

Constructing Class Boundaries: Gender and Shared Computing

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Abstract— Information and Communication Technologies (ICTs) have been referred to as the ‘the great equalizer’ between men and women. Our research in India and Chile explores how gender and class identities intersect with ICTs in the context of shared computing environments with telecenters. Our study indicates that although these shared use projects are implemented in the name of targeting poor women, an ‘emerging middle class’ of women, such as stay at home mothers and young unmarried women are one of the dominant user groups in these telecenters. Women are constructing identities, trying to cross perceived class boundaries, and maintaining middle class positions through the use of ICTs and their symbolic value. This symbolic value becomes tied to linear notions and aspirations of progress, advancement, and upward mobility.

Index Terms—Gender, ICTs, Development, Class, India, Chile

I. INTRODUCTION

Information and Communication Technologies (ICTs), such as computers and mobile phones, have been referred to as the ‘the great equalizer’ between men and women [1, 2].

In their various forms they have been identified as effective tools to address many gender inequalities and contribute to economic development for women. Greater access to information, educational training in computers, and employment opportunities are a few of the examples commonly cited as the benefits of ICTs for women. One of the most popular channels for the delivery of ICT services is through shared computing in computer kiosks or telecenters¹. Kiosks are equipped with one or more internet-enabled computers and usually provide a variety of educational, government and/or business services. While many kiosks start

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¹ Computer kiosks or telecenters offer public connectivity or shared use computing with a range of communication and/or education services, many of which are subsidized or free to the public (Colle et al., 2001). These kiosks or telecenters differ from cybercafés because they most often have an explicit development or social component to its services. There is immense variation in the business models, services offered and populations targeted in shared computing projects. We will use the terms telecenters and kiosks interchangeably as a generic term to describe two ICT projects in India and Chile.

(and remain) as subsidized by the government, NGOs, or business enterprises, they are often owned and run by independent entrepreneurs. The discourse around these initiatives indicates that the spread of IT-enabled services can be immensely beneficial to both women and men, especially those who are poor, have limited skills or who lack resources to invest in education or own an individual computer [3, 4]. However, the same discourse indicates that profound gender differences remain and that women must overcome ‘barriers’ to gain access to ICTs. When these ‘barriers to access’ are discussed, solutions are very often based on a simplistic additive assumption that by equipping women with technologies, this will result in a ‘gender success.’

Our preliminary research on shared computing in two very different social, economic and political contexts in India and Chile² illustrates some interesting similarities and findings that call for further inquiry into these shared computing environments and their intersections with gender and class issues. Both cases focus on the provision of education services to the general population through training in computers and make concerted efforts to target the poor as users. We take a critical view of the discussions surrounding ICTs, gender and the poor and explore these different cases to understand cultural practices and class formation in relationship to women and technologies. Our research asks: *How do gender and class identities intersect with ICTs in the context of shared computing such as kiosks or telecenters?* By situating our work in gender and technology studies, we examine gendered identities and the processes and relations by which individuals can gain, control and maintain access to ICTs and its benefits.

Our studies indicate that although these shared use projects, particularly telecenters, are implemented in the name of targeting poor women, an ‘emerging middle class’³ of women (such as stay at home mothers and young unmarried women⁴ who are on the boundaries of working class and middle class) are one of the dominant user groups in these telecenters for education services. Our research claims that women are constructing identities, trying to cross perceived class

² We would like to emphasize that that the populations we are focusing on are not monolithic groups but characterized by differences in income, educational backgrounds and political economies.

³ Defining “class” is challenging because of the many conceptions associated with it. We view class as a set of cultural lived and imagined practices, instead of predetermined outcomes. We refer to the emerging middle class a liminal group on the boundaries of working class and middle class in India and Chile. We will further discuss this in the paper.

⁴ These women tended to range in age from early 20’s to early 40’s and were often mothers of school-age children.

boundaries, and maintaining middle class positions through the use of ICTs and their symbolic value. We also find that there is a curious absence of emerging middle class men who participate in these shared use computing environments for computer education courses. Most studies examine the impacts of ICTs on women, barriers women face in usage, empowerment, and influences on use [5-7]. We contribute to this literature and extend it by examining gendered processes associated with class formation in the context of these shared computing projects.

II. CASES AND METHODS

A. India

India has actively engaged in ICT4D projects with over 150 kiosk projects in the country [8]. Both the central government and individual states have been pioneers in the field of ICT4D, starting kiosk projects in the late 1990's. We focused on ICT projects in the southern Indian state of Kerala and conducted fieldwork with users and non users of the Akshaya project. Kerala is a unique state in India and is well known as being a 'model of development' with high levels of social indicators, such as high female literacy and low infant mortality as compared to the rest of the country [9-11]⁵.

The Akshaya project is a partnership between the government of Kerala/Kerala State IT Mission and private entrepreneurs who own, run and operate the computer kiosks. The goal of the project is to develop more than 5000 networked multi-purpose technology centers in the entire state. The project also aims to make one person from every family in the state 'e-literate.' Thus the government subsidizes an e-literacy training phase in which they provide an almost free course to one member from each household for a few days. After this subsidized course, individuals must pay a full fee to use the centers for connectivity or to take continuing or more advanced classes (www.akshaya.net). The kiosks are located in urban, peri-urban and rural areas. The urban areas are small compared to the Chile case with an average population of 49,000 people. The periurban areas where the kiosks are implemented have average populations of 14,000 people and the rural areas have populations of less than 5000 people. We focus our work in the Malappuram District, which has an average per capita income of \$306 and was where the project was first piloted.

According to Kerala State IT mission project officials, during the e-literacy phase of the project, many low and middle income women participated in learning the basics of computers. During this phase, the state selected the "decision maker" of each household to attend the computer-training program. Many of the people who attended the training were women due to the large number of men working abroad as laborers in Gulf countries. Thus the officials deemed this phase to be a "gender success."

⁵ The unique political and social environment of Kerala, with its highly literate female population provides an interesting case to understand women's use of computing. However, we recognize that generalizability may be limited in areas with less literate populations.

B. Chile

Since Chile emerged from the Pinochet dictatorship in 1989, and elected Ricardo Lagos as president in 2000, efforts to 'bridge the digital divide' have been made both at the federal and local levels of government. Much of the promotion of new digital technologies has relied on the belief that technologies will help make the government more transparent to citizens and allow for greater participation by the same. Hence Chile has become reliant on an e-governance model.

The field site for this study was Peñalolén (www.penalolen.cl), a part of the greater Santiago metropolitan area, but having its own mayor and elected officials. The town's population is at approximately 230,000, and the majority of the inhabitants are lower middle class or lower working class. The area is classified as 100 percent urban. Currently, the town serves as type of bedroom community⁶ to other areas of Santiago, and Peñalolén's economy is mostly based on the service industry, except for one large vineyard at the northern municipal limits. The ICT development in Peñalolén has never really had an explicit gender-specific focus.

It is in this environment that the municipal government of Peñalolén has been developing a local technology network a *comuna digital*, (or digital community) with the schools, subsidized telecenters, and other NGOs in the area. While the specific start of Peñalolén's telecenter movement was in 1998, with the introduction of a community based FM radio station, it has only been in the last year that both governments subsidized and private cybercafés have truly blossomed. The original telecenter was promoted as an area where people could come and "create community." This same philosophy continues to permeate the other spin-off telecenters in the town. This is not true of the newer, privately-owned cybercafés that operate in a strictly for-profit agenda.

C. Methods

We chose two countries on different continents to understand variation and similarities across geographies. We selected these two cases because they both contained examples of shared computing environments, with a particular focus on providing educational services to the public and targeting the poor. In both field sites, there was a phase in which the services were subsidized and the low income population was specifically approached as potential users. Additionally both shared computing environments were used by working class and middle class women. In neither case was there a gender specific strategy to attract female users. The two cases are similar in terms of their social indicators but very different in terms of their economic and national income levels (See table 1).

We took an ethnographic approach and conducted in-depth semi structured and recorded interviews. We conducted 25 interviews in India and 24 interviews in Chile. We also

⁶ Bedroom communities refer to small towns outside of a larger city where people live for proximity to jobs in the city, with lower cost of living.

conducted many informal interviews with users and non-users of the centers, as well as kiosk entrepreneurs. These interviews took place in the homes of individuals as well as in the actual shared computing centers. We also used participant observation methods in centers and homes of entrepreneurs and users. We also want to note that we interviewed both men and women, which reflects the way in which we conceptualize gender as a relational notion. We will discuss this concept of gender in more depth below.

TABLE 1: ECONOMIC AND SOCIAL INDICATORS FOR CHILE AND INDIA

Characteristics	Chile	India
Area (sq km)	756,950	2,973,190
GNI Per capita income	\$4250	\$730
Literacy Rate	96%	61%
Infant mortality (deaths per 1000 live births)	8.4	56

III. LITERATURE REVIEW

We situate this exploration of women and technology in the vast literature on gender studies, technology and development. The example from Akshaya in which project officials called the project a ‘gender success’ because many women participated in the program, highlights the need to clarify the distinctions between gender and sex in this shared computing context.

Influential writings materialized in the 1970s distinguishing between biological sex and social gender [12, 13]. Studies in feminist anthropology examined cultural representations of the sexes and the relations between men and women. The literature examined how understandings of men and women were socially constructed and how social environment factors reinforced these relations and defined them. Power relations were not simply biologically determined or a result of men and women’s positions in modes of production. Instead the literature maintained that these relations were socially produced [14].

A. Women and Technology/Gender and Technology

The literature that examined women and technology dates back to the 1970’s and ranges from a focus on the problems created by technologies for women and their work [15]; to issues of male dominance in technology fields [16]; to a more dynamic understanding of the fluid nature of gender and technology [17]. These various aspects of the literature were broadly categorized into two different types of narratives that focused on the themes of women’s exclusion from and inclusion to technology.

The exclusion narrative revolved around the idea of women being excluded from technology with a focus on a lack of equal access to education and employment. It was assumed that science was an open, unbiased field. If women received the right opportunities, they could become scientists [18]. This stream of feminist scholarship concerned with “women in technology” most often focused on why so few women

participated in the engineering field [16, 19, 20]. This literature has been critiqued for drawing on binary opposition between feminine and masculine as ordering devices. Other literature which fell under the exclusion arguments was often referred to as “women and technology” with a focus on the technologies encountered by women. This literature encompassed analyses of technologies in the workplace or reproductive technologies and how technologies negatively impacted women in relation to men. This scholarship often took a patriarchal view of technology as leading to the differential treatment of men and women or undercutting women’s roles in wage labor [17].

In response to the exclusion studies an inclusion narrative emerged with the argument being that more women should be included into ICTs as long as the technologies were properly diffused or that women received the right opportunities [17, 19]. This literature was mostly concerned with access to technologies or recruitment of women to join in and use these technologies in engineering or computer science fields with a “women only approach.” This literature was critiqued for not understanding gender, but simply seeing technologies as neutral forces.

The feminist constructivist writings reframed the debate as “gender and technology” with these relations being mutually shaped [15, 16, 18]. (See figure 1). They rejected technologically deterministic arguments and maintained that new technologies were necessarily ‘heterogeneous.’ Scholars argued for the need to understand technology as part of the social fabric that holds society together. Technology was defined as a sociomaterial product with a web of combining artifacts and people. Gender relations materialized in technology and the concepts of masculinity and femininity in turn acquired their meaning through their embeddedness in technologies (Ibid). These scholars argued for the need to integrate the material, discursive and social elements of technoscientific practice. The social construction of technology literature [21] evolved in a post structuralist light with the case that technology and gender was co-produced. There has been a push to move beyond dualities and to talk about the plurality of genders, issues of masculinities, and the construction of gender through technology mediated spaces [22].

This vast gender and technology literature is a starting point for our work because it moves beyond treatments of technologies as neutral, in terms of exclusion or inclusion, or simply a product of male interest. We build on these debates and further them by trying to understand the multiple ways women approach technologies, the power relations involved and how it relates to class in the context of shared computing. We will now turn to the literature on women and development to further understand how the technology and gender debates interface with the gender and development debates.

B. Women in Development/Gender and Development

Boserup’s work was a defining moment which brought issues of women in development to the agendas of development institutions and governments [23]. Since then, much has been written about how investments into women’s health, education, and literacy are linked to a country’s levels

of social and economic development [24]. The term “Women in Development” (WID) was coined by the development community to argue that women were being differentially impacted by modernization than men. WID advocates portrayed women as productive members of society and pushed for their inclusion as active contributors to economic development. The WID movement targeted women as the beneficiaries of development since they had previously been excluded. Women were brought in on sex-specific terms to development with a pragmatic agenda that unified them. They tried to integrate women’s concerns into mainstream development projects and programs [25-27].

Similar to the various camps examining women and technology and gender and technology, the same debates re-emerged in the development literature. Feminist scholars eventually critiqued a WID approach and shifted to Gender and Development (GAD), which called for gender analysis of social relations (See figure 1). With GAD, there was a shift of focus from women to power relations between men and women as much as the institutions in which they were embedded [25, 26]. These scholars critiqued the “women only” approach and maintained the need to understand the multiple ways in which gender was constructed, produced and intersected with socioeconomic as well as cultural factors.

C. Women and ICTs

Similar to the WID and Women in Technology literature, much of the Digital Divide literature and the gender discourse surrounding ICTs, emphasized the language of ‘barriers’, inclusion/exclusion narratives, and the need for woman-targeted approaches as interchangeable with ‘gender.’

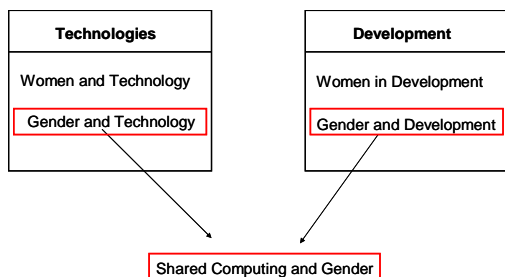


Fig. 1. The debates in the literature on technologies, development and gender. We draw from the two bodies of literature “Gender and Technology” and “Gender and Development” as a framework for examining shared computing and gender.

The push to use ICTs in the developing world emerged from the binary Digital Divide discourse and tried to understand whether the Internet served to reinforce or erode “the gap between information rich and poor groups [28].”

Women were targeted specifically within this discourse with the idea that “ICTs create significant opportunities for bridging the gender divide and supporting the empowerment of women in developing countries[29].” Studies indicated that women faced barriers with large gender differences in use of ICTs around the world. The main reasons attributed were lack of access, lack of training, high costs of equipment, and technologies that did not reflect the needs of women [5, 7, 30].

There is a gap in the literature and a need to take a more critical lens to understanding gendered relations and ICTs in the context of shared computing. The intersection of the Gender and Technology constructivist approach and the Gender and Development literature draws together themes that inform this research (See Figure 1). In particular, the idea of understanding relations between men and women in development, the ways in which power relations are constructed and how gender and technology are mutually constructed frame the way we approach the topic of gender as well as our research questions. Rather than viewing access to technologies as simply a matter of overcoming barriers, or exclusion/inclusion narratives, we approach women’s access to technology in terms of gendered relations and processes related to identity and class formation. It is important to differentiate between understandings of incorporating “women” into shared computing in comparison to “gender.” We challenge the notion that gender is an additive category to these projects. Instead, it is a lens through which these shared computing environments can be re-examined. We argue that women’s roles and participation in shared use computing, access and control is socially distributed and culturally and historically specific. This means not just understanding how many women have learned to use a computer, but also and more importantly, understanding their cultural practices and identity formation in relationship to computing.

IV. GENDER AND SHARED COMPUTING

A. Influences on Use of ICTs

Many shared computing projects are implemented in the name of empowering the poor or marginalized groups. This is based on an assumption that poor or low income populations cannot afford to own individual computers and therefore would represent the dominant user groups of kiosks. Kiosk services are available for women to take computer education courses, to search the internet for information, and to communicate over instant messaging services or to email their relatives living or working far away. Our research finds that low income women are not the ongoing users of kiosks. The research revealed that there were many processes related to whether low income women attended the subsidized literacy course or used the kiosk.

Things such as women’s abilities to negotiate relationships with their husbands; whether other women in their localities were attending computer courses; cultural norms about what is considered appropriate public areas and distance from home where women were ‘allowed’ to go; all influenced whether women used the centers. The Kerala case highlighted how some of these cultural norms influenced use of centers. Entrepreneurs recognized that women in the villages were not always allowed to go to far away places such as towns. Therefore, sometimes they arranged the subsidized training to take place in temporary locations close to villages. But once the training was over and the centers were established in towns due to financial reasons, these women claimed that the distance was too far from their homes to travel alone.

Low income women also indicated that time was a constraint that prevented them from using the kiosks on an

ongoing, sustainable basis. Huyer indicated that unless men or women see an immediate benefit for themselves or their family from ICTs they perceive lack of time as a reason that constrains them from using kiosks[31]. Additionally, many of the women from low income backgrounds who participated in the computer literacy courses did not find relevant services for which they were willing to pay after the course ended.

It has been suggested that women want hard data, or more practical information to be available online [31]. This fits with our observations of higher income women in India and Chile, who indicated that they were looking for information to help their families or themselves, whether it was to get information for their children's homework assignment or to look up diabetes information for their mother-in-law. Nutritional information, health information, tips for better educational processes, scholarships, beauty tips, and cooking ideas were other types of content our middle income respondents indicated interested them.

V. EMERGING MIDDLE CLASS

There is an ongoing effort in anthropology to theorize and portray class as cultural practices or processes [32-34]. There has been renewed interest in understanding and defining class in the last decade, building on the work of Bourdieu. He offers a multi-faceted approach to understanding class in which one's position is related to economic, cultural and social capital. Whereas many definitions of class are based purely on economic capital, class can also be seen in terms of its powerful symbolic dimensions of cultural capital. This is significant for understanding how particular classes are socialized. The process of socialization imbibes a specific 'habitus.' Habitus can be described as "the system of durable dispositions of being and acting that represent internalized embodiment of social norms and established patterns of behavior. People subjected to similar experiences share the dispositions associated with a particular habitus [35, 36]." With this understanding of class, "Each person is a source of judgments and a subject of judgments; each individual is in the classification scheme whose discrimination he is helping to establish...[32]."

Building on these understandings of class, our research indicates that there is an intersection between the way women are imagining and constructing their class identities and ICTs. Class boundaries can be seen as fluid in this context. For this research, we view class as a set of cultural lived and imagined practices, correlated with economic inequality and identity formation, instead of predetermined outcomes. Ethnography helps us to represent class boundaries and to understand how individuals construct cultural meanings and in turn their own identities [32]. We claim that the use or discourse of using ICTs allow women to position themselves to cross a particular class boundary, to enter the 'middle classes' or to maintain middle class positions. Many of these women are on the border of being working class and an established middle class, and are in a liminal state of defining and delineating differences between these classes through ICTs. For this reason, we refer to the women in our study as the 'emerging

middle class.⁷ ICTs are increasingly becoming infused in a cultural economy which is transforming itself and the terms by which individuals imagine themselves and others.

We found in both India and Chile that there was a symbolic value associated with ICTs that was linked to linear notions of progress, advancement, and upward mobility. It was based on an idea of leaving one state of being and entering another. Participating in a computer education program became part of an imagined process of gaining entry, maintaining or redefining class boundaries. Working class women who engaged in computer literacy courses found a value in simply knowing about computers. They couldn't necessarily articulate what the benefit of computers brings to them, but they associated it with modernity and advancement. In India for example, a Muslim woman, who had finished her 8th grade education and participated in the e-literacy training course stated,

"It is a new world now and a new millennium. All important places use computers like banks and hospitals and I wanted to know how to use computers as well."

A female school teacher in India noted,

"In order to become all around developed, you need Information Technologies (IT). For rural areas, IT will help them. IT is 'a must.' It is a necessary thing. I do not have a deep knowledge of IT, but without it, there is no development in rural or urban areas."

This symbolic value that is associated with ICTs becomes tied to aspirations and constructions of class boundaries. There is often an opposition created between ideas of culture and notions of development. Definitions of culture are often seen in relation to the past whereas development, is often viewed in terms of the future. But Appadurai (2004) views the concept of 'aspiration' as a cultural capacity. The capacity to aspire finds its roots in the "wider ethical and metaphysical ideas which derives from larger cultural norms. Aspirations are never simply individual... They are always formed in interaction and in the thick of social life [37]." These aspirations are part of a system of ideas that are located within a larger set of beliefs and social relations about self advancement.

One example where this symbolic value is being tied to aspiration is in India. Class construction is linked to the IT industry and aspirations for participating in it. The IT industry in India has produced 1 million jobs for IT professionals (2005) and is worth more than \$17 billion dollars, which was a 34% increase in 2 years [38] (See Table 2). As a result, the industry has become associated with beliefs that entry into the industry in any form will lead to economic success⁸. Highly visible success stories are inextricably linked to these class constructions and the symbolic value that has become tied to computer education and notions of upward mobility. The popular media in India reinforces these constructs through

⁷ The women in these classifications have similar economic and cultural identities in India and Chile (respectively).

⁸ Respondents indicated that this could be a job as an IT professional or someone in the service industries supporting it (like drivers, restaurant workers, maintenance people).

advertising campaigns supporting the IT and computer education industry. One billboard by a private computer education company stated, “Change the way the world sees you, take a computer class.” This physical messaging on the landscape contributes to one’s sense of self worth, confidence and the construction and reinforcement of class boundaries. It is linked to self representation and perceptions of modernity. It indicates that by taking a computer class, one can change the way she is perceived in society, which is bound to class identity. Mass media and forms of commodity production produce a space for imagination and imagined ways of being [39]. This capacity to aspire can be conceived as “a navigational capacity which is nurtured by the possibility of real-world conjectures and refutations... [37].”

TABLE 2: INFORMATION TECHNOLOGY INDUSTRY IN INDIA

INDIA	2005
Indian software and services industry	\$17.2 billion (34% increase in 2 years)
% of GDP	4.1%
IT Professionals	1 million

Women, aspiring to be middle class, or trying to maintain their middle class status indicated that one reason they were participating in computer education was to augment their income. Women in Chile indicated that they were taking the classes not just to improve themselves, but to assist their husbands in their businesses and hopefully to supplement household income and status. Women in both countries believed that if they were to finish online courses or learn about computers, they someday would be able to get better jobs. When asked whether they knew someone who had gotten a better job because of this basic knowledge of computers, the women often could not point to one example. But there was a general consensus that if you wanted to attain a better job or improve your income, a computer education could help you to achieve that. In Chile one woman asserted, “One cannot do anything nowadays--if one can’t use a PC.” Appadurai (2004) indicates that most societal groups express horizons in choices made and voiced in terms of specific material and proximate outcomes, such as better jobs, higher income, and future jobs for their children. But these lists are tied up in norms and presumptions about life. Although these emerging middle class women can identify their aspirations for increased incomes and jobs associated with ICTs, they struggle with identifying the mechanisms by which to achieve those goals. They grasp for concrete examples, experiences of relations between aspirations and outcomes, and “opportunities to link material goods, and immediate opportunities to more general and generic possibilities and options (Ibid).”

Participation or usage of kiosks/telecenters was linked to women’s aspirations for herself and her children as well as maintenance of a state of middle class-ness. By participating in these programs, women imagined securing positions in a new class or advancing their positions, if not for themselves, then for their children. One woman in India stated,

“Computers have benefited me since taking this course. I can now go online and chat. I can also help with the education of my child. I want my children to know about computers. One of my children studies here too.”

We found that these women were using ICTs not only as an entry into this imagined construct of the middle class but as a way to uphold their middle class identities. Since these women may have grown up as working class, or may have recently acquired a new social status of middle class, maintaining this identity is seen as important for them, particularly for their children’s futures. In both India and Chile, we found that investment in children’s education was a driver for technology use. Women were interested in technology use to further their engagement with their children’s advancement. They expressed that with knowledge in computers, they thought that they were equipping themselves with the tools to make informed decisions about their children’s education and futures. One woman in Chile stated, “We’re all going into the future; and all the schools now work on computers, so you have to learn to keep up with your children, to help them, to understand them.”

It is often assumed that women as a category are marginalized and are not using ICTs. But as indicated earlier, we found in both India and Chile that rather than low income women, this “emerging middle class” of women were one of the dominant user groups in these telecenters. The other dominant groups were young children of both sexes and young men in their late teens and early twenties. Specifically in Peñalolén, Chile, we found that women were driving the telecenter movement through the active pursuit of funding grants to establish telecenters from the municipal government. The government would grant a women’s group (sometimes formed for just this purpose) a sum of money that would pay for all the technology, support, and internet connections for one year. In the next year the new telecenter would have to become self-supporting. This did not discourage women; rather they explained they wanted these centers in order to “improve the neighborhood and improve opportunities for our husbands and children.”

There is a noticeable absence of “emerging” middle and lower class men who attended these computer education courses. In Chile, women indicated that men lacked the interest to engage in telecenter courses because they feared the risk of looking foolish as they learned. This belief roots in the cultural characteristic of machismo that is pervasive throughout Latin America and the relations between men and women. Both men and women in Chile and India say that men do not have the time to take classes as they are too busy working and supporting the household. Finally, some men interviewed in Chile also indicated that women had more ‘orderly’ minds and could learn and engage in computer activities more productively than men. This goes against the old debates in the US about technologies being more masculine and suitable for men (but is in line with older thinking about women being more adept at typewriters and as telephone switchboard operators).

VI. CONCLUSION

This paper has intended to understand the multiple ways women approach technologies, the gender relations involved and how it relates to class in the context of shared computing. Our preliminary research illustrates that women's participation in shared computing environments contributes to formation of class boundaries, and aspirations to gain entry or to maintain middle classness.

We identify this area of middle class and identity construction in the context of technologies as an important area for future research. Based on these observations, our research raises several questions: How is this emerging middle class being imagined for both men and women? How are boundaries being created? How is technology materially used, and how is it imagined as a vehicle to achieve status and/or class? How are maternal investments into children linked to either maintaining or aspiring to cross class boundaries? What is it about being an emerging middle class woman that creates an entry into shared computing compared to men?

A deeper understanding of how gender intersects with the "emerging middle class", besides the standard market research on these groups, is needed. Specifically exploring how technologies and their symbolic value factor into the construction of class boundaries and upward mobility are strategic areas for practitioners and private companies investing in ICT4D to understand in order to target new markets and women.

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