# Learning Communities and Laptops: A Design Experiment

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**Abstract**: In order to create a technologically fluent community of learners, one College of Education implemented a Laptop Initiative for pre-service teachers. The laptop requirement was a design experiment created to form a community of practice within the College of Education, centered around ubiquitous computing and situating technology use into the classroom practice. The experiences of a cohort of foreign language pre-service teachers are highlighted as an example of this situated community of practice.

## Introduction

This poster focuses on a "design experiment" (Brown, 1992; Collins, 1992; Collins, Joseph, and Bielaczyc, 2004) in the form of a laptop initiative for pre-service educators set forth by a College of Education at a major research institution in the American Southwest.

### Needs Assessment

The laptop requirement came about for primarily two reasons within the College of Education: (1) the administration recognized the need to prepare future teachers to meet state technology competencies, (2) they perceived a disconnect between the existing computing tools course and using technology as an integrated part of one's teaching practice. Research indicates pre-service teachers are not being prepared adequately to integrate technology in their teaching. A 1995 study by the Office of Technology Assessment and a national survey conducted by Morsund and Bielefeldt (1999) reported the stand-alone courses offered in the majority of university teacher preparation programs were not as effective as integrated approaches to technology training. Both studies indicated pre-service teacher programs were not training future teachers adequately due to the types of courses offered, the lack of faculty modeling and use, and lack of use in field experiences. By the fall of 2003 there were 13.6 million computers in schools, creating a ratio of 1 computer for every 4 students (Cattagni, 2001). Despite the availability of computers, emerging research indicates technology is being systemically underutilized (Tyack & Cuban, 1995; Cuban, Kirkpatrick, & Peck, 2001). These authors consistently found that teachers use technologies to enhance regular instruction, but rarely use technology to transform their teaching. Instead, these authors report teachers made infrequent and limited use of computers and typically used computers to maintain and reinforce current classroom practices.

### Design Solution: The Laptop Initiative

The Laptop Initiative was created to form a community of practice within the College of Education, centered around ubiquitous computing and situating technology use into the classroom practice (Lave & Wenger, 1991; Rogoff, 1994). Every student enrolled in the pre-service program was required to purchase a laptop. The entire education building was made wireless, allowing students and faculty to use their laptops anywhere in the building or surrounding areas. The college's technology center was re-organized so students and faculty would be supported "just in time" via a student help-desk. A support-center was created for faculty, providing instructional staff to model and support ways technology can be incorporated into one's teaching practice. Additionally, other resources such as access to online tutorials for individualized learning and peripheral equipment were secured so students could utilize their laptops as part of their pre-service teaching requirement. The computing tools course was phased out and each faculty within the college became responsible for integrating technology into their curricula. By providing both students and faculty with equal access to technology and support, the administration wants each pre-service cohort to form a learning community (Brown & Campione, 1996; Bielaczyc & Collins, 1999), sharing their collective struggles and successes integrating technology into their classroom practice. The Laptop Initiative is based largely on a pedagogical model of learning via enculturation, or legitimate peripheral participation (Lave & Wenger, 1991), with faculty and pre-service teachers experimenting with ways to integrate technology both at the university and out in the schools.

## Findings and Discussion

The data reported in this poster was collected as part of a year-long qualitative study during the end of the second and beginning of the third year of the Laptop Initiative. The study focused on a cohort of pre-service foreign language teachers and their computer experiences in the field during student teaching. In order to document the entire design experiment, from development through implementation, administrators and faculty were interviewed and observed throughout this time. The findings are preliminary due to on-going efforts to analyze this large data set and triangulate developing assertions with study participants.

Of the pre-service foreign language teachers participating in the study, the portability of the laptop was most often mentioned as a positive feature of the college's initiative. During student teaching, they reported using their laptops for researching lesson ideas, investigating cultural information, and creating lesson plans. There were two other uses of the laptop frequently reported during student teaching: (1) computer-based activities for their students utilizing the Internet for research, and (2) in-class grammar presentations using the laptop. The ways in which the pre-service teachers used their laptops have been reflective of the models observed from university courses and faculty modeling. However, many of the pre-service teachers report never taking their laptop to school. Repeatedly, the pre-service teachers commented that knowing how to use the computer does not equal knowing how to use the computer to teach. In the field, the pre-service teachers felt restricted in their student teaching because of either a lack of school computer resources, or due to working with teachers who did not use computers in their practice. More significantly, many participants report not being adequately prepared in their content area to integrate technology in ways appropriate for the subject. In conclusion, the ways that pre-service teachers report using technology at the university may be beginning to transform their practice; however, how this developing expertise is being transferred to their field experiences is inconclusive.

## Next Steps

At this stage of analysis, this study indicates simply requiring each student to purchase a laptop and providing institutional support does not ensure technology usage will be situated in the field outside of the college. If pre-service teachers are to become technologically fluent in their teaching practice, their experiences with technology must go beyond the community of practice established within the walls of the college. In particular, more research needs to be conducted in how technology is being integrated into pre-service teachers subject matter classes, outside of the College of Education at the university level. Additionally, the design experiment needs to be revised to include providing support for schools and teachers supporting the pre-service teachers in the field as part of their student teaching.

## References


Brown, A., & Campione, J. (1996). Psychological theory and the design of innovative learning environments. In L. Schauble & R. Glaser (Eds.), *Innovations in Learning: New environments for education* (pp. 289-325). Mahwah, NJ: Lawrence Erlbaum Associates.

Cattagni, A., & Farris Westat, E. (2001). *Internet Access in U.S. Public Schools and Classrooms: 1994-2000*. U.S. Department of Education Office of Educational Research and Improvement.

Collins, A., Joseph, D., & Bielaczyc, K. (2004). Design Research: Theoretical Issues and Methodological Issues. *The Journal of the Learning Sciences, 13*(1), 15-42.

Cuban, L., Kirkpatrick, H., & Peck, C. (2001). High access and low use of technologies in high school classrooms: Explaining an apparent paradox. *American Educational Research Journal, 38*(4), 813-834.

Cuban, L., & Tyack, D. (1995). *Tinkering Toward Utopia*. Cambridge: Harvard University Press.

Lave, J., & Wenger, E. (1991). *Situated Learning: Legitimate peripheral participation*. Cambridge, MA: Cambridge University Press.

Moursund, D., & Bielefeldt, T. (1999). *Will New Teachers be Prepared to Teach in a Digital Age? A National Survey on Information Technology in Teacher Education*: Milken Exchange on Education Technology.

Rogoff, B. (1994). Developing understanding of the idea of communities of learners. *Mind, Culture, and Activity, 1*(4), 209-229.

*Teachers and Technology: Making the Connection*. (No. OTA-EHR-616)(1995). Washington D.C.: U.S. Congress, Office of Technology Assessment.