Virtual schools: The changing landscape of K-12 education in the U.S.

Ian N. Toppin[1] · Sheila M. Toppin[2]

Abstract Virtual schools are a growing phenomenon in k-12 education. School systems in almost every state in the United States offer some version of fully online or blended education. It is no longer far-fetched to conclude that if the current trend continues, virtual school enrollments will eclipse those of traditional brick-and-mortar k-12 institutions within the next 10 years. This paper examines some of the challenges and strengths of virtual schools, it offers questions to consider when deciding whether or not a virtual school option would be ideal, and it draws conclusions, which provide an outlook for the future of virtual schools in k-12 education.

Key words Virtual schools · Cyber academies · Online education · K-12 education · Distance education · Educational administration

1 Introduction

An increasing number of colleges and universities today are seeking to bolster their enrollment numbers and financial positions by using various forms of web-based instruction. They are increasing the number of non-degree and degree programs offered in hopes of expanding the borders of their campuses without incurring costs associated with ~~exorbitant~~ overhead expenses. This approach is by far a less ~~hectic~~ option than the traditional capital campaigning and political ~~maneuver~~ing associated with pursuing brick-and-mortar enrollment and infrastructure improvements.

✉ Ian N. Toppin
iantoppin@hotmail.com

Sheila M. Toppin
stoppin@cau.edu

1 Center for Teaching and Learning, 315 Henry A. Hunt Memorial Library, Fort Valley State University, 1005 State University Drive, Fort Valley, GA 31030, USA

2 Department of Public Administration, Clark Atlanta University, 223 James P. Brawley Drive, Atlanta, GA 30314, USA

Beginning in the 1990s, a similar strategy has been taking place in k-12 education, albeit the motives seemed to be different, at least on the part of public school systems. Since the 1990s, virtual schools have come to represent one of the most transformational trends in k-12 education. The need and convenience of these schools seem to increase with rising social concerns about dropout rates, safety issues, bullying, and other types of peer pressures. However, other practical concerns are also driving the growing impact of this educational approach. For example, virtual schools are a convenient option for families whose livelihoods require them to be highly mobile. It is convenient for students who live in rural areas, where access to educational facilities is a challenge; and for those who need to take courses that are not locally available. Additionally, high school students who are faced with juggling academic schedules alongside of personal or vocational commitments may also welcome a virtual choice.

Gellman-Danley and Fetzner (1998) and Berge (1998) developed a policy analysis framework to assist decision makers in evaluating distance education programs, which may also include those that are web-based. Nine critical areas were proposed for consideration: 1) Academic, 2) Fiscal, 3) Geographic, 4) Governance, 5) Labor-Management, 6) Legal, 7) Student Support Services, 8) Technical, and 9) Cultural. King et al. (1999) adapted and collapsed the Gellman-Danley and Fetzner and the Berge model into seven critical areas (Academic, Governance/Administration/Fiscal, Faculty, Legal, Student Support Services, Technical, and Cultural). King, Nugent, Russell, and Lacy's seven ~~prong~~ framework will be utilized for an evaluation of Impact of Virtual Schools upon the Landscape of K-12 Education in the United States.

2 Academic

2.1 Virtual schools

Although virtual schooling may be conducted from pedagogical approaches that do not involve the Internet, this paper will only be concern with those which utilize the Internet to provide online courses or entire programs of study. Reid et al. (2009) defined a virtual school as one which offers alternative solutions to educating k-12 students who may not be well-served otherwise, but Salsberry (2010) described it as one which typically offers learning experiences via the Internet. Cavanaugh (2010) observed that virtual schools have grown up over the past 15 years in different policy and budget ecosystems, but most of them can be classified into six major categories: (1) State run virtual schools; (2) multi-district virtual schools; (3) single-district virtual schools; (4) consortium programs; (5) university programs; and (6) private and parochial virtual schools. Some virtual schools are fully online, others are fully online with restrictions, then, there are those which are supplementary.

2.2 Characteristics of virtual school students

A study of the demographic makeup of k-12 virtual school students was conducted by Miron and Urschel (2012). Because K-12 Inc. is the largest virtual school provider in the US, data derived from analyzing that organization's students may be broadly representative of virtual school students. K-12 Inc. enrolls more public school students

than any private education management organization in the US. This made it an ideal candidate from which to obtain demographic data. Based on Miron & Urschel's report (2012), K-12 Inc. data provided the following information:

- K-12 Inc. enrolls substantially more white students than the public schools in states where it operates.
- K-12 Inc. enrolls the same percentages of black students as the public schools in states where it operates.
- K-12 Inc. enrolls fewer Hispanic students than the public schools in states where it operates.
- On average, approximately 40 % of K-12 Inc. students qualify for free or reduced price lunch, as compared to 47.2 % of those in the public schools in states where it operates.
- In states where K-12 Inc. operates, it enrolls on average 9.4 % of students with disabilities, as compared to 11.5 % in public schools in those states, and 13.1 % nationally.
- On average the enrollment of K-12 Inc. schools is greatest in middle school grades (6–8), but decreases sharply for high school grades (9–12).

  Stedrak et al. (2012) indicated that virtual education for elementary and secondary students has grown into a $507 million market and continues to grow at an estimated annual pace of 30 %. If this trend continues it would not be far-fetched to assume that enrollment in virtual schools will eclipse traditional brick-and-mortar k-12 campuses within a few short years.

3 Governance/Administration/Fiscal

3.1 Cost advantages of virtual school providers

Barth et al. (2012), in a report for The Center for Public Education, which is an initiative of the National School Boards Association, provided the following four categories of virtual learning providers:

- For-profit companies, which produce a full range of services, from out-of-the-box courseware, to a completely planned curriculum with teachers, tutors, and proctored exams – a literal "virtual school." K-12 Inc. and Connections Learning are two of the largest providers in this market.
- Non-profit companies, which usually have philanthropic goals such as offering online learning to help at-risk students graduate. Diploma Plus, KIPP LA, and the Virtual High School Global Consortium, are examples of non-profit providers.
- State Departments of Education, which provide free virtual courses to students who are residents of their state.
- Individual School Districts, who purchase online software for the purpose of creating their own blended-learning approaches, and online course work.

  The report noted that funding for virtual schools vary depending on the state. Some are funded directly by the state, while others may be funded by local school districts. A major concern is the fact that funding for virtual

schools does not necessarily correspond to the number of students being educated by them, or by what it costs to operate them. For example, the State of Colorado was cited, where virtual schools are funded based on their enrollments by October 1 each year. However, if students drop out after that date providers are not required to return those funds. This can obviously result in virtual school providers being funded for a number of students to whom they offered little or no instruction. More importantly, it can result in millions of dollars in payments for services that were not rendered.

Miron and Urschel (2012) advocate that funding for virtual schools should reflect the actual costs required for educating students in those schools and should not be based on the same scale of what it cost to educated students in traditional schools. Given that the attrition rate in virtual schools is relatively high; these authors promote a funding model that is based on the number of students who satisfactorily complete courses rather than the number who simply enroll by a given date.

3.2 Lack of best-practices data

Rapid growth of k-12 virtual academies is outpacing researchers' ability to study the phenomenon and generate data, which supports best practices. The International Association for k-12 Online Learning (iNACOL) reported in its October 2013 issue on *Fast Facts about Online Learning* that currently (2013–2014), 25 states had virtual schools in operation. During this same period, 29 states and Washington DC had fully online schools. Enrollment in fulltime online schools jumped from 200,000 in 2009–2010, to 310,000 in 2012–2013. This represents a 64.5 % increase in only 3 years.

Due to a lack of data, decision making by administrators is essentially a process of trial-and-error. Barbour (2011) states that the growth and practice of virtual schooling has far out-paced the production of reliable and valid research. This position is supported by Black et al. (2009) who affirmed that limited data exists as it relates to teaching and learning in k-12 virtual schools. Additionally, Barbour et al. (2012) concluded that the limited published research which is available has largely excluded the perspectives of students engaged in virtual schooling. This means that the research is basically one-sided and lacking input from one of its most important constituent groups.

Best-practices data for use by virtual school faculty is in critical need. DiPietro et al. (2010) concluded that there is a relative dearth of research relating to teaching and learning in virtual schools. The authors contend that even though there are numerous handbooks addressing teaching online, there is little research on successful online teaching in the K-12 arena, and that much of the existing research focused on teaching online is rooted in face-to-face content areas, which is built upon a postsecondary audience, or which fails to use data from the teachers themselves to triangulate findings. Kennedy and Archambault (2012) further perceived that while enrollment in k-12 online learning is growing exponentially throughout the US, only 1.3 % of those who responded and are involved with teacher education programs felt that teacher preparedness needs are being addressed.

3.3 Cost advantages

Cost advantages are among the primary areas of consideration for administrators who are considering the merits of embarking upon, or expanding the reach of virtual schools under their control. They may not understand the technology, or even the pedagogy for effective teaching and learning in a virtual setting, but they understand the money in terms of return on investment (ROI), and this factor is often what drives many of their decisions.

The previously mentioned report from Miron and Urschel (2012), prepared for the National Education Policy Center states that although K-12 Inc. schools receive less in public revenues than brick-and-mortar schools, their full-time virtual schools have considerable cost advantages that explain or justify differences in amount of public monies they received. Cost advantages were specifically cited in this report in areas such as: operations, student support services, teachers' salaries, employee benefits, disability services, employee services, student-to-faculty matching, and efficiency of cost distribution over large student populations. However, further empirical data is needed to grasp the full picture of the economic and social impact of virtual schools.

4 Legal

4.1 Inadequate oversight

State regulations governing operating standards for virtual schools should be the same for public and private charter institutions. However, as the number of private for-profit vendors in the market grows, and as it becomes more profit-driven, regulating it for integrity in technical and content delivery will continue to be an enormous challenge. This necessitates the need for expanded oversight, which will undoubtedly stretch the already limited regulatory resources of state departments of education. Natale and Cook (2012) suggested that few, if any state education agencies are currently equipped to regulate the rapidly growing number of independent for-profit and nonprofit organizations delivering online learning options.

5 Technical

5.1 Technology

Technology is a key component in the success of Internet-based virtual school programs. A robust technology infrastructure is the single most important investment if the virtual school is to function properly and produce favorable results. The proficiency of technology impacts user-morale and attitudes about persisting in a virtual school program. If the technology works as it is supposed to, users interact with it more frequently and it does not become an obstacle to learning. However, if it does not work as it is supposed to, the results could be costly in many ways.

Zhao (2011) found that in order to develop virtual technology competencies, schools must take a number of actions to change their mindsets, policies, and

practices about technology. Barbour (2012) pointed out that technology and online learning will have no impact on student achievement unless they also change how instruction is designed, delivered, and supported. Barbour further emphasized that to date there is no independent, reliable research that indicates that this transformation in pedagogy is occurring. Abrego and Pankake (2010) stressed the importance of the role school administrators play when it comes to implementing and sustaining online technology. These authors claimed that implementation and sustainability of technology across a school would not be possible without development of an open climate and culture.

Technology must be reliable, simple for end-users to navigate, and properly supported. Course design should be engaging, using multiple instructional approaches to appeal to diverse learning styles. DeNisco (2013) advocated that with online instruction comes a change in the nature of teaching, communicating with, and assessing students. The importance of these aspects cannot be overstated.

6 Faculty

6.1 Lack of collegial support

From the outside looking in, it would appear as if being a virtual teacher is not very challenging. Yet, to be an effective virtual teacher, nothing can be further from the truth. Virtual teachers are just as confronted by the need to engage their students in meaningful curricula activities as are their face-to-face counterparts. However, because they are in a virtual setting, they quite often do not get the same level of support. Using qualitative analysis of eight virtual high school teachers Hawkins et al. (2012) reported that teachers conveyed a sense of disconnection from their students, the profession, and their peers as a result of limited interactions due to significant institutional barriers.

On the other hand, some students may choose virtual schooling because from the outside looking in it may appear to be a less challenging option. However, a significant student-related requirement for being successful in a virtual school setting is discipline. This can be a challenge in any setting, but especially so during the early years of schooling and while matriculating in isolation from other peers. Not to mention extra-curricular activities, which are important k-12 experiences that virtual school faculty and students often fore-go. Barbour et al. (2012) found that a lack of a sense of community also exists among virtual school students.

7 Student support services

7.1 Anytime, anywhere access

One of the major strengths of virtual schooling is its decentralized approach to teaching and learning. This decentralized model can be a significant benefit for those who prefer virtual over traditional brick-and-mortar schools. It is more adaptable to the needs and dynamic lifestyles of many of today's students. Historically, if circumstances did not allow a student to attend school during traditional school hours, between eight o'clock

in the morning and approximately three in the afternoon, that student would miss important information, which could affect their academic performance. Virtual schools make it possible for this information to still be accessible to students and to adapt to their life and learning styles, rather than students having to adapt to the operating hours of schools. In the case of virtual schools, which are conducted online, Vanourek (2011) provided the following observation:

> "Online and blended schools challenge some of the most basic assumptions about schooling. They no longer place groups of children of the same age in an assigned grade with a teacher and a chalkboard in a room for 50-some minutes at a time in 180 6-hour days. With virtual schools, there has been a move to learning that is not bound by time, space, and pace, liberating education systems from the confines of rigid blocks of time and uninspired configurations of space to better meet the needs of students" (p. 1).

DiPietro (2010) noted that k-12 virtual schools is gaining recognition as an alternative to the traditional face-to-face educational setting by providing students with access to anytime, anywhere, learning opportunities. Lin (2011) conveyed the idea that online education, which can extend a single school's reach to potentially thousands of students across a given district or state, vastly multiplies a school's capacity to provide educational opportunities to students in need of options, wherever they may live. Military families are among those who can greatly benefit from an anytime, anywhere virtual school model.

7.2 Counseling services

Counseling and other support services are very important to the k-12 experience. There are aspects of these types of services that are difficult to duplicate with an equal level of success when comparing the virtual school setting to face-to-face. Additionally, because some of these services are legally required, they pose significant challenges for virtual school providers to duplicate at an equal level of proficiency. Curry (2010) stressed that as the trend towards online virtual educational programs continues to grow, attention to services such as student counseling merits careful consideration. This is especially true since virtual learners are legally supposed to have virtual access to the same support services that face-to-face learners do. The challenge is being able to provide those services while also providing the same level of confidentially and quality that is expected.

7.3 Convenience for differently abled students

Depending on the age of the buildings, many traditional brick-and-mortar schools struggle to bring their facilities up to Americans with Disability Act (ADA) compliance standards, and to maintain them at that level in order to provide quality services and proper access to those who are differently abled. While virtual schools are not exempted from also having to provide quality ADA services, they benefit from the fact that in recent years, developers of learning management systems (LMS's) and other digital tools that are used for virtual and online instruction, have been mindful of the

need to be ADA compliant from the very start. Consequently, there is a range of speech and touch activated tools, which make it easier for those who are differently abled to function in a virtual environment, while physically being in the comforts of their familiar surroundings.

Repetto et al. (2010) noted that one approach to increasing graduation rates is to design learning environments that serve students with disabilities through the 5Cs known to increase school completion: connect, climate, control, curriculum, and caring community. These authors claim that virtual school programs, which are aligned with the 5Cs, have closed achievement gaps and increased completion rates among students with disabilities. Carnahan and Fulton (2013) called attention to the fact that the population of special education students in cyber schools mirrors the population of special education students in brick-and-mortar classrooms, thus it is important to understand the characteristics associated with educating these learners in a virtual setting.

7.4 Added support for failing and at-risk students

A 2009 report from the Research Services Office of Assessment, Research, and Data Analysis for Miami Dade Public Schools stated that in the past, virtual schools primarily targeted advanced students who didn't have access to certain courses in their regular schools. However, recently, many virtual schools have shifted their focus to credit recovery as a way to provide failing or at-risk students with an alternative to traditional credit recovery courses. The report stated that credit recovery is an especially important issue in urban areas, as indicated by 81 % of schools. Additionally, virtual schooling can be an effective tool for providing failing or at-risk students with additional remediation instruction and materials, apart from regular instruction, and verifying whether or not they are accessing those materials regularly and effectively. This can have significant implications for reducing k-12 failure, dropout, and stop-out rates.

8 Cultural

8.1 Internationalization & consumerism

Moore (1994)), lamented more than 20 years ago on the problems that arise from differences between cultural perspectives of the teacher and learners in two or more countries. While there may be a short-term gain of experience, the long-term effects are challenged by technological, pedagogical, time-zone, or administrative problems. In unique platforms with ample resources these challenges can be addressed through proactive instructors and administrators.

Another caveat is the culture of consumerism which has influenced domestic education which is given a black and critical eye to for-profit institutions. Many of our institutions of higher education regard themselves as competitors trying to attract business and to provide their services. In the United States, almost uniquely among nations, higher education of any kind is available to almost anyone who can pay the tuition fee.

9 Discussion

9.1 How should consumers make the decision about virtual schooling?

Since current performance results for virtual schools still lag behind their brick-and-mortar counterparts, careful consideration should be given when deciding whether or not to place students in a virtual school environment. Virtual schools, however, do offer certain advantages over brick-and-mortar schools in meeting challenges relating to lifestyles and learning styles of students. But, these benefits should be carefully assessed in light of virtual school performance outcomes, which clearly indicate that this type of schooling option is not what is best for every student. Strong personal discipline is a pre-requisite for pursuing any kind of education, but particularly fully virtual schooling. The following are a few suggested questions to consider when deciding if a virtual school option should be chosen:

- Will time and resources be saved by a virtual schooling option?
- Is mobility an issue that makes face-to-face contact difficult or impossible?
- Is there an assurance that the virtual school courses are designed to be engaging and appealing to your desired learning style?
- Is there evidence that teachers are well trained in content and delivery of instruction?
- Is there evidence that teachers are accountable for being accessible to students?
- Are virtual support and services readily available?
- Is the technology reliable?
- Does the course or program meet all state and other applicable accrediting standards?
- Are additional courses needed to complete a program of study in a convenient manner?
- Do life events dictate a change in schedule that can be accommodated by virtual schooling?
- Do health concerns make other options difficult or impossible?
- Is there a preference for the convenience of a virtual setting?
- Is there a preference for learning using technology?
- Is the virtual school course or program given the same recognition as that of its face-to-face counterpart?
- Is involvement in extracurricular activities a high priority?
- Is the personal discipline present, which is required to be a successful virtual school learner?
- Are support services available and accessible in the virtual school setting?

9.2 What are the performance results?

Poor performance results in virtual schools are too significant to ignore. Quillen (2011) pointed out that it has been a rough time for the image of k-12 virtual education. The author referred to the results of studies in Colorado and Minnesota, which suggested that full-time online students are struggling to match the achievement levels of their peers in brick-and-mortar schools. This perspective is further borne out in Miron and

Urschel's (2012) report for the National Education Policy Center. The report provided performance results indicating that of all private management organizations operating virtual schools, only 27.4 % of students showed Adequate Yearly Progress (AYP) in 2010–2011, versus 52 % for public schools nationwide during the same period.

The report also highlighted results from K-12 Incorporated, which enrolls more public school students in virtual education than any other private education management organization in the entire US. It showed that only 27.7 % of K12 Inc. students showed AYP in 2010–2011; that of the 48 fulltime virtual schools operated by K-12 Inc., only seven (19.4 %) had ratings indicating satisfactory progress; and that the ontime graduation rate for K-12 Inc. schools is 49.1 % compared to 79.4 % in public schools in states where K-12 Inc. operates. These data reiterate the fact that a significant challenge to virtual schooling is the drop-out rate among students who choose this option. Miron and Urschel (2012) found that students in schools operated by K-12 Inc. and other virtual schools are more prone to attrition.

10 Conclusions and implications

As the demand for alternatives to traditional approaches to k-12 education grows, so too will the demand for virtual schooling continue to rapidly grow. Yet, the need to curtail such growth until various aspects of virtual schooling can be more fully understood seems imperative. Policies surround funding virtual schools based on performance outcomes are still lacking while performance outcomes continue to be a significant area of concern.

On the other hand, the adaptable nature of virtual schooling works in its favor. It would not be too far-fetched to suggest that virtual schooling may be the primary modality of educational choice in the near future. It is definitely ideal for families who are mobile, such as military service personnel with school-age children. And, developments in various types of learning analytics should make it easier to address poor performance issues moving forward; thereby enhancing the attractiveness of virtual schooling. Even though current challenges appear to be significant, they are not the type of issues, which cannot be easily resolved through policy solutions. This mean that the major impact virtual schools have made on the educational landscape so far, may suggests that the future will only get brighter in the years ahead.

References

Abrego, J., & Pankake, A. (2010). Pk-12 virtual schools: the challenges and roles of school leaders. *Educational Considerations, 37*(2), 7–13.

Barbour, M. (2012). Review of "*Overcoming the Governance Challenge in K-12 Online Learning*". National Education Policy Center, Wayne State University. Retrieved on February 21, 2014, from: http://files.eric.ed.gov/fulltext/ED530436.pdf.

Barbour, M. (2011). The promise and the reality: exploring virtual schooling in rural jurisdictions. *Education in Rural Australia, 21*(1), 1–19.

Barbour, M., McLaren, A., & Zhang, L. (2012). Its not that tough: students speak about their online learning experiences. *Turkish Online Journal of Distance Education, 13*(2), 226–241.

Black, E., DiPietro, M., Ferdig, R., Polling, N. (2009). Developing a survey to measure best practices of K-12 online instructors. *Online Journal of Distance Learning Administration, 12*(1).

Carnahan, C., & Fulton, L. (2013). Virtually forgotten: special education students in cyber schools. *TechTrends Linking Research and Practice to Improve Learning, 57*(4), 46–52.

Cavanaugh, C. (2010). The evolving online landscape. *School Administrator, 67*(4), 22–25.

Barth, P., Hull, J., Andrie, R. (2012). Searching for the reality of virtual schools at a glance. *Center for Public Education*, National School Boards Association. Retrieved on February 5, 2015, from: http://www.centerforpubliceducation.org/Main-Menu/Organizing-a-school/Searching-for-the-reality-of-virtual-schools-at-a-glance/Searching-for-the-reality-of-virtual-schools-full-report.pdf.

Berge, Z. L. (1998). Barriers to online teaching in post-secondary institutions: Can policy changes fix it? *Online Journal of Distance Learning Administration*, 1(2).

Curry, N. (2010). Virtual counseling for students enrolled in online educational programs. *Educational Considerations, 37*(2), 22–26.

DeNisco, A. (2013). Preparing for online teaching: web-based assessment and communication skills in K-12. *District Administration, 49*(5), 38–41.

DiPietro, M. (2010). Virtual school pedagogy: the instructional practices of K-12 virtual school teachers. *Journal of Educational Computing Research, 42*(3), 327–354.

DiPietro, M., Ferdig, R., Black, E., & Presto, M. (2010). Best practices in teaching K-12 online: lessons learned from michigan virtual school teachers. *Journal of Interactive Online Learning, 9*(3), 10–35.

Gellman-Danley, B., Fetzner, M. J. (1998). Asking the really tough questions: Policy issues for distance learning. *Online Journal of Distance Learning Administration, 1*(1).

Hawkins, A., Graham, C., & Barbour, M. (2012). "Everybody is their Own Island": teacher disconnection in a virtual school. *International Review of Research in Open and Distance Learning, 13*(2), 123–144.

International Association for K-12 Online Learning (2013). Fast facts about online learning. Retrieved on January 27, 2014, from: http://www.inacol.org/cms/wp-content/uploads/2013/11/iNACOL-Fast-Facts-About-Online-Learning-October-2013.pdf.

King, J.W., Nugent, G.C., Russell, E. B., Lacy, D. (1999). Distance education policy in post secondary education: Nebraska as a case study. In Proceedings: 15th Annual Conference on Distance Teaching and Learning. University of Wisconsin, Madision. 275–281.

Kennedy, K., & Archambault, L. (2012). Offering pre-service teachers field experiences in K- 12 online learning: a national survey of teacher education programs. *Journal of Teacher Education, 63*(3), 185–200.

Lin, M. (2011). *School quality in the cloud: guidelines for authorizing virtual charter schools.* Authorizing Matters, Issue Brief, NACSA Cyber Series. Retrieved on February 21, 2014, from: http://files.eric.ed.gov/fulltext/ED544280.pdf.

Miron, G., & Urschel, J. (2012). *Understanding and improving full-time virtual schools: a study of student characteristics, school finance, and school performance in schools operated by K12, Inc.*. National Education Policy Center, School of Education, University of Colorado, Boulder. Retrieved on February 7, 2014, from: http://files.eric.ed.gov/fulltext/ED533960.pdf.

Moore, M. G. (1994). Is there a cultural problem in international distance education? In Melody Thompson, ed., *Proceedings of Conference on Internationalism in Distance Education*. University Park: The Pennsylvania State University, The American Center for the Study of Distance Education, pp 188–92, 194. http://web.worldbank.org/archive/website00236B/WEB/CULT_01.HTM

Natale, C., & Cook, J. (2012). Virtual K-12 learning: new learning frontiers for state education agencies. *Peabody Journal of Education, 87*(5), 535–558.

Quillen, I. (2011). Virtual Ed. faces sharp criticism. *Education Week, 31*(13), 1.

Reid, K., Aqui, Y., & Putney, L. (2009). Evaluation of an evolving virtual school. *Educational Media International, 46*(4), 281–294.

Repetto, J., Cavanaugh, C., Wayer, N., & Liu, F. (2010). Virtual schools: improving outcomes for students with disabilities. *Quarterly Review of Distance Education, 11*(2), 91–104.

Research Services Office of Assessment, Research, and Data Analysis for Miami Dade Public Schools (2009). *Virtual school literature review*. Research Services, Miami Dade County Public Schools. Retrieved on February 3, 2014, from: http://files.eric.ed.gov/fulltext/ED536253.pdf.

Salsberry, T. (2010). K-12 virtual schools, accreditation, and leadership: what are the issues? *Educational Considerations, 37*(2), 14–17.

Stedrak, L., Ortagus, J., & Wood, R. (2012). The funding of virtual schools in public elementary and secondary education. *Educational Considerations, 39*(2), 44–54.

Vanourek, G. (2011). *An (Updated) primer on virtual charter schools: Mapping the electronic frontier*. Authorizing Matters, Issue Brief, NACSA Cyber Series. Retrieved on February 7, 2014, from: http://files.eric.ed.gov/fulltext/ED544289.pdf.

Zhao, Y. (2011). What children should know about technology and the virtual world. *Principal, 89*(3), 14–17.