

# What Works in K-12 Online Learning

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## Core Values

- Implementing, managing and institutionalizing online learning in America's schools is essentially about pursuing educational improvement and school reform intended to improve student performance and potential.
- Online learning is essential to achieve:
  - Education Excellence
  - Efficiency
  - Equity
  - Choice

## Definitions

- K-12 Online Learning (OLL): “education in which instruction and content are delivered primarily via the Internet” (Watson, Winograd & Kalmon, 2004)
- Virtual School: “an educational organization that offers K-12 courses through Internet- or Web-based methods” (Clark, 2001)
- OLL is a type of distance education (DE), or formal study in which teacher and learners are separate in time or space.

## Growth of K-12 Online Learning

- Steady enrollment growth, from 40-50k in 2000-01 to 300k in 2002-03
- Considerable room for growth in K-12 -- 1.97 million OLL enrollments in higher education, 2002-03
- Better tracking is needed of enrollments, courses, programs

## K-12 Online Learning Growth Factors

- A tradition of distance/computer-based ed
- Emergence of the World Wide Web
- Computer and Internet access/use in schools
- Government policies/funding
- Networking among providers/consumers
- Public interest in K-12 OLL
- See *Keeping Pace with K-12 Online Learning*, 2004, 2005, 2006.

<http://sreb.org/programs/EdTech/onlinelearning/learningresearch.asp>

## Types of K-12 Online Learning Programs

- Programs may be classified in many ways
- By teaching methods, curriculum, organization
- Programs may be organized as
  - Statewide (20+ states, 2005)
  - Consortia (VHS, COSC, etc.)
  - University-based (MO, NE, IN, BYU, etc.)
  - Cyber charter (86 in 16 states, 2003-04)
  - Local district (100s, no. depends on defn)
  - Private provider (Keystone, AMDG, Apex, etc.)

## Implementation Progress

- U. S. Dept of Ed. National Ed Tech Plan (2005):  
“support e-learning and virtual schools”
  - Provide every student access to e-learning
  - Enable every teacher to participate in training
  - Explore creative ways to fund e-learning opportunities
  - Use e-learning options to meet NCLB
  - Develop e-learning quality measures and standards
- Progress is being made, but no national effort exists in the U. S. to collect information

## Global Reach of K-12 Online Learning

- Primarily a North American phenomenon, but potential for expansion
- Most nations currently focused on building SchoolNet activities, not K-12 OLL
- Nations with a history of K-12 DE, especially Commonwealth nations, may be next to adopt K-12 OLL on a large scale

## Trends in K-12 Online Learning

- Focus on engagement, retention
- Reduction in the text-based nature of courses
- Increase in multi-media, interactivity—which means that more courses are being professionally produced
- Addition of special coaches: reading/literacy coaches
- Addition of preparatory courses (pre-AP)

## Trends in K-12 Online Learning

- Virtual courses are adding virtual classroom components (discussion forums, chat) and integrating Web 2.0 applications (wiki, blog, Second Life)
- Site-based classrooms are using virtual resources built for online courses
- Site-based classrooms are adding virtual sessions (discussion forums)
- Virtual schools are offering courses to help site-based teachers use these resources

## Metrics for Measuring Success

- Metrics for online learning programs according to the universal values behind all school reform and improvement initiatives
  - Excellence:
    - Relevant 21<sup>st</sup> Century Skills
    - Highly qualified teacher in every classroom
    - Mastery funding model → 90% success rate in some schools!
  - Efficiency: Anytime, anyplace, any pace
  - Equity: Access to 21<sup>st</sup> Century Education for *all students*
  - Choice: Multiple learning paths

## Research in K-12 DL: How Much Can There Be?

- The first synthesis of studies of K-12 distance learning located 19 rigorous studies completed between 1986-1997, using email and audio/video conferencing for learning
- The next synthesis identified 14 studies completed between 1989 and 2004, using the web for learning
- Recently the pace of research has increased, with 8 studies released by Learning Point Associates, and others in progress

## What the research tells us

- About how online learning compares to classroom learning:
  - Overall, they are equally effective for academic achievement
  - They are different and equally complex, serving different populations using different strategies and methods
  - Now that the general effectiveness of online learning has been established, what have we learned by looking more deeply at what is happening there?

## What the research tells us

- About student achievement
  - Virtual schools provide a quality learning experience to a more "bimodal" range of students than do most traditional schools
  - Virtual schools have gotten much better recently at retaining students and increasing course completion rates
  - Teacher development in student-centered teaching, collaboration, problem-based learning, group work, and authentic assessment lead to improved performance

## What the research tells us

- About student achievement:
  - More communication, feedback, and student-teacher interaction have a positive effect
  - Simulations, manipulatives, and tutorials that offer student feedback increase performance

## What the research tells us

### About characteristics of successful students:

- They are motivated, independent, self-directed
- They enjoy technology, have strong language skills, and are visual learners
- They have consistent parent support and are involved in non-academic activities
- They have positive attitudes and are willing to ask for help
- Extroverted students should be encouraged to take interactive courses, while more introverted students succeed in self-paced courses

## What the research tells us

### About effective courses:

- Structure in courses and a meaningful curriculum are critical to student success.
- Components of structured courses are clear expectations, concrete deadlines with some flexibility, outlines of course requirements, time sheets, and study guides.
- A combination of flexibility, independence, and experience with online tools resulted in improved critical thinking, research, and computer skills.

## What the research tells us

### About effective instruction:

- Instructors must be qualified to teach the content online and experienced in online learning
- Courses should include student-student interaction facilitating metacognition and reflection
- Instruction should be differentiated, using content that can be repurposed
- Instructors need assistance with the constant updating and adapting of course materials
- Immediate tech support keeps momentum going
- Students need additional strategies in locating and evaluating information

## What the research tells us

- About administrative practices:
  - Students benefit from mentors, on-site support staff, counseling, and technical support
  - Ongoing use of student data should be analyzed and represented visually to illuminate relationships between activity in courses and student course grades

## What we still need to know

- A critical step in moving the field forward is consensus on the goals of K–12 online learning.
- If the primary goal is increasing educational equity and access to learning, then online courses judged as “as good as” classroom courses for large numbers of students will be sufficient.
- If the goal is to offer high-quality education using materials and practices that may not be possible in a classroom, then the desired outcomes will look very different from outcomes with no significant difference compared to traditional settings.

## What we still need to know

- Better understanding of the students so scaffolding can be adapted for “bimodal” student populations and to enable multiple pathways for students with different learning preferences.
- Predictive instruments, diagnosis, and prescription of services and scaffolds could enhance every student’s chance of success while increasing the efficiency of teachers
- Development of programs or course modules that foster the abilities known to result in success: self-discipline, motivation, responsibility, and organization

## What we still need to know

- Based on knowledge that online learning can strengthen K–12 students’ teamwork skill, problem-solving abilities, creativity, decision-making proficiency, and higher order thinking skills, virtual schools can design courses to highlight and evaluate these skills.
- By reporting success in these areas, virtual schools can distinguish themselves as vanguard institutions in education of citizens prepared for participation in a democracy.
- Long-term research in methods of promoting these skills online and tracking their effects will inform stakeholders and the public.

## What we still need to know

- Detailed study of the demands of the content areas will enable course designers to supplement auditory and performance-based courses with the appropriate media, synchronous tools, and offline materials.
- Such study should result in course design standards and job aids for designers that account for intended learning across domains.
- Definitions for highly qualified online teachers for higher education and professional development providers

## What we still need to know

- Research is also needed about the most effective interaction types, tools, and frequency for the learners and tasks in a course.
- Online courses seem to work best for well-defined knowledge domains and pose greater challenge for ill-defined learning and complex skills.
- Research is needed to develop tools in psychomotor subjects and abstract, complex subjects.

## What we still need to know

- Standards are needed for reporting outcomes of online learning programs.
- For the first time in education, immense amounts of detailed data are available in course management systems, but standards do not exist that allow data to be shared, synthesized, and analyzed.
- A common descriptive system and metrics should be created and refined to ensure that outcomes from online programs can be accurately compared and combined.
- Such a system would streamline processes such as developing cost-benefit rubrics to determine course sustainability, the feasibility of developing in-house courses as compared to purchasing courses, and the most effective and efficient student-teacher ratios.

## A recommendation for all education systems

### Assessment for data-driven effectiveness:

- Online assessment is one of the next generation “killer applications” that is waiting for us out there.
- When online assessment results are tied into elearning systems (LMS), the potential benefits become very significant.
- The results should be more effective use of class time and a system of education that isn't based on mass production, but is instead based on mass customization.

## Sources of research reports

- Cathy Cavanaugh's studies and books  
<http://www.unf.edu/~c.cavanaugh>
- SREB's resource list  
<http://sreb.org/programs/EdTech/onlinelearning/learningresearch.asp>
- Michigan State University distance learning research database  
<http://ott.educ.msu.edu/literature/>
- The new book, *What Works in K-12 Online Learning*, from ISTE (June 2007)
- The new *Handbook of Distance Education*, from Erlbaum (March 2007)