

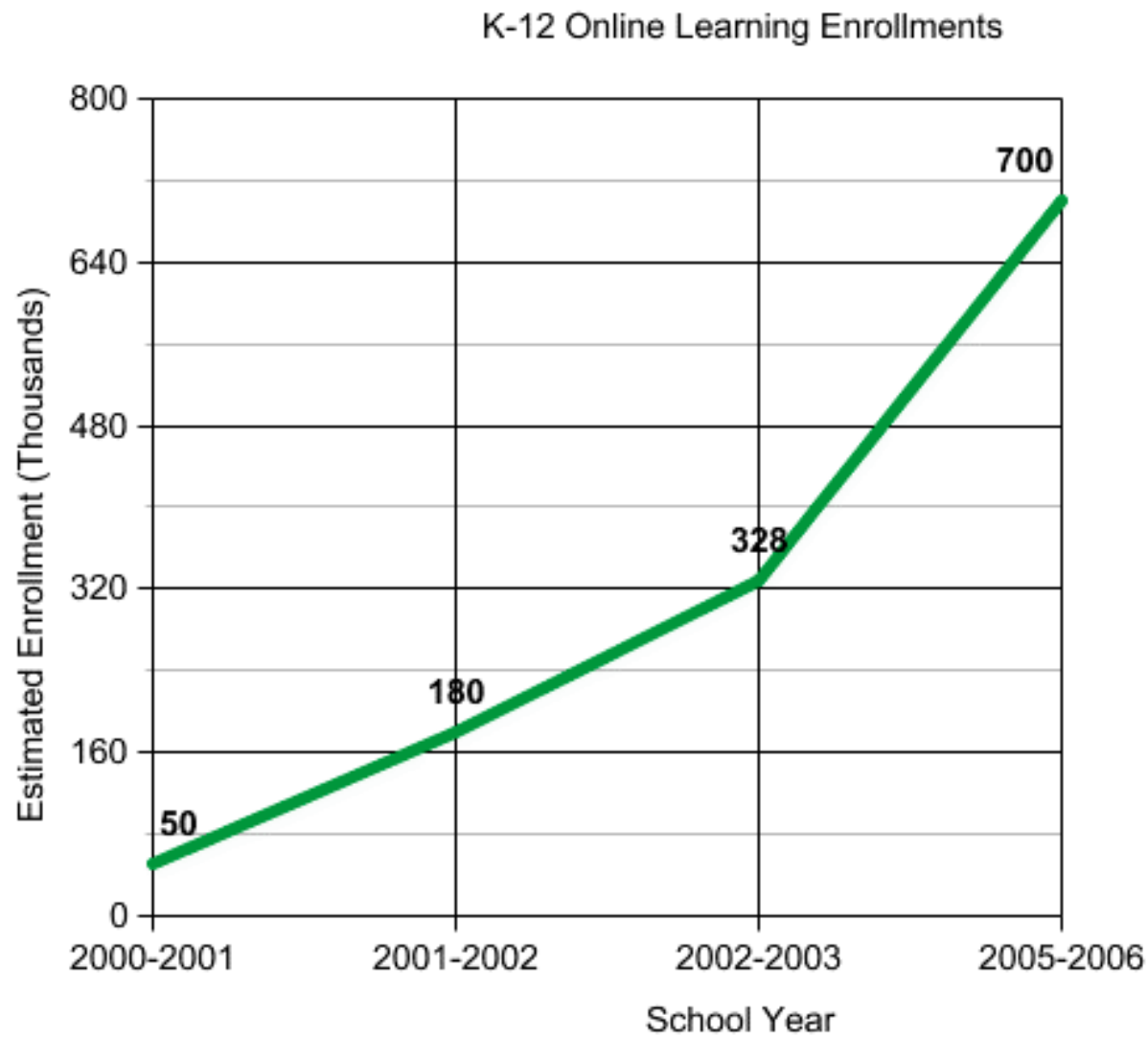


What the Research Has to Say About K-12 Online Learning

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The need for research



Clark; Peak Group; Setzer & Lewis; eMarketer

The need for research

- Course instructors, designers, and managers at the K-12 level need information from research and experienced practitioners about **best practices** and they need guidance about how to offer the most **effective courses for specific learners and specific content areas**.
- In contrast, policymakers and legislators need broader information related to the **overall effectiveness** of online learning.

What overall effectiveness research has been done?

- 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 (2001)
- The next synthesis identified 14 studies completed between 1989 and 2004, using the web for learning (2004)
- Eight studies were released in 2005 by Learning Point Associates and dissertations on virtual schooling steadily increase

What the research tells us

1. 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

**“...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.”
(Rice, 2006)**

What the research tells us

2. About student achievement

- Virtual schools provide a quality learning experience to amore “bimodal” range of students than do most traditional schools
- Virtual schools have improved in recent years at retaining students and increasing course completion rates
- Teacher development in student-centered teaching, collaboration, problem-based learning, group work, and authentic assessment contribute to improved academic performance

What the research tells us

2. About student achievement:

- More communication, feedback, and student-teacher interaction have a positive effect
- Simulations, manipulatives, and tutorials that offer student feedback increase performance
- Higher levels of student engagement and sense of community are correlated with higher academic performance in language courses
- More time practicing the course content (writing, speaking, listening, reading) correspond to higher achievement!

What the research tells us

3. 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

3. About characteristics of successful students:

- Students preferring active experimentation and concrete experience tend to have more difficulty with virtual reality, for example, than students preferring abstract conceptualization and reflective observation
- For both learning styles, learning increased with the use of guided exploration in a virtual reality setting

What the research tells us

4. 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.

What the research tells us

4. About effective courses:

- A combination of flexibility, independence, and experience with online tools resulted in improved critical thinking, research, and computer skills.
- Opportunity for rich interactive collaboration among students and teachers help student learning
- Students reportedly felt frustration and isolation when interaction was limited

What the research tells us

5. 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

What the research tells us

5. About effective instruction:

- Students need additional strategies in locating and evaluating information
- Learning is enhanced when instructors are actively involved in the learning process, by guiding students through lessons, clarifying instructions, offering feedback and asking questions
- Successful online teachers have well-developed organization skills and routines
- Effective online teachers develop a social presence and a welcoming environment

What the research tells us

6. 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
- Students thrive when they have educational support, time, and continual access to well-functioning technology

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

Study of the balance of face-to-face and online learning that best serve different students learning different content

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.

Sources of research reports

Cathy Cavanaugh's studies, books, and reference list

<http://www.unf.edu/~c.cavanaugh>

<http://drscavanaugh.org/distlearn/index.htm>

The new book, What Works in K-12 Online Learning, from ISTE

The new Handbook of Distance Education, from Erlbaum