

Consejero Automatico: Chatbots for Supporting Latino Parents' Educational Engagement

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Abstract

Parents' participation and actual engagement in their children's education is one of the most important predictors of children's academic success. However, inequities in information access prevent many parents in the United States from engaging in ways that allow their children to achieve such success. We present preliminary research aiming to holistically capture everyday technology and information practices of low-income Latino immigrants in Atlanta, Georgia. Our findings allow us to identify assets mobilized by these parents to design *Consejero Automatico*, a chatbot for WhatsApp that helps parents improve their information-seeking practices. We use *Consejero* as a probe for uncovering design goals and constraints when leveraging everyday assets, and present a preliminary results that emphasize the role of trust in driving the adoption of tools for enhancing information sharing amongst the targeted group.

CCS Concepts

• **Human-centered computing** → *Empirical studies in HCI*;

Keywords

Chatbots; Latinos; Parents; Schools; WhatsApp; Atlanta

ACM Reference Format:

Marisol Wong-Villacres^{†‡}, Hayley Evans[†], Danielle Schechter[†], Betsy DiSalvo[†], Neha Kumar[†]. 2019. *Consejero Automatico: Chatbots for Supporting Latino Parents' Educational Engagement*. In *THE TENTH INTERNATIONAL CONFERENCE ON INFORMATION AND COMMUNICATION TECHNOLOGIES AND DEVELOPMENT (ICTD '19)*, January 4–7, 2019, Ahmedabad, India. ACM, New York, NY, USA, 5 pages. <https://doi.org/10.1145/3287098.3287149>

1 Introduction

The participation and actual engagement of parents in their children's education is one of the most important predictors of children's academic success [1, 5]. However, for many parents from non-dominant groups in the United States (e.g., ethnic minorities),

engaging in ways that allow their children to achieve such success is still a challenge [6, 13]. Barriers like language and cultural differences stand in the way [4, 13]. Digital technologies have the potential to offer the needed support by enhancing parents' opportunities to access relevant information [9]. However, to do so, the design of such technologies has yet to enable parents to actively participate with regards to what they find meaningful and valuable, and broaden their access to diverse voices and perspectives [22]. To tackle these pending design challenges, we focus on the case of Spanish-speaking low-income Latino parents and identify meaningful aspects of their everyday practices that can inform the design of technologies for this group. We further probe the potential of the identified aspects by drawing on them to propose and evaluate *Consejero Automatico* (henceforth, *Consejero*), a design concept that diversifies parents' exposure to learning resources.

The educational attainment of Latino children in the United States is one of the lowest when compared to other ethnicities [2]. Given the large presence of Latinos in the country [3], finding ways to support them becomes a national priority. Deficit-based models have traditionally disregarded the support that parents can offer to these children [13, 19]. In alignment with assets-based approaches, as recommended by Mathie and Cunningham for community development [16], we work to understand the potential of parents' everyday practices to operate as assets for technology design.

In this poster, we present preliminary results of an ethnographic engagement begun to devise pathways for the design of technologies to support Latino immigrant parents. Drawing on our findings, we present the concept of *Consejero*; a chatbot integrated in parents' online groups for broadening their opportunities to access information. In particular, we propose *Consejero* as a culturally appropriate probe for triggering discussion about ideas for future technologies. Our research exercise has thus far been driven by a two-fold focus—first, on identifying assets that might be leveraged for engaging low-income Latino immigrant parents through technology; and second, on identifying design goals and constraints based on such assets. Below we present our initial findings on these fronts and conclude with recommendations for designing technologies for this particular group.

2 Related Work

Our research draws on and extends literature on parental engagement to support their children's education practices, and the design

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ICTD '19, January 4–7, 2019, Ahmedabad, India

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ACM ISBN 978-1-4503-6122-4/19/01...\$15.00

<https://doi.org/10.1145/3287098.3287149>

of chatbots within human-computer interaction (HCI). We also emphasize that our work adds to limited research published at ICTD on underserved contexts in the U.S.

2.1 Technology and Parental Engagement

Parents' support to children's education is an emergent topic across HCI. Previous research show that for parents, parent-school communication technologies have the potential to foster their engagement. They find parent portals and electronic progress to be useful for becoming more informed of their children's academic performance [8, 10]. Many parents also appreciate email-based communication and feel that technology can allow them to ask questions and voice concerns [18]. Existing work has attempted to harness such potential by proposing technologies for enhancing the classroom experience like videotapes [14], social networking sites [25], and learning suites [24]. These solutions aim at helping parents, teachers, and children connect to each other and participate together in classroom-based activities. However, these do not address parents' information needs. Further, there is not enough work on the parental engagement needs of non-dominant groups. Our work proposes the design of new technologies for low-income Latino parents that align with these parents' cultural, socioeconomic, and technological ecologies to enhance how they seek and access education-related information.

In regard to how to enhance parents' information access, three studies are particularly relevant to our work. DiSalvo's and Khanipour's research on parents' practices when seeking educational information for their children [9, 15] suggested that new parent-school communication technologies should facilitate parent-led initiatives rather than only school-authored ones. Wong-Villacres et al. make further design recommendations in this regard [22]. We build on this prior work to focus on designing for (1) supporting equitable interactions for all parents and teachers, (2) providing a unified and organized source of information, and (3) enabling access to relevant information.

2.2 Chatbots for Information Access

Chatbots are artificially intelligent agents that are able to converse with humans using natural language, allowing users to type questions and respond with meaningful answers [7]. Due to this potential to deliver relevant information responding to natural language, chatbots are increasingly becoming commonplace [20]. Companies are using chatbots as booking agents in messaging applications, and health organizations are exploring its use to facilitate access to health advice. Chatbots also hold great potential to combat digital inequities; their natural-language interface could facilitate technology across groups that are less tech-savvy [11].

Although there is a long line of research exploring the interaction between humans and computer-based agents [20], research on chatbots is still emergent [11, 23]. Recent studies on chatbots have suggested that the expectations of use for chatbots are shaped by cultural considerations [20, 23]. The work of Medhi Thies et al., for example, found that young, well-to-do, urban users in India preferred a chatbot that behaved as a friend, making useful recommendations [20]. Similarly, Zamora identified that, in contrast with Americans, Indians would prefer multi-language interactions with chatbots [23]. There is, however, no work on chatbots that describes

how non-dominant communities perceive these tools. We address this gap focusing on the realm of learning-related information for supporting parental engagement.

3 Methodology

We studied parents' everyday technology, information, and engagement practices by conducting semi-structured interviews with parents, teachers, school liaisons, staff of a school district, members of non-governmental (NGOs) and religious organizations that support Latino immigrants in Atlanta, Georgia. We interviewed 18 parents (22-35 years-old), 2 teachers, and 6 parent-school liaisons and 4 members of NGOs. Sixteen participants identified as female. Only four parents were not from Mexico but from Central and South American countries. In addition, we conducted participant observations at one school, and at a church where we volunteered to help parents improve their digital literacies. Throughout our data collection we focused on exploring (1) information transfers between parents and other stakeholders, (2) assets that could be leveraged to design parent-school technologies, and (3) the different constraints these parents experienced to bridge social capital.

The first author—an Ecuadorian mother—guided the data collection, conducting all observations and most interviews. Her ethnicity facilitated access to the sub-communities studied. All authors of this paper are women from diverse cultural backgrounds (Latina, Indian, and white American), with an interest in conducting HCI research with non-dominant populations in diverse parts of the world. However, we recognize that the analysis we offer is shaped by the lens of our biases—conscious and unconscious—as part of a population more dominant than those we studied. Recognizing our biases we strive towards a self-reflective discussion of how parents' everyday practices can lead to assets for design.

4 Findings

We now report on preliminary aspects of our findings that unearth how several complex practices and beliefs among the Latino immigrant parent community can be leveraged to the design of technologies for this group.

4.1 Technology Access, Ownership, and Use

Our participant parents preferred to use mobile phones over tablets or laptops. Most of them had unlimited data plans and used private social networks such as Messenger and WhatsApp over public ones like Facebook (which they often deemed “a waste of time” and found hard to trust in terms of the information they could share). Although parents tried to install new apps—mainly those recommended by the school—they often postponed doing so. Sometimes they had their children or other family members install the apps and manage their use. Parents expressed interest in platforms such as Google Translate, Google Maps, and YouTube, to get them through their daily routines. This highlights that a possible design for these parents needs to work over a mobile app they already use and offer a sense of privacy just like WhatsApp and Messenger.

4.2 A Sense of Community

The sense of community among our participants was visibly strong. For example, parent participants were able to find low-cost child-care by trusting their neighbors to take care of their children. Also,

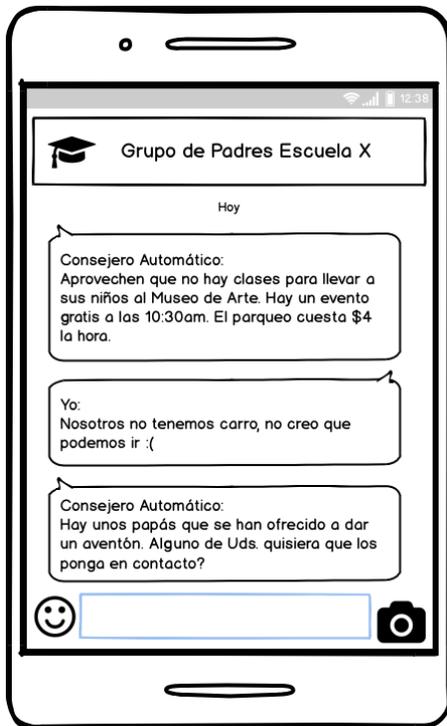


Figure 1: Here, the school liaison reminds the parent about an upcoming holiday at the school, Consejero recommends a free trip to the museum. Consejero further helps parents connect to solve transportation issues.

they relied on parent-school liaisons or their children for relaying information to them. With liaisons, in particular, most parents shared WhatsApp groups where liaisons shared school information. Parents also trusted NGOs and churches to provide information in Spanish in alignment with their parenting needs (e.g., free after-school programs, and parenting classes). However, our participants faced many obstacles to access and make sense of the deluge of information both schools and supporting organizations could provide. In most cases information was too wordy, did not convey the direct benefit for children or did not seem appropriate for parents' transportation and financial constraints.

We consider that such a strong sense of community—particularly the closeness to those who can diversify learning resources for parents—is indeed an asset. The pending challenge lies, however, in harnessing it so that the information flowing from organizations and schools to parents, can benefit more parents.

4.3 Situated Cultural Value Systems

Values between our participants and school systems were not always aligned. Schools pushed for students to engage in activities that would improve their academic performance (e.g., active reading and practicing Math at home using specific online apps). In contrast, our participants focused more on making sure their children grew up to “*ser felices*” (be happy). This notion went beyond achieving a college degree or academic success. As Lina, a mother of

a middle-schooler further described, happiness was about freedom: “*I want her (the daughter) to have the freedom to pursue whatever she wants in life, which is something I could not afford to do when I was her age*”. Some parents hoped this freedom would translate into their children becoming professionals. However, most of them emphasized they would support their children’s decisions even if those did not imply going to college but pursuing activities such as hair styling and serving in the army. The desire for their children to be free to decide was the main motivation parents had for supporting children’s education. Many of the parents we interviewed shared how that support usually translated into making “*sacrificios*” (great efforts) to give their children tools they thought were needed for studying (e.g., investing in an Internet plan, and buying a tablet or a computer). Parents’ commitment towards children’s happiness suggests that, despite financial and time constraints, parents would be willing to act on information if they believed that could lead to their children’s happiness. It is key, thus, to find ways to deliver information that parents can act on.

5 Consejero Automatico

Our findings highlight three key aspects to acknowledge—and harness as assets—when designing for this group. First, parents’ eagerness to use apps they are familiar with—and avoid those which benefits are not clear to them—indicates that any design needs to work over such familiar apps, especially the ones that elicit a sense of privacy like WhatsApp. Second, parents’ willingness to work towards their children’s happiness suggests also willingness to act on information that could benefit children’s future. Third, the potential of organizations and schools to share information about learning opportunities, together with the issues that parents face to access relevant information, signals a need to work on issues of meaning, scale, and form to ensure parents can make use of available resources.

We explored different design ideas for probing the opportunities and constraints lying within the aforementioned assets. Amongst some of the ideas we considered were a close Facebook group that would encourage discussion amongst parents, and a plugin for Google Maps that would suggest learning resources nearby parents’ current location. However, these ideas did not ensure the given information was meaningful to parents’ particular contexts. We decided to pursue the idea of *Consejero*, a Spanish-speaking chatbot that reacts to parents’ ongoing conversations with other parents and school liaisons in WhatsApp groups. These are communication channels parents already use and trusts. As an intelligent agent, *Consejero* can derive relevant information from trusted sources (e.g., church, Latin American Organizations, schools, and after-school program websites) and curate it to provide timely suggestions to parents. Further, it can answer questions parents might have about the offered suggestions, thereby augmenting the opportunities for parents to act on them.

We created a low-fidelity prototype of *Consejero* (Fig.1), which showed what a typical conversation between the parent liaison, parent group, and *Consejero* might look like. To probe the potential of the assets reified by *Consejero*, we showed this low-fidelity paper prototype to three Latina mothers with children in elementary and/or high-school. Initial response from all showed that there was promise in the idea. They enjoyed the free advice and extra

resources. However, they also helped us to identify a need to further work in how trust and aspirations can be leveraged. Two of our participants showed mistrust towards auto-generated information. They immediately asked, “*what’s in it for the people making this suggestion?*”. One of them did not immediately recognize Consejero as a non-human agent. Despite being skeptical at first, they grew to trust Consejero once they saw that it was giving others important information and being responsive to their needs. However, there was still some concern about whether the information was being offered in the form of an advertisement. Future explorations would need to look the relationship between privacy, trust, meaningful information and advertisements.

In terms of providing meaningful information, mothers also commented they would like content outside of our scope, e.g., tips about potty-training children and advise on how to discipline children. This suggests a need to consider whether channels for information exchange are better held in group or 1:1. The evaluation also unearthed cultural issues to consider. One woman said that she was tempted to say “thank you” when it provided advice, though she knew it was software. Another said that she would like Consejero to address her with the respectful form in Spanish (“*Usted*”), rather than informally (“*Tu*”). Cultural nuances are, thus, a key aspect to understand when attempting to use intelligent agents to deliver actionable information.

6 Discussion

Based on our preliminary findings, we now discuss how we plan to deploy a piece of technology for parents in a way that is situated, respectful and considerate of parents’ everyday practices.

6.1 Embracing Situated Knowledges

Donna Haraway [12] advocates that as researchers we should adopt a feminist approach which considers the perspectives of those we study, and recognizes our own positionality, to create a greater sense of objectivity in research. In our data collection and evaluation methods, we attempted to embrace this approach by adopting several methodologies and involving a wide range of stakeholders including parents, teachers, religious leaders, and parent liaisons. We reflected on the biases appearing in our own questions in each interview, attempted to ask questions that were cognizant of such biases, and reviewed data all together. Furthermore, in our preliminary exploration of Consejero, we sought feedback from Latino parents within the familiar context of WhatsApp. Through open dialogue, we were able to find new possible uses and functionalities, allowing the community to express their points of view.

Drawing on these results, we intend to continue and expand upon this conversation through a series of participatory design activities with parents and beyond. In essence, our purpose is to design and iterate “with” the community rather than “for” them, acknowledging the community goes beyond the context of parents or children but to schools, NGOs and others.

6.2 Prioritizing Everyday Practices

Natarajan and Parikh discuss the importance of evaluating and understanding everyday values and practices [17]. They stress that many ICTD initiatives that push information to vulnerable groups, fail due to a lack of understanding of people’s daily practices and

values. In proposing Consejero, we took these lessons to heart in both data collection and ideation. We saw that this was crucial for a successful technological intervention to emerge as Latino immigrant parents are certainly a marginal and vulnerable population within the United States. Though their children must perform within the United States school system, their families live within the Latino culture and communities. As a result, their values and practices often do not coincide with those that are considered typical for American parents and children. Rather than attempting to replace their values with those “typical” of local Americans, which would likely be undesirable and unsuccessful, we have made and will continue to make an effort to build a piece of digital technology according to parents’ wants, needs, values, and existing family and community practices.

6.3 Being Mindful of the Politics in Artifacts

Langdon Winner’s heavily cited article titled “*Do Artifacts Have Politics?*” [21] addresses the fact that technology embodies politics whether these are intentional or not, and that these politics can have serious consequences. He warns that we must consider these political implications, and the impacts they might have on social relations. These considerations can lead to better informed, community-sensitive designs.

In the case of Consejero, such concerns are particularly acute as our primary stakeholders are largely undocumented persons living within the United States. Connecting these individuals through technology, and introducing an intelligent agent to organize among them, could have unintended consequences. For that reason, through participatory design, we will explore how these concerns further shape the design of Consejero.

Further, given that our probe, Consejero, would operate in a communication channel managed by schools, we need to further explore the level of authority parents could assign to it. As [22] demonstrated, many information exchange opportunities are lost when technology becomes an extension of schools’ authority.

7 Conclusions and Future Work

Our preliminary research on Consejero Automatico, an educational chatbot for achieving parental engagement in schools for Latino immigrants, highlights further aspects to explore when leveraging everyday practices for the design of technology for non-dominant groups. Latinos are the largest minority in the United States, yet they under-perform on almost every academic measure when compared to their African-American and Caucasian counterparts [2]. However, parental engagement has been shown to improve educational attainment, and our preliminary research indicated that technology might be able to address this gap, as long as it is appropriately situated in social and cultural norms and values. In future work, we will use Consejero to engage in participatory design activities with several other stakeholders (parents, families, teachers, school officials, and more) that aim for design that solidly addresses all the concerns here identified.

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