An examination of latino immigrant youths' out-of-school technology practices

Latino youth and technology

Yvonne De La Peña
Marjorie Faulstich Orellana

Abstract

The majority of the existing research on youth and technology has focused on physical access, computer-related skills, or student attitudes. Less is known about the social and cultural aspects of young people's interactions with technology. However, understanding how youth use technology and the different factors that affect these uses can help us capitalize on students' strengths. Using survey and ethnographic data, this study is intended to contribute to a better understanding of youths' interactions with technology. Participants in the study were Latino immigrant students (fifth- and sixth-graders) from an elementary school located in a large metropolis in the United States. Results provide both an overall picture of the youths' technological practices as well as a deeper look at the ways in which engaging with technology was valuable and meaningful for them.
Keywords: Technology; Awareness; Ethnography.

Uma avaliação das práticas tecnológicas de jovens imigrantes latinos que não frequentam escola

Resumo

A maioria dos estudos existentes relacionados com juventude e tecnologia foca principalmente o acesso físico, habilidades relacionadas à computação ou comportamento dos alunos. Pouco é conhecido sobre os aspectos culturais e sociais relacionados à interação de jovens com a tecnologia. Contudo, entender como os jovens a utilizam e os diferentes fatores que afetam esse uso podem nos ajudar a priorizar as qualidades desses jovens. Por meio da utilização de sondagens, pesquisas e dados etnográficos, esse estudo tem a intenção de contribuir para uma melhor interpretação da interação entre jovens e a tecnologia. Os participantes desse estudo foram imigrantes latinos (alunos entre quinta e sexta série) de uma escola de ensino fundamental localizada em uma grande metrópole nos Estados Unidos da América. Resultados forneceram uma figura global sobre as práticas tecnológicas dos jovens. Práticas essas nos levam a crer, Por meio de uma visão mais profunda, que para os jovens a relação com a tecnologia é muito valiosa e significativa.
Palavras-chave: Tecnologia; Conhecimento; Etnografia.

Una evaluación de las prácticas tecnológicas de jóvenes latinos inmigrantes que no frecuentan la escuela

Resumen

La mayoría de los estudios existentes relacionados con juventud y tecnología se centran principalmente en el acceso físico, en las habilidades relacionadas a la computación o al comportamiento de los alumnos. Poco se conoce sobre los aspectos culturales y sociales relacionados a la interacción de jóvenes con la tecnología. Pese a eso, entender de que manera los jóvenes usan esa tecnología y los diferentes factores que afectan ese uso pueden ayudarnos a priorizar las cualidades de esos jóvenes. A través de sondeos, investigaciones y datos etnográficos, este estudio tiene la intención de contribuir para interpretar mejor esa interacción entre los jóvenes y la tecnología. Los participantes del estudio fueron inmigrantes latinos (alumnos entre quinto y sexto grado) de una escuela de enseñanza primaria situada en una gran metrópolis en Estados Unidos. Los resultados ofrecieron una visión global sobre las prácticas tecnológicas de los jóvenes. Esas prácticas nos llevan a creer, a través de una visión más profunda, que para los jóvenes la relación con la tecnología es muy valiosa y significativa.
Palabras clave: Tecnología, Conocimiento, Etnografía.

Introduction

The digital divide is no longer only about physical access to technology but also about types of uses. In other words, access to technology is being defined both in terms of technology availability and in terms of people's ability to make use of those technologies to engage in meaningful practices. Hence, researchers are starting to theorize about factors such as language background, cultural values, and relevance of activities in people's interactions with technology (Kupperman & Fishman, 2002; Leonardi, 2003; Warschauer, 2003). They argue that looking at how technology is culturally and personally relevant to people's lives might provide us with a richer framework for understanding the social, cultural, and economic aspects of the digital divide (Angus, Snyder & Sutherland-Smith, 2003).

In the United States, the inequities of the digital divide have been persistently most pronounced for the Latino[1] community in comparison to other ethnic minority groups (US Department of Commerce, 2002). Despite the rapid growth of the Latino population in the United States, there is very limited empirical research on how this group interacts with technology in everyday life. This is especially true for Latino youth. In their report, A Nation Online: How Americans are Expanding Their Use of the Internet, the US Department of Commerce (2002) stated that children and teenagers are rapidly becoming the largest group of computer and Internet users. However, the scant literature on Latinos/as and technology mostly focuses on adults (e.g., Leonardi, 2003; Tornatzky, Macias, & Jones, 2002) or on youths' interactions with technology in the formal educational system (e.g., Kupperman & Fishman, 2002), overlooking the culturally and personally relevant technological practices that Latino youth might engage in outside of school.

On the other hand, the existing research on youth and technology has mainly focused on physical access, computer-related skills, or student attitudes (e.g., Burns & Ferguson, 1988; Frantom, Green, & Hoffman, 2002; Oosterwegel, Littleton, & Light, 2004), telling us little about the social and cultural aspects of their interactions with technology. Using survey and ethnographic data, this study is intended to contribute to the understanding of Latino youths' interactions with technology. In particular, we aim to shed light on Latino youths' out-of-school experiences with technology and to contemplate the ways in which engaging with technology is valuable and meaningful for them.

A sociocultural approach: 'Funds of Knowledge' as theoretical perspective

The 'funds of knowledge' perspective is based on a simple premise: 'that people are competent and have knowledge, and their life experiences have given them that knowledge' (González, Andrade, Civil, & Moll, 2001, p. ix). Specifically, this perspective focuses on the knowledge that is necessary for everyday life in particular social contexts and how this knowledge is used and shared by and within households. There is a wide set of economic and sociocultural activities that household members engage in for household functioning and well-being, each of which requires specific bodies of knowledge. When participating in these activities, household members bring distinct knowledge and expertise and therefore contribute to a household's 'funds of knowledge'. Moreover, by participating in these activities, household members acquire experiences that can later become sources of knowledge.

Researchers working from a 'funds of knowledge' standpoint began by looking at families' labor exchange practices when investigating the funds of knowledge to which youth were exposed (e.g., Moll, Amanti, Neff & González, 1992). Later they refined the theory to include the social networks that interconnect households with their social environments (Moll, Tapia & Whitmore, 1993) and gave a greater emphasis to

---

[1] The term 'Latino' has come to represent those who identify with a Latin American culture. The term 'Hispanic' was invoked by the United States government in its need to count the ever-increasing number of Spanish speaking people who could not be identified as a single race, and thus refers to individuals of Spanish-speaking cultural descent (Leonardi, 2003). This paper uses the term Latino throughout except when referring to research done by authors who use the term Hispanic.

An examination of latino immigrant youths' out-of-school technology practices • Yvonne De La Peña and Marjorie Faulstich Orellana

social and cultural practices as opposed to stand-alone knowledge or skills (e.g., González, et al., 2001; Lee, 2001). 'Funds of knowledge', then, are strategic and cultural resources that households manage (Vélez-Ibáñez & Greenberg, 1992). A 'funds of knowledge' perspective is useful as a guiding theory for this study as it has as an objective to locate and identify youths' experiences with technology outside of school which could later become sources of technological knowledge.

Our interest in youths' interactions with technology emerged from a larger program of research that studied the everyday language and literacy practices of immigrant Latino youth. A first study included the children of immigrants living in a community within a large metropolis in the United States. The main focus of this study was on these youths' work as language brokers (Tse, 1996), family interpreters (Valdez, 2002), or 'para-phrasers' (Orellana, Reynolds, Dorner & Meza, 2003) for their families, most of which had immigrated from the central farming areas of Mexico within the last 15-20 years. A second study examined the translation experiences of five young people from families similar to those in the first study but who were living in a suburb of the same metropolis. The suburban youth were selected based on snowball sampling that identified them as active translators for their families.

Method

Participants

The first study inquired 280 5ᵗʰ and 6ᵗʰ grade students at an elementary school. Based on their responses to the survey questions about translation practices, thirteen youth were selected for qualitative case studies. To these thirteen youth, the five youth from the smaller study were added which resulted in a set of 18 case studies.

Instruments
Survey of technology-based practices

The survey inquired different kinds of technology-related practices carried out on computers, over the Internet, and/or on video game consoles, the main places where the youth accessed computers, and the types of people who provided help to the youth in their interactions with computers.

Interview and Observation

The youths' language practices and daily life experiences were informed by prior ethnographic research with immigrant youth; thus the qualitative and quantitative dimensions of this project were iterative. A team of fieldworkers observed these youth in their classrooms and in out of school contexts, especially at home. The aim of the out-of-school observations was to identify and document translation practices, especially as these were embedded in everyday activities, but fieldworkers recorded notes on all activities that youth engaged in and household resources for language and literacy, which included their interactions with and talk about technology. In addition, the youth were interviewed informally about their daily life experiences, including their engagement with technology. These observations were recorded in field notes.

Procedure

For this study of youths' technology-based interactions, we draw from these combined data sets. Specifically, we used the survey data to identify broad patterns of youths' technology engagements at the elementary school site. We then utilized fieldnotes and interview data to see what these technology practices looked like and how they were structured within the context of the youths' everyday lives. Over a period of two years, sixteen observations, on average, were made in each home. A subset of five youth were observed much more intensively, with between 20 and 40 visits to each home.

Results

We begin with results from the survey data. First we give a brief overview of the youths' use of computers and then talk about differences found based on gender and English language skills. After this, we

continue with results from the ethnographic data. First we discuss what we consider to be an important finding from our analysis across cases: youth as experts. We end by presenting three case study vignettes. Although these vignettes are not representative of all the case studies, our purpose is to illustrate variations in youths' technological engagements as shaped by the contexts within which they occur.

Coding and analyzing the survey data

The first set of analyses involved the survey data, to secure a broad overview of the youths' technology-related experiences. These analyses included frequency counts of different kinds of technology-related practices carried out on computers, over the Internet, and/or on video game consoles and chi-square tests and analyses of variance (ANOVA) to see if there were significant differences based on gender or English language skills. Previous research has demonstrated that gender differences exist in the types of technological activities youth engage in (Volman and van Eck, 2001) and that language skill is an important factor in the interactions of Latinos/as with technology (Ospina, Macias, Shejavali, & Gonzalez, 2002; Tornatzky, et. al., 2002).

After sketching the broad contours of the youths' technology practices, the survey data were further examined to identify the main places where the youth accessed computers, and the types of people who provided help to the youth in their interactions with computers. We looked at the main places where the youth reported accessing computers, because the places were youth have access to computers matters. Technological practices cannot be analyzed outside of the particular contexts they are embedded in (Warschauer, 2003). We looked at people who provided assistance to the youth, because we were interested in knowing the human resources that were available to these youth. Youth acquire valuable knowledge and resources from communities grounded in informal networks such as families or social circles. In particular, this is important in considerations of the technology engagement, because it is not just access to hardware that matters; access to people who can help resolve technology problems also has a bearing (Warschauer, 2003). Specifically, we wanted to know if the youth were receiving their help mainly from family, peers, or others.

Coding and analyzing the ethnographic data

The exploration of the survey data in turn informed our analyses of the ethnographic data; we probed the fieldnotes for where the youth interacted with technology; what they used technology for; and what resources they sought when they encountered challenges. An important point to highlight is the fact that when the survey was designed, the researchers made efforts to ensure that it reflected youths' perspectives and interests. Therefore, these categories, that were subsequently used to look into the youths' interactions with technology, emerged from data that tapped into the points of view of the youth themselves.

In addition, we used the analytical lenses of a 'Funds of Knowledge' perspective to probe how technology fitted within the everyday exchange of knowledge and information in households. That is, we looked for the presence of technology in parents' and other adult family-members' occupations, household practices (e.g., Sunday outings) and interactions within their social networks, and the different activities the youth participated in both at home (e.g., chores) and outside of home (e.g., sports).

All case study files contained within the larger data set were reviewed to identify those that included reports on youths' technology uses. All but three of the eighteen case study files included such information about technology interactions as part of the reports on youths' daily life experiences, as observed by fieldworkers. These fifteen case study files were then examined and coded using the previously created categories. From this process additional categories, grounded in the data, were created. These additional categories included types of activities, participants, roles participants took, (e.g., Did they take up the role of "expert" and provide technological knowledge to others? Did they negotiate understandings with others? Did they work alone?), and family attitudes towards

technology. See Table I for the final set of conceptual categories.

In addition to coding across cases in this way, we developed analytical memos that summarized the technology-based experiences of each of the case study youth. The conceptual categories acted as a framework for these summaries. Hence, the summaries gave a picture of the youths' interactions with technology, highlighting important aspects of these interactions as discovered by the analysis across cases. In addition, these summaries were especially useful when trying to understand how the youths'

the most popular activity, with Internet surfing, e-mailing, and chatting following behind. However, considerable number of the youth used computers for other activities such as drawing, writing poems, and keeping journals. Finally, more than half of the youth reported using the computer to do homework. Figures I and 2, respectively, demonstrate the frequency of computer use by the youth and the variety of computer activities in which they reported to engage.

We also found that home was the place where the youth more often accessed computers and when

Box 1. Conceptual categories used during ethnographic data analysis

Activity
   Context
   Purpose
   Participants
   Access			

Context
   Household
   School
   Other
	Purpose
	   Information
	   Communicate
	   Express
	   Fun
		Participants
		   Who
		      Role
			Access
			   Location
			   Software
			   Internet
			   Knowledge
			      Who
			      What

Location
   Own room
   Family room
   Other
	Who
	   Self
	   Family
	   Friend
	   Other
		What
		   Hardware
		   Software
		   Other
			Role
			   User
			   Expert
			   Learner

interactions with technology fitted within the daily lives of their particular households.

Patterns of usage

We found that a substantial number of the youth used a computer frequently and for a great variety of activities. Playing computer games was by far

encountering difficulty with the computer, the youth received help more often from a family member than from anyone else. Figures 3 and 4, respectively, demonstrate the percentage of youth who accessed a computer at the different locations and the percentage of youth who received help from different individuals.
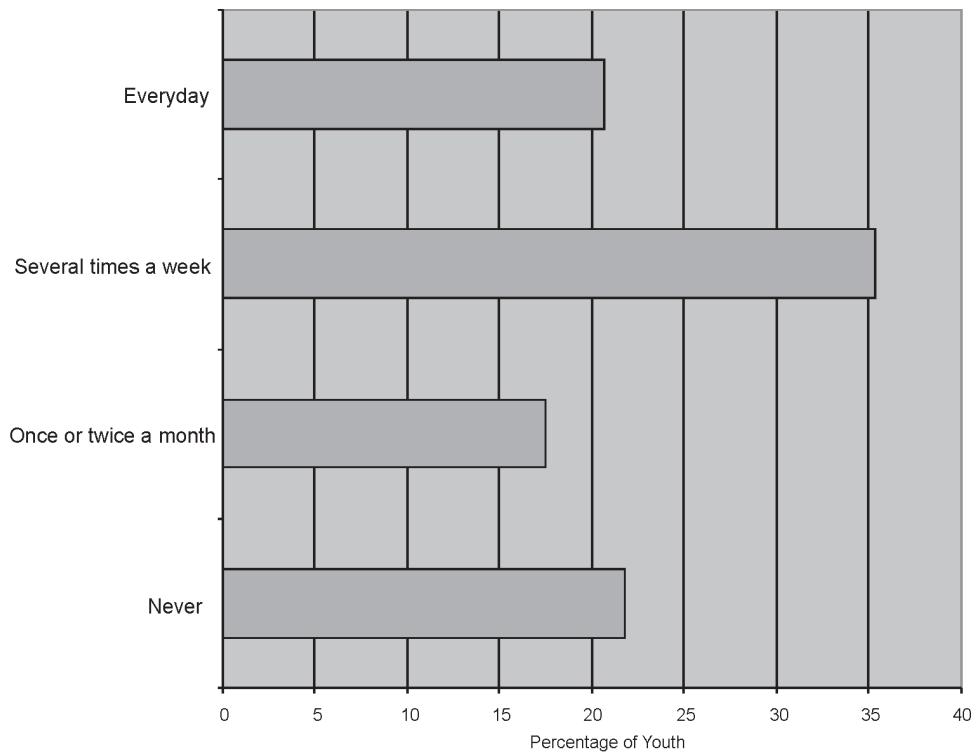
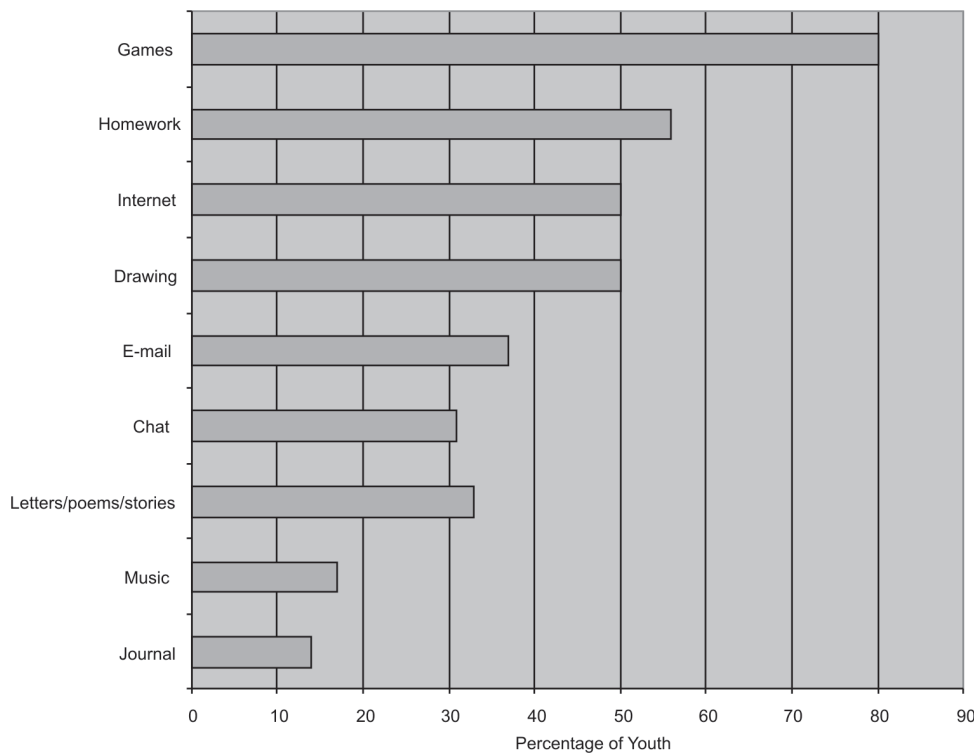Figure1. Responses to the question, "How often do you use computers outside of school?"

Figure 2. Responses to the question, "What do you use computers for?"
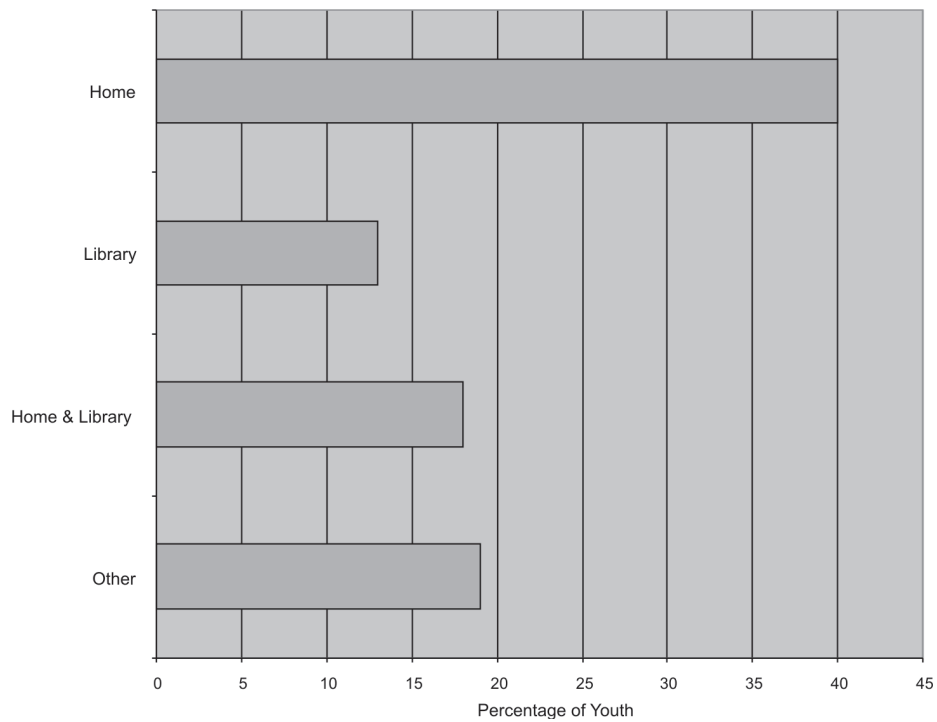
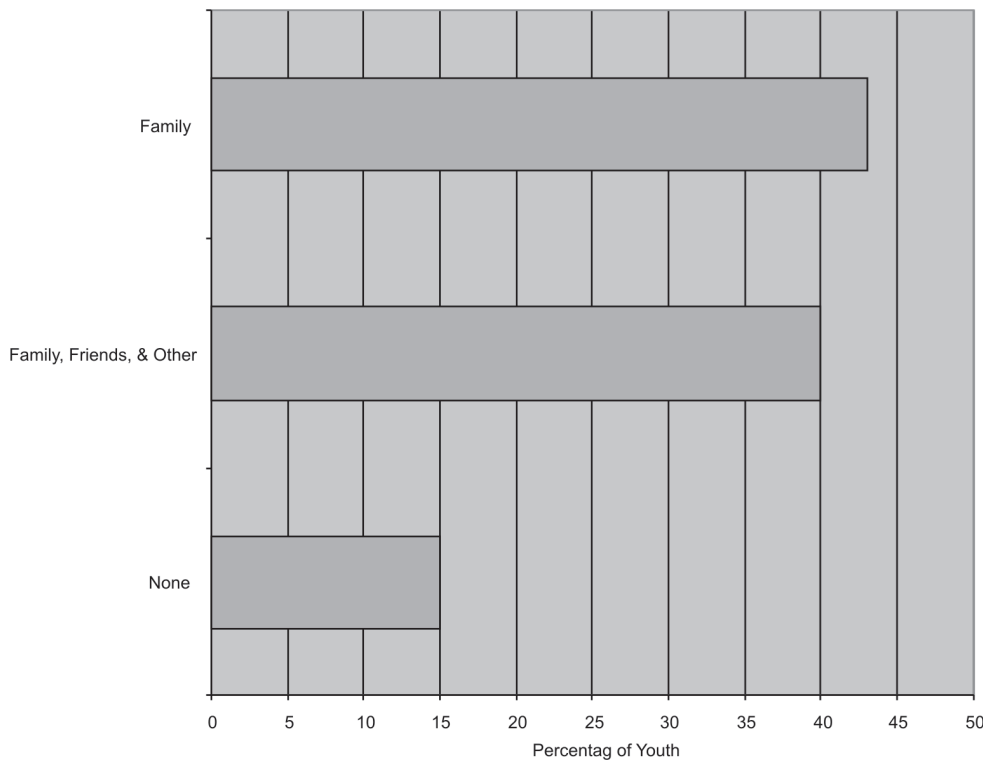Figure 3. Responses to the question, "Where do you use a computer?"

Figure 4. Responses to the question, "When something goes wrong with your computer, who helps you?"

Differences based on gender and English language skills

There were some differences in relation to the types of technological activities the youth engaged in based on gender and English language skills. A significant gender difference was found in regards to the youths' frequency of playing digital games;

$\chi^2(2) = 15.55$, ($p = .00$ two-tailed). The results of this analysis are in line with previous research that indicates that boys tend to play video games or computer games more often than girls do (Marshall, Gorely, Biddle, 2006; Volman & van Eck, 2001). However there was no difference by gender in overall computer use. This is also in line with previous research that has shown that girls use computers as frequently as boys at this age if no distinction is made between the applications used by boys and the ones used by girls (Marshall, Gorely, Biddle, 2006; Volman & van Eck, 2001).

The analysis also revealed a significant effect of language proficiency, as measured by self-reports of the youths' proficiency to write and read English, on the number of activities performed on a computer ; $F(2, 270) = 9.76$, ($p < 0.001$) and $F(2, 267) = 6.96$, ($p < 0.001$) for writing proficiency and reading proficiency respectively. Previous research with Latino/a adults has also found that English language skills and proficiency play an important role in their Internet and computer activities (Leonardi, 2003; Menard-Warwick & Dabach, 2004; Ospina et al., 2002; Tornatzky et al., 2002). It is not clear, however, if this is a direct effect of language abilities, or an index of something else, such as the recency of families' immigration (which could influence their ability to purchase computers or to expose youth to computer technology) or socioeconomic status. Further research is needed to explore the relationship between English language skills and proficiency and Latino youths' engagement with technology, specifically computers and the Internet.

Youth and expertise

We began our analyses of the ethnographic data with the assumption that youth who utilized computers must have had access to some kind of technological "funds of knowledge" from more expert others, or specifically from adults. However, as the analysis progressed it became clear that it was the youth who were often the main sources of technological knowledge for their families, and that they took the lead in many decisions that were made about technology in their homes. Often it was the eldest children in a family, who encouraged their families to purchase technology, set up and managed the hardware, and taught younger siblings to use computers and video games. For example, we observed both Brianna and Katie helping their younger brothers play on the computer and teaching them how to navigate cartoon web sites on the Internet. In another instance, we observed Jasmine helping her brother Gerardo produce invitations for his upcoming birthday party. These invitations were later distributed among their friends and family.

To date, the focus of the 'funds of knowledge' framework has been principally on adults' funds of knowledge and how they can be leveraged for youths' learning in school. Yet, youth are social actors with their own sets of knowledge, information and skills (James & Prout, 1997; Thorne, 1993). In this study, our ethnographic data revealed that although adults brought some sort of expertise to the youths' interactions with technology, it was the youth who provided most of the relevant technological expertise. Hence it becomes clear that it is important to pay attention to the youths' funds of knowledge and to how this knowledge is shared within households. This is especially true when considering household funds of knowledge in the area of technology because youth are often the first to adopt the newest developments of media culture such as digital games, computers and mobile phones (Suoranta & Lehtimäki, 2004).

A case in point is using the computer and Internet to keep in touch with family. Using the computer and Internet to keep in touch with family was a recurrent theme among the purposes for which the youth engaged with technology. For example, Amanda often wrote emails to her family in Cuba; Tony liked instant messaging his cousins, and Nova expressed a desire to have an Internet connection so that he could send pictures to his cousins in México. Previous research with Latino/a adults has found that communicating with family members was a main reason for them to use computes and access the Internet as they could save money on long-distance domestic and international phone calls (Ospina et al., 2002). However, research has also found that some Latino/a adults, although aware of the possible economic benefit to use

computers and the Internet as a medium to communicate with family far away, were reluctant to do so. A main reason cited was a lack of technological knowledge and skills, the same technological knowledge and skills that often youth employ when they engage in family communication through technology.

However another reason that was mentioned for not engaging in family communication through computers and the Internet was related to values regarding good communication and relationships (Leonardi, 2003; Ospina et al., 2002). Hence, further research is needed to explore the relationship between Latinos'/as' values regarding good communication and relationships, their technological knowledge and skills, and their use of technology, specifically computers and the Internet.

The social context of technological activities

Using the survey data and the cross-case analyses, we were able to obtain a general picture of the youths' uses of computers and also identify important aspects of their technological activities. However, to probe more deeply the nature and meanings of youths' engagement with technology it is necessary to look at the youths' interactions in context. In doing so, we can observe how the different contextual factors (e.g., access, type of activity, participants) shape youths' technological experiences. The following vignettes offer further insight into what meaningful access to technology comprises; together they demonstrate that access is not a simple yes/no proposition (either youth have access to technology or not). Rather, access to technology exists in gradations and its meaning and value varies depending on particular social contexts (Warschauer, 2003).

Jasmine.

Jasmine was born in the United States; her parents are Mexican. She is the oldest of three children. She has two younger brothers, Gerardo and Beto. At the time of our research, Jasmine's father worked in manual labor and her mother was a homemaker. For a time, Jasmine's family had a computer, but when it broke down they were not able to immediately replace it. However, there were other places where Jasmine had access both to computers and the Internet. For example, the upstairs neighbors in their two-flat had a computer and an Internet connection and allowed her to use it. Jasmine's knowledge of how to use computers appeared limited, but she showed rather sophisticated knowledge about the uses of the Internet and used it to contribute to her household functioning and well being. For example, on one occasion, Jasmine asked one of the fieldworkers on the research project to do research on the Internet for her. She wanted to get information, to share with her parents, about a life insurance policy that her parents were thinking about buying.

Josh.

Josh was also born in the United States to immigrant parents from a farming community in central Mexico. He has one younger sister, Marla. At the time of our research Josh's father worked at a hotel performing a variety of duties, from maintenance jobs to setting up and serving banquets; his mother worked at a chicken processing plant. At Josh's house, the computer was placed in the living room where all members of the family, including aunts and uncles, had access to it. Access to the Internet was done through dial-up but phone calls were given preferential treatment since both the computer and the phone shared a line. It was Josh who maintained the family computer, installed software on it, kept the virus protection up to date, and helped with its proper functioning. More than engaging in computer activities, Josh enjoyed spending his free time playing video games and it was common for his friends to come over to his house and play with him.

Nova.

Nova, unlike the other youth, was born in Mexico, in the same small farming community where his father had been born. Nova was the older of two children; his sister, Carrie, was five years younger. At the time of our research Nova's father worked in landscaping and his mother worked cleaning guest rooms at a local university. Nova's parents bought a computer when Nova was in the seventh grade and after a family

discussion it was placed in Nova's room. Nova was ecstatic about this and worked on putting it together mostly by himself. Unfortunately for Carrie, the location of the computer came to define it as Nova's computer. Due to expenses related to their newly acquired house it was not possible for Nova's parents to keep an Internet connection. Nova enjoyed building web sites and at the time of the study was working on two of them. He was constructing one in collaboration with his cousins about one of their favorite musical groups. The other one was Nova's personal web site; he was building it with help from a friend from Mexico, who possessed sophisticated computer knowledge.

Discussion

Traditionally technological activities have been regarded as individual activities and technological literacy has been deemed to consist of stand-alone knowledge and skills. In this study we found that the technological activities in which the youth engaged were not solitary endeavors. On the contrary, their interactions with technology were mostly socially embedded. Both the survey data and the ethnographic data showed that family and friends were important participants in the youths' engagements with technology. It was often through their social networks that the youth obtained and shared technological knowledge and skills. Furthermore, the survey data showed that the youth had the knowledge and skills to engage in a variety of technological activities. Yet, as evident in the ethnographic data, it was within so-cial practices that such technological knowledge and skills were transformed into meaningful activity. For example, the youths' technological knowledge and skills became meaningful as they used technology to keep in touch with family and friends or collaborated to create party invitations or passed through the levels of a digital game with the help of more knowledgeable others.

In addition some of the youths' technological activities were part of the daily functioning of their households, allowing them to make important contributions to their households while supporting their acquisition of technological skills and knowledge. In particular, these youth may have extended their role as tutors and household helpers into the realm of technology, leveraging their technological skills to teach their siblings and help their families. These findings make clear that the non-school technological practices of youth should not always be considered 'just play', as is often assumed in discussions of youths' technological activities. [For example, King and O'Brien (2005) note, 'students are told that they can play with computers when they are done with their real work' (pg. 42).] Instead, this could be one of many ways in which participation by children in household tasks comes to be seen by Latino families as essential for their education and therefore encouraged (Orellana, 2003; Villenas & Moreno, 2001).

Until recently, most of the research aimed at understanding and improving youths' lives has taken a 'research on' children and teenagers approach (Darbyshire, Macdougall, & Schiller, 2005), exploring their lives through the voices of adult proxies and portraying them as mere objects to be studied (Barker & Weller, 2003). However the youth in this study were active participants in their technological activities and had their own areas of expertise and views of technology. A recent study found that the perceptions of youth in Spain, India, Brazil, Africa, and Norway, about usefulness of technology, learning with technology, and interest in technology differed significantly from those of their parents (Casas, Mjaavatn, Nayar, Rizzini, September, Figuer, González, & Malo, 2007). If we are to fully understand youths' technological activities we need to look at youth as competent social actors that make sense of and actively contribute to their environments (Barker & Weller, 2003). Furthermore it is necessary to investigate the social and cultural aspects of their interactions as well. In our study, the survey data showed that the great majority of the Latino youth living in this community had some type of physical access to computers and engaged in computer usage in their daily lives. At the same time, the ethnographic data revealed that the nature and meaning of that engagement varied widely.

As schools increasingly incorporate technology into education, it is important that we have a clear view of the technological knowledge and skills that students bring to school. Moreover, it is important that we understand the different technological practices in which students engage. Having this knowledge can help us capitalize on students' strengths and create zones of practice where they are involved in the creation of knowledge not just consumers of it.

References

Angus, L., Snyder, I., & Sutherland-Smith, W. (2003). Families, cultural resources and the digital divide: ICTs and educational (dis)advantage. *Australian Journal of Education, 47,* 18-39.

Barker, J., & Weller, S. (2003). "Never work with children?" The geography of methodological issues in research with children. *Qualitative Research, 3*, 207-227.

Burns, B., & Ferguson, E. (1988). A developmental study of children's computer aptitude and knowledge about computer technology. *Early Child Development and Care, 37*, 7-22.

Casas, F., Mjaavatn, P. E., Nayar, U., Rizzini, I., September, R., Figuer, C., González. M., & Malo, S. (2007). Adolescents, their parents and audiovisual media: Evaluations and interpersonal relationships in five countries. In F. Casas, I. Rizzini, R. September. P. E. Mjaavatn & U. Nayar (Eds.), *Adolescents and audio-visual media in five countries* (pp. 11-64). Girona, Spain: Documenta Universitaria.

Darbyshire, P., Macdougall, C., & Schiller, W. (2005). Multiple methods in qualitative research with children: More insight or just more? *Qualitative Research, 5*, 417-436.

Frantom, C. G., Green, K. E., & Hoffman, E. R. (2002). Measure development: The children's attitudes toward technology scale (CATS). *Journal of Educational Computing Research, 26*, 249-263.

González, N., Andrade, R., Civil, M., & Moll, L. C. (2001). Bridging funds of distributed knowledge: Creating zones of practices in mathematics. *Journal of Education for Students Placed at Risk, 6*, 115-132.

James, A., & Prout, A. (1997). *Constructing and reconstructing childhood: Contemporary issues in the sociological study of childhood*. Washington, D.C.: Falmer Press.

King, J. B., & O'Brien, D. G. (2005). Adolescents' multiliteracies and their teachers' needs to know: Toward a digital détente. In D. E. Alvermann (Ed.), *Adolescents and literacies in a digital world* (pp. 40-50). New York: Peter Lang Publishing, Inc.

Kupperman, J., & Fishman, B. J. (2002). Academic, social, and personal uses of the Internet: Cases of students from an urban Latino classroom. *Journal of Research on Technology in Education, 34*, 189-215.

Lee, C. D. (2001). Is October Brown Chinese? A cultural modeling activity system for underachieving students. *American Educational Research Journal, 38*, 97-141.

Leonardi, P. M. (2003). Problematizing "new media": Culturally based perceptions of cell phones, computers, and the Internet among United States Latinos. *Critical Studies in Media Communication, 20*, 160-179.

Marshall, S. J., Gorely, T., & Stuart, J. H. B. (2006). A descriptive epidemiology of screen-based media use in youth: A review and critique. *Journal of Adolescence, 29*, 333-349.

Moll, L. C., Amanti, C., Neff, D., & González, N. (1992). Funds of Knowledge for teaching: Using a qualitative approach to connect homes and classrooms. *Theory into Practice, 31*, 132-141.

Moll, L. C., Tapia, J., & Whitmore, K. F. (1993). Living knowledge: The social distribution of cultural resources for thinking. In G. Salomon (Ed.), *Distributed cognitions: Psychological and educational considerations* (pp. 139-163). New York: Cambridge University Press.

Oosterwegel, A., Littleton, K., & Light, P. (2004). Understanding computer-related attitudes through an idiographic analysis of gender- and self-representations. *Learning and Instruction, 14*, 215-233.

Ospina, S., Macias, E. E., Shejavali, K., & González, G. (2002, January). *Latino internet content study: Findings from focus group sessions.* Retrieved November 2004, from http://www.trpi.org/pages/itPubs.html

Orellana, M. F. (2003). Responsibilities of children in Latino immigrant homes. *New Directions for Youth Development, 100*, 25-39.

Orellana, M. F., Reynolds, J., Dorner, L., & Meza, M. (2003). In other words: Translating or "para-phrasing" as a family literacy practice in immigrant households. *The Reading Research Quarterly, 38*, 12-34.

Suoranta, J., & Lehtimäki, H. (2004). *Children in the information society: The case of Finland* (H. Liikala, Trans.). New York: Peter Lang.

Thorne, B. (1993). *Gender play: Boys and girls in School.* New Brunswick, NJ: Rutgers University Press.

Tornatzky, L. G., Macias, E. E., & Jones, S. (2002, February). *Latinos and information technology: The promise and the challenge.* Retrieved November 2004, from http://www.trpi.org/pages/itPubs.html

Tse, I. (1996). Who decides? The effect of language brokering on home-school communications. *The Journal of Education Issues of Language Minority Students, 16,* 225-233.

U.S. Department of Commerce, Economics and Statistics Administration, National Telecommunications and Information Administration (2002). *A Nation Online: How Americans Are Expanding Their Use Of The Internet.* Retrieved November 2004, from http://www.ntia.doc.gov/opadhome/digitalnation/index_2002.html

Valdes, G. (2002). *Expanding definitions of giftedness: The case of young interpreters from immigrant countries.* Mahwah, NJ: Erlbaum.

Vélez-Ibáñez, C. G., & Greenberg, J. B. (1992). Formation and transformation of funds of knowledge among U.S.-Mexican households. *Anthropology and Education Quarterly, 23,* 313-35.

Villenas, S., & Moreno, M. (2001). To "valerse por si misma" between race, capitalism, and patriarchy: Latina mother-daughter pedagogies in North Carolina. *Qualitative Studies in Education, 14,* 671-687.

Volman, M., & van Eck, E. (2001). Gender equity and information technology in education: The second decade. *Review Educational Research, 71,* 613-634.

Warschauer, M. (2003). Technology and social inclusion: Rethinking the digital divide. Cambridge, MA: MIT.

About the authors

Yvonne De La Peña (yvonnedelapena@alumni.utexas.net) - University of California – Los Angeles
Marjorie Faulstich Orellana(orellana@gseis.ucla.edu) -University of California – Los Angeles

Correspondence address

Yvonne De La Peña
3350 Sawtelle Blvd #202
Los Angeles, CA, 90066
USA