

Real Learning Happens in Virtual Schools

Research proves that online learning works. Now attention is turning to evaluating the methods and means for continued growth and success.

BY CATHY CAVANAUGH, PH.D.

ONE MILLION STUDENTS ARE LEARNING ONLINE IN VIRTUAL SCHOOLS AROUND THE COUNTRY. THEY have chosen virtual schools for flexible schedules, individualized instruction, freedom to learn anywhere, and an immense catalog of courses. Does online learning work for K–12 students? We have many decades of results from offline, K–12 distance-learning programs on which to build. K–12 students have participated in distance education via correspondence courses and other distance technology for almost 100 years. However, Web-based virtual schools began in 1994 with Utah’s Electronic High School, the Virtual High School based in Massachusetts, and the Florida Virtual School. In the past decade, we have learned much from research and evaluation on K–12 online learning.

Virtual-school stakeholders seek assurances that students are meeting learning standards. Although the field is rapidly evolving, the relative infancy of virtual schooling means that many unanswered questions remain. Support for ongoing research has come from the U.S. Department of Education and the North American Council for Online Learning (NACOL), a non-profit organization focused on K–12 online learning. A growing number of researchers and established virtual schools are now devoting their efforts to research, evaluation, and dissemination of effective practices.

Online vs. Classroom-Based Learning

While no large-scale data has been published documenting the effectiveness of K–12 online learning, hundreds of studies of limited scope have informed the practice. Several researchers have synthesized the individual studies to arrive at a view that rates distance learning as equal to classroom instruction. Among the few to include K–12 data, Mickey Shachar and Yoram Neumann reviewed 86 studies of adult and pre-college learning in 2003 and found that distance education was slightly more effective than classroom instruction.

The first synthesis of studies that focused entirely on K–12 distance learning examined the results of 19 rigorous studies

completed between 1986 and 1997. These studies (“The Effectiveness of Interactive Distance Education Technologies in K–12 Learning: A Meta-Analysis”), published in 2001 by this author, examined distance-education programs that used e-mail and audio/video conferencing for teaching and learning. Overall, the distance and blended programs resulted in slightly higher student academic achievement than exclusively classroom-based programs. Outcomes were more positive for interactive distance-education programs that combined an individualized approach with traditional classroom instruction. Programs including instruction delivered through telecommunications, designed to enhance classroom learning and center on small groups of students, yielded larger effect sizes than programs using videoconferencing, fully distance instruction, and large groups of students. Distance-education programs for most academic content areas had positive learning effects.

The next K–12 distance-education synthesis (“The Effects of Distance Education on K–12 Student Outcomes: A Meta-Analysis”), in 2004, statistically combined the results of 14 studies completed between 1999 and 2004, all of which used the Web for learning. Again, the results indicated that online programs were at least as effective as the classroom programs in terms of student achievement. No specific factors were found

to influence differences in achievement, including academic content area, grade level, role of the instructor, length of the program, type of school, frequency of the distance-learning experience, pacing of instruction, instructor preparation and experience in distance education, or the setting of the students.

These comprehensive studies found—over almost 20 years of research—that online and other distance courses can be equally as effective as classroom-based courses for K–12 academic achievement when they are well-planned, well-taught, and matched to student needs.

Best Practices

The effectiveness of online learning appears to have more to do with the teachers, learners, and methods than with the medium. In recent years, program evaluations on the established virtual schools have identified a core group of successful online-teaching practices. The vanguard community of online teachers is well positioned to lead classroom teachers as they integrate blended approaches into their practice.

Online Teachers

In addition to being well qualified in content knowledge and pedagogical skill, online teachers must be qualified in methods of teaching the content online and have experience in online learning. Most U.S. virtual schools require new online teachers to have a number of years of successful classroom teaching experience. However, because many new teachers grew up communicating online, a few online schools have begun to hire new teachers without classroom experience beyond the internships required for achieving their teaching credentials.

Because university teacher-education programs and state teacher-certification procedures have been slow to include online teaching experiences and standards as part of mainstream teacher preparation, online schools assumed the full burden of preparing teachers to teach online. Many online schools crafted a boot-camp period of online orientation with mentors to scaffold online teaching skills in partnership with an experienced colleague. Online schools no longer need to shoulder the full responsibility of online-teacher preparation because state and teacher-education colleges have started their own programs. Two states have online-teaching endorsements approved or in development, and several university teacher education programs offer online teaching internship experiences.

Any teacher-preparation or professional-development program for online teachers should balance its emphases among content knowledge, online teaching for the content area, and technology skills. Teacher development in important online teaching skills—including student-centered teaching, collaboration, problem-based and inquiry learning, group work and discussion, and authentic assessment—has contributed to improved academic performance and increased time engaged in

A Developmental Continuum of Online-Teacher Development			
Preservice	Induction	Early career	Master/leader
Technical skills	Co-teaching online	Teaching online courses	Mentoring online teachers
Experience as an online learner	Adapting online materials	Creating online materials	Designing online courses and revising and/or designing curricula
Shadowing an online teacher	Skill development	Assisting in planning and delivery of professional development	Delivering professional development
Viewing online courses, standards, and curricula	Maintaining currency in the field through professional publications and organizations	Contributing to professional publications or organizations	Leading in professional publications or organizations

Adapted from "Professional Development for Virtual Schooling and Online Learning" (Davis & Rose, 2007).

academic activities. Successful online teachers also use well-developed organizational skills and routines, have a recognizable online personality, and create a welcoming environment.

In response to the need for an online-teaching career ladder, NACOL's research committee developed the continuum shown in the table above as a guide for schools and teachers.

Online Students

Students take online courses in a wide range of settings: home, neighborhood school or school operated by the online-course provider, public library, community center, or while traveling. Online learning began with high school courses, and most of today's online learners are high school students who can learn independently. However, more middle and elementary school students are learning online. In addition, online schools are serving students who need credit recovery, have not had success in their previous schools, or have individualized educational plans.

For these reasons, knowledge about the characteristics of successful online learners has helped schools tailor their programs. Students who arrive in a virtual school with motivation and self-direction as well as the prerequisite academic background have the foundation for success. The online schools that recognize the importance of motivation have created course-design principles around attention, relevance, confidence, and satisfaction. Online schools also have become more explicit about their expectations for support staff and parents, who are pivotal to student success. Most online schools identify a parent, online tutor/mentor, or site facilitator working at the location where the student accesses the course to provide the first line of assistance to students.

A Brief Look at the Research

by Saul Rockman

As good as or better than. That's the short version of a review of the research on online learning and virtual schools.

While it is a relatively new line of research, there are many studies on the academic, attitudinal, and behavioral effects of online learning. Most common are descriptive studies of the accomplishments of participating students, often in comparison to students taking the same course in a traditional setting. Outcomes usually consist of subject-matter tests administered by the state, or other standardized assessments required of all students taking a course, such as Advanced Placement (AP) tests.

Few of these studies are designed to be as rigorous as federal policy prefers, but they do provide substantive information for further developing or fine-tuning virtual courses. They also offer a preponderance of relatively consistent findings about how students are doing: Students in virtual classrooms, they show, do as well as or better than students who receive the same course in a face-to-face classroom. Students also tend to like the virtual classes better than traditional instruction, and those who may not thrive in a traditional classroom seem to be engaged in doing the work in a virtual environment.

These findings are reassuring, but they don't put online programs in the category of a silver bullet. Like many other educational interventions, online programs and virtual schools are often seen as a total solution to wide-ranging deficits in U.S. education. Although online instruction does provide a useful element in successful learning, it is not the total solution for all students, nor is it a useful intervention for many. It may, however, provide the best possible outcomes—for some students, or for some students at some times. As in face-to-face settings, the more highly motivated students do well, and many of those who do not succeed in traditional schools find the wherewithal to succeed in online programs.

My firm, Rockman et al, found that middle school students taking an online, hybrid, first-year Spanish course perform as well as students in face-to-face courses. The West Virginia project sought to provide rigorous middle school programs equally to isolated rural schools and urban schools. On some assessed areas, one group's outcomes are significantly higher; in another, significantly lower—but the overall conclusion is that virtual Spanish was as good as traditional. The real policy outcome is that students in rural, isolated schools who would not otherwise have access to the course taught by a certified teacher can now receive it and do as well as those in traditional classes.

From my perspective, the most positive evidence of the value of virtual instruction comes from high school Spanish II teachers who note that the students who had taken the middle school virtual course were some of the best in the class. They not only had better study skills and greater facility with computers than older students who had taken the beginning Spanish course in high school, but they also were most enthusiastic about learning a foreign language.

In Florida, an independent study by Florida TaxWatch, a private research institute, found that students taking online courses earned higher grades than students in equivalent courses in traditional settings. They also noted that the more time the students spent on the online course, the higher the grade. Florida Virtual School students also outperformed traditional students on the state tests in math and reading.

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Online Interaction

At the heart of technology-mediated teaching and learning are the interactions that happen within an online course. While the majority of learning materials are composed of static digital resources, instructions, and assessments, the learning experience is more enjoyable and effective when dynamic interpersonal interactions form a significant portion of the course. Just as in the classroom, online learning is enhanced when teachers are actively involved in the learning process. Frequent communication, feedback, and scheduled tutoring or skill checks benefit student learning and contribute to the structure and communication that most K–12 learners need in the absence of meeting face-to-face at established times.

Even within course activities, consistency and structure help students understand what is expected of them. For example, a uniform method for online discussions will help students plan their participation and allocate time to prepare for the discussion. Both students' and teacher's roles in online discussions should be defined and understood. Discussions that are designed with open-ended questions lead to higher-order thinking and deeper learning. Teacher responses that include specific feedback and extension questions tend to increase student participation by keeping the discussion going in new directions.

Online Content Learning

In an online course, students spend significant time working independently. Courses designed to require more time applying the course content through writing and speaking correspond to higher achievement, as do simulations, manipulatives, and tutorials that offer student feedback. Getting the most out of online-learning activities depends on a student's skill in locating and evaluating information, among other information literacy and information and communications technology skills. Teachers and course designers should expect that some students would need opportunities to develop these skills before applying them in the content they are learning. (For more information about

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Virtual High School

- Follow-up efforts focus on improving performance in relation to quality, growth, and program goals.
- Data and improvement plans resulting from the school’s Quality Benchmark Indicators are key aspects of program evaluation.

Virtual-school leaders and evaluation consultants recommend that informative and actionable evaluation knowledge grows from continually monitoring a variety of data sources and a focus on performance. In the virtual-education world, an annual evaluation and program-improvement cycle may be too long. For improvements to happen, the evaluation data must

be coupled with a systemic commitment to rapid response.

Not only will research and evaluation insights from today’s online schools guide the next decade in online learning, but they also will guide classroom teachers and school leaders as they adopt blended-learning approaches for all K–12 learners. Virtual schools are serving online students while leading all students into next-generation education. ●●●

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