

Digital Curricular Materials and Devices: Evidence of Success

Impact Data on Student Achievement and Teacher Effectiveness

- The results of the 2011 National Assessment of Educational Progress (NAEP) for writing showed that students whose teachers asked them to use computers to draft and revise their writing before 5-19 points higher on the assessment. The more frequently students were asked to use computers, the higher the student scored.
- Of the eighth and twelfth grade students who scored above the 75th percentile on the NAEP writing assessment, 99 percent reported having access to a computer at home.
- According to a 2013 survey of Advanced Placement and National Writing Project teachers, conducted by PEW Research Center, found that 84 percent use the internet at least weekly to find content that will engage students and 92 percent say the internet has a major impact on their ability to access content, resources, and materials for their teaching.

Results From Other Places: Maine¹

In 2002, the state of Maine began implementation of a statewide 1:1 laptop initiative for all middle school students and teachers. The initiative expanded in 2007, to include high school teachers and again in 2009 to include high school students. A 2009 study from the Center for Education Policy, Applied Research and Evaluation found that:

- Nearly 80 percent of teachers agreed (strongly or somewhat) that their students were better able to study real-life issues/problems using laptops than they would without them.
- Nearly 70 percent of teachers claimed the quality of their students' work increases when they use laptops.
- Writing scores improved approximately 1/3 of a standard deviation on the state assessments after introduction of the laptops.
- Twice as many students who used the laptops in the writing program met state proficiency standards as those who used the laptops only as a finishing tool.
- For math teachers – teacher knowledge significantly improved and students in the experimental group classroom scored significantly higher on the state math assessment.

A 2004 report from the Maine Education Policy Research Institute found that:

- Over 70% of the teachers surveyed reported that the laptops helped them to more effectively meet their curriculum goals, and individualize their curriculum to meet particular student needs.
- Over 75% of the teachers reported that having the laptops helped them better meet Maine's statewide learning standards, the Learning Results.
- More than 4 out of 5 teachers surveyed reported that students are more engaged in their learning, more actively involved in their own learning, and produce better quality work.
- More than 70% of the students surveyed reported that the laptops helped them to be better organized, to get their work done more quickly, and with better quality.
- Teachers reported that all types of students are more engaged in their learning and more motivated to learn, particularly at-risk and special needs children.
- A sample of ninth grade students who no longer have laptops reported that they get less work done without the laptops, and the quality of their work has declined without the laptops.

Results From Other Places: Mooresville Graded School District, North Carolina

In 2007, the Mooreseville Graded School District began implementation of a digital conversion initiative. The initiative focused on a shift from print to digital curricular materials and a 1:1 internet accessible device for every student and teacher. Since 2007, the district's graduation rate has increased 25 percent, making them the third-highest cohort rate in the state. The district also realized improvements in student

¹ http://maine.gov/mlti/resources/MLTI_March_09.pdf

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achievement; moving from the bottom quarter of all districts to the third highest performing district in the state.²

Results From Other Places: Floydada School District, Texas³

In 2004, Floydada implemented a 1:1 Technology Immersion Pilot project that gave laptops to all middle school students and teachers. The district has since expanded to include elementary and high school students. Floydada is a rural district with rough 86 percent free and reduced price lunch students. Results include:

- A 50 percent reduction in middle school discipline referrals.
- Double digit gains in all core subject areas on the state assessments.
- Increased opportunities to enrich learning through projects with NASA engineers, access to online college courses, and interaction with people and experiences outside of the district.
- In school year 2010-2011, seniors earned 450 college credits, saving their families \$65,000 in tuition fees.

Additional Information

“Florida, Maine, Michigan, North Carolina, Pennsylvania, Texas, and Virginia found generally positive relationships between 1:1 environments and various aspects of the teaching and learning process. They reported that teachers used the laptops to develop instructional materials, access information related to instruction, and communicate with colleagues; students used laptops to complete classroom assignments and conduct research. Since the implementation of the initiatives, in many implementing locales there has been a shift from teacher-centered to student-centered instructional practices in the classroom, with teachers facilitating more and presenting less, and many students becoming more self-directed learners. Students have shown an increase in engagement and motivation after the implementation of several of the 1:1 initiatives. Some but not all of the evaluations also have found an association between laptop use and increased student achievement in several academic areas. Evaluators also report that laptops have facilitated the development of 21st century skills (e g , digital literacy, creativity and innovation skills, critical thinking and problem solving skills, communication and collaboration, and self directed learning) among students.”⁴

Since 2009, West Virginia requires that publishers include an interactive version of all print-based text.⁵

“Henrico County, Virginia began a one-to-one laptop initiative in 2001. Eighty percent of district schools were fully state accredited at the start of the program. By spring 2003, every regular school in the district was fully accredited. The district attributes the 100 percent accreditation to the one to-one initiative. Unanticipated results were teacher enthusiasm, retention and recruitment and increased parent involvement and technology literacy.”⁶

² <http://www.all4ed.org/files/DigitalLearningImperative.pdf>

³ Ibid

⁴ https://www.fi.ncsu.edu/assets/podcast_episodes/white-paper-series/laptop-initiatives-summary-of-research-across-six-states.pdf

⁵ <http://www.ecs.org/clearinghouse/81/98/8198.pdf>

⁶ Ibid