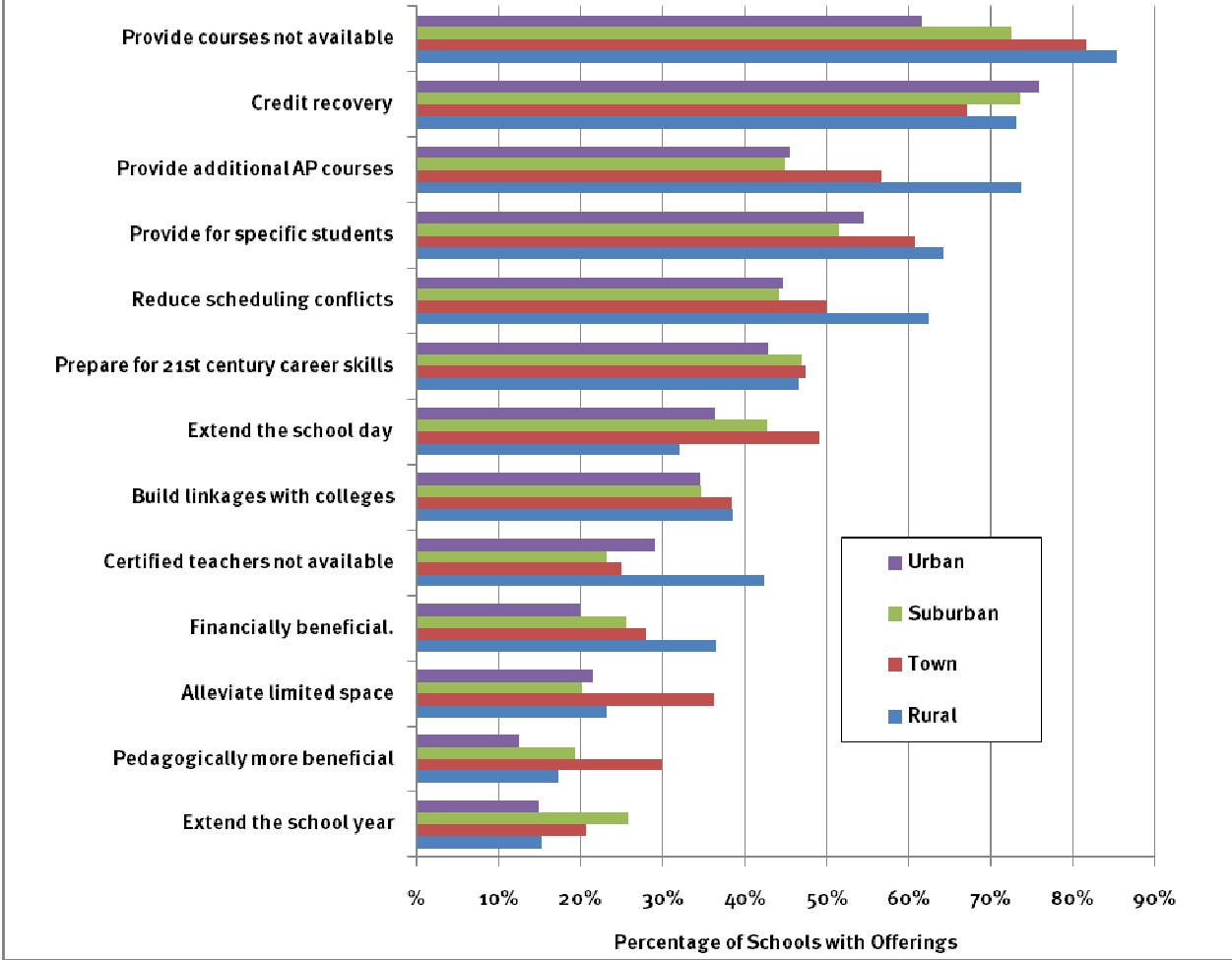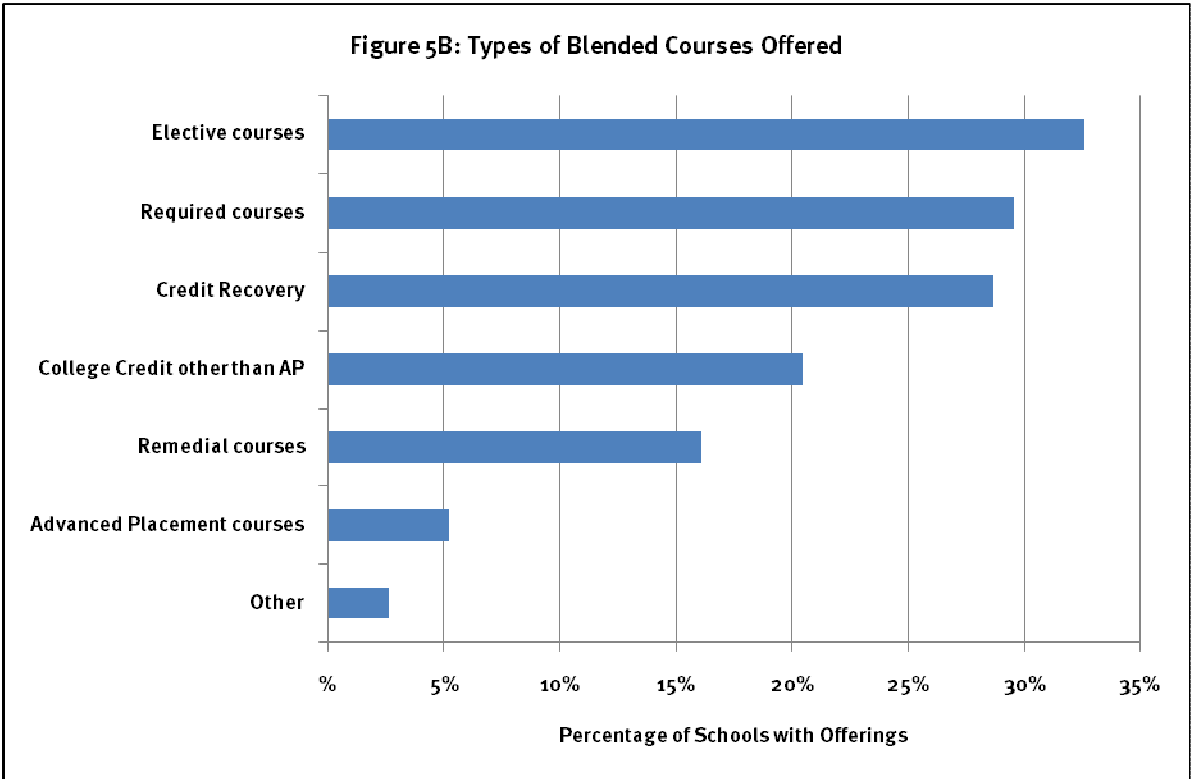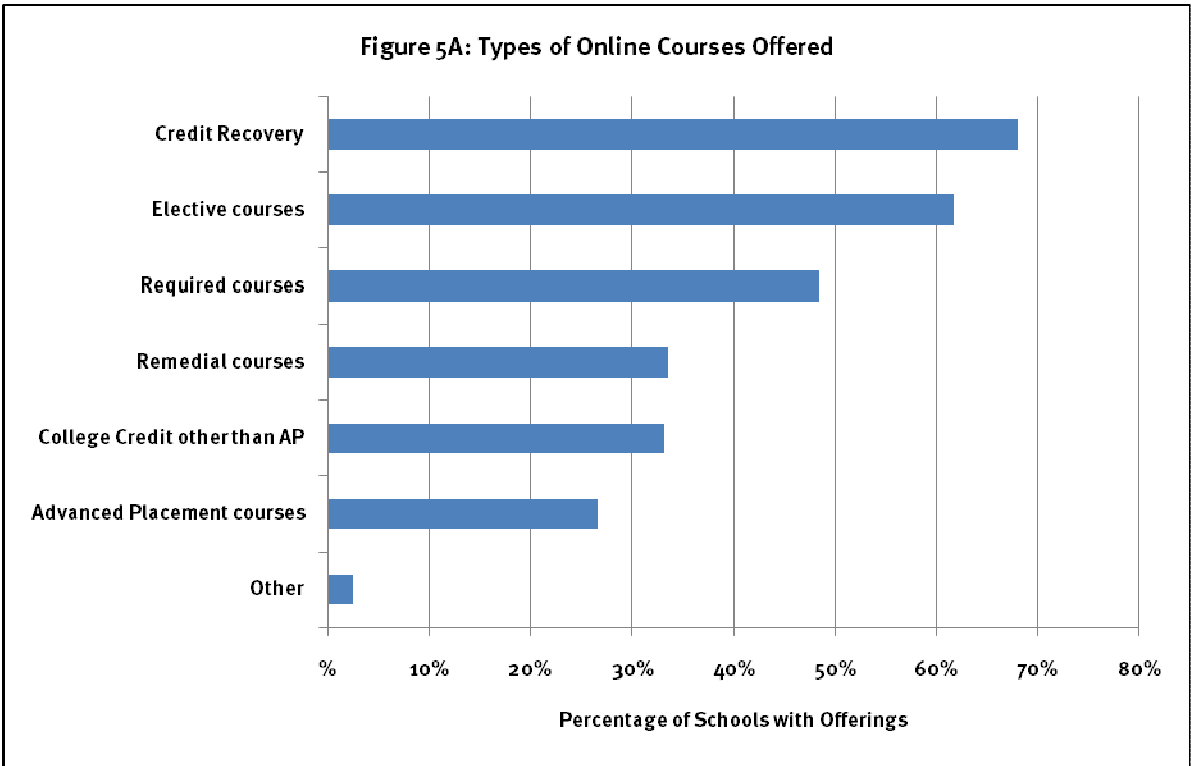
Figure 4C: Importance for Offering Online or Blended/Hybrid Courses - by Location

Categories (top to bottom): Provide courses not available, Credit recovery, Provide additional AP courses, Provide for specific students, Reduce scheduling conflicts, Prepare for 21st century career skills, Extend the school day, Build linkages with colleges, Certified teachers not available, Financially beneficial., Alleviate limited space, Pedagogically more beneficial, Extend the school year

Legend: Urban, Suburban, Town, Rural

X-axis: Percentage of Schools with Offerings (%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%)

Types of Courses Offered

The data in Figures 4A through 4C overlap in several ways but do not provide enough detail regarding the type of courses being offered online or in blended learning modes. To examine this further, a specific question was included in the survey to detail the types of courses being offered online or in blended modes (see Figures 5A and 5B). These data show a somewhat different pattern between online and blended courses. Credit recovery is the most popular type of course offered in online mode whereas elective courses are the most popular type in blended courses. While it is difficult to determine exactly why this is so, speculation is that there are several successful, for-profit entities that provide fully online credit recovery courses to the schools. These courses are generally self-contained, programmed-instruction courses. The importance of online credit recovery courses is a relatively recent phenomenon but one that has gained considerable popularity among high school administrators. This appears to be particularly true in urban high schools (see Figure 5C).

Figure 5A: Types of Online Courses Offered

Course Type	Percentage
Credit Recovery	~68%
Elective courses	~62%
Required courses	~48%
Remedial courses	~33%
College Credit other than AP	~33%
Advanced Placement courses	~26%
Other	~2%

Percentage of Schools with Offerings

Figure 5B: Types of Blended Courses Offered

Course Type	Percentage
Elective courses	~32%
Required courses	~29%
Credit Recovery	~28%
College Credit other than AP	~20%
Remedial courses	~16%
Advanced Placement courses	~5%
Other	~3%

Percentage of Schools with Offerings

Figure 5C: Types of Online Courses Offered - by Location

Providers of Online and Blended Courses

Figures 6A and 6B present data on the providers of online and blended courses to the high schools in this study. A different set of providers emerge for online as opposed to blended courses. For fully online courses, the percentage of high schools reporting that they used each of the four major providers is:

- Postsecondary schools (51%)
- State virtual schools (42%)
- Independent (For-Profit) vendors (36%)
- The home school district (25%)

For blended courses, the major providers are:

- Postsecondary school (18%)
- The home school district (18%)
- Independent (For-Profit) vendor (14%)
- Another school district (9%)

Figure 6A: Providers of Online Courses
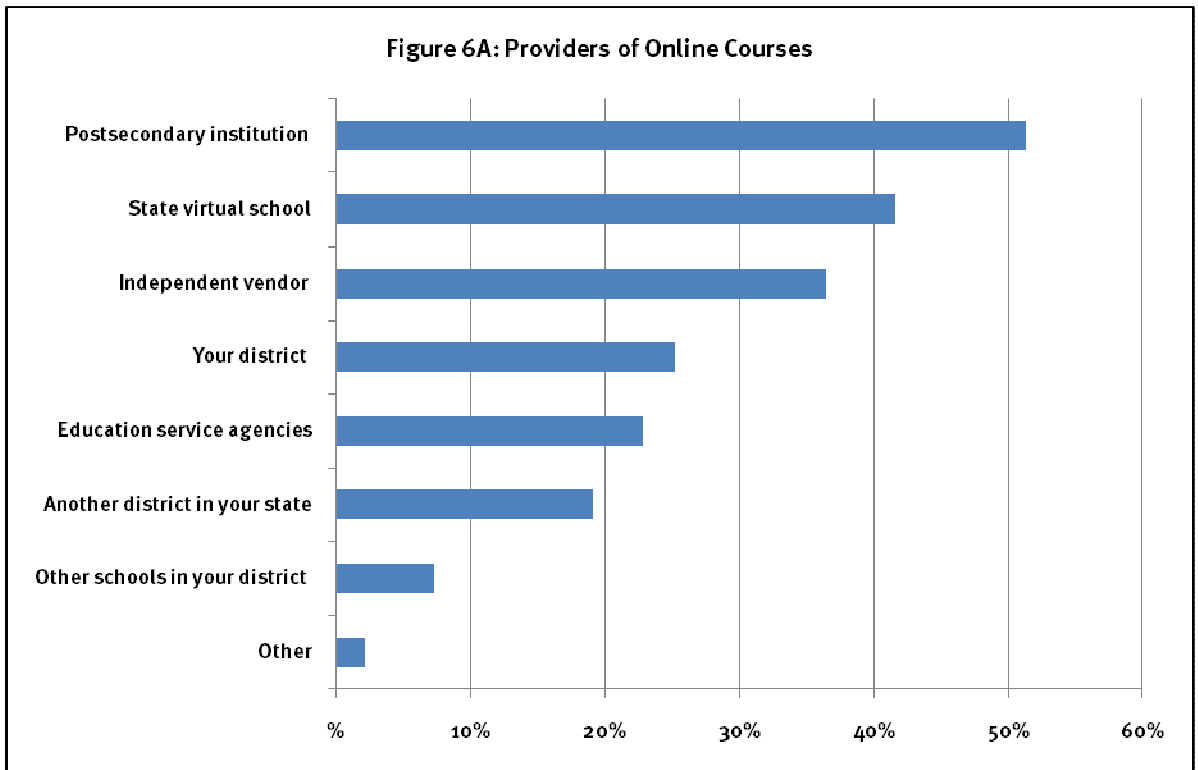
The differences between the two are worth noting for two major reasons. First, while state virtual schools are major providers of fully online courses, the same is not true for blended courses. This most likely reflects a preference on the part of the virtual schools to develop fully online courses. A second reason is that high schools are beginning to develop their own blended courses. School districts have begun investing in the

Figure 6B: Providers of Blended/Hybrid Courses
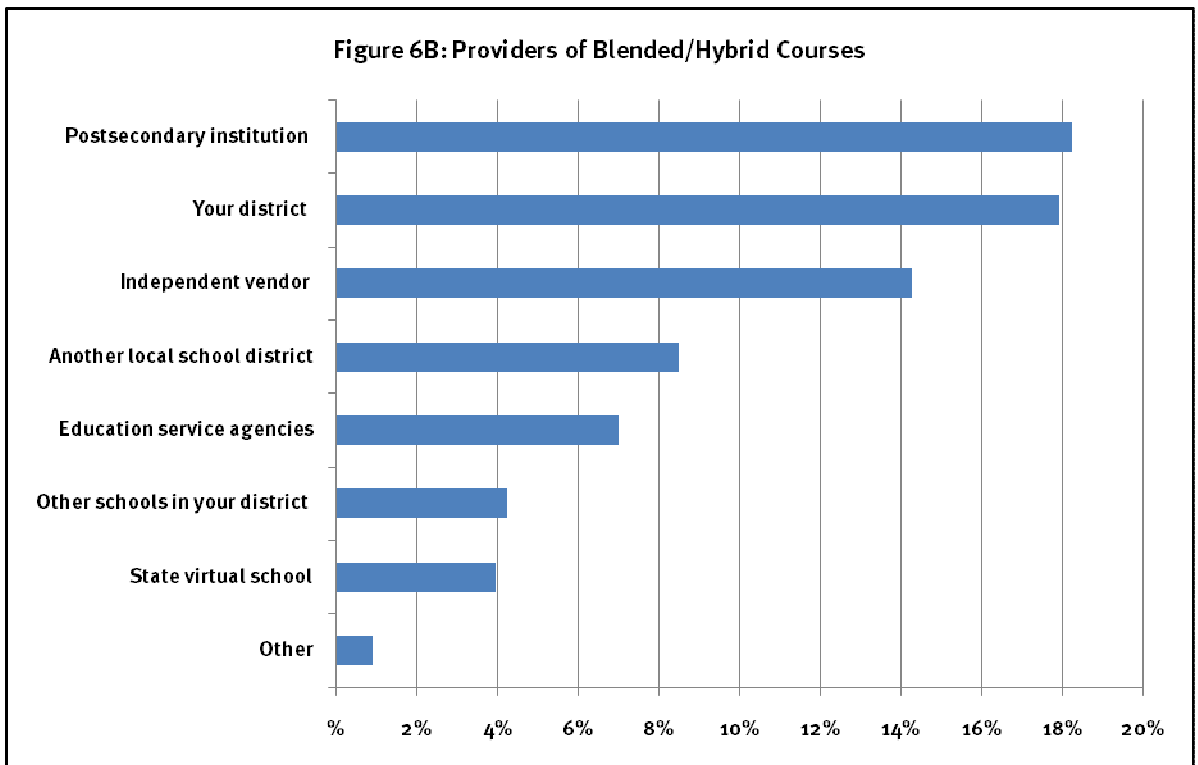
infrastructure to develop their own online course materials and may be finding it easier to develop online modules or parts of courses as opposed to entire courses. It might also indicate a preference on the part of these schools to maintain face-to-face activity which the blended environment affords.
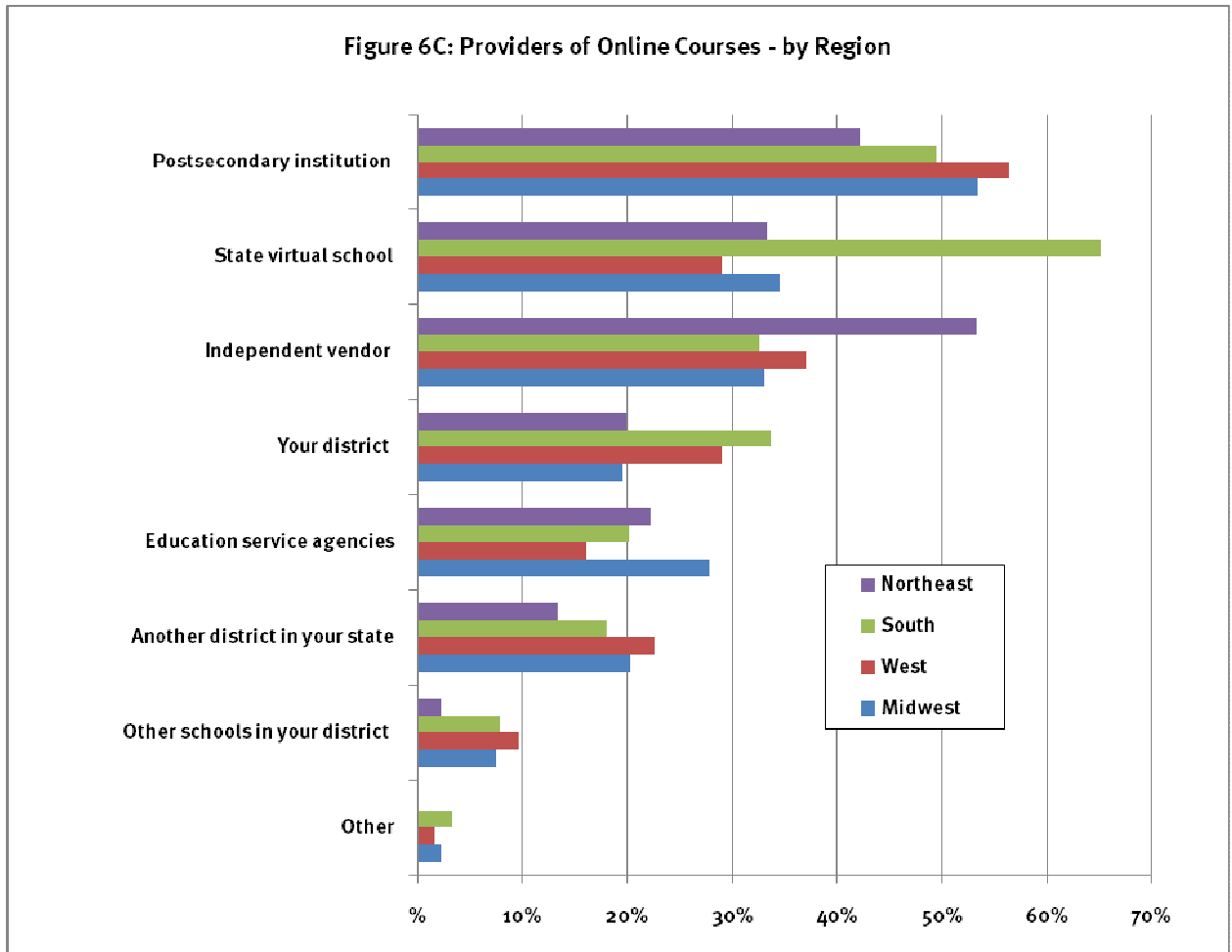

Figure 6C: Providers of Online Courses - by Region

TABLE 1. NUMBER OF PROVIDERS OF ONLINE COURSES.

	Percentage
1	35.2%
2	36.5%
3	14.8%
4 or more	13.5%

In terms of online course providers, it needs to be mentioned that southern high schools are much more dependent on state virtual schools than are other regions of the country. Figure 6C shows the providers of online courses cross tabulated by region of the country. In the southern region, state virtual schools are by far the leading providers of online courses. The reason for this is that Southern states were among the earliest to establish virtual schools, some of which such as the Florida Virtual School, enjoy excellent reputations and enroll large numbers of students.

Table 1 provides data on a phenomenon that has been reported in earlier studies, namely school districts and hence high schools do not rely on a single provider for their online and blended courses. [5, 6] To the contrary, they contract with a number of providers of online and blended courses in order to best meet the diverse needs of their students. In a given high school, it is not unusual therefore to see a for-profit vendor providing a credit recovery course, a state virtual school providing a required social studies course, and a
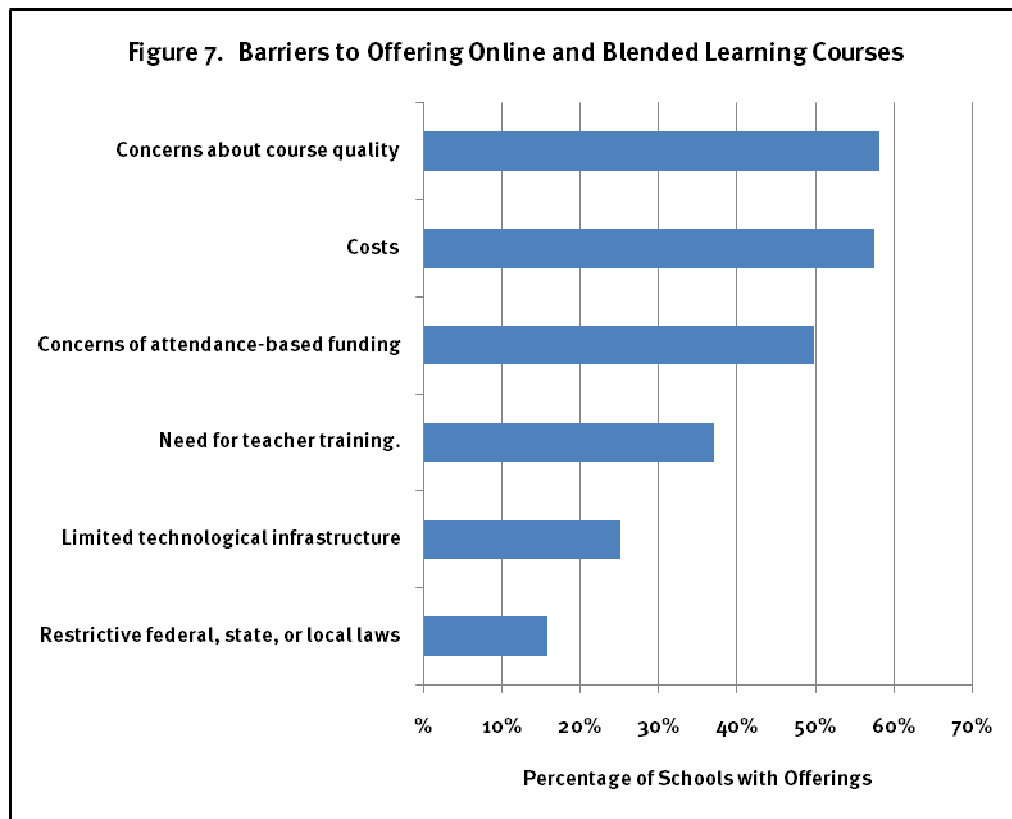
postsecondary school providing a course for college credit. The data in this table indicate that the majority (65 percent) of the high schools rely on two or more providers for their online course needs.

Barriers to Developing Online or Blended Courses

In previous studies, an important area of inquiry was the perceived barriers to developing online or blended learning courses. [5, 6] Figure 7 provides the responses to the question: *How much of a barrier the following areas would be (or are) to offering fully online or blended learning courses?* The responses indicate that the three following issues are of greatest concern:

- Concerns about course quality (58%)
- Course development and/or purchasing costs (58%)
- Concerns about receiving funding based on student attendance for online and/or blended/hybrid education courses (50%)

The quality of online and blended courses has consistently been of concern among educators at all educational levels. A substantial number of K-12 school district

Figure 7. Barriers to Offering Online and Blended Learning Courses

Barrier	
Concerns about course quality	
Costs	
Concerns of attendance-based funding	
Need for teacher training.	
Limited technological infrastructure	
Restrictive federal, state, or local laws	

Percentage of Schools with Offerings

administrators, college faculty and administrators, as well as the high school administrators responding to this survey have all expressed these concerns. [4, 5, 6] There has not been any conclusive research that shows greater effectiveness of online or blended learning over face-to-face instruction. Those studies that have been conducted generally do not show any significant differences among the modalities. In 2009, the U.S. Department of Education conducted a meta-analysis of studies completed since

2004 that compare student outcomes in online, blended, and face-to-face studies in both K-12 and higher education institutions. The meta-analysis yielded fifty-one usable contrasts. The main finding was that blended environments combining face-to-face and online elements had better outcomes than purely face-to-face instruction or purely online instruction. However, variables related to time on task also had a significant effect on student outcomes and the results do not demonstrate that online learning (whether blended or not) is superior as a medium. [15] It is accepted that among many educators there are concerns about the quality of online and blended learning as compared to face-to-face and that these concerns will remain for the near future.

Beyond quality, costs for development and funding formulae are also of concern to the respondents in this study. These are valid concerns that need to be addressed by state and local education policy makers. While most states have addressed the latter, many state legislatures and state education departments have not, and so it remains a concern and represents a genuine barrier to the development of online and blended learning courses.

The need for teacher training, while always an issue with any new technology, continues to be a concern but it does not seem to be as much of a barrier as it once was. The majority of the respondents (60 percent) did not perceive it as a barrier.

Voices from the Schools

As part of this study, respondents were asked to comment and to offer their voices on any aspect of online or blended learning. Approximately two hundred respondents offered their comments and insights. The authors of this study are planning on following up on a number of these comments with in-depth interviews. This will be done at a later date and will be reported on separately. However, it is important for the readers of this study to get a feel for the voices of these respondents. Each response was coded as either a positive statement or one expressing concern with online and blended learning. Of the two hundred comments, 56 percent were positive and 32 percent expressed concern. The remaining comments were not easily categorized or had mixed views. In general, voices from rural schools were most positive. Whether driven by financial constraint, lack of certified teachers, or most importantly, the inability to meet the needs of their students, rural schools are becoming dependent upon online technology for their basic academic programs. A small sample of their comments follows:

> "I work at a rural K4-12 school. It has been difficult to recruit teachers in high need areas like science. Online courses and their availability are very important to us here. Last year, for example, we were able to place 32 students into an online Chemistry course. Without having been able to do that, our students would have missed a requirement for receiving an advanced diploma." [Rural High School Administrator]

> "We are a small rural school in Indiana...concerned about dwindling school funding and loss of certified staff. Online options are looking more and more attractive for our students so that they can continue to pursue academically challenging coursework and/or course work in an area that interests them." [Rural High School Administrator]

> "I have found that most of the students who have taken online courses need a great deal of supervision. Most of mine are trying to make up failed course work so they can

graduate on time. I have some students who are taking online college courses. Either way this allows students another venue to stay on track. Many of my students are in a rural area and getting to summer school to makeup a failed course is almost impossible during the summer. The online courses offered by the state department of education in my state have helped a number of my students to graduate on time."
[Rural High School Administrator]

A number of the concerns were expressed related to quality issues and student readiness, maturity, and motivation. Examples of these include:

"Not all students are ready for the independence of an online course. However, for those who are, it is an important experience for them as they prepare for college and/or future education that will require internet (online) and blended/hybrid learning course. We are experiencing one at our community college for high school students and I am anxious to see how successful they are." [Small Town High School Administrator]

"Almost all students who were fully enrolled in online courses through our own virtual courses or as transfers to an Ohio virtual school were attendance issues/truancy problems. Almost all were withdrawn from virtual by us or by the other Ohio virtual school due to non-performance and therefore returned with little or no credit. This is an enormous problem! They become dropouts." [Suburban High School Administrator]

"I have a concern about the readiness of struggling students to learn in the online course format. If students have poor reading ability this option is not the best for them. We have also found that Math instruction can be problematic." [Urban High School Administrator]

There are a number of other themes that can be identified within the comments or voices of the respondents relating to pedagogy and the need for interaction, need for student monitoring, costs, and the appropriateness of online instruction for certain student populations. As indicated earlier, these will be carefully reviewed, followed-up with in-depth interviews, and reported on as a second part of this study at a later date.

DISCUSSION

The Role of Online Learning in American High School Reform

The major purpose of this study was to examine the role that online learning is playing in addressing concerns and issues facing the American high school. In examining the findings, it is obvious that there are certain initiatives involving online learning that directly address large school reform issues such as improving graduation rates, credit recovery, building connections for students to their future college careers, differentiating instruction, and operating costs.

Improving Graduation Rates and Credit Recovery

Improving the graduation rate is perhaps the most important aspect of many high school reform initiatives. While this study did not collect data on the graduation rates per se, it did specifically collect data on how online and blended learning were being used in providing options to students in enrolling in and completing coursework. The need for these courses varies but relates to students having not completed required coursework earlier in their high school careers due to illness, scheduling conflicts, academic failure, etc. Students needing such courses make up a significant portion of the high school student population that subsequently drops out or is late in graduating. The findings in this study indicate that credit recovery has evolved into the most popular type of online course being offered at the secondary level. A relatively new phenomenon, online credit recovery courses were practically non-existent a few years ago and have now become a dominant form of online course offerings in many high schools. What is particularly interesting is that urban high schools, which historically have the lowest graduation rates of any schools in the country, appear to be embracing online credit recovery as a basic part of their academic offerings. [20] This finding is collaborated by reports by several providers of online courses that are seeing significant increases in demand for credit recovery courses. Gregg Levin, vice president for sales for Aventa Learning, a for-profit provider of online services to K-12 schools, in a recent article said that demand for online credit recovery courses had increased "eight-fold between 2005 and 2008". [16] Many high schools have been forced to find solutions to their high school drop-out problems due to pressure from state education departments and the federal No Child Left Behind mandates to improve student outcomes. Online credit recovery appears to be an integral part of the solutions for many of these schools.

While it would be easy to state that the advance of online credit recovery is a positive finding in this study, it should be taken with some caution. The data in this study suggest that while high school administrators are providing more opportunities for students to enroll in online courses, they also have concerns about the quality of online courses and indicate that students need maturity, self-discipline, and a certain command of basic skills (reading and mathematics) in order to succeed in these courses. Many of the students who need to recover credits are those who may not have these characteristics. There have also been concerns that some school districts might be using credit-recovery, whether online or face-to-face, as a quick, convenient way to move students through to graduation. As an example, a New York Times article [17], raised concerns by teachers and others that some New York City public schools were "taking shortcuts" and "gaming

the system" to move students through to graduation with questionable practices related to weak credit recovery programs. [17] Nevertheless, credit recovery has become a major aspect of many high school academic programs and the online versions of these are proving to be especially popular. A prime area for future research would be the study of the quality and effectiveness of these programs.

Building Bridges to College Careers

An important aspect of the high school reform dialogue has centered on the importance of advising students to stay in school and move onto a college career upon graduation. Students who have set the goals of attending college for themselves are more likely to do well in school and graduate. Rather than waiting for graduation, educators have been developing programs to bridge the high school and college experiences at an earlier time. Whether through advanced placement or registration in college courses as electives, there has been a growing population of high school educators seeking to expand the opportunities for their students to start their college careers while still in high school. While many models for this exist, there have always been logistical issues with regards to transporting students to colleges, training high school teachers to teach college-level courses, articulating courses taken in high school for college credit, etc. It appears from this study that online and blended learning courses are increasingly being used to overcome these logistical issues. By enrolling in online and blended learning courses, high school students no longer need to be transported to a college campus, can enroll in college courses taught by college professors, and can be given college credit immediately upon completing and passing their coursework. Data from this study indicate that high school administrators see online elective college-level courses as an effective ways for some of the more able students to begin their college careers.

Differentiating Instruction

Christensen, Horn, and Johnson [9], referenced earlier, see online learning as an integral part of high school reform specifically by allowing high schools to customize instruction and to differentiate course offerings to meet a wide variety of student needs. However, while offering a wide breadth of courses is most desirable, doing so in face-to-face mode can be quite expensive. Offering some courses online allow for greater breadth of course offerings without necessarily incurring the same costs. For example, to offer a face-to-face elective course generally requires that there be a certain amount of student interest and enrollment for the course in order to make it cost effective. A student interested in taking elective coursework in chemistry might not be interested in taking an advanced foreign language course and vice versa. To meet the needs of both students, high school schedulers would have to offer both an advanced chemistry and a foreign language course and then hope that there are enough students registered to make them cost-effective. Online and blended courses, on the other hand, can be made available for just a single student and only incur the cost for that one student. The data from this study consistently indicate that high school administrators see online learning as meeting the diverse needs of their students whether through advanced placement, elective college courses, or credit recovery. Indeed, the data indicate that the major reason for offering online and blended courses is to offer courses that otherwise would not be available. This supports strongly the concept promulgated by Christensen, Horn, and Johnson of the

role that online technology can play in differentiating instruction and providing more choices for high school administrators in developing their academic programs.

Financial and Policy Issues

Financial and policy issues continue to be major concerns for high school administrators as they consider online learning. On the one hand, as indicated above, offering online and blended courses makes a good deal of financial sense especially when trying to meet specific needs for small groups of students. This enables schedulers to maximize their full-time faculty resources in required and other popular courses and to minimize offering courses in face-to-face mode for small numbers of students.

On the other hand, the respondents in this survey clearly see costs and funding formulae as barriers to expanding and implementing online and blended courses. If administrators decide to develop their own online courses, substantial financial investment needs to be made in hardware and software infrastructure, teacher training and support services. The initial investment for these can be prohibitive. However, if a school contracts out for the majority of its online and blended learning courses, the cost of the provision of local support services will probably be offset by the savings incurred by having to offer fewer courses in face-to-face mode. With so many providers of online courses, especially those that are non-profit such as state-supported virtual schools and local colleges and universities, most schools do not find it necessary to develop an in-house online learning program.

The financial issues of more concern may have to do with state and local education policies that follow strict attendance-based funding formulae and do not easily accommodate students taking courses beyond a school district. While most states have developed policies regarding funding formula for online courses, some have not. State virtual schools have proliferated but the funding formulae for them and the schools that contract with them have not necessarily been optimized. Several reports from agencies and organizations such the Southern Regional Education Board [18] and the Evergreen Consulting Group [19] highlight the fact that policies, even in states with well-established virtual schools, need to be reviewed and refined in order to support online learning programs for their K-12 school districts.

The Pedagogy of Online Learning

For a number of years, the pedagogy of online learning has been the subject of concern at every level of education. Educators express concerns and perceptions that online learning is not as effective as face-to-face instruction. Their concerns relate to the students' motivation and maturity levels, study habits and organizational skills, as well as their academic preparedness. These concerns will not likely disappear and exist as a given among many educators. Regardless of the concerns, the decision to embrace online learning has been made and the vast majority of schools are moving forward with their programs and looking to expand them in the future. From this and our two previous studies [5,6], it is clear that many schools and school districts see benefits to online learning programs that overshadow concerns about pedagogical value. Online learning is seen as a means to broaden and expand student experiences. It allows students looking for more advanced work to test and challenge their skills by taking more demanding instructional

material. It also allows students who might be at risk to make up coursework that they have missed in order to graduate. These policy decisions are based on the rationale that providing broader access to a secondary education may be of more importance than the concerns and perceptions regarding the pedagogical value of online learning.

Rural Schools in the Vanguard

While online and blended learning is increasingly being seen as an important component of high school reform for all schools, rural schools have been in the vanguard in offering these programs to their students. The three studies that these authors have conducted on K-12 online learning have consistently provided insights into the issues that rural schools have faced and the role that online technology plays in addressing them. These schools have had to overcome significant problems related to funding, teacher certification, and small enrollments that forced them to creatively address the needs of their students. While high schools in all locales (cities, towns, and suburbs) are facing serious challenges, the rural schools probably have the most difficult. With limited tax bases, low enrollments, and difficulty in attracting and keeping certified teachers, their issues are fundamental and can jeopardize their very existence. The data suggests that they are making valiant efforts to overcome these issues and online and blended learning are among the strategies for doing so while providing quality educational programs for their students. Their counterparts in other locales can learn from their experiences. Earlier on in this study, comments or voices from respondents were provided to give readers insights into the thoughts of educators as they pursue online and blended learning opportunities for their students. The loudest voices in these comments came from rural high school administrators.

CONCLUSIONS

The purpose of this study was to examine the role that online learning is playing in addressing some of the concerns and issues facing the American high school. This was the third study that these researchers have conducted in the last five years on the nature of online and blended learning in K-12 schools. It is our conclusion that online learning and blended learning are making inroads into K-12 academic programs and most significantly at the secondary level. The American high school is widely viewed as an institution in crisis and the call for reform has been loud and strong. The results of this study indicate that online and blended learning are becoming integral to a number of high school reform efforts, especially with regard to improving graduation rates, credit recovery, building connections for students to their future college careers, differentiating instruction, and supporting cost-efficiency for instruction. However, while high schools, especially in rural areas, are depending upon online and blended learning for many of their programs, concerns remain among educators. Concerns about the quality of online instruction persist. There is a continuing need to establish and update state and local policies for funding, attendance requirements, and other issues related to online instruction. Careful evaluation needs to be undertaken for relatively new online programs such as credit recovery. The benefits, concerns, and costs related to online and blended learning are prime areas for future research as they become a significant focus in the national dialogue on reforming the American high school.

METHODOLOGY

This study of American high schools used descriptive analysis relying extensively on a modified survey instrument designed specifically for our original studies [5, 6]. The instrument was, in turn, patterned after a similar instrument used to conduct national surveys of chief academic officers in American colleges and universities. [4] Modifications to the survey instrument were minimal – primarily formatting and changing question references to the current school year. This survey was conducted for the 2008–2009 academic year.

For purposes of this study the following definitions were used:

- **Fully online course** – A course where most or all of the content is delivered online, and typically has no face-to-face meetings.

- **Blended/hybrid course** – A course that blends online and face-to-face delivery, and where a substantial proportion of the content is delivered online, sometimes uses online discussions and typically has few face-to-face meetings.

The "universe of interest" for this study included all public high schools in the United States with total enrollments in grades 9 to 12 of at least 50 students (18,883). 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).

Approximately 8,000 randomly-selected high schools 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 schools 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 schools with online or blended course offerings. The invitation letter and the survey form itself were carefully worded to encourage responses from all school 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 if the school responded using the web version 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

TABLE 2. REGIONS OF THE COUNTRY REPRESENTED IN THE HIGH SCHOOL SAMPLE

	Frequency	Percent
Northeast	65	14.7%
South	111	25.2%
West	89	20.2%
Midwest	176	39.9%

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 for the school, and the number of students enrolled.

TABLE 3. LOCATIONS OF RESPONDENTS

	Frequency	Percent
Urban	68	14.4%
Suburban	94	21.3%
Town	74	16.8%
Rural	205	46.5%

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.

Four hundred and forty one high school administrators participated in this study. Responses were received from schools in forty-eight states. Their high schools represent all of the regions in the country (see Table 2). The location (urban suburban, town, rural)

TABLE 4. ENROLLMENT SIZE RECODED TO REPRESENT VERY SMALL, SMALL, MEDIUM AND LARGE HIGH SCHOOLS

	Frequency	Percent
Very Small (< 200)	113	25.6%
Small (201-500)	117	26.5%
Medium (501-1200)	100	22.7%
Large (102+)	111	25.2%

of these schools is presented in Table 3. Definitions of locations are based on a modified version of the U.S. Department of Education National Center of Education Statistics (NCES) codes. The sizes of the schools (see Table 4) were coded to represent very small, small, medium and large enrollments. Of all schools in this sample, 82 percent had at least one student enrolled in a fully online course and 38 percent had at least one student enrolled in a blended or hybrid course.

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Using data collected from a national sample of principals this study examines the role of online and blended instruction in addressing concerns and issues facing the American high school.
From its findings, it is obvious that there are certain initiatives involving online learning that directly address school reform issues such as improving graduation rates, credit recovery, building connections for students to their future college careers, differentiating instruction, and operating costs. Specific topics include:

- Improving Graduation Rates and Credit Recovery

- Building Bridges to College Careers

- Differentiating Instruction

- Financial and Policy Issues

- The Pedagogy of Online Learning

- Rural Schools in the Vanguard

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