



Current 1:1 Research on Teaching and Learning

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My Background

- I:1 Laptop Program Administrator and Teacher at Two Laptop Schools
 - Ronald C. Wornick Jewish Day School
 - Saint Andrew's Episcopal School
- Head of Learning Resources at GESS
- Ed.D. in Educational Leadership
 - *Impactful Student Learning Outcomes of One-to-one Student Laptop Programs in Low Socioeconomic Schools*

Laptop Learning Series

- *Current 1:1 Research on Teaching and Learning*
 - 9:45 – 10:45 T204
- *Get the Biggest Learning Bang for Your Buck*
 - 1:15– 2:15 T205
- *The Impact of 1:1 on the Educational Digital Divide*
 - 2:30 – 3:30 T205

Why?

- Why have you implemented (or plan to implement) a one-to-one student laptop program?
- Are you satisfied with these answers?

Research on Teaching and Learning

- Effects on Teachers
- Changes to the Classroom Environment
- Impacts on Student Learning



EFFECTS ON TEACHERS

Effects on Teachers

- Helping Teachers Progress through the Evolutionary Process
 - Professional Development
 - Collaboration
 - Teacher Involvement
- **Key Literature**
 - Dwyer, D. C., Ringstaff, C., & Sandholtz, J. H. (1991). Changes in teachers' beliefs and practices in technology-rich classrooms. *Educational Leadership*, 48(8), 45-52.
 - Windschitl, M., & Sahl, K. (2002). Tracing teachers' use of technology in a laptop computer school: The interplay of teacher beliefs, social dynamics, and institutional culture. *American Educational Research Journal*, 39(1), 165-205.

Effects on Teachers (cont'd)

- Attitude Toward Technology Use in Education
 - Supplementation
 - Integration
 - Revolution
- Key Literature
- Burns, K., & Polman, J. (2006). The impact of ubiquitous computing in the Internet age: How middle school teachers integrated wireless laptops in the initial stages of implementation. *Journal of Technology and Teacher Education*, 14(2), 363-385.
- Garthwait, A., & Weller, H. G. (2005). A year in the life: Two seventh grade teachers implement one-to-one computing. *Journal of Research on Technology in Education*, 37(4), 361-377.

Effects on Teachers (cont'd)

- Instructional Practice
 - Increased Teacher Workload
 - Movement Toward Constructivism
 - Changing Roles
- Key Literature
- Silvernail, D., & Lane, D. (2004). The Impact of Maine's one-to-one laptop program on middle school teachers and students: Phase one summary evidence. Maine Education Policy Research Institute. Retrieved from <http://www.bryan.k12.oh.us/Forms/MLTIPhaseOne.pdf>.
- Swan, K., Kratcoski, A., Mazzer, P., & Schenker, J. (2005). Bringing Mohamed to the mountain: Situated professional development in a ubiquitous computing classroom. *Journal of Educational Computing Research*, 32(4), 353-365.



CHANGES TO THE CLASSROOM ENVIRONMENT

Changes to the Classroom Environment

- Increased Technology Use
 - Language Arts
 - Writing
 - Humanities
 - Math
 - Science
 - Daily Activities

- Key Literature
- Rockman et al. (1998). Powerful tools for schooling: Second year study of the laptop program. A project for Anytime Anywhere Learning by Microsoft Corporation & Notebooks for Schools by Toshiba American Information Systems. Project Report. San Francisco, CA.
- Russell, M., Bebell, D., & Higgins, J. (2004). Laptop learning: A comparison of teaching and learning in upper elementary classrooms equipped with shared carts of laptops and permanent 1:1 laptops. *Journal of Educational Computing Research*, 30(4), 313-330.

Changes to the Classroom Environment (cont'd)

- Student-Centered Activities
 - Individualized Instruction
 - Collaborative Learning
 - Changing Roles and Interactions
 - Students as Teachers
 - Student-Teacher Interactions
 - Interactions Between Students
 - Increased Motivation and Enthusiasm for School
- Key Literature
 - Dunleavy, M., Dexter, S., & Heinecke, W. F. (2007). What added value does a 1:1 student to laptop ratio bring to technology-supported teaching and learning? *Journal of Computer Assisted Learning*, 23(5), 440-452.
 - Swan, K., Van 'T Hooft, M., Kratcoski, A., & Schenker, J. (2007). Ubiquitous computing and changing pedagogical possibilities: Representations, conceptualizations and uses of knowledge. *Journal of Educational Computing Research*, 36(4), 481-515.

Changes to the Classroom Environment (cont'd)

- Disadvantages of 1:1
 - Classroom Management
 - Distraction and Inappropriate Computer Use
 - Over-reliance on Technology for Learning
- Key Literature
 - Rockman, S. (2007). It's my laptop. *Threshold*, 4(4), 21-25.
 - Windschitl, M., & Sahl, K. (2002). Tracing teachers' use of technology in a laptop computer school: The interplay of teacher beliefs, social dynamics, and institutional culture. *American Educational Research Journal*, 39(1), 165-205.



IMPACTS ON STUDENT LEARNING

Impacts on Student Learning

- Impacts on Standardized Test Scores
 - Increased Test Scores
 - Decreased Test Scores
- Inconclusive Results
- Key Literature
- Grimes, D., & Warschauer, M. (2008). Learning with laptops: A multi-method case study. *Journal of Educational Computing Research*, 38(3), 305-332.
- Rockman, S. (2003). Learning from laptops. *Threshold*, Fall (2003) 25.

Inconclusive Results

- “Those administrators and board members who insist on a specific test score gain as the return on investment are, more likely than not, going to be disappointed.”

Rockman (2003)

- The expectation that one-to-one initiatives will improve achievement scores bears further investigation, and it is likely that to expect achievement gains, one-to-one initiatives would need to be part of a larger, more comprehensive effort to improve instruction.”

Penuel (2006)

Impacts on Student Learning (cont'd)

- Improved Work Quality
- Writing
- Learning in Non-Core Curriculum Areas
 - Acquisition of Technology Skills
 - Information Literacy
 - Improved Higher Order Thinking Skills
- Key Literature
- Mitchell Institute. (2004). One-to-one laptops in a high school environment: Piscataquis Community High School study final report. Portland, ME: Mitchell Institute. Retrieved November 24, 2007 from http://www.mitchellinstitute.org/Gates/pdf/One-to-One_Laptops_Report.pdf.
- Silvernail, D., & Lane, D. (2004). The Impact of Maine's one-to-one laptop program on middle school teachers and students: Phase one summary evidence. Maine Education Policy Research Institute. Retrieved from http://www.bryan.k12.oh.us/Forms/MLTI_PhaseOne.pdf.

Impacts on Student Learning (cont'd)

- Degree of Learning Impact
 - Academic performance prior to the laptop program
 - Special needs students

- Key Literature
- Bebell, D. (2005). Technology promoting student excellence: An investigation of the first year of 1:1 computing in New Hampshire middle schools. Boston, MA: Technology and Assessment Study Collaborative, Boston College.
- Russell, M., Bebell, D., & Higgins, J. (2004). Laptop learning: A comparison of teaching and learning in upper elementary classrooms equipped with shared carts of laptops and permanent 1:1 laptops. *Journal of Educational Computing Research*, 30(4), 313-330.

Key Literature

- Penuel, W. (2006). Implementation and effects of one-to-one computing initiatives: A research synthesis. *Journal of Research on Technology in Education*, 38(3), 329.
- Rockman, et al. (1997). Report of a laptop program pilot: A project for anytime anywhere learning by Microsoft Corporation, notebooks for schools by Toshiba America Information Systems. Rockman et al: San Francisco, CA
- Rockman, et al. (2000). A more complex picture: Laptops use and impact in the context of changing home and school access. San Francisco, CA: Rockman et al.
- Warschauer, M. (2006). *Laptops and literacy: Learning in the wireless classroom*. New York: Teachers College Press
- Wenglinsky, H. (2006). Technology and achievement: The bottom line. *Educational Leadership*, 63(4), 29-32.
- Zucker, A. (2004). Developing a research agenda for ubiquitous computing in schools. *Journal of Educational Computing Research*, 30(4), 371-386.



QUESTIONS? DISCUSSION?