

# **Educational Technology into the Community: Undergraduate Teacher-Education Students and Refugee Families**

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## **Abstract**

This qualitative evaluation study explored how preservice teachers developed understanding of the value of technology resources for learning by configuring surplus university computers for local refugee children and their families in order to address the digital divide. The project built upon theoretical frameworks regarding meaningful learning—*active, constructive, intentional, and authentic*—and drew upon activity theory as a framework for designing student-centered learning environments. The study used a qualitative evaluation design (Patton, 2002; Stake, 2004) which included multi-faceted examination of the intended outcomes for a service-learning experience within an introductory course in educational technology. These students moved from naïve to nuanced conceptualization of the uses of technology for learning during which both the type and amount of their knowledge grew.

## **Purposes**

As the population of a school or community diversifies, public school teachers must be prepared to work with children from a wider range of backgrounds. A pilot program at the University of North Florida conducted in 2006 focused on how to bring preservice teachers and refugee children together in ways that served the educational needs of the children and in ways that prepared the preservice teachers to use technology to work with children who were new to American schools. The program personally connected the preservice teachers with students in area schools, which has been recommended as a key strategy for improving the use of technology in K-12 schools (Brown & Warschauer, 2006).

As of 2004, the United States was by far the largest of the 10 traditional resettlement countries for refugees, having resettled 73,851 refugees (US Department of Housing and Human Services, 2006). Florida, where the program described in this paper took place, ranks fourth in states taking in the largest percentage of refugees resettled in the U.S. (Patrick, 2004), and took in over 19,000 refugees in 2004 (US Department of Housing and Human Services, 2006). The United Nations High Commissioner for Refugees has stated that education is an essential condition for the rehabilitation of refugee children

who may have suffered from traumatic experiences such as war, as a vehicle for rebuilding lives, even as a means toward conflict prevention (2001).

Assistance for refugees in overcoming their obstacles to success includes social services to facilitate adjustment, language instruction for students and their parents, and the reduction of discrimination (McBrien, 2005). Acquiring academic fluency in English is a major pathway to academic achievement, and fluency results from both school instruction and out-of-school experiences in the culture. In addition, parental involvement in education is an influential factor contributing to a student's success and persistence in school (Fan & Chen, 2001). In order for education for refugees to succeed, teachers must understand the experiences and cultures of refugee children and must welcome them without discrimination (McBrien, 2005). Understanding begins with the awareness of the needs of refugee children and knowledge that they are neighbors in our communities.

The pilot project worked toward two of the three obstacles: assistance with learning English, and combating discrimination. In the project, preservice teacher education students in an introductory educational technology course developed understanding of the value of technology resources for learning by configuring surplus university computers to be given to local refugee children and their families. This qualitative evaluation study explored how preservice teacher education students developed understanding of the value of technology resources for learning by configuring surplus university computers to be given to local refugee children and their families. Specifically, it focused on the following question: How do undergraduate preservice teacher educators construct understanding of educational technology as a learning tool while working with refugee children and their families? Thus, it documented their construction of meaningful learning (citation) during a transformational, community-embedded, problem-based experience.

The structure of the course project involved several stages. The students began with the stories of eight families who had recently arrived in the city from Sierra Leone, Afghanistan, Liberia, and Burma, to become familiar with the educational needs of the children. As they learned concepts in educational technology, these preservice teachers applied knowledge in identifying, locating, evaluating, and producing educational materials such as video, electronic books, software, and tutorials to place on a computer for each family. During the project's culminating week, students visited each family to work side-by-side in setting up and learning to use the computer and its resources. Thus, the study included an additional focus on issues regarding "equity of access and opportunity . . . [to] strengthen student learning" (Baker & Koretz, 2006, p. 30), in this case the learning of both preservice teachers and the children of these new American families.

### Theoretical Framework

The theoretical framework within which this project was conceived—and, hence, upon which the evaluation study was based—included the conception of meaningful learning

proposed by Jonassen, Peck, and Wilson (1999). However, a second source guiding the study centered on the need to foster social justice as it relates to the purposes for public schooling.

Recent educational literature (Ravitz, Mergendoller, & Rush, 2002; Rothstein, 2004; Wenglinsky, 1998) has described both a digital divide and a pedagogical divide which influence the achievement of students from economically disadvantaged homes. While they have less access to computers at school and at home, they appear to benefit academically when they develop technological skill and use computers for academic work at home (Fuchs & Woessman, 2004; O'Dwyer, Russell, Bebell, & Tucker-Seeley, 2005; Ravitz, Mergendoller & Rush, 2002; Subrahmanyam, Kraut, Greenfield & Gross, 2000; Wenglinsky, 1998). Recognition that refugees are among the more disadvantaged citizens in the community and that refugee children may benefit dramatically from a home computer led to the design of this course learning experience involving university students and eight families. The evaluation of this experience sought to understand the complexities at the intersections of teacher preparation, uses of technology, the challenges faced by refugees, and personalization of learning.

Recent advances in brain research have underscored how students' affective neural networks lead to determinations of importance regarding learning and thereby lead to motivation, engagement, and commitment to the learning process (Rose & Meyer, 2002). Such meaningful learning results in students who are capable and independent learners. In this community-based project, meaningful learning by teacher candidates was a means to the end result of teachers who can effectively learn and teach with technology in ways that make learning meaningful, in turn, for the full spectrum of students in K-12 classrooms.

Meaningful learning, as a construct within this study, refers to learning that is *active, constructive, intentional, and authentic*. It "includes reciprocal intention—action—reflection activities," as proposed in Jonassen's (2000, p. v) activity theory, and occurs when learners make meaning in the context of solving novel problems (Rose & Meyer, 2002).

Developing expertise as a technology-using teacher requires learners to develop technology skills, to practice the use of the technology, to participate in the stages of selection and development of technology resources for K-12 children, and to engage in the pedagogy of technology integration. In this case, the preservice teachers engaged in the processes of identifying, locating, evaluating, and producing educational materials such as video, electronic books, software, and tutorials for computers specifically configured for refugee children.

*Active learning* engages learners in cognitive effort, facilitated by instructional transactions (Merrill, 1992) designed to guide the learner toward acquisition of specific knowledge and skills. It occurs within an interpersonal, collaborative, learning community and depends on learner interactions with the instructor, with learning materials, and with other learners within the context of a meaningful task.

*Constructive learning* in teacher education requires the development of pedagogical capabilities by integrating new skills into preservice teachers' existing conceptions of teaching and learning through both reflection and metacognition for application to other contexts (Jonassen, Howland, Moore & Marra, 2003). What results are new learning models. Adopting new approaches to teaching, while unfamiliar and uncomfortable, leads to conceptual change. The role of the instructional technology course is to accelerate that process through immersion and to prepare candidates to continue to construct their notions of technology-supported teaching through the remaining experiences within their teacher-preparation programs.

With *intentional learning*, the goal is to support candidates as they embark on a professional path as lifelong learners and educators who value continuous development. Lifelong learners acquire a level of self-regulation that enables them to identify learning goals and to plan experiences to fulfill those goals. Instructional processes can help learners articulate an intentional learning purpose, for example, with engaging problems to solve (Jonassen, 2000). Coursework in educational technology is particularly useful in providing a rationale for learning and fostering the motivation needed to connect learning to personal goals.

*Authentic learning* in teacher preparation recognizes that teaching is a complex and ill-structured task requiring practice in meaningful, real-world situations. The inclusion of an educational technology course within preparation programs fits into the continuum of authentic teacher education by immersing candidates in a variety of learning technologies and technology-supported teaching strategies. This particular offering of the course required that preservice teachers work directly with children and families in order to build their foundation for using technology with students in further coursework, field experiences, internship, and early professional practice.

## Methodology

The study used a qualitative evaluation design (Patton, 2002) which included multi-faceted examination of the intended outcomes for a service-learning experience within an introductory, undergraduate preservice teacher education course in educational technology. It also explored the unintended, but concomitant outcomes within this rich, authentic learning experience.

The course was offered at a mid-sized, urban Southeastern university as a prerequisite to entering the teacher education program. As part of the University's honors program, this section of the required course, "Introduction to Educational Technologies," included purposes and activities which went beyond the components expected in all course sections—in this case the service-learning experience of reconfiguring surplus university computers for refugee children and their families. Course enrollment, as well, included not only those freshman and sophomore students who intended to major in teacher education, but also students who found the course relevant to their work in other majors

such as psychology or sociology. All but one of the 12 honors students were freshmen and sophomores, with a female to male ratio of 11:1.

Course objectives were correlated to applicable state and national standards established by teacher-education accreditation bodies and advocated by professional organizations in educational technology. These standards provided at least one dimension of what Stake (2004) referred to as the criteria used to make judgments regarding the efficacy of program components in an evaluative endeavor. Local College goals for undergraduate teacher education programs provided further guidance in the “critical thinking” (p. 57) embedded in this evaluative study.

The 32 sessions of the 16-week semester-long course took place in a computer lab in which each student had access to an individual Internet-connected computer and devices including digital cameras, microphones, scanners, CD recorders, and printers. In addition, the Blackboard learning management system provided course materials, assignment management, and asynchronous communication.

Multiple sources of information provided data about the students’ experiences as learners within an authentic application of educational technology: student journals, photographs and interviews of students in the homes of refugee families, and the actual materials collected and produced by the students for the families. Other indicators of how these experiences may have influenced both the learning of the university students and the impact of those experiences on the refugee children and their families were also relevant: the local public radio interview with the faculty member regarding the course project, a newspaper account of delivering the computers to the families, background information about the families provided by the resettlement agency, interviews with students one year after the course, and follow-up contact with staff at the resettlement agency regarding their perceptions of the project’s impact.

Specifically, at the beginning, midpoint, and end of the course, students provided guided journal entries about their experiences in the course as they discussed how they viewed: technology in aiding K-12 student learning; their roles in addressing the digital divide in their community; how technology changed the way they learned; and the effect of the course project on their progress in becoming technology-using educators. The follow-up semi-structured interviews (Patton, 2002; Seidman, 1998) with the students one year after the completion of the course explored how they then reflected on the course experiences relating to this project, their description of how the experiences related to the broad collegiate academic experience, and their future professional plans. The interviews also focused on the dispositional development of the students with regard to their ideas about technology as an agent of change in learning and in life.

Data analysis involved at least two strategies. First, the use of a logic model of evaluation or theory of action adapted from Patton (2002), along with elements of Stake’s (2004) discussion of responsive evaluation and democratic evaluation, provided a framework for determining the “educational value” (Eisner, 1998, p. 98) of this set of course experiences. This qualitative approach to evaluation describes inputs, activities, outputs,

immediate outcomes, and long-term impacts and the connections among them. This focus for evaluation builds upon the needs of practitioners to make decisions about the value of their practice rather than attempting to generate theories or causal explanations.

Secondly, the process of data analysis employed Eisner's (1998) model for educational criticism in order to clarify the "critical thinking" suggested by Stake (2004, p. 57). Educational criticism—the process of making professionals' connoisseurship public for educative purposes—includes four dimensions which structure the process of analysis: description, interpretation, evaluation, and thematics. The following discussion of the results of the project is thus framed by a model of evaluation adapted from Patton (2002) and Stake (2004) along with the process of educational criticism (Eisner, 1998). It represents a first-level in project evaluation which we anticipate will involve additional layers from alternative theoretical vantage points.

### Results and Conclusions

Through the relationship with the children and their families, the project enabled the preservice teachers to build their skills and expertise—from *knowing about* effective uses of technology to experiencing *the use of* technology by real children across grade levels, subject areas, and cultures. The students also began to understand first-hand the multicultural richness in the community they would soon serve as teachers and to appreciate the value of technology as a key to the success of an entire family.

The project built upon theoretical frameworks regarding meaningful learning—learning that is *active, constructive, intentional, and authentic*. The study documented that this community-based course project enabled students to participate as active manipulators of technology tools, to construct and articulate their conceptions of teaching and learning with technology, to reflect on their goals and act intentionally to achieve them, and to situate their learning within a complex authentic problem-based task. This active problem-based learning incorporated effective brain-based learning, including learning with understanding, building on pre-existing knowledge, learning actively, transferring of learning to applied situations, and integrating technology to support learning (National Research Council, 1999). These teacher-education students moved from naïve to nuanced conceptualization of the uses of technology for learning during which both the type and amount of their knowledge grew. At the conclusion of the project, no longer were the students focused on solely on knowing *how* to use technology, but they had begun to know *with* technology (Broudy, 1988; Jonassen, Howland, Moore, & Marra, 2003; Ryle, 1969). Within this rich, authentic learning experience, they witnessed the power of technology to change the lives of people on the other side of the digital divide.

#### *The logic model for the analysis of the data*

The "logic model" below (Patton, 2002) used for the analysis of the data gathered during this project outlines the components within the evaluation process and the central findings.

Project logic model: How do undergraduate preservice teacher educators construct understanding of educational technology as a learning tool while working with refugee children and their families?

Inputs	Preservice teachers (students) should learn to use effective educational technology and should recognize the unique educational needs of refugee children. (Sources: course objectives and intents)
Implementation	Students prepared computer hardware and software relevant to the educational needs of refugee children and their families; and students taught the families to use the educational resources. (Sources: course activities)
Process Evaluation	Students developed their abilities to use technology effectively and confidently to teach a diverse range of children. (Sources: Student products, interviews, and reflective writing)
Cognitive outcomes	Students identified and developed digital materials for high-level, standards-based learning. (Sources: student products)
Attitude outcomes	Students value all children as learners and the contributions of the families to their learning. Students expressed their belief that it was their obligation as educators and citizens to serve high-need members of the community, and to recognize and support parents as important educational partners. (Sources: Interviews and reflective writing)
Long-term impact	Students will be effective, inclusive technology-using teachers. (Anticipated) One student who teaches has become an effective, inclusive technology-using teacher. (Source: interview)

The project logic model illustrates the door that the course project opened for students to develop their understanding of the role of the teacher in (1) using technology for teaching and learning, (2) differentially and sensitively serving the needs of diverse students such as refugees, and (3) including the parents in the schooling experience. During the semester in which the project took place and over the intervening year in their teacher education programs, the participating preservice teachers advanced toward becoming reflective, inclusive, community-focused, technology-using educators. Some students were technology avoiders who became enthusiastic advocates for technology in the classrooms and homes of children:

In the past I have tried to avoid using technology other than for the basic things. I would say people shouldn't be afraid of technology (HC, April 11, 2006, course journal).

When the semester started, I was hesitant about introducing new technology into classrooms. Now I can see the huge advantages new developments offer schools (SL, April 11, 2006, course journal).

I realize the value of technology and the impact it has on society. The class gave me the opportunity to learn enough that I could impart my knowledge to others—something that I highly prize and value (AS, April 15, 2006, course journal).

During follow-up interviews, students stated that the experience of meeting refugee families in their homes was eye-opening and therefore the most valuable aspect of the project for their development as teachers. The family visits “drove home” the enormity of the struggles faced by refugees in their native countries and in adjusting to life in the United States; these visits vividly illustrated the great potential of technology for reducing the isolation faced by refugees from both their native cultures and American society. Helping the children learn to use the computers also gave the students a teacher’s perspective on teaching with technology.

Qualitative evaluation also includes attention to process (Patton, 2002). This study recognized that the project ceased to represent a pragmatic assignment in a course and became a lynchpin for meaning building to provide a base for future decision-making by developing professionals.

#### *Analysis of the data from the perspective of educational criticism*

The process of educational criticism involves four dimensions—description, interpretation, evaluation, and thematics (Eisner, 1998). These separate dimensions typically flow from one to the other as the critic explains the educational worth of a particular activity to a particular audience. Thus, the use of educational criticism can illuminate the results of the service-learning project in terms of the professional growth of preservice teachers and the impact of their work on refugee children and their families. Each vignette below offers a short criticism of one dimension of the project.

#### *Vignette 1*

Students did in fact study the family stories provided by the Lutheran Social Services school liaisons regarding family structures, the educational background and goals of the families, and the needs of the families for educational support. They made decisions about what computer software and media might be appropriate and, more importantly, the specific programs to load which could both further the children’s educational progress and support the families in their efforts to become part of American society. They worked in groups to identify appropriate tools and resources and shared with each other how they were shaping the plans for meeting the complex learning needs of their particular families. Subsequently, they actually delivered the products of their efforts to the families in their homes; these visits allowed the university students to spend time with the families and, in some instances, to share a meal prepared for them by the families.

These activities reflect a set of professional goals which emphasize the importance of preservice teachers becoming aware of the role of culture in learning, the complexity of the cultural milieu in the United States, the need for schools to respond positively to the diverse cultures represented by children in their classrooms, and the relationships

necessary between school and home to foster children's learning. Indeed, such goals underscore the role of the school in promoting equity, achievement, and social justice within society (Rothstein, 2004). The value of such opportunities in preservice teacher education is evident in one student's reflection on the course a year after its completion. She revealed her positive view of both the project and the importance of reaching out to those children and their families who may be hidden from view.

You see people of different ethnicities come in and out, but not whole groups of them, and I never even knew they were here as a group. So taking that class as a citizen of Jacksonville opened my eyes to what we have here, and it also made me look out for, be on the watch for other things in Jacksonville, such as the homeless population that we have here that a lot of other people overlook (Interview, March 19, 2007).

However, in addition to increased awareness, this student appreciated her own contribution to meeting identified needs. "This class was able to incorporate giving back and serving the community outside of teaching and technology. We could take the technology and give it to other people who don't necessarily have the resources we have in America."

This vignette leads to an identification of a theme embedded in student experience with the "technology into the community" project: the role of teachers in facilitating culturally appropriate learning through technology and in fashioning their own culturally appropriate pedagogy (Ladson-Billings, 1994). This role also requires an activist stance on the part of the professional. For one student, it

taught me to be on the lookout for other ways I can help people in ways that don't necessarily have any payoff. As a citizen, that's my duty to help other people. . . . So it's taught me that instead of just watching and feeling for that person, I'll do something about it (Interview, March 19, 2007).

While only in their first stages of professional development, the project fostered in these preservice teachers a deep awareness of how instrumental they can be in reaching students often relegated to the margins of American schooling.

### *Vignette 2*

In their journeys as technology-using preservice teachers, the students began with the idea that a limited range of technology is used to engage and motivate learners. Students knew that basic technology resources such as word processing, web sites, and educational software could benefit the refugee children. After experiencing initial frustration while seeking free materials for the computers, the students developed a very broad concept of technology for learning that included digital video, audio books and ebooks, creativity software, and mindtools. In addition, the students' concept of effective educational technology changed from seeing children as passive receivers of information via technology to seeing children as active users of tools that show their conceptual thinking.

Through this journey, the students had a transformation as they adopted a student-centered view of learning and a tool-based view of technology. The preservice teachers experienced meaningful learning by constructing increasingly sophisticated knowledge of how children learn with technology. This construction happened as a result of their intentional actions to configure the computers in ways that would most benefit the refugee children. The students became empowered as learners and as providers of learning experiences for others, and then they became instruments of empowerment for the families. The families, in turn, received a toolset comprised of technology and the basic skills for using the technology in their own development.

The tools and skills represent a small, but important bridge across digital and cultural divides that the families might experience (Rothstein, 2004). The students valued their role as emerging experts in educational technology and also as good citizens. They had the self-efficacy of knowing they were skillful and thoughtful users of technology for teaching and learning based on having sat side-by-side with a new user of technology for whose learning they have taken significant responsibility. Fundamentally, the students knew that their efforts were the key to having this happen for the refugee families. The students' journey exemplifies the process of moving from a view of teaching as a technical activity to a recognition of teaching as a moral activity.

#### Educational importance

This project demonstrated that contextualized learning in educational technology is not only possible in teacher preparation programs, but significant to the community beyond—to both the children and their families in helping them to maintain their cultural connections and to improve their quality of life in the U. S. Establishing the need for authentic school-home relationships with these preservice teachers can begin to bridge the digital divide and thus to address the complexities embedded in the achievement gap, outcomes that enrich life for all Americans.

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