
Thank you for your request to our REL Reference Desk regarding research on the effectiveness of reading intervention programs for elementary school students in a virtual school environment. Ask A REL is a collaborative reference desk service provided by the ten regional educational laboratories (REL) that, by design, functions much in the same way as a technical reference library. It provides references, referrals, and brief responses in the form of citations on research based education questions.

The information below represents the most rigorous research available. Researchers consider the type of methodology and give priority to research reports that employ well described and thorough methods. The resources were also selected based on the date of the publication with a preference for research from the last ten years. Additional criteria for inclusion include the source and funder of the resource.

Question: *What research is available on the effectiveness of reading intervention programs for elementary students delivered in a virtual school context?*

Key words and search strings used in the search: *elementary school AND reading AND virtual school; Grade K-5 AND reading; online learning AND reading interventions, virtual school OR online learning AND reading; blended learning*

Search databases and websites:

1. ERIC: <http://www.eric.ed.gov/>
2. JSTOR: <http://www.jstor.org/action/showAdvancedSearch>
3. Google Scholar: www.google.com/scholar
4. Institute of Education Sciences (IES) Resources: <http://ies.ed.gov/pubsearch/>
5. What Works Clearinghouse: <http://ies.ed.gov/ncee/wwc/>

Citations Retrieved: (NOTE: Abstracts and executive summaries are copied directly from the reports when possible to ensure accuracy):

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*. (2009-May). Washington, DC: U.S. Department of Education, Office of Planning, Evaluation and Policy Development, SRI International. Retrieved from <http://files.eric.ed.gov/fulltext/ED505824.pdf>

Abstract/Summary: A systematic search of the research literature from 1996 through July 2008 identified more than a thousand empirical studies of online learning. Analysts screened these studies to find those that (a) contrasted an online to a face-to-face condition, (b) measured student learning outcomes, (c) used a rigorous research design, and (d) provided adequate information to calculate an effect size. As a result of this screening, 51 independent effects were identified that

could be subjected to meta-analysis. The meta-analysis found that, on average, students in online learning conditions performed better than those receiving face-to-face instruction. The difference between student outcomes for online and face-to-face classes--measured as the difference between treatment and control means, divided by the pooled standard deviation--was larger in those studies contrasting conditions that blended elements of online and face-to-face instruction with conditions taught entirely face-to-face. Analysts noted that these blended conditions often included additional learning time and instructional elements not received by students in control conditions. This finding suggests that the positive effects associated with blended learning should not be attributed to the media, per se. An unexpected finding was the small number of rigorous published studies contrasting online and face-to-face learning conditions for K-12 students. In light of this small corpus, caution is required in generalizing to the K-12 population because the results are derived for the most part from studies in other settings (e.g., medical training, higher education). One appendix is included: (1) Meta-Analysis Methodology. (Contains 14 exhibits and 22 footnotes.)

Ortlieb, E., Sargent, S., Moreland, M. (2014). Evaluating the Efficacy of Using a Digital Reading Environment to Improve Reading Comprehension within a Reading Clinic. *Reading Psychology*, 35(5), 397-421. doi:10.1080/02702711.2012.683236

Abstract/Summary: This study examined the effectiveness of using the online digital reading environment to increase elementary students' comprehension within a reading clinic. Preservice teachers at a four-year university in the Midwest worked one-on-one with 58 fourth-grade students from three schools who were assigned to one of three conditions: print-based text instruction, hybrid instruction consisting of equal time with print and online digital reading environment, and digital-based text instruction. Students participated in 12 tutoring sessions lasting 75 minutes each, consisting of instructional activities targeting their areas in need of improvement. Multiple pre-and post-intervention measures of reading comprehension were collected. One-way analysis of variance results indicated that after controlling for initial reading achievement, there was a main effect for condition on comprehension.

Rosen, Y., Beck-Hill, D. (2012). Intertwining Digital Content and a One-to-One Laptop Environment in Teaching and Learning: Lessons from the Time to Know Program. *Journal of Research on Technology in Education*, 44(3), 225-241. Retrieved from <http://files.eric.ed.gov/fulltext/EJ976467.pdf>.

Abstract/Summary: This study provides a comprehensive look at a constructivist one-to-one computing program's effects on teaching and learning practices as well as student learning achievements. The study participants were 476 fourth and fifth grade students and their teachers from four elementary schools from a school district in the Dallas, Texas, area. Findings indicated consistent and highly positive findings of the efficacy of a constructivist one-to-one computing program in terms of student math and reading achievement, differentiation in teaching and

learning, higher student attendance, and decreased disciplinary actions, suggesting a range of possible educational benefits that can be achieved through a comprehensive one-to-one computing educational environment.

Referrals

Organizations:

- **Center for Online Learning, Research and Service:** <http://www.uis.edu/colrs/research/>
- **Center for Online Innovation in Learning:** <http://www.coil.psu.edu>

Federally Funded Resources:

- Institute of Education Sciences (IES), public search engine available at: <http://ies.ed.gov/pubsearch/>
- What Works Clearinghouse: <http://ies.ed.gov/ncee/wwc/>
- Center on Innovations in Learning: <http://www.centeril.org>

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