

Youth interacting with technology: Social and cultural aspects

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Using survey and ethnographic data, the present study intends to contribute to the understanding of youth and their interactions with technology, more specifically the cultural and social aspect of such interactions. Understanding how youth use technology and the social, cultural, and economic factors that affect these uses will help us create a solid technology education model and understand better how technology can be used effectively in the classroom.

Keywords youth, technology, activities, location, gender, age, language

1. Introduction

The majority of the existing research on youth and technology has mainly focused on physical access, computer-related skills, or student attitudes (for examples see, [1-3]), telling us little about the social and cultural aspects of their interactions with technology. However, as Warschauer stated [4], technological practices are varied and highly contextualized as they are practiced by individuals in particular communities. Recently researchers have begun examining social aspects of individual's interactions with technology as they recognize that greater physical access to technology does not necessarily translate into increased levels of participation. They are starting to theorize about factors such as language background, cultural values, and relevance of technological activities in people's lives [4-6]. Using survey and ethnographic data, the present study intended to contribute to the understanding of youth and their interactions with technology, more specifically the cultural and social aspect of such interactions. Understanding how youth use technology and the social, cultural, and economic factors that affect these uses will help us create a solid technology education model and understand better how technology can be used effectively in the classroom.

2. Methods

Our interest in youths' interactions with technology emerged from a larger program of research that studied the everyday language and literacy practices of Latino immigrant children in the US. A first study included the children of immigrants living in a community on the northwest side of Chicago, Illinois. A second study examined the translation experiences of four young people from families similar to those in the first study but who were living in a suburb of Chicago. The suburban youth were selected based on snowball sampling that identified them as active translators for their families

This work began with a survey that was administered to 5th and 6th grade students at an elementary school in Chicago. The survey inquired into youths' language practices and daily life experiences and included a subsection of questions about technology-based practices. Based on their responses to the survey questions, twelve youth were selected for qualitative case studies. To these twelve youth, the four youth from the smaller study were added which resulted in a set of 16 case studies total. A team of fieldworkers observed these youth over a period of two years in their classrooms and in out of school contexts, especially at home. In addition, the youth were interviewed informally about their daily life experiences, including their engagement with technology.

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2.1 Coding and Analyzing the Survey Data

The first set of analyses involved the survey data, to secure a broad overview of youths' technology-related experiences. These analyses included (a) frequency counts of different kinds of technology-related practices carried out on computers, over the Internet, and/or on video game consoles and (b) 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 [7], and that language skill is an important factor in the interactions of Latinos/as with technology [8-9].

After sketching the broad contours of youths' technology practices, the survey data were further examined to identify (a) the main places where the youth accessed computers, and (b) 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 where youth have access to computers matters for considerations of the technology divide. Technological practices cannot be analyzed outside of the particular contexts they are embedded in [4].

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 divide, because it is not just access to hardware that matters; access to people who can help resolve technology problems also has a bearing [4].

2.2. 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 and how youth interacted with technology; what they used technology for; and what resources they sought when they encountered challenges. All case study files contained within the larger data set were reviewed to identify those that included reports on youths' technology uses. Fifteen case study files were coded. We first 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). We looked at the places where these activities took place, the activity participants, and how youth engaged in them. Finally, we looked at family attitudes towards technology and the presence and resolution of difficulties with technology.

In addition to this coding across cases, we developed analytical memos that summarized the technology-based experiences of each of the case study youth. These summaries gave an overview of the youths' interactions with technology based on the ethnographic data. These summaries were especially useful when trying to understand how the youths' interactions with technology fitted within the daily lives of their households.

3. Results

Playing computer games was by far the most popular activity, with 80% reporting that they used it for this purpose. However, half of the youth reported using a computer to draw and one third said they used it to write letters/poems/stories. These figures suggest that expressing themselves and being creative were salient purposes for which the youth engaged in some of the technological activities. The ethnographic data showed that expressing oneself and being creative were indeed frequent purposes for which the youth engaged in technological activities. For example, Nova often used his computer and the Internet to design and implement his own web site (in collaboration with friends and cousins) where he included personal information such as his favorite musical group. Katrina talked about using her computer to write a book about her "most embarrassing moments at the computer".

Additionally, 37% reported using a computer to do e-mail and 31% reported using it to chat. These figures suggest that communication was a main purpose for which the youth engaged with technology. Specifically, keeping in touch with family was a recurrent theme within the ethnographic data. For example, Amanda often wrote emails to her family in Cuba and Tony liked instant messaging

his cousins. In summary, although the majority of the youth reported engaging with technology to play games, a considerable portion of them also used technology in other more personally relevant activities. In addition, the ethnographic data showed that these personally relevant activities can take many forms and fit into youths' lives in different ways.

In terms of who provided help, the survey data showed that approximately 43% of the youth reported receiving help from a family member when something went wrong with the computer, and approximately 40% reported receiving help from a combination of family, friends, and non-family adults. These findings suggest that family was an important resource for the youth when using technology. Furthermore, the ethnographic data showed that older siblings, in particular, were a main source for technological knowledge and frequently took it upon themselves to introduce and, in some cases, further teach their younger siblings to use computers and video games. For example, both Brianna and Katie were observed helping their younger brothers play on the computer and teaching them how to navigate cartoon web sites on the Internet. In another instance, Tony's father commented, during one of the site visits, that when the little ones needed help getting past a video game level, Tony was always willing to show them what to do.

Analysis on the survey data to determine if the answers from the male youth and the female youth differed in relation to frequency with which they use a computer, showed no significant differences. This finding is in line with previous research that has shown that girls use the computer as frequently as boys at this age if no distinction is made between the applications used by boys and the ones used by girls [7]. A significant difference was found in regards to playing video games however; with more males reporting engaging in this activity than females. When taken together, these findings make apparent the importance of paying attention to the types of technological activities that the youth engage in. In this study, this idea is better exemplified by looking at the case studies of three of the youth, Jasmine, Josh, and Nova.

Jasmine, Josh, and Nova all demonstrated having technological knowledge and skills. Furthermore, all three of them used their technological knowledge and skills to contribute to their households in significant and valuable ways. On the other hand, the data showed that the technological practices in which each of them engaged differed considerably. Jasmine's technological practices were almost always about seeking information. She was frequently observed either searching for information related to her household's activities or information necessary to complete her school assignments; she was seldom observed engaging in some other type of technological activity. Although, Josh and Nova's technological practices were sometimes about seeking information, their technological practices also included maintaining his household's computer and playing video games in Josh's case and building web sites and exchanging technological knowledge with family and friends, sometimes over the Internet, in Nova's case. These three case studies made apparent that the youth's technological practices were framed by the contexts of their particular life situations and that this in turn affected the acquisition of different technological skills and knowledge by the youth.

Finally, a significant difference was found in regards to English language skills. Those youth who reported having less difficulty reading and writing English also reported engaging in more different activities when using information technologies than their counterparts. Unfortunately, the ethnographic data did not provide any useful information as to the different social and cultural factors that might contribute to these significant differences.

4. Discussion

Recently, researchers have started questioning the traditional conceptualization of the digital divide which overemphasizes the lack of access to technology by communities or individuals. They argue that this conceptualization is problematic because it reduces people into two camps, those who possess access and tools to use technology, and those who do not [10]. In fact, the digital divide is now less about physical access to technology and more about types of uses. In other words, access to technology is starting to be defined less in terms of technology availability and more in terms of people's ability to make use of those technologies to engage in meaningful social practices.

Physical availability alone should not be seen as the defining factor in the youth's access to technology. Instead, access to technology should be seen as affected by social factors such as the youth's age, gender, family composition, and social networks, as well as physical availability. As shown by the results of the survey data, the great majority of the youth had some type of physical access to computers. Yet, as demonstrated by the ethnographic data, the types of activities that the different youth chose to engage in varied in purpose and relevancy to their lives. Although it is true that physical availability could have been the determining factor, e.g. access could have been provided at a time different from when it was convenient or for a limited amount of time, there are other factors that could have contributed to the youth's decision to engage in a certain technological activity.

For example, with immigration, "the need for children to care for siblings and assume other household chores may increase" [11]. This could be especially true of older siblings. Furthermore, some researchers argue that the participation by children in household tasks may be seen by Latino families as essential for their education and therefore encouraged [12-13]. The amount of time each youth had after completing their household chores could have influenced the type of technological activities each chose to engage in.

Family composition could have also been a factor. Some of the youth had siblings old enough to share in the distribution of household chores leaving them with more free time to engage in technological activities. On the other hand, caring for family members and doing household chores has historically been regarded as women's work [14]. It may be that as young women, it was expected of the female youth, but not of the male youth, to take care of their siblings and participate in household chores. In either case, some of the youth could have had a greater amount of free time that they could spend in technological activities, like video game playing and web site creation, which required engagement over an extended period of time. Others, in contrast, engaged in activities that were focused, with a very specific purpose, and could have been completed during a short period of time or over small intervals.

If gender is a potential factor in the amount of time youth spend engaged in certain technological activities, it is also a potential factor in the types of activities they engage in, and even in the kind of physical access they have. For example, previous research has shown that the parents of boys are more likely to buy home computers than are those of girls [15]. Children's notions about which activities and interests are appropriate for their sex are influenced by many external factors. Expectations and beliefs, which in turn structure children's environments, are some of them. The difference in type of technological activities the youth engaged in, could have been due to what they believed was appropriate for them based on their gender. From an early age males are expected to learn about machines, tools, and how things work [14]. Women are seen as soft, sweet, interested in the home and child care [14]. Furthermore, there is a general belief that computing and playing video games are male activities [16]. In choosing the types of technological activities they chose to engage in, the youth, could have been acting guided by their gender schemas.

In addition to gender related knowledge, youth's social networks, such as families or peer groups, provide them with access to intangible but valuable resources. Having these resources might affect the types of technological activities youth chose to engage in. For example, past research has shown that access to people who can help resolve technology problems or provide technological knowledge has a bearing on individuals' computer usage [4]. In the case of some of the youth, their decision to engage in certain technological activities could have been affected by the technological knowledge shared by those around them. For example, Jasmine was able to obtain help from neighbors conducting Internet searches. She did not however, seemed to have people around her who had a different type of technological knowledge. In Josh's case playing video games seemed to be the preferred technological activity by those around him. His friends often came over to play video games and they kept tabs on each other about equipment and games. For Nova, it was the construction of web sites and communicating electronically. Nova had cousins who built web pages and sent emails and pictures online.

None of the factors mentioned above could be consider in isolation when looking at the different technological engagements of the youth. On the contrary, all of these factors combine to structure an environment in which the engagement in a certain technological activity is encouraged and

supported. Furthermore, they may help the youth see themselves as people who engage in certain technological practices and not others. For example, Josh was an avid video game player but claimed that computers were not his thing. This was in spite of his gender, his time spent maintaining the computer, and his parents believe that knowing about computers could be beneficial to his economic future. If Josh had had a computer in his room, if he had had friends or family member who had been interested in building web sites as opposed to playing video games, would computers then have been his thing?

In an increasingly technology-driven world, it is encouraging that our survey data showed that Latino immigrant youth not only have access to information and entertainment technology but are also making use of it in their daily lives. However, a person's access to and use of technology depend also on his/her capacity to benefit from it in a particular situation. Questions about equitable access then are not just questions about physical access to technology but also about the quality and nature of such access [17] and thus the associated learning experiences. Therefore, before we can deliver equitable policies about technology access, we need to understand the social, economic, cultural and life contexts that shape people's technological needs and interests.

On the other hand, as educational accountability pressure rises and schools increasingly incorporate technology into education, it is important that we understand the cultural resources that individuals and families bring to their experiences with technology outside of school so that we can have a clear view of the technology resources and prior knowledge that students bring to school. By better contextualizing technology in relation to education, family, and cultural practices, "...we can begin to work towards developing fairer educational outcomes and pedagogical practices that are appropriate for the societal diversity and technological sophistication of the twenty-first century" [17].

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References

- [1] B. Burns and E. Ferguson, *Early Child Development and Care* **37**, 7 (1988).
- [2] C. G. Frantom, K. E. Green and E. R. Hoffman, *Journal of Educational Computing Research* **26**, 249 (2002).
- [3] A. Oosterwegel, K. Littleton and P. Light, *Learning and Instruction* **14**, 215 (2004).
- [4] M. Warschauer, *Technology and social inclusion: Rethinking the digital divide*. (MIT Press, Cambridge, MA, 2003).
- [5] J. Kupperman and B. J. Fishman, *Journal of Research on Technology in Education* **34**, 189 (2002).
- [6] P. M. Leonardi, *Critical Studies in Media Communication* **20**, 160 (2003).
- [7] M. Volman and E. van Eck, *Review Educational Research* **71**, 613 (2001).
- [8] S. Ospina, E. E. Macias, K. Shejvali and G. González, Latino internet content study: Findings from focus group sessions. (2002, January). Retrieved November 23, 2004, from The Tomas Rivera Policy Institute Web site: <http://www.trpi.org/pages/itPubs.html>
- [9] L. G. Tornatzky, E. E. Macias and S. Jones, Latinos and information technology: The promise and the challenge. (2002, February). Retrieved November 23, 2004, from The Tomas Rivera Policy Institute Web site: <http://www.trpi.org/pages/itPubs.html>
- [10] J. Menard-Warwick and D. B. Dabach, *Journal of Adolescent & Adult Literacy* **47**, 380 (2004).
- [11] B. Thorne, M. F. Orellana, E. Lam, and A. Chee, in: P. Hondagneu-Sotelo (ed.), *Gender and U.S. immigration: Contemporary trends*, edited by P. Hondagneu-Sotelo, (University of California Press, Berkeley, CA., forthcoming).
- [12] M. F. Orellana, *New Directions for Youth Development* **100**, 25 (2003).
- [13] S. Villenas and M. Moreno, *Qualitative Studies in Education* **14**, 671 (2001).
- [14] M. R. Cherland, *Private practices: Girls reading fiction and constructing identity*. (Taylor & Francis, London, 1994).
- [15] J. W. Schofield, *Computers and classroom culture*. (Cambridge University Press, Cambridge, MA, 1995).
- [16] J. Margolis and A. Fischer, *Unlocking the clubhouse: Women in computing*. (The MIT Press, Cambridge, MA, 2003).
- [17] L. Angus, I. Snyder and W. Sutherland-Smith, *Australian Journal of Education* **47**, 18 (2003).