2016

Virtual Education: Not Yet Ready for Prime Time?

Michael K. Barbour
Sacred Heart University

Recommended Citation

Barbour, M. K. (2016). Virtual education: Not yet ready for prime time? In W. J. Mathis & T. Trujillo(Eds.), The Test-Based Education Reforms: Lessons from a Failed Agenda (p. 407-429). Charlotte, NC: Information Age Publishing.

Barbour, M. K. (2016). Virtual education: Not yet ready for prime time? In W. J. Mathis & T. Trujillo (Eds.), *The Test-Based Education Reforms: Lessons from a Failed Agenda* (p. 407-429). Charlotte, NC: Information Age Publishing.

Virtual Education: Not Yet Ready for Prime Time?

Michael K. Barbour, Sacred Heart University

Abstract

The field of K–12 online and blended learning is varied and growing. Regardless of whether a student is enrolled in a brick-and-mortar school and taking one or two courses online, or if they are completing all of their education from a cyber school, more and more students are enrolled in online and blended learning opportunities each school year. Over the past decade, there have been successive legislative and regulatory changes in jurisdiction after jurisdiction designed to encourage this growth in K–12 online and blended learning. Many of these changes have been spurred by proponent claims that K–12 online and blended learning will revolutionize education by allowing students to personalize or customize their education, which they also believe provides a more meaningful, higher quality learning experience. However, expansion of K–12 online and blended learning options continues to outpace the availability of useful research on the efficacy of this method. This chapter examines the current state of research into K–12 online and blended learning, and how much of this enthusiasm from proponents and their legislative allies often runs contrary to what is actually known from the existing but limited research base.

Introduction

The field of K-12 online learning is a varied and growing field – both in the United States and internationally.[1] In some instances this means a student that is enrolled in a brick-and-mortar school, who is taking one or more course from a supplemental virtual school. The most current data indicates that there are approximately 740,000 course enrollments in 2013-14 state virtual schools,[2] but this does not include district-based and consortium operated supplemental programs. In other cases this means a student that is not enrolled in a brick-and-mortar school, but instead takes their entire course load from a full-time cyber school (both from charter schools and traditional public schools). Again, the most current data indicates that there are approximately 315,000 students enrolled in full-time cyber schools in 2013-14, which represents a growth of 6.2% from the previous school year.[3] There is also a growing constituency of students that are exposed to blended learning within the traditional public school environment or in specialized blended learning schools (often in a charter school environment). In both the full-time cyber schools and the blended learning schools, it is not only quite common for these schools to be directly or indirectly managed by for-profit, corporate educational management organizations (EMOs). In fact, the majority of full-time cyber school students attend corporate-run charter schools.

Overall, the field of K-12 online and blended learning has seen significant growth. Approximately 15 years ago, Clark estimated that there were between 40,000 and 50,000 students enrolled in one or more distance education courses in the U.S..[4] More recent estimates indicate that there are between two to six million U.S. K-12 students are engaged in some form of online or blended learning.[5] One of the reasons for this growth is the claim by proponents that K-12 online learning will revolutionize education.[6] Proponents further argued that the use of K-12 online and blended learning allow students to personalize or customize their education, which they also believe provides a more meaningful, higher quality learning experience.[7]

Unfortunately, there has been a lack of research to guide this practice and growth. In her review of the K-12 distance education literature, Kerry Rice wrote:

> "A paucity of research exists when examining high school students enrolled in virtual schools, and the research base is smaller still when the population of students is further narrowed to the elementary grades."[8]

A number of scholars have documented the absence of "rigorous reviews" of virtual schools. [9] Cavanaugh, Barbour, and Clark explained this state of affairs, writing that:

> in many ways, this [was] indicative of the foundational descriptive work that often precedes experimentation in any scientific field. In other words, it is important to know how students in virtual school engage in their learning in this environment prior to conducting any rigorous examination of virtual schooling. [10]

We can ask "How long must we wait?" K-12 online learning began around 1991. [11] Further, the first cyber charter school began around 1994. [12] Finally, the first supplemental online learning programs also began in the mid-1990s,[13] and proliferated considerable throughout the early 2000s.[14]

While the amount of published research continues to increase, and the variety of research questions continues to broaden, much of the research into virtual schooling continues to be descriptive or exploratory.[15] While such research has potential to impact the practice of virtual schooling, often it applies only in limited contexts. There continues to be too little reliable research available to guide practitioners and policymakers. Simply put, nine years after Rice's initial assessment, the overall state of research into K-12 online learning has not changed that much.[16] While there has been some improvement in what is known about supplemental K-12 online learning, there continues to be a lack of reliable and valid evidence to guide the practice of full-time K-12 online learning. Yet it is full-time K-12 online learning that has seen the greatest growth in recent years.[17] It is past time that K-12 online learning policy, be driven by what is actually known based on the available research.

With this exponential explosion in the use of K-12 online learning, and the high costs to schools and society, it is vital that we look at what the research tells us. First and foremost is whether K-12 online learning results in effective learning. In this chapter I will begin with examining the literature, and in particular the research, into student performance in the K-12 online learning environment. This examination will focus on the nature of K-12 online learning programs represented within the literature, as well as the nature of students often included in the samples that are used. These factors often tell a very different story than the one presented by proponents of K-12 online and blended learning. I will then discuss the how K-12 online learning programs are evaluated, as accountability applies to virtual and cyber schools and any public expenditure. Then I proceed to examine the state of research into the practice of K-12 online learning, specifically what we know about the effective design, delivery, and support of K-12 online learning opportunities. This transitions into a discussion of the evaluation of teacher preparation programs, which is a rich and vibrant area at this time, and looking at the state of

program evaluation and pedagogical training for K-12 online and blended learning teachers. Finally, I describe the current state of teacher licensure with respect to K-12 online learning.

Research on K-12 Online Learning Student Performance

In their 2009 report summarizing the research into the effectiveness of K-12 online learning, the International Association for K-12 Online Learning (iNACOL) concluded, "the preliminary research shows promise for online learning as an effective alternative for improving student performance across diverse groups of students."[18] However, as Larry Cuban outlined in *Virtual Schools in the U.S. 2013*, this claim that online learning is as effective as face-to-face instruction is comprised of "weak studies that offer little compelling evidence of enhanced student achievement."[19] Cuban's assessment is validated when these studies are carefully examined.

To date, the vast majority of academic research examining K-12 online learning has focused on the supplemental environment.[20] This is problematic for a number of reasons. The biggest problem – beyond the methodological issues that Cuban raised in the 2013 report – is the fact that when the majority of these studies were conducted the population of students enrolled in supplemental K-12 online learning opportunities was a highly selective group of students.[21] One of the best descriptions of the nature of these supplemental K-12 online learners was by Haughey and Muirhead.

> Students who do well in online programs are motivated to learn. They are self-directed and self-disciplined. They are not disenchanted with school…. Successful online students are at their grade level. They read and write well…. Online students need to be independent learners. They should be curious and able to ask for help… An interest in technology and good computer skills.[22]

This description is certainly not representative of the average K-12 student, and also not representative of many K-12 online learners. Yet it is representative of the nature of students included in the majority of research that has found K-12 online learning to be as effective as face-to-face instruction.

Rice concluded quite accurately when she wrote "that the effectiveness of distance education appears to have more to do with who is teaching, ***who is learning***, and how that learning is accomplished, and less to do with the medium" (emphasis added).[23] Clearly there is a deficit in the performance of virtual school students when a full range of students are included in the online cohort, as can be seen from the results of the research literature on student performance in full-time virtual schooling.

While there is little peer-reviewed research into the effectiveness of full-time K-12 online learning, there is a growing body of literature from state governments, policy think tanks, and investigative journalists. For example, the Colorado Department of Education found that full-time "online student scores in math, reading, and writing have been lower than scores for students statewide over the last three years."[24] Five years later, an iNews Network investigation found that full-time "online student scores on statewide achievement tests are consistently 14 to

26 percentage points below state averages for reading, writing and math over the past four years."[25] Colorado is not an isolated example.

In Wisconsin, a state audit found mixed performance when comparing full-time online students with their brick-and-mortar counterparts. Online charter school students had higher median scores in reading, but lower median scores in math.[26] Another legislative audit in Minnesota found similar mixed results. Online charter school students performed at approximately the same level in reading as compared to brick and mortar students, but a much smaller percentage of full-time online students scored proficient in math compared to brick-and-mortar counterparts.[27] Further, the audit found that 25% of online charter school seniors dropped out of school, compared to a statewide average of only 3%. Investigative journalists reported similar findings in Arizona that found the largest online charter schools (representing 90% of the full-time online students in the state) all had lower levels of performance in mathematics and only two had performance levels in reading above the statewide average.[28] Further, all of the online charter schools had lower graduation rates than the state average. Issues related to poor student performance even prompted a class action lawsuit by shareholders against one for-profit, online charter provider for inflating student results.[29]

An eight state study of charter school performance by the RAND Corporation in eight states included an analysis of virtual charter schools in Ohio. The authors found that online charter school students experienced significantly lower achievement gains compared to brick-and-mortar charter schools in the state.[30] Ohio also represents an interesting example of the potential bias that may be present in "research" produced by policy think tanks. While the RAND Corporation study concluded that students attending charter schools in the eight states achieved similar gains as students in traditional public schools, the authors' findings concerning online charter schools were quite negative. However, that same year the Ohio Alliance for Public Charter Schools – an "organization dedicated to the enhancement and sustainability of quality charter schools"[31] – found that online charter schools "rank higher when looking at their 'value-added' progress over one year rather than simply measuring their one-time testing performance."[32] Interestingly, two years later Innovation Ohio – a self-described progressive think tank – compared the performance of Ohio's online charter schools to their brick-and-mortar counterparts.[33] The authors found that only three of the state's 23 online charters were rated effective or better on the state report card, compared to more than 75% of the brick-and-mortar schools. Further, the authors reported that "nearly 97 percent of Ohio's traditional school districts have a higher score than the average score of the seven statewide" online charter schools (p. 4). Finally, online charter schools in Ohio also underperformed brick-and-mortar schools in graduation rates.

While this is an example of the potential skewing of data that often occurs when policy think tanks, who often have a vested interest, report the results of their "research," it is also a good illustration of how proponents of online charter schooling often attempt to confound measures of student performance used to highlight their gains. The use of value-added performance data by the Ohio Alliance for Public Charter Schools is an example of this confounding of measures. In another example, Miron and Urschel reported that in their examination of K12, Inc. online charter schools "all of the diverse measures we reviewed indicated a consistent pattern of weak performance."[34] The authors made this conclusion based on annual yearly progress data, which they described as the only consistent measure that the authors were able to use to compare

the performance of K12, Inc. schools to traditional brick-and-mortar schools. In response, Jeff Kwitowski (K12, Inc. Vice President of Public Affairs) wrote:

> AYP is not a reliable measure of school performance…. There is an emerging consensus to scrap AYP and replace it with a better system that measures academic progress and growth. K12 has been measuring student academic growth on behalf of its partner schools, and the results are strong with academic gains above the national average."[35]

The strong academic gains Kwitowski references are available in *K12® Virtual Academies Academic Performance Trends* and *2013 K12® Academic Report*.[36] However, if you examine the data from Colorado – one of the states that factors performance growth in its state reporting system, the Colorado Virtual Academy (i.e., the K12, Inc. online school) was found to have made adequate growth in only one of four areas within the middle school and high school levels, and in none of the four areas at the elementary school level.[37]

In Pennsylvania, the Center for Research on Education Outcomes compared that state's charter school learning gains on state standardized math and reading achievement test scores to that of comparable students in "feeder schools" or the brick-and-mortar schools from which the charter school students transferred.[38] When examining the full-time online charter schools, the authors found that 100% of these online charter schools performed significantly worse than feeder schools in both reading and math. In response to the poor performance of students in their Pennsylvania school, a K12, Inc. representative stated, "the type of child now coming to an online school, 75 percent of those kids coming in are behind more than one grade level."[39] However, Miron and Urschel found that K12, Inc. online schools enrolled students that are more academically able, white, and of higher socioeconomic classes than their brick-and-mortar counterparts.[40]

Based on this research – both what is known from the supplemental and full-time environments – one would expect that policymakers would approach online learning cautiously. Even the authors of the U.S. Department of Education's *Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies* (one of the most often cited studies to support the growth of both supplemental and full-time K-12 online learning), advised that "caution is required in generalizing to the K–12 population because the results are derived for the most part from studies in other settings."[41] However, a cautious approach has not been the case in many jurisdictions.

For example, in 2009 the Michigan legislature passed *Public Act 205*. This legislation allowed for two online charter schools to be created in the state, limiting each to 400 students in the first year of operation and an additional 1000 students in the second year of operation (but the schools had to recruit and enroll one dropped out student for each regular student in year two). At the end of two years, each online charter school was to submit a report to the State Superintendent detailing a number of requirements – including student participation and performance. Future allowable growth rates would be based on that report.[42] The results from the Michigan Educational Assessment Program (MEAP) indicated that the percentage of students attending the Michigan Virtual Academy that met or exceeded proficiency was below the statewide average in 9 of the 17 categories in 2010 and 13 of the 15 categories in 2011. Similar-

ly, the percentage of students attending the Michigan Connections Academy that met or exceeded proficiency was below the statewide average in 9 of the 18 categories in 2010 and 9 of the 15 categories in 2011. Yet, prior to the submission of their reports to the State Superintendent, the legislature passed *Public Act 219*, which incrementally increased the number of online charter schools to 15 by the end of 2014 and removed any meaningful limits to the number of students that can be enrolled.[43] This potential massive expansion of full-time K-12 online learning in the State of Michigan was not justified by the specific results produced by the existing online charter schools in that state, or the general research into full-time online learning.

In addition to student performance, other indicators of program quality are embedded in various types of evaluation and approval processes for virtual schools. In a study of this area, the Michigan Virtual Learning Research Institute described a variety of regulatory regimes based on the variables depicted in Table 1.

Table 1. Variables Related to the Evaluation and Approval Process for Virtual Schools[44]

Level of Evaluation and Approval		
Provider level		Course level
Approval Requirement		
Optional approval		Required approval
Geographic Reach		
Multi-district	Multi-district & single district	Single district
Delivery Model		
Fully online		Blended
Evaluation and Approval Procedures		
Front-end approval	Front-end approval & ongoing monitoring	Annual monitoring / audits

As is evident from this overview, a wide variety of variables can be combined in a number of ways. Thus, there is no consistent method for approving and evaluating virtual schools. Providers or courses can be approved, for example, either with no monitoring, ongoing monitoring or annual monitoring of performance.

And yet, calls for an evaluation process to monitor instructional quality in virtual schools have been heard for over a decade. For example, in 2003 Kraft wrote:

> Cyber charter schools should be evaluated on several grounds. First, their compliance with applicable laws should be evaluated. Second, cyber charter schools should be required to provide an accounting of their funding and expenses. Finally, cyber charter schools should be required to demonstrate their progress."[45]

Yet, more than a decade later, a 2014 Michigan Virtual Learning Research Institute report indicated only 31 of the 50 states had any formal evaluation or approval process beyond the same

measures used to evaluate brick-and-mortar schools.[46] And of these 31 states, the majority had a primarily front-end approval process—meaning that once a course or program was initially approved, either by the state or some external accreditor, there was no mechanism in place to ensure that courses or programs continuously provided a quality instructional program.

Research on K-12 Online Learning Practices

Unfortunately, beyond research comparing student performance in online learning with students in the traditional brick-and-mortar environment and more general literature focused on student funding, there isn't a lot of research to guide the practice of K-12 online learning. This is not to say that research doesn't exist, only that it is often limited to a specific context or methodology – generally both.[47] For example, DiPetro, Ferdig, Black, and Preston reported a study of 37 best practices for teaching in the K-12 online environment.[48] The problem arises with the claim of having 37 unique research-based best practices for teaching in the K-12 online environment. This would imply that the authors had a large, varied sample of K-12 online teachers and that the practices were examined within their online teaching context and shown to have a positive impact on student engagement or achievement. However, this study examined the perceptions of 16 online teachers with the Michigan Virtual School (MVS) that were selected as being "effective" teachers by the online program themselves. There was no verification of whether the teachers actually implemented the practices that they believed to be effective or the degree or fidelity with which the practices were implemented. There was also no verification of whether the practices had any impact on student engagement or achievement. These issues do not make the study of no value, but it does limit the usefulness of the findings. The 37 practices that are outlined by DiPietro and her colleagues are likely useful pedagogical strategies for new and struggling teachers at the MVS. They are also likely useful for K-12 online teachers who are teaching in similar contexts to the MVS or teaching similar online students as served by MVS. Finally, these 37 practices are a useful starting point for future researchers who are looking to further validate whether these 37 practices are indeed best practices for teaching in the K-12 online environment. It is not, however, scientific support for the methods.

Similarly, Barbour reported ten – and later seven – principles of effective online content for K-12 learners.[49] Like the research conducted by DiPietro and her colleagues, this study examined the perceptions of six online course developers with the Centre for Distance Learning and Innovation (CDLI) in Newfoundland and Labrador, Canada. Like the previous study, the author did not examine the online course content to see whether the developers utilized the principles they perceived to be effective or the student data to determine if online course that included these principles were found to be more engaging or yielded better student performance. Finally, in a separate study, Barbour and Hill found that because the CDLI relied on a heavily synchronous model of instruction its online teachers made little use of asynchronous online course content.[50] So like the research conducted by DiPietro and her colleagues, the ten/seven principles are limited to the context in which they were generated or as a starting point for future research. These are just two of the examples from the litany of research that is available within the field of K-12 online learning. At present there are few large scale, longitudinal research studies available to guide the practice of K-12 online learning.

In fact, the examples of large scale, longitudinal research studies are quite limited. To wit, the University of Florida's *Virtual School Clearinghouse* – an AT&T Foundation-funded project designed to provide K-12 online learning programs, particularly statewide supplemental programs, with data analysis tools and metrics for school improvement from 2006-2009.[51] The school improvement lessons generated for 13 of those K-12 online programs were outlined in a publication entitled *Lessons Learned for Virtual Schools: Experiences and Recommendations from the Field*.[52]

Similarly, the National Research Center for Rural Education Support (NRCRES) created a *Facilitator Preparation Program* designed to prepare school-based facilitators to support K-12 students enrolled in online courses.[53] Supported by an Institute of Education Sciences grant, researchers from the NRCRES conducted a two year, randomized controlled trial with more than 600 students in 93 rural high schools to examine the effectiveness of their *Facilitator Preparation Program* – eventually finding that facilitators who participated in the training had an increased level of student retention and student performance.[54] However, these findings were focused on Advanced Placement courses, specifically in rural jurisdictions.

Finally, Barbour outlined a design-based research approach that was undertaken by SRI International, in partnership with the Virtual High School Global Consortium (VHS).[55] Essentially, SRI International – in conjunction with their VHS partners – worked collaboratively to identify seven goals that VHS wanted to achieve to focus SRI International's research and evaluation efforts. These efforts resulted in three annual evaluations and a five-year evaluation,[56] as well as more specific evaluation studies that focused on specific goals the VHS were not meeting.[57]

It is important to note that all three of these longitudinal research examples focused on supplemental online learning programs. There remains little large scale or long-term research into the full-time K-12 online learning environment.

This is not to say that there is no research into the full-time K-12 online learning environment. For example, Liu and Cavanaugh examined factors affecting student academic success in a Midwestern K-12 online learning program that offered supplemental and full-time K-12 online learning opportunities.[58] The authors found that full-time online learning was particularly effective for students who spent a lot of time in the learning management system and who were not participating in the free or reduced lunch program. The authors acknowledged that this did not mean that students other than those described in the study should avoid enrolling in full-time online learning, only that these students would need additional levels of support in order for them to succeed. As the NRCRES research outlined, the presence of a local facilitator can have a significant positive impact on online student success.[59]

In the full-time K-12 online learning environment the local level of support is often from the parent or learning coach, a position that was also found to be critical to the instructional model of full-time online learning when these programs were legally challenged in Wisconsin.[60] The importance of the learning coach is evidenced by the fact that programs such as Connections Academy (i.e., *Learning without Boundaries: How to Make Virtual Schooling Work for You?*) and Insight Schools (i.e., *Virtual Schooling: A Guide to Optimizing your Child's Education*) have

created substantial guides aimed at assisting parents/guardians in performing the learning coach role.[61] In fact, the reliance of these online charter schools on the parent as a primary provider of instruction and instructional support have led some to question whether these programs were publicly-funded instances of homeschooling.[62]

There have been some isolated studies that have examined the role of the learning coach. For example, Carol Klein focused her dissertation on the California Virtual Academy (CAVA) examining the relationship between the online program and its "home schooling constituents." Klein found that CAVA parents/guardians were generally satisfied with their child's online learning experience. Klein also found that CAVA parents/guardians were "well educated and who wanted a solid educational foundation for their own children."[63] Given the importance of the learning coach to student success, a high proportion of parents/guardians who were well educated and invested in their child's education would be consistent with those capable of supporting the full-time K-12 online learner in the home. In fact, as a part of her dissertation study Lisa Hasler Waters examined the perceptions of learning coaches who supported full-time online learning children.[64] Hasler Waters described the learning coaches in her study undertaking the following activities: encouraging the child learning online, modeling potential responses, reinforcing subject matter content, providing direct instruction, adapting instructional strategies and learning content, and leveraging resources to support their online learning child.

Interestingly, Hasler Waters also reported that "learning coaches believed they and not their children's teachers were ultimately responsible for instructing their children."[65] Depending on the level of involvement of the learning coach in their online learning child's education, this could potentially help or hinder that online learners' experience. For example, Borup, Graham, and Davies indicated that 40% of parents had no interaction with their students enrolled in the Open High School of Utah. Further, the authors also found an inverse relationship between the level of parental interaction and student achievement. This led them to speculate that the correlation "reflected parents' tendency to increase interactions levels following academic problems."[66] Liu, Black, Algina, Cavanaugh, and Dawson actually developed a valid and reliable instrument to measure parental involvement in K-12 online learning environments.[67] However, to date this one study with a single statewide, supplemental K-12 online learning program in the Southeast has been the only research to examine the use of this validated instrument.

It should be reinforced that much of the research into full-time K-12 online learning suffers from the same issues of K-12 online learning literature in general. The vast majority of the research is from unpublished dissertations,[68] is limited to specific contexts or is methodologically limited.[69] All of these factors limit the ability of the research in the field to be useful for practitioners and policymakers. These factors also highlight the need for a more focused effort on research conducted in partnership with individual K-12 online learning programs to address their individual challenges.

Research on K-12 Online Teacher Preparation

Given these realities, it is generally up to the virtual schools themselves to provide their teachers with professional development to ensure that they become highly qualified online teachers. One example of a virtual school's professional development program for

its online teachers is the VHS Collaborative (formerly the Virtual High School). The collaborative requires all teachers in partner schools who are interested in providing online instruction to complete an online course in relevant methodology. Additionally, all potential online course developers must complete an online course in designing online instruction. Teachers have the opportunity to earn graduate credits for completing these courses through partner institutions, including Plymouth State University, Endicott College, and Framingham State University. Most virtual schools offer their own teacher training in face-to-face or online formats, prior to their first online assignment as well as on an on-going basis.

The Evergreen Education Group has proposed one possible solution to the teacher training issue in a policy brief entitled *Teaching Online Across State Lines*. Its purpose was to "explore key teacher licensing issues, and [propose] an online teacher specialization that would allow a licensed teacher to teach online students in multiple states." As a part of that exploration, the authors made the following recommendations:

> All online teachers should be highly-qualified, licensed teachers. In addition, states should create an online teaching specialization that would allow a teacher licensed in any state to teach online students in any state without having to go through a separate licensure process in each state. This specialization would be based on online teachers meeting both of the following requirements:
>
> A. They demonstrate that they are licensed and highly qualified in any state, and
> B. They demonstrate expertise in teaching online via either of two methods:
>
> - They have taken and passed a professional development course in teaching online by an approved provider, which includes a course specific to teaching in an online environment offered by universities, regional education agencies, or national providers of accredited programs, or
> - They have successfully taught in an accredited online program for at least three years.
>
> The creation of an online teacher specialization raises the bar for teachers who are licensed in another state, by requiring that these teachers must demonstrate that they have taken and passed a professional development course that meets state requirements or confirm they have successfully taught in an accredited online program. This approach preserves the approach to teaching online used by many individual school districts without imposing any new mandates. Licensed teachers in a district may shift to teaching online with no additional state-created requirements. [70]

This kind of model is not without precedent. For example, Georgia and Idaho currently offer specific K-12 online teaching endorsements. However, these endorsements are still voluntary for online teachers in both states. Essentially, the proposal from the Evergreen Education Group is to extend these kinds of endorsements nationally, in much the same

way that the National Board for Professional Teaching Standards created a certification program that teachers could complete and become nationally certified.

Another challenge facing virtual schools is the evaluation of online teaching in the absence of reliable and valid research to support high quality practice. At present, eight states have adopted some form of online teaching standards and/or created some form of teacher certification for online teaching (Georgia, Idaho, Michigan, Louisiana, South Carolina, South Dakota, Utah, and Vermont). In most instances, the adopted standards have been iNACOL's *National Standards for Quality Online Teaching*. The iNACOL "national standards" were first adopted in 2007 – after the organization reviewed existing sets of standards (almost all of which were not research-based or validated), and then adopted the standards published by the Southern Regional Education Board, with some adaptations for iNACOL's involvement with the Partnership for 21st Century Skills initiative. These "national standards" were refreshed in 2011, largely based on feedback from practitioners and the standards use as a quality control mechanism in Texas and California. Unfortunately, eight years after first being introduced, these "national standards" have still not undergone the typical three stage process for standards development. The first stage would be to conduct a systematic literature review and then develop draft standards based upon sound, empirical research. The second stage would be to solicit the input from experts in the field – from a variety of practitioner and researcher sectors – on the draft standards; often, several rounds of expert feedback help refine the standards. The final stage would be to translate the standards into a rubric for practitioners to use. Researchers would train individuals to use the rubric, and then assess whether it is reliable when used independently—that is, whether inter-rater reliability could be documented. To date, there have been no standards in K-12 online and blended learning that have undergone this process – even though several states have adopted a variety of standards to measure the quality of various aspects of K-12 online and blended learning.

The initial iNACOL *National Standards for Quality Online Teaching* were adopted in 2007 after a "literature review of the existing online teaching quality standards, then…a cross-reference of standards, followed by a survey completed by representatives of the iNACOL network…." The result was that the organization "chose to fully endorse the work of the Southern Regional Education Board (SREB) *Standards for Quality Online Teaching and Online Teaching Evaluation for State Virtual Schools* as a comprehensive set of criteria." While the SREB standards indicate they "have been supported by practice over time, as well as substantiated by research," neither the SREB nor the iNACOL standards identified the research substantiating these claims. The 2011 revised version of the iNACOL standards indicated that "iNACOL organized a team of experts… to review these new standards and the new literature on the topic" and that "iNACOL has received feedback from organizations using these standards for the development of professional development and evaluation of online teachers." However, once again the standards were published without any documentation and verification. In fact, the only published research to support the iNACOL standards was a literature review conducted by Ferdig, Cavanaugh, DiPietro, Black, and Dawson to determine whether the standards were supported by research.[71] Interestingly, one of the things these researchers found was that the literature available to support the standards was limited because most of the

literature focused on online learning with adult populations or on the traditional classroom environment.

Conclusions

Those familiar with the state of research into the field of K-12 online and blended learning will also be familiar with the claim that there is a lack of research to support much of the practice of K-12 online and blended learning. While this sentiment is true to some extent, there are many things that we do know from the research in the field. For example, despite claims from proponents, K-12 online and blended learning tends to produce lower levels of learning, particularly in math and particularly for less affluent and less self-motivated children. There are no common, research-based standards or consensus on what constitutes best or promising practices. There is also, however, limited mechanisms in place to monitor and evaluate programs to ensure that K-12 online and blended learning programs are accountable – from both student performance and financial perspectives.

With respect to the actual practice of K-12 online and blended learning, there have been limited investigations into what constitutes effective design, delivery, and support of K-12 online and blended learning with different populations. Currently, there only exists general guidelines that often lack empirical foundation or support. For example, research in the field is beginning to indicate that in the supplemental online learning environment that the presence of an active and engaged local mentor or facilitator can be a critical component to student success. The research is also beginning to point to the fact that parental involvement and engagement in their child's online and blended learning can also be a critical component to student success. But based on the state of research in the field, these types of findings only offer suggestions for things that online and blended programs and teachers could try; as opposed to guidelines that have achieved some level of consensus within the research community. Even those jurisdictions where university programs and state-level endorsements exists, they are only voluntary for online and blended learning teachers. While these initial findings many be promising , there remains many questions that practitioners and policymakers need answered in relation to the successful implementation of K-12 online and blended learning.

It is important that both of these situations be remedied. However, expansion of online options continues to outpace the availability of useful research. As a result, practitioners have little to guide them on how to effectively design, deliver, and support virtual schooling even as policymakers continue to search for effective regulatory models. K-12 online and blended learning is a growing part of our society, and it would be unrealistic to think that it will become less important in the future. However, with the public purse and the public well-being, particularly with the welfare of the individual students at stake, it is imperative that we know more about the practice of K-12 online and blended learning. For example, during the fiscal year 2014 K12, Inc. reported revenue of $919.6 million that came "primarily [from their] online managed public schools."[72] At the same time legislators in Tennessee were trying to close the lone cyber charter school in the state, which was operated by K12, Inc., because it was one of the lowest performing schools in the state.[73] This is simply one example of why it is so important that the public and policymakers actually use that knowledge when making regulatory decisions.

Unfortunately, when it comes to many within the public and an increasing number of policymakers, "the current climate of K-12 school reform promotes uncritical acceptance of any and all virtual education innovations, despite lack of a sound research base supporting claims that technology in and of itself will improve teaching and learning."[74] Even more disappointing is the considerable enthusiasm from some proponents and their legislative allies of policies that often run contrary to what is actually known from the existing but limited research base. Simply put, based on what we currently know, K-12 online and blended learning will continue to be a part of our future, but is not yet ready for prime time as an educational solution for all – or even most – students.

Notes and References

[1] Barbour, M. K. (2013). *State of the nation study: K-12 online learning in Canada*. Victoria, BC: Open School British Columbia. Retrieved from http://canelearn.net/wp-content/uploads/2015/07/state_of_nation-2013.pdf

Barbour, M. K., Brown, R., Hasler Waters, L., Hoey, R., Hunt, J., Kennedy, K., Ounsworth, C., Powell, A., & Trimm, T. (2011). *Online and blended learning: A survey of policy and practice from K-12 schools around the world*. Vienna, VA: International Association for K-12 Online Learning. Retrieved from http://www.inacol.org/wp-content/uploads/2015/02/iNACOL_a-survey-of-policy-and-practice.pdf

Watson, J., Murin, A., Vashaw, L., Gemin, B., & Rapp, C. (2012). *Keeping pace with K-12 online and blended learning*. Durango, CO: Evergreen Education Group. Retrieved from http://www.kpk12.com/wp-content/uploads/KeepingPace2012.pdf

[2] Watson, J., Murin, A., Vashaw, L., Gemin, B., & Rapp, C. (2014). *Keeping pace with K-12 online and blended learning*. Durango, CO: Evergreen Education Group. Retrieved from http://www.kpk12.com/wp-content/uploads/EEG_KP2014-fnl-lr.pdf

[3] Watson, J., Murin, A., Vashaw, L., Gemin, B., & Rapp, C. (2014). *Keeping pace with K-12 online and blended learning*. Durango, CO: Evergreen Education Group. Retrieved from http://www.kpk12.com/wp-content/uploads/EEG_KP2014-fnl-lr.pdf

[4] Clark, T. (2001). *Virtual schools: Status and trends*. Phoenix, AZ: WestEd. Retrieved from http://www.wested.org/online_pubs/virtualschools.pdf

[5] Ambient Insight. (2012). 2012 *Learning technology research taxonomy: Research methodology, buyer segmentation, product definitions, and licensing model*. Monroe, WA: Author. Retrieved from http://www.ambientinsight.com/Resources/Documents/AmbientInsight_Learning_Technology_Taxonomy.pdf

Watson, J., Murin, A., Vashaw, L., Gemin, B., & Rapp, C. (2012). *Keeping pace with K-12 online and blended learning*. Durango, CO: Evergreen Education Group. Retrieved from http://www.kpk12.com/wp-content/uploads/KeepingPace2012.pdf

Wicks, M. (2010). *A national primer on K-12 online learning, version 2*. Vienna, VA: International Association for K-12 Online Learning. Retrieved from http://www.inacol.org/cms/wp-content/uploads/2012/11/iNCL_NationalPrimerv22010-web1.pdf

[6] Moe, A. M., & Chubb, A. M. (2009). *Liberating learning: Technology, politics and the future of American education*. San Francisco CA: Jossey-Bass.

Peterson, P. (2010). *Saving schools: From Horace Mann to virtual learning*. Cambridge, MA: Belknap Press of Harvard University Press.

Vander Ark, T. (2012). *Getting smart: How digital learning is changing the world*. San Francisco, CA: John Wiley & Sons, Inc.

[7] Christensen, C. M., Horn, M. B., & Johnson, C. W. (2011). *Disrupting class: How disruptive innovation will change the way the world learns* (2nd ed.). New York: McGraw-Hill.

Packard, R. (2013). *Education transformation: How K-12 online learning is bringing the greatest change to education in 100 years*. Hillsboro, OR: Beyond Words.

Vander Ark, T. (2012). *Getting smart: How digital learning is changing the world*. San Francisco, CA: John Wiley & Sons, Inc.

[8] Rice, K. L. (2006). A comprehensive look at distance education in the K-12 context. *Journal of Research on Technology in Education, 38*(4), 425-448.

[9] Barbour, M. K., & Reeves, T. C. (2009). The reality of virtual schools: A review of the literature. *Computers and Education, 52*(2), 402–416.

[10] Cavanaugh, C., Barbour, M. K., & Clark, T. (2009). Research and practice in K-12 online learning: A review of literature. *International Review of Research in Open and Distance Learning, 10*(1). Retrieved from http://www.irrodl.org/index.php/irrodl/article/view/607

[11] Barbour, M. K. (2011). The promise and the reality: Exploring virtual schooling in rural jurisdictions. *Education in Rural Australia, 21*(1), 1-20.

[12] Darrow, R. (2010). *A comparative study between online charter high schools and traditional high schools in California*. Unpublished doctoral dissertation, California State University, Fresno, CA.

[13] Clark, T. (2001). *Virtual schools: Trends and issues - A study of virtual schools in the United States*. San Francisco, CA: Western Regional Educational Laboratories.

Clark, T. (2003). Virtual and distance education in American schools. In M. G. M. W. G. Anderson (Ed.), *Handbook of distance education* (pp. 673-699). Mahwah, NJ Lawrence Erlbaum Associates, Inc.

[14] Clark, T. (2013). The evolution of K-12 distance education and virtual schools. In M. G. Moore (Ed.), *Handbook of distance education* (3rd ed.) (pp. 555-573). New York: Routledge.

[15] Barbour, M. K. (2013). The landscape of K-12 online learning: Examining what is known. In M. G. Moore (Eds.), *Handbook of distance education* (3rd ed.) (574-593). New York: Routledge.

[16] Barbour, M. K. (2013). The landscape of K-12 online learning: Examining what is known. In M. G. Moore (Eds.), *Handbook of distance education* (3rd ed.) (pp. 574-593). New York: Routledge.

[17] Watson, J., Murin, A., Vashaw, L., Gemin, B., & Rapp, C. (2011). *Keeping pace with K-12 online learning: An annual review of state-level policy and practice*. Evergreen, CO: Evergreen Education Group. Retrieved from http://kpk12.com/

[18] Patrick, S., & Powell, A. (2009). *A summary of research on the effectiveness of K-12 online learning*. Vienna, VA: International Association for K-12 Online Learning.

[19] Molnar, A. (Ed.); Miron, G., Huerta, L., Cuban, L., Horvitz, B., Gulosino, C., Rice, J. K., & Shafer, S. R. (2013). *Virtual schools in the U.S. 2013:Politics, performance, policy, and research evidence*. Boulder, CO: National Education Policy Center. Retrieved from http://nepc.colorado.edu/publication/virtual-schools-annual-2013/

[20] Barbour, M. K., & Mulcahy, D. (2006). An inquiry into retention and achievement differences in campus based and web based AP courses. *Rural Educator, 27*(3), 8-12.

Barbour, M. K., & Mulcahy, D. (2008). How are they doing? Examining student achievement in virtual schooling. *Education in Rural Australia, 18*(2), 63-74.

Barbour, M. K., & Mulcahy, D. (2009a). Student performance in virtual schooling: Looking beyond the numbers. *ERS Spectrum, 27*(1), 23-30

Cavanaugh, C. (2001). The effectiveness of interactive distance education technologies in K-12 learning: A meta-analysis. *International Journal of Educational Telecommunications, 7*(1), 73-88.

Cavanaugh, C., Gillan, K., Bosnick, J., & Hess, M. (2008). Effectiveness of online Algebra learning: Implications for teacher preparation. *Journal of Educational Computing Research, 38*(1) 67-95.

Cavanaugh, C., Gillan, K., Kromrey, J., Hess, M., & Blomeyer, R. (2004). *The effects of distance education on K-12 student outcomes: A meta-analysis*. Naperville, IL: Learning Point Associates.

Chingos, M. M., & Schwerdt, G. (2014). *Virtual schooling and student learning: Evidence from the Florida Virtual School*. Cambridge, MA: Harvard Kennedy School. Retrieved from http://www.hks.harvard.edu/pepg/PDF/Papers/PEPG14_02FVS_Chingos_Schwerdt.pdf.

Florida Tax Watch Center for Educational Performance and Accountability (2007). *A comprehensive assessment of Florida Virtual School*. Talahassee, FL: Author.

Hughes, J. E., McLeod, S., Brown, R., Maeda, Y., & Choi, J. (2007). Academic achievement and perceptions of the learning environment in virtual and traditional secondary mathematics classrooms. *American Journal of Distance Education, 21*(4), 199-214.

O'Dwyer, L., Carey, R., & Kleiman, G. (2007). A study of the effectiveness of the Louisiana Algebra I on-line course. *Journal of Research on Technology in Education, 39*(3), 289-306.

[21] Barbour, M. K. (2013). The landscape of K-12 online learning: Examining what is known. In M. G. Moore (Eds.), *Handbook of distance education* (3rd ed.) (pp. 574-593). New York: Routledge.

[22] Haughey, M., & Muirhead, W. (1999). *On-line learning: Best practices for Alberta school jurisdictions*. Edmonton, AB: Government of Alberta.

[23] Rice, K. L. (2006). A comprehensive look at distance education in the K-12 context. *Journal of Research on Technology in Education, 38*(4), 425-448.

[24] Colorado Department of Education. (2006). *Report of the State Auditor: Online education*. Denver, CO: Author. Retrieved from http://www.cde.state.co.us/onlinelearning/download/2006%20Report%20of%20the%20State%20Auditor.pdf

[25] Hubbard, B. & Mitchell, N. (2011). Online K-12 schools failing students but keeping tax dollars. *I-News Network*. Retrieved from http://www.inewsnetwork.org/special-reports/online-k-12-schools/

[26] Joint Legislative Audit Committee. (2010). *An evaluation: Virtual charter schools*. Madison, WI: Legislative Audit Bureau. Retrieved from http://legis.wisconsin.gov/lab/reports/10-3full.pdf

[27] Office of the Legislative Auditor. (2011). *K-12 online learning*. St. Paul, MN: Author. Retrieved from http://www.auditor.leg.state.mn.us/ped/2011/k12oll.htm

[28] Ryman, A., & Kossan, P. (2011). The race to online: Arizona experiments with virtual K-12 schools. Will they work for your child? *Arizona Republic*. Retrieved from http://www.azcentral.com/news/education/online-school/

[29] Faruqi & Faruqi, LLP. (2012). *Faruqi & Faruqi, LLP files securities class action suit against K12, Inc. and certain of its executives*. New York: Author. Retrieved from http://www.faruqilaw.com/LRN

[30] Zimmer, R., Gill, B., Booker, K., Lavertu, S., Sass, T. R., & Witte, J. (2009). *Charter schools in eight states effects on achievement, attainment, integration, and competition*. Santa Monica, CA: RAND Corporation. Retrieved from http://www.rand.org/content/dam/rand/pubs/monographs/2009/RAND_MG869.sum.pdf

[31] Ohio Alliance for Public Charter Schools. (2009). *E-schools show superior results: Analysis of state value-added data confirms e-schools students' progress*. Columbus, OH: Author. Retrieved from http://www.oapcs.org/files/EschoolStudy_final6-24-09.pdf

[32] Ohio Alliance for Public Charter Schools. (2009). *E-schools show superior results: Analysis of state value-added data confirms e-schools students' progress*. Columbus, OH: Author. Retrieved from http://www.oapcs.org/files/EschoolStudy_final6-24-09.pdf

[33] Innovation Ohio. (2011). *Ohio e-schools: Funding failure; Coddling contributors*. Columbus, OH: Author. Retrieved from http://innovationohio.org/2011/05/12/ohio-e-schools-funding-failure-coddling-contributors-2/

[34] Miron, G., & Urschel, J. (2012). *Understanding and improving full-time virtual schools*. Denver, CO: National Education Policy Center. Retrieved from http://nepc.colorado.edu/publication/understanding-improving-virtual

[35] Kwitowski, J. (2011). AYP, an unreliable measure of school performance. *K12 Blog*. Retrieved from http://k12choice.com/index.php?option=com_rsblog&layout=view&cid=7:ayp-an-unreliable-measure-of-school-performance&Itemid=77

[36] K12, Inc. (2012). *K12® virtual academies academic performance trends*. Herndon, VA: Author. Retrieved from http://phx.corporate-ir.net/External.File?item=UGFyZW50SUQ9MTM0MDc2fENoaWxkSUQ9LTF8VHlwZT0z&t=1

K12, Inc. (2013). *2013 K12® academic report*. Herndon, VA: Author. Retrieved from http://www.k12.com/sites/default/files/pdf/2013-K12-Academic-Report-Feb6-2013.pdf

[37] State of Colorado. (2013). *School performance framework 2012: Colorado Virtual Academy (COVA)*. Denver, CO: Author. Retrieved from https://cedar2.cde.state.co.us/documents/SPF2012/0020%20-%201752%20-%203%20Year.pdf

[38] Center for Research on Education Outcomes. (2011). *Charter school performance in Pennsylvania*. Stanford, CA: Author. Retrieved from http://credo.stanford.edu/reports/PA%20State%20Report_20110404_FINAL.pdf

[39] Saul, S. (2011, December 12). Profits and questions at online charter schools. *New York Times*. Retrieved from http://www.nytimes.com/2011/12/13/education/online-schools-score-better-on-wall-street-than-in-classrooms.html?_r=0

[40] Miron, G., & Urschel, J. (2012). *Understanding and improving full-time virtual schools*. Denver, CO: National Education Policy Center. Retrieved from http://nepc.colorado.edu/publication/understanding-improving-virtual

[41] Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2009). *Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies*. Washington, DC: U. S. Department of Education, Office of Planning, Evaluation, and Policy Development.

[42] Watson, J., Murin, A., Vashaw, L., Gemin, B., & Rapp, C. (2010). *Keeping pace with K-12 online learning: An annual review of state-level policy and practice*. Evergreen, CO: Evergreen Education Group. Retrieved from http://kpk12.com/

[43] Watson, J., Murin, A., Vashaw, L., Gemin, B., & Rapp, C. (2011). *Keeping pace with K-12 online learning: An annual review of state-level policy and practice*. Evergreen, CO: Evergreen Education Group. Retrieved from http://kpk12.com/

[44] Barbour, M. K., Clark, T., DeBruler, K., & Bruno, J. A. (2014). Evaluation and approval constructs for online and blended courses and providers. Lansing, MI: Michigan Virtual Learning Research Institute at MVU. Retrieved March 5, 2015, from http://media.mivu.org/institute/pdf/eval_constructs.pdf.

[45] Kraft, K. (2003). Cyber charter schools – An analysis of their legality. *SMU Law Review, 56*, 2327-2354.

[46] Barbour, M. K., Clark, T., DeBruler, K., & Bruno, J. A. (2014). Evaluation and approval constructs for online and blended courses and providers. Lansing, MI: Michigan Virtual Learning Research Institute at MVU. Retrieved March 5, 2015, from http://media.mivu.org/institute/pdf/eval_constructs.pdf;

Watson, J., Murin, A., Vashaw, L., Gemin, B., & Rapp, C. (2013). *Keeping pace with K-12 online and blended learning: An annual review of policy and practice*. Evergreen, CO: Evergreen Education Group. Retrieved March 5, 2015, from http://kpk12.com/cms/wp-content/uploads/EEG_KP2013-lr.pdf.

[47] Barbour, M. K. (2013). The landscape of K-12 online learning: Examining what is known. In M. G. Moore (Eds.), *Handbook of distance education* (3rd ed.) (pp. 574-593). New York: Routledge.

[48] DiPetro, M., Ferdig, R. E., Black, E. W., & Preston, M. (2008). Best practices in teaching K-12 online: Lessons learned from Michigan Virtual School teachers. *Journal of Interactive Online Learning, 7*(1). Retrieved from http://www.ncolr.org/jiol/issues/pdf/7.1.2.pdf

[49] Barbour, M. K. (2005). Perceptions of effective web-based design for secondary school students: A narrative analysis of previously collected data. *The Morning Watch, 32*(3-4). Retrieved from http://www.mun.ca/educ/faculty/mwatch/win05/Barbour.htm

Barbour, M. K. (2007). Principles of effective web-based content for secondary school students: Teacher and developer perceptions. *Journal of Distance Education, 21*(3), 93-114.

[50] Barbour, M. K., & Hill, J. R. (2011). What are they doing and how are they doing it? Rural student experiences in virtual schooling. *Journal of Distance Education, 25*(1). Retrieved from http://www.jofde.ca/index.php/jde/article/view/725

[51] Black, E. W., Ferdig, R. E., DiPietro, M. (2008). An overview of evaluative instrumentation for virtual high schools. *American Journal of Distance Education, 22*(1), 24-45.

[52] Ferdig, R. E. & Cavanaugh, C. (Eds.). (2008). *Lessons learned for virtual schools: Experiences and recommendations from the field*. Vienna, VA: International Association for K-12 Online Learning.

[53] Irvin, M. J., Hannum, W. H., Farmer, T. W., de la Varre, C., & Keane, J. (2009). Supporting online learning for Advanced Placement students in small rural schools: Conceptual foundations and intervention components of the Facilitator Preparation Program. *The Rural Educator, 31*(1), 29-36.

[54] de la Varre, C., Keane, J., Irvin, M. J., & Hannum, W. H. (2011). Dual perspectives on the contribution of on-site facilitators to teaching presence in a blended learning environment. *Journal of Distance Education, 25*(3). Retrieved from http://www.jofde.ca/index.php/jde/article/view/751

[55] Barbour, M. K. (2013). The landscape of K-12 online learning: Examining what is known. In M. G. Moore (Eds.), *Handbook of distance education* (3rd ed.) (pp. 574-593). New York: Routledge.

[56] Espinoza, C., Dove, T., Zucker, A., & Kozma, R. (1999). *An evaluation of the Virtual High School after two years in operation*. Arlington, VA: SRI International. Retrieved from http://ctl.sri.com/publications/downloads/evalvhs2yrs.pdf

Kozma, R., Zucker, A., & Espinoza, C. (1998). *An evaluation of the Virtual High School after one year in operation*. Arlington, VA: SRI International. Retrieved from http://ctl.sri.com/publications/downloads/evalvhs1yr.pdf

Kozma, R., Zucker, A., Espinoza, C., McGhee, R., Yarnall, L., Zalles, D., et al. (2000). *The online course experience: Evaluation of the Virtual High School's third year of implementation, 1999-2000*. Arlington, VA: SRI International. Retrieved from http://ctl.sri.com/publications/downloads/VHS_Online_Experience.pdf

Zucker, A., & Kozma, R. (2003). *The Virtual High School: Teaching generation V*. New York, NY: Teachers College Press.

[57] Elbaum, B., McIntyre, C., & Smith, A. (2002). *Essential Elements: Prepare, Design, and Teach Your Online Course*. Madison, WI: Atwood Publishing.

Yamashiro, K., & Zucker, A. (1999). *An expert panel review of the quality of Virtual High School courses: Final report.* Arlington, VA: SRI International.

[58] Liu, F., & Cavanaugh, C. (2011). High enrollment course success factors in virtual school: Factors influencing student academic achievement. *International Journal on E-Learning, 10*(4), 393-418.

[59] Also supported by:

Barbour, M. K., & Mulcahy, D. (2004). The role of mediating teachers in Newfoundland's new model of distance education. *The Morning Watch, 32*(1–2). Retrieved from http://www.mun.ca/educ/faculty/mwatch/fall4/barbourmulcahy.htm

Barbour, M. K., & Mulcahy, D. (2009b). Beyond volunteerism and good will: Examining the commitment of school-based teachers to distance education. In I. Gibson et al. (Eds.), *Proceedings of the Annual Conference of the Society for Information Technology and Teacher Education* (779–784). Norfolk, VA: AACE.

Roblyer, M. D., Freeman, J., Stabler, M., & Schniedmiller, J. (2007). *External evaluation of the Alabama ACCESS initiative phase 3 report*. Eugene, OR: International Society for Technology in Education.

[60] Johnson v. Burmaster, 744 NW2d 900 (Wis. App. 2007). Retrieved from http://www.wicourts.gov/ca/opinion/DisplayDocument.html?content=html&seqNo=31069

[61] Connections Academy. (2004). *Learning without boundaries: How to make virtual schooling work for you?* Baltimore, MD: Author.

Kanna, E., Gillis, L., & Culver, C. (2009). *Virtual schooling: A guide to optimizing your child's education*. New Tork: Palgrave MacMillan.

[62] Ohanian, S. (2004). *The K12 virtual primary school history curriculum: A participant's-eye view*. Tempe, AZ: Education Policy Studies Laboratory. Retrieved from http://nepc.colorado.edu/files/EPSL-0404-117-EPRU.pdf

[63] Klein, C. (2006). *Virtual charter schools and home schooling*. Youngstown, NY: Cambria Press.

[64] Halser Waters, L. (2012). *Exploring the experience of learning choices in a cyber charter schools: A qualitative case study*. Unpublished doctoral dissertation, University of Hawaii, Mānoa, HI.

[65] Halser Waters, L. (2012). *Exploring the experience of learning choices in a cyber charter schools: A qualitative case study*. Unpublished doctoral dissertation, University of Hawaii, Mānoa, HI.

[66] Borup, J., Graham, C. R., & Davies, R. S. (2013). The nature of parental interactions in an online charter school. *American Journal of Distance Education, 27*(1), 40-55.

[67] Lui, F., Black, E., Algina, J., Cavanaugh, C., & Dawson, K. (2010). The validation of one parental involvement measurement in virtual schooling. *Journal of Interactive Online Learning, 9*(2). Retrieved from http://www.ncolr.org/issues/jiol/v9/n2/the-validation-of-one-parental-involvement-measurement-in-virtual-schooling

[68] Barbour, M. K., & Reeves, T. C. (2009). The reality of virtual schools: A review of the literature. *Computers and Education, 52*(2), 402–416.

[69] Barbour, M. K. (2013). The landscape of K-12 online learning: Examining what is known. In M. G. Moore (Eds.), *Handbook of distance education* (3rd ed.) (pp. 574-593). New York: Routledge.

[70] Watson, J., Murrin, A., & Pape, L. (2014). *Teaching across state lines*. Durango, CO: Evergreen Education Group. Retrieved from http://www.kpk12.com/wp-content/uploads/EEG_KP-TchngStLines.pdf

[71] Ferdig, R. E., Cavanaugh, C., DiPietro, M., Black, E. W., & Dawson, K. (2009). Virtual schooling standards and best practices for teacher education. *Journal of Technology and Teacher Education, 17*(4), 479-503.

[72] K12, Inc. (2014). *Form 10-K for K12 INC: Annual report*. Hendon, VA: Author. Retrieved from http://biz.yahoo.com/e/140815/lrn10-k.html

[73] Balakit, M. (2015, April 22). Push fails to keep Tennessee Virtual Academy open. *The Tennessean*. Retrieved from http://www.tennessean.com/story/news/education/2015/04/21/tennessee-virtual-academy-makes-final-push-stay-open/26136201/

[74] Molnar, A. (Ed.); Miron, G., Huerta, L., Cuban, L., Horvitz, B., Gulosino, C., Rice, J. K., & Shafer, S. R. (2013). *Virtual schools in the U.S. 2013:Politics, performance, policy, and research evidence*. Boulder, CO: National Education Policy Center. Retrieved from http://nepc.colorado.edu/publication/virtual-schools-annual-2013/