Virtual Schools

At a Glance

The majority of school districts in the U.S. are providing some form of online learning for their students. In the past, virtual schools primarily targeted advanced students who didn't have access to certain courses in their regular schools. Recently, however, 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. This Information Capsule summarizes research conducted on the impact of virtual schools on students' achievement, course retention rates, and levels of satisfaction. Studies conducted on the cost effectiveness of virtual schools are also reviewed. Strategies to increase the effectiveness of online learning programs are discussed and a brief description of virtual schools within the state of Florida, including the Miami-Dade Virtual School, is provided. A more detailed Literature Review on virtual schools is available at Research Services Web site (http://drs.dadeschools.net).

Virtual schools have become one of the fastest growing trends in education, with states and school districts increasingly turning to online strategies as a way to introduce educational reforms. The majority of U.S. school districts are providing some form of online learning for their students. Watson and Gemin (2008) reported that 57 percent of U.S. public secondary schools offer students access to online learning. A nationwide survey of school districts conducted by Picciano and Seaman (2009) revealed that 70 percent of school districts stated they had at least one student who had taken an online course during the 2007-08 school year. An additional 12 percent of districts that did not have any students enrolled in online courses indicated that they planned to have at least one student enrolled within the next three years. Approximately 70 percent of the students enrolled in online courses are at the high school level, 17 percent of students are at the middle school level (grades 6-8), and 14 percent of students are at the elementary level (grades K-5) (Picciano & Seaman, 2009; Christensen & Horn, 2008).

Researchers estimate that K-12 online enrollments grew from 45,000 nationwide in 2000 to approximately one million in 2008 (International Association for K-12 Online Learning, 2009; Watson & Gemin, 2008). Picciano and Seaman (2009) estimated that by 2016, online enrollments might easily increase to between five and six million K-12 students.

In 2008, online courses represented one percent of all courses taken by students. Researchers predict that by 2014, 10 percent of all K-12 courses will be delivered online and by 2019, 50 percent of K-12 courses will be delivered online (International Association for K-12 Online Learning, 2009; Arnoldy, 2008; Christensen & Horn, 2008; Watson & Gemin, 2008; Smith et al., 2005).

Virtual schools appeal to students from both ends of the achievement spectrum. The self-paced nature of online courses provides remedial alternatives to students who have failed in traditional courses, but also enables advanced students to accelerate their studies according to their own abilities (Bonner, 2008; Roblyer & Davis, 2008; Watson & Gemin, 2008; Greenway & Vanourek, 2006). In the past, online schools primarily targeted advanced students who didn't have access to certain courses in their regular schools. Recently, however, more and more schools are using virtual classes to offer rapid remediation and credit recovery. Targeted students in need of remediation include late enrollees, transient or highly mobile students, students who are repeating a class they previously failed, students requiring summer school, credit-deficient students, students needing one-on-one support, or any student who is behind in his or her educational progress for any reason (Bonner, 2008; Wisconsin Virtual School, 2008; Tucker, 2007). National surveys indicate that although the most common reason students give for enrolling in virtual schools is unavailability of a desired course, the second most frequently cited reason is the opportunity to receive extra help (Watson & Gemin, 2008).

Credit recovery is defined as the opportunity for students to earn academic credits they have lost, or are about to lose, by failing a regular course. Credit recovery differs from first time credit in that students have already satisfied seat time requirements for the course and can focus on earning credit based on competency of the content standards. Goals related to credit recovery vary with each online program, but often include helping students make up credits to meet graduation requirements; meeting graduation deadlines; preparing students for state exams; and getting dropouts back in school (Watson & Gemin, 2008; Wisconsin Virtual School, 2008).

In the past, schools had few resources outside of summer school to help students who failed a course. Susan Patrick, President and CEO of the International Association for K-12 Online Learning, stated:

> "When students have completed the attendance requirement in a course, and were unsuccessful, the options for earning credit towards graduation are often limited to using the same book, often with the same teacher, within the same seat time approach. Is this really the best way to invest resources of time and money in helping students succeed?" (Watson & Gemin, 2008).

Statistics on the number of students taking credit recovery courses at virtual schools are difficult to obtain because many course providers don't ask students why they are enrolling in their courses. The Florida Virtual School reported that 17 percent of its in-state high school students enrolled in courses for credit recovery purposes (Trotter, 2008).

Research on Virtual Schools

Student Achievement

Little research has been conducted on the performance of students enrolled specifically in credit recovery courses. However, Watson and Gemin (2008) compared passing rates of students who reported they were enrolled in credit recovery courses at the Florida Virtual School (FLVS) to the passing rates of all FLVS students. They found that success rates for students recovering credit were similar to those of the entire FLVS student population. During the 2006-07 school year, FLVS students who reported taking courses for credit recovery had a passing rate of 90.2 percent, compared to a 92.1 percent passing rate for the overall FLVS student population.

Florida Tax Watch (2007), an independent, nonpartisan, nonprofit research institute, conducted an extensive analysis of the performance of students attending the Florida Virtual School (FLVS). The analysis was based on students enrolled in all types of FLVS classes, including credit recovery, advanced placement, core content, and elective courses. Researchers compared the FCAT scores of FLVS students and students attending public schools in Florida. As can be seen in Tables 1 and 2, FLVS students consistently outperformed their public school counterparts on both the Reading and Mathematics sections of the FCAT.

Table 1.
Percent of Students Scoring at FCAT Reading Level 3 or Higher, 2006

	FLVS Students	Florida Public School Students
Grade 6	80%	64%
Grade 7	83%	61%
Grade 8	81%	46%
Grade 9	74%	40%
Grade 10	49%	32%

Table 2.
Percent of Students Scoring at FCAT Mathematics Level 3 or Higher, 2006

	FLVS Students	Florida Public School Students
Grade 6	70%	53%
Grade 7	79%	55%
Grade 8	87%	60%
Grade 9	86%	59%
Grade 10	82%	65%

Florida Tax Watch (2007) also reported that FLVS students posted higher advanced placement exam scores than Florida public school students (Table 3). In the 2005-06 school year, FLVS students' average advanced placement exam score was 3.05, compared to 2.49 for Florida public school students. In addition, FLVS students' average advanced placement exam score increased from 2004-05 to 2005-06, while public school students' average score decreased.

Table 3.
Average Advanced Placement Exam Scores, 2004-05 and 2005-06

	FLVS Students	Florida Public School Students
2004-05	2.89	2.54
2005-06	3.05	2.49
Difference	+0.16	-0.05

Florida Tax Watch's (2007) analysis found that the more times a student logged into their FLVS course, the higher the final grade they were likely to receive. The researchers suggested that students with higher participation rates may have worked harder than students who logged into their courses less frequently. Florida Tax Watch's analyses also revealed that the longer a student took to complete a course, the lower the resulting grade for that course tended to be. The average number of active weeks for a grade of "A" was 18.62, while the average number of active weeks for a grade of "F" was 42.32. The researchers hypothesized that students who took longer to complete their courses needed more time and assistance to understand the course content and materials.

In general, most studies have found that distance instruction is as effective as traditional classroom instruction and in some cases, even more effective. A brief summary of two other studies that compared the achievement of students enrolled in distance learning to the achievement of those attending traditional schools is provided below.

- Bernard and associates (2004) conducted a meta-analysis of 232 studies that compared the effect of distance education and traditional classroom-based instruction on K-12 and postsecondary student achievement. They found a small, but significant effect favoring distance education; however, there was extreme variability in effect size, depending on the program being studied, suggesting that distance education was successful in some cases and unsuccessful in other cases. This wide variability led the researchers to conclude that a number of distance education programs led to higher levels of student achievement than their classroom counterparts, while a number resulted in lower levels of achievement.

- Cavanaugh and colleagues (2004) conducted a meta-analysis of 14 web-based distance education programs for students in grades 3-12. Analyses found an overall effect size not significantly different from zero, indicating that students in distance education programs performed as well as students in classroom-based programs. Similar to the findings of Bernard and associates (2004), this meta-analysis also found considerable variation in

effect sizes, with some programs appearing to produce much higher levels of achievement than traditional classroom instruction and others much lower levels of achievement. However, differences in achievement could not be attributed to specific course factors, such as instructor preparation and experience, length of the program, or pacing of instruction. The researchers concluded that the effectiveness of online learning was more closely related to the quality of the program, rather than the medium in which it was delivered.

Retention Rates

Research findings have confirmed that dropout rates tend to be higher in online courses than in traditional courses. Studies have found that the reasons students are most likely to drop out of online courses are related to either technological problems or feelings of isolation and disconnectedness (Bocchi et al., 2004; Santovec, 2004; Willging & Johnson, 2004; Frankola, 2001). Researchers have reported dropout rates at virtual schools ranging from 40-70 percent, although some established schools claim dropout rates of only 10-20 percent (Roblyer & Davis, 2008). One factor that accounts for these discrepancies is how and when dropout rates are calculated. For example, some virtual programs include in their dropout figures any student who signs up for a course but never completes it; other programs offer a penalty-free drop period of from two to five weeks and count only students who drop out after that period (Roblyer, 2006).

Student Satisfaction with Online Courses

Most studies have found that students in virtual classrooms report similar or slightly lower levels of satisfaction with their courses than students in traditional classrooms. Two studies that examined students' levels of satisfaction with their online courses are summarized below.

- Bernard and associates (2004) conducted a meta-analysis of 232 studies that compared student attitudes in K-12 and postsecondary virtual classes with the attitudes of students attending traditional classes. They found that students enrolled in traditional courses tended to have more positive attitudes than those enrolled in online courses. However, the wide variability in attitude outcomes among programs led the researchers to conclude that attitudes may depend more on the specific program in which the student is enrolled, rather than the format in which the course is taught.

- Karp and Woods' (2003) study of students enrolled at the Idaho Virtual Campus included two sets of focus group interviews with online students. Interview responses revealed that the major perceived benefit of online courses was that students were able to learn at their own pace and review materials whenever they wanted. Visual learners preferred virtual learning, but those who liked to work in groups or learn by listening reported that the virtual learning format became boring or made it hard to remember content. Commonly perceived difficulties associated with online courses included learning to use the system and the organization and design of the modules. In addition, students did not feel they could ask their teachers questions when they needed information. Many students stated they would prefer a combination of online and face-to-face learning, rather than the exclusive use of only one format.

Cost Effectiveness

Studies on the cost effectiveness of virtual schools are limited. Although some research has concluded that virtual schools can educate students at a lower cost than traditional brick-and-mortar schools, more studies are needed before definitive cost determinations can be made. A brief summary of two studies that compared the costs associated with virtual schools and traditional schools is provided below.

- Florida Tax Watch (2007), an independent, nonpartisan, nonprofit research institute, concluded that the Florida Virtual School (FLVS) offered online instruction at a lower per student cost than traditional schools, stating that education through FLVS was a "bargain for Florida taxpayers." The 2006-07 total state and local funding per weighted FTE for Florida public schools was $6,291; the total state and local funding per weighted FTE for FLVS students was $5,243, translating into $1,048 (17 percent) less per FLVS student. Other

costs further increased the cost of traditional schools relative to FLVS. For example, in 2006-07, over $242 million was spent on new school construction and almost $483 million was spent on student transportation for Florida school districts, but none of that money was spent directly on FLVS.

- A cost study on virtual schooling, commissioned by the BellSouth Foundation, found that "the costs of operating a virtual school are about the same as those of a regular brick-and-mortar school." The study estimated the average startup costs for an online school at $1.6 million. Although virtual schools do not incur building and transportation costs, quality teachers remain essential for personalized instruction. While a traditional school typically spends 70-80 percent of its budget on personnel, a virtual school's expenditures in this area may be even higher, given the costs, in addition to teacher salaries, of personnel needed for online course development and technological support. Virtual schools must also pay for learning management software and other technology costs, mobile phones or long distance service for teachers to contact students and parents, and technical training for staff. However, the BellSouth study found that, over time, there may be the potential for significant cost efficiencies in virtual schools. As opposed to physical schools, one virtual school can serve tens of thousands of students. Virtual schools can copy and re-use course materials and per student hardware and software costs tend to decline with scale. The study concluded that the true costs of high quality virtual schooling and potential economies of scale are not yet clear (Tucker, 2007).

Research Summary

In general, research has demonstrated that virtual learning is as effective as traditional classroom learning and in some cases, even more effective. However, there are wide variations in the quality of K-12 virtual programs. Differences in the design and delivery of distance learning courses may explain much of the variance in student performance. Therefore, the effectiveness of online learning appears to be more a function of the quality of the program than the medium through which it is delivered (Roblyer & Davis, 2008; Tucker, 2007; Cavanaugh et al., 2004).

Studies have confirmed that online courses tend to have lower rates of retention than traditional courses. Most studies have also found that students in virtual classrooms report similar or slightly lower levels of satisfaction with their courses, compared to students in traditional classrooms. Although some research has concluded that virtual schools can educate students at a lower cost than traditional brick-and-mortar schools, more studies are needed before definitive cost determinations can be made.

Researchers have identified several barriers that limit the conclusions that can be drawn from the existing empirical literature:

- Studies have not specified which types of programs, circumstances, and supports are needed for student success (Tucker, 2007). Greenway and Vanourek (2006) stated: "The question about the comparative effectiveness of virtual schooling may be too blunt. We should ask which *types* of virtual schools work, under what *conditions,* with which *students,* which *teachers,* and with what *training.*"

- Basic statistics on student performance and course enrollments in virtual schools are difficult to obtain. In many cases, the virtual school is not the school of record and does not have access to their students' files (Tucker, 2007; Smith et al., 2005).

- Most virtual schools don't have mandated statewide assessments that can be used to study the academic progress of online students. In most studies, student achievement in online courses is therefore assessed by course grades or end-of-course tests, which usually don't have the same level of reliability or validity as standardized assessments (Watson et al., 2008; Smith et al., 2005).

- Virtual schooling is never completely random, as students self-select or are enrolled by parents or school personnel. In addition, the many different reasons why students enroll in virtual courses (from advanced coursework to credit recovery) often lead to wide variations in student outcomes (Dickson, 2005; Smith et

al., 2005).

- A significant number of online schools serve students who are underachieving. When the achievement outcomes of virtual schools serving at-risk or remedial students are compared to state or national averages, they are often identified as failing to achieve educational success. Even when these schools raise students' test scores, they may still lag behind state or national averages (Watson, 2008; Roblyer, 2006).

Strategies for Increasing the Effectivenes of Online Learning Programs

Researchers have identified the following strategies to increase the effectiveness of online learning programs:

- **Design effective pedagogical approaches.** The design and delivery of the instruction provided to distance learners is probably the most significant determinant of learning outcomes (Smith et al., 2005; Thomas, 2003; Simonson, 2002). Simonson (2002) stated that "well-designed and developed instructional experiences are required in order for the distance instruction to be successful. In other words, it is not the fact that instruction is delivered in a traditional face-to-face environment or at a distance that predicts learning."

- **Identify students who are most likely to succeed in the online environment.** Virtual schools serve a more bimodal range of students than traditional schools, attracting large proportions of students who are academically advanced as well as students who have not been successful in traditional courses. Studies have identified a variety of student characteristics that contribute to success in online courses, but no one set of characteristics has emerged as dominant and no studies have identified a way to accurately predict which students will succeed in online courses (Roblyer & Davis, 2008; International Association for K-12 Online Learning, 2007a).

- **Prepare students for the online course experience.** Many students who register for online courses mistakenly believe they will be easier and faster than traditional courses. Effective virtual programs anticipate these misconceptions by letting students know exactly what to expect before they begin an online course. Some virtual programs offer no-credit orientation sessions to prepare students for online courses. Other programs have an extended drop period of as long as five weeks that takes the place of an online orientation (Roblyer & Davis, 2008; Roblyer, 2006; Smith et al., 2005).

- **Determine how learning activities will be paced.** Online courses can pace learning activities according to an academic calendar or according to students' needs (Cavanaugh, 2008; Patrick, 2008; Wilhoit & Schlosser, 2008; Tucker, 2007; National Forum on Education Statistics, 2006; Hassel & Terrell, 2004).

- **Encourage student-teacher interaction.** The most unique feature of online instruction is that teachers and students rarely, if ever, see each other. Yet, communication with and feedback from instructors has been identified as a valuable part of the online course experience (Cavanaugh, 2008; International Association for K-12 Online Learning, 2007a; Kleiman et al., 2005; Cavanaugh et al., 2004; Thomas, 2003).

- **Provide students with adequate technical support.** High quality virtual programs provide all students with technical assistance and ensure that students have the resources needed to access all online programs and services (Roblyer, 2006; Weiner, 2003; Simonson, 2002).

- **Provide teachers with professional development.** Online teachers need strategies to promote student success in their online courses (Roblyer 2006; Smith et al., 2005; Thomas, 2003).

- **Select high quality teachers.** Districts and schools must ensure that every virtual course is taught by a high quality teacher (Cavanaugh, 2008; International Association for K-12 Online Learning, 2007b; Smith et al., 2005; Thomas, 2003).

On a Local Note

In July 2008, the Florida Legislature passed a law requiring each individual Florida school district to provide virtual learning programs "to make online and distance learning instruction available to full-time virtual students in grades kindergarten through grade 8 by 2009-2010." The School District Virtual Instructional Program (K-8) will be funded based on successful completion of courses (as determined by promotion to a higher grade for K-8 students and credit completions for grades 9-12 students). The new state law offers school districts the choice of setting up their own programs or contracting out with the Florida Virtual School, the Florida Virtual Academy, the Florida Connections Academy, or other approved private online providers (Florida Department of Education, 2008; Watson et al. 2008).

Districts are currently required to provide Florida Virtual School as an option to middle and high school students, but will now be required to offer their own online courses to students in grades 9-12 in certain areas, including Department of Juvenile Justice programs, dropout prevention programs, and career and vocational programs. Districts are required to offer these programs beginning in the 2009-10 school year (Florida Department of Education, 2008; Watson et al., 2008).

Florida has the largest supplemental online program in the United States. Online programs offered in Florida include:

The **Florida Virtual School** (FLVS) is a supplemental online program serving public, private, and home-schooled students throughout Florida and around the world. FLVS enrolls students in grades 6-12 and is currently in the process of developing curricula to serve K-5 students. Opened in 1997, FLVS is now the largest K-12 online learning program in the country, having served 71,000 students in 213,540 half-credit enrollments in 2007-08 (including summer 2007 and summer 2008). FLVS offers more than 90 courses. The school serves a wide spectrum of students, from struggling learners to academically advanced students. FLVS students who are recovering credit are not segregated into special class sections and in many cases, instructors are not aware the students are enrolled in the course

for credit recovery. Courses begin at different times of the year, with students setting their own pace as they proceed through the course. Florida-certified instructors guide the lessons, assess student work, and provide constructive feedback. The school operates as an independent school district and serves the entire state. It is funded through public FTE dollars, with full funding contingent upon student success. There is no charge to Florida students for FLVS courses (Christensen & Horn, 2008; Florida Department of Education, 2008; Florida Virtual School, 2008; Watson et al., 2008).

FLVS partners with eight school districts that operate their own FLVS-franchised virtual schools, including Miami-Dade and Broward. The online curriculum at each of the franchised schools is delivered by local school district instructors. Individual districts retain FTE funding for the students. Other counties with FLVS franchises are Hillsborough, Marion, Okaloosa, Palm Beach, Polk, and St. John's (Florida Virtual School, 2008; Watson et al., 2008). The Miami-Dade Virtual School is discussed in greater detail below.

Florida's K-8 Virtual School Pilot Program consists of two full-time schools: Florida Virtual Academy and Florida Connections Academy. The schools have operated since 2003 when the Florida Legislature first funded the K-8 Virtual School Pilot Program. Both schools are run by private companies. Students study at home under the supervision of their parents but have access to the schools' curriculum and certified teachers. During the 2007-08 school year, each school was funded for and enrolled 940 students. The program is provided free of charge to students who are Florida residents. Students are required to take the FCAT and both schools received a performance grade of "A" for the 2007-08 school year. In July 2008, the Florida Legislature passed a new law requiring individual school districts to provide virtual learning programs to students in K-8 by the 2009-10 school year. Therefore, during the 2008-09 school year, only returning students were funded for the state-level K-8 Virtual School Pilot Program (Florida Department of Education, 2008; Watson et al., 2008).

Volusia County Schools has operated an online credit recovery program since 1992 to support at-risk students across the district. The initial targets

of the program were students who had dropped out of school, but today the programs supports all nine high schools and alternative education sites in the district. The online program uses its own teachers who work with students on a one-on-one basis to create individualized learning plans, provide tutoring and coaching, and track their academic progress. The program is expanding to give students such as single mothers the opportunity to complete assignments from home. The district uses a commercially produced curriculum (Apex Learning) for most of the program's courses, but utilizes other content as well and reviews the program regularly, changing providers when staff feel it is necessary (Trotter, 2008; Watson & Gemin, 2008).

Miami-Dade Virtual School (M-DVS) began operation in 2003 as a franchise of the Florida Virtual School. The school currently serves approximately 675 students in grades 9-12. Students are enrolled in approximately 750 half-credit courses. Courses are offered in language arts, mathematics, science, social studies, foreign language, health, and physical education. Students take courses for a variety of reasons, including credit recovery, acceleration, and scheduling conflicts. All courses are staffed by certified teachers. M-DVS is funded primarily by the Enhancing Education Through Technology grant and operated through the district's Office of Instructional Technology. Although courses were previously offered on a year-round basis, M-DVS will not be open during summer 2009 due to a lack of funding.

As part of its franchise agreement with the Florida Virtual School, M-DVS students are surveyed annually to gather information about the strengths and weaknesses of the program. The 2006-07 Virtual School Student Survey indicated that M-DVS students were very satisfied with their online experience. M-DVS clearly appears to be filling a need for students who require an alternative to traditional school courses. Eighty-four percent of students "strongly agreed" or "agreed" that they would recommend M-DVS to other students. Eighty-five percent of students felt the quality of their online course was "equal to" or "better than"

a traditional high school course. Results of the M-DVS Student Survey are available at http://www.flvs.net/educators/documents/franchise-evals/Miami Student 2007consensed.pdf.

Summary

Virtual schools have become one of the fastest growing trends in education, with states and school districts increasingly turning to online strategies as a way to introduce educational reforms. In the past, online schools primarily targeted advanced students who didn't have access to certain courses in their regular schools. Recently, however, more and more schools are using virtual classes to offer rapid remediation and credit recovery to students who have failed traditional courses.

Research has demonstrated that virtual learning is as effective as traditional classroom learning and in some cases, even more effective. However, wide variations in the quality of virtual programs have led many researchers to conclude that the effectiveness of online programs is more a function of the quality of their instructional design and delivery than the medium through which they are delivered. Studies have confirmed that, compared to traditional courses, online courses tend to have lower retention rates. Most studies have also found that students in virtual classrooms report similar or slightly lower levels of satisfaction with their courses than students in traditional courses. Although some research has concluded that virtual schools can educate students at a lower cost than traditional brick-and-mortar schools, more studies are needed before definitive cost determinations can be made.

Strategies designed to increase the effectiveness of online learning programs, such as determining how learning activities will be paced, encouraging student-teacher interaction, and providing students with adequate technical support, were summarized. A brief description of online programs offered within the state of Florida, including the Miami-Dade Virtual School, was provided in this report. Administration of surveys to Miami-Dade Virtual School students found high levels of satisfaction with their online course experiences.

References

Arnoldy, B. (2008). Virtual Schools See Strong Growth, Calls for More Oversight. *Christian Science Monitor*, May 14, 2008.

Bernard, R.M., Abrami, P.C., Lou, Y., Borokhovski, E., Wade, A., Wozney, L., et al. (2004). *How Does Distance Education Compare to Classroom Instruction? A Meta-Analysis of the Empirical Literature.* Retrieved from http://doe.concordia.ca/cslp/Downloads/PDF/CanKnow/Bernard (2004) Full Text.pdf.

Bocchi, J., Eastman, J., & Swift, C. (2004). Retaining the Online Learner: Profile of Students in an Online MBA Program and Implications for Teaching Them. *Journal of Education for Business, 79*(4), 245-253.

Bonner, J. (2008). Online School Targets Hispanics, At-Risk. *Casper Star-Tribune*, May 22, 2008.

Cavanaugh, C. (2008). Real Learning Happens in Virtual Schools. *Cable in the Classroom Online,* Fall 2008, 10-14.

Cavanaugh, C., Gillan, K.J., Kromrey, J., Hess, M., & Blomeyer, R. (2004). *The Effects of Distance Education on K-12 Student Outcomes: A Meta-Analysis.* Retrieved from http://www.ncrel.org/tech/distance/k12distance.pdf.

Christensen, C.M., & Horn, M.B. (2008). How Do We Transform Our Schools? *Education Next, 8*(3). Retrieved from http://www.hoover.org/publications/ednext/18575969.html.

Dickson, W.P. (2005). *Toward a Deeper Understanding of Student Performance in Virtual High School Courses: Using Quantitative Analyses and Data Visualization to Inform Decision Making.* Retrieved from http://www.mivu.org/upload_1/NCREL1.pdf.

Florida Department of Education, Office of Independent Education and Parental Choice. (2008). Retrieved from http://www.floridaschoolchoice.org/Information/Virtual_Schools.

Florida Tax Watch. (2007). *Final Report: A Comprehensive Assessment of Florida Virtual School.* Retrieved from http://floridataxwatch.org/resources/pdf/110507FinalReportFLVS.pdf.

Florida Virtual School. (2008). Retrieved from http://www.flvs.net.

Frankola, K. (2001). Why Online Learners Drop Out. *Workforce, 80*(10), 53.

Greenway, R., & Vanourek, G. (2006). The Virtual Revolution. *Education Next, 6*(2). Retrieved from http://www.hoover.org/publications/ednext/3210506.html.

Hassel, B.C., & Terrell, M.G. (2004). How Can Virtual Schools Be a Vibrant Part of Meeting the Choice Provisions of the No Child Left Behind Act? *U.S. Department of Education Secretary's No Child Left Behind Leadership Summit - Increasing Options Through e-Learning.* Retrieved from http://www.doe.virginia.gov/VDOE/Instruction/title1/Hassel-Terrell-VirtualSchools.pdf.

International Association for K-12 Online Learning. (2007a). *Effectiveness of K-12 Online Learning.* Retrieved from http://inacol.org/resources/docs/VSresearch-summary.pdf.

International Association for K-12 Online Learning. (2007b). *National Standards for Quality Online Teaching.* Retrieved from http://inacol.org/resources/nationalstandards/NACOL_Standards Quality Online Teaching.pdf.

International Association for K-12 Online Learning. (2009). *Fast Facts About Online Learning.* Retrieved from http://www.inacol.org/press/docs/nacol_fast_facts.pdf.

Karp, G.G., & Woods, M.L. (2003). Wellness NutriFit Online Learning in Physical Education for High School Students. *The Journal of Interactive Online Learning, 2*(2). Retrieved from http://www.ncolr.org/jiol/issues/PDF/2.2.3.pdf.

Kleiman, G., Carey, R., Bonifaz, A., Haistead, E., & O'Dwyer, L. (2005). A Study of the Effectiveness of the Louisiana Algebra I Online Project. In R. Smith, T. Clark, & R.L. Blomeyer (Eds.), *A Synthesis of Research on K-12 Online Learning.* Naperville, IL: Learning Point Associates. Retrieved from http://www.ncrel.org/tech/synthesis/synthesis.pdf.

National Forum on Education Statistics. (2006). *Forum Guide to Elementary/Secondary Virtual Education.* Retrieved from http://nces.ed.gov/pubs2006/2006803.pdf.

Patrick, S. (2008). Future Issues in Online Learning. *Cable in the Classroom Online,* Fall, 28-32.

Picciano, A.G., & Seaman, J. (2009). *K-12 Online Learning: A 2008 Follow-Up of the Survey of U.S. School District Administrators.* Retrieved from http://www.sloanconsortium.org/publications/survey/pdf/k-12_online_learning_2008.pdf.

Roblyer, M.D. (2006). Virtually Successful: Defeating the Dropout Problem Through Online School Programs. *Phi Delta Kappan, 88*(1), 31-36.

Roblyer, M.D., & Davis, L.D. (2008). Predicting Success for Virtual School Students: Putting Research-Based Models into Practice. *Online Journal of Distance Learning Administration, 11*(4). Retrieved from http://www.westga.edu/~distance/ojdla/winter114/roblyer114.html.

Santovec, M. (2004). Virtual Learning Communities Lead to 80 Percent Retention at WGL. *Distance Education Report, 8*(8), 4.

Simonson, M. (2002). In Case You're Asked: The Effectiveness of Distance Education. *The Quarterly Review of Distance Education, 3*(4), 7-9.

Smith, R., Clark, T., & Blomeyer, R.L. (2005). *A Synthesis of New Research on K-12 Online Learning.* Naperville, IL: Learning Point Associates. Retrieved from http://www.ncrel.org/tech/synthesis/synthesis.pdf.

Thomas, W.R. (2003). *Essential Principles of High-Quality Online Teaching: Guidelines for Evaluating K-12 Online Teachers.* Retrieved from http://www.sreb.org/programs/EdTech/pubs/PDF/Essential_Principles.pdf.

Trotter, A. (2008). Online Options for 'Credit Recovery' Widen. *Education Week, 27*(38), 1, 12-13.

Tucker, B. (2007). *Laboratories of Reform: Virtual High Schools and Innovation in Public Education.* Retrieved from http://www.educationsector.org/usr_doc/Virtual_Schools.pdf.

Watson, J. (2008). Online Learning: The National Landscape. *Cable in the Classroom Online,* Fall, 4-9.

Watson, J., & Gemin, B. (2008). *Using Online Learning for At-Risk Students and Credit Recovery.* Retrieved from http://inacol.org/resources/promisingpractices/NACOL_CreditRecovery_ PromisingPractices.pdf.

Watson, J., Gemin, B., & Ryan, J. (2008). *Keeping Pace with K-12 Online Learning: A Review of State-Level Policy and Practice.* Retrieved from http://www.kpk12.com/downloads/KeepingPace_ 2008.pdf.

Weiner, C. (2003). Key Ingredients to Online Learning: Adolescent Students Study in Cyberspace - The Nature of the Study. *International Journal on E-Learning*, July-September, 44-50.

Wilhoit, G., & Schlosser, K. (2008). Leadership and Innovation. *Cable in the Classroom Online,* Fall, 24-26.

Willging, P., & Johnson, S. (2004). Factors that Influence Students' Decisions to Dropout of Online Courses. *Journal of Asynchronous Learning Networks, 8*(4), 23-31.

Wisconsin Virtual School. (2008). Retrieved from http://www.wisconsinvirtualschool.org.